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SEX DIFFERENCES IN SMOKING WITHDRAWAL, URGE, AND CESSATION AFTER STROKE-INDUCED INSULAR CORTEX DAMAGE.
Amir Abdolahi 1,2, Geoffrey Williams 2, Curtis Beneschi 1, Henry Wang 2, Eric Spitzer3, Bryan Scott1, Robert Block1, Edwin van Wijngaarden1; 1Acute Care Solutions, Phillips Research, Cambridge, MA, 2University of Rochester, Rochester, NY, 3Rochester General Hospital, Rochester, NY

Aims: Growing evidence supports the role of the insular cortex (IC) in regulating withdrawal and cravings associated with tobacco abuse. Recognizing the higher susceptibility of smoking relapse among females, we investigated whether sex differences in withdrawal, urge, and abstinence were still apparent after damage to IC and non-IC regions.

Methods: A total of 156 smokers (females: 21 IC and 50 non-IC strokes; males: 17 IC and 68 non-IC strokes) were recruited from 3 acute care stroke units in Rochester, NY. Validated questionnaires were administered during admission to assess urge (Questionnaire on Smoking Urges) before and during admission, withdrawal intensity during admission (Wisconsin Smoking Withdrawal Scale), and continuous abstinence at 3 months post-stroke. Multivariable linear and logistic regressions were used to evaluate differences in urge, withdrawal, and abstinence between IC and non-IC groups, controlling for covariates and stratified by sex.

Results: On average, withdrawal scores were lower in IC damaged patients versus non-IC, consistently so among females (β=−3.11, 95% CI: −5.85,−0.38) and males (β=−2.77, 95% CI: −5.51,−0.03). A greater reduction in urge from baseline to hospitalization was also noted in the IC group, with similar effects in females (β=−1.00, 95% CI: −1.97,−0.03) and males (β=−1.27, 95% CI: −2.41,−0.13). While the interaction was not statistically significant (p = 0.26) due to small sample size, IC damage was more strongly associated with 3-month abstinence in males (OR = 3.59, 95% CI: 0.72, 17.82) than females (OR = 1.47, 95% CI: 0.40, 5.48) suggesting that the IC may be partially responsible for observed sex differences in relapse.

Conclusions: Nevertheless, no sex differences were observed for withdrawal and urge measures, suggesting the IC as a potential novel target for therapeutics that may be effective in both males and females.

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THE ASSOCIATION BETWEEN RELIGION/SPRITUALITY AND 30 DAY CRACK/COCaine AND MARIJUANA USE AMONG FEMALE OFFENDERS.
Abenaa Acheampong1, Denise Christina Vidor1, Catherine Woodstock Stirley2, Linda Cotterl2; 1University of Florida, Gainesville, FL, 2Epidemiology, University of Florida, Gainesville, FL, 3University of Miami Miller School of Medicine, Miami, FL

Aims: This analysis examines the association between religion/spirituality and 30 day crack/cocaine and marijuana use patterns among females in an alternative to incarceration program.

Methods: Data comes from 319 women recruited from a Municipal Drug Court System in the Midwest. Women were interviewed about religion/spirituality, socio-demographic characteristics, and use of crack/cocaine (CC) and marijuana (MJ) in the past 30 days. Religion/spirituality was defined as viewing religion and spirituality as very important, attending religious services regularly, and seeking advice from religious leaders. Multinomial logistic regression determined the association between religion/spirituality, socio-demographic characteristics, and 30 day CC and MJ use patterns.

Results: Among the sample, 47% (N=150) of the women used either CC and/or MJ in the past 30 days (CC+MJ: 16%; CC only 18%; MJ only 13%). Results of bivariate analyses showed that religion/spirituality, race, number of arrests, current sex trading, and being separated from parents as a child were significantly associated with drug use patterns. In an adjusted multinomial model, religion and spirituality decreased the odds of CC+MJ (AOR .30) and CC (AOR .39), however, a significant decrease in odds of MJ was not found. Other variables that were significantly associated with CC and MJ use patterns included: current sex trade (CC+MJ: AOR 5.15; CC: AOR 3.06), being non-black (CC+MJ: AOR .35; CC: AOR .423; MJ: AOR .28), 4+ arrests (CC+MJ: AOR 3.80; CC: AOR 2.33), and ≥30 years of age (CC+MJ: AOR .41; CC: AOR .17; MJ: AOR 2.87).

Conclusions: Future drug prevention and interventions should consider the potential protective effects of religion/spirituality on substance use.

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THE INTERACTION BETWEEN COCAINE DEPENDENCE AND HIV INFECTION ON RISKY DECISION MAKING AND ITS NEURAL SUBSTRATES.
Merideth Addicott, Andrea L Hobkirk, Daniella Cordero, Christina S Meade; Psychiatry & Behavioral Sciences, Duke University, Durham, NC

Aims: Stimulant drug abuse is a major driver of HIV infections since stimulant abusers engage in high rates of risky sexual behaviors. Both HIV and HIV+ alter brain function, which may contribute to risky decision making. Cocaine abuse affects dopamine function, and cocaine users display impaired executive function related to inhibitory control and risk-taking propensity. HIV infection is also associated with deficits in executive function, such as impaired inhibition and risky decision making. However, how the interaction between cocaine dependence and HIV infection affects decision-making processes is unknown.

Methods: In this case-control study, four groups of participants (cocaine dependent/HIV+, n = 15; cocaine dependent/HIV-, n = 17; non-drug user/HIV+, n = 17; non-drug user/HIV-, n = 20) completed a loss aversion task while under functional MRI. In this task, participants accepted or rejected gambles with an equal probability of winning or losing. Gambles were drawn randomly from a gain/loss matrix that ranged from $0 to $40 and from $0 to -$20. Behaviourally, there was a step-wise decrease in loss aversion across the four groups (p < .05), with cocaine dependent/HIV+ participants demonstrating the least loss aversion. The BOLD signal was modeled using regressors for gain values and loss values, separately. Group-level tests on the contrast Loss > Gain revealed hypoactivation among cocaine dependent participants compared to non-drug users in the bilateral caudate/putamen; hypoactivation among HIV+ compared to HIV- participants in the bilateral frontal poles, inferior temporal lobes, and superior parietal lobules; and an interaction effect in the right insula (cluster corrected, p < 0.05).

Conclusions: These results suggest that cocaine dependence and HIV infection have unique, yet additive, effects on reward-based decision making, which may help to explain engagement in risky behaviors.

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EFFECTS OF ELECTRONIC VS. COMBUSTIBLE CIGARETTE ADMINISTRATION ON SMOKING WITHDRAWAL SUPPRESSION.
Claudia G Aguirre, Adam Leventhal, Matthew Kirkpatrick, Nicholas Goldenson, Jimi Huh; Preventive Medicine, University of Southern California, Los Angeles, CA

Aims: Concurrent use of electronic cigarettes (ECs) and combustible cigarettes (CCs) (“dual use”) is becoming increasingly common. Dual users may use ECs as a smoking substitute to provide acute satiation of key withdrawal symptoms (i.e., negative affect and urge to smoke) during brief periods of CC abstinence. We tested whether ECs effectively substitute for CCs by comparing the effects of CC and EC administration on suppression of withdrawal symptoms in dual users in a lab study.

Methods: Dual users (aged 18-58; n=25) completed four lab visits each after 16 hours of nicotine deprivation. At each visit, subjects completed (in randomized order) one of four experimental conditions as part of a 2 [Nicotine Administration: administration of EC or CC vs. matched continued deprivation control] × 2 [Cigarette Type: EC vs. CC administration/matched control] factorial within-subject design. Participants used their preferred CC brand and EC device during the 8-minute nicotine administration procedure to maximize external validity. Subjective measures were administered before and after EC or CC ad-lib administration (or continued deprivation for the matched control conditions).

Results: There was a Nicotine Administration x Cigarette Type interaction for urge to smoke [F (1, 100)=6.15, p=.02]. Both ECs and CCs significantly suppressed smoking urge, but the magnitude of suppression (relative to continued deprivation) was weaker from ECs [F(1,47)=11.21, p<.01] than CCs [F(1,47)=82.58, p<.0001]. Both EC and CC administration significantly suppressed urge to vape and negative affect; the magnitude of suppression did not differ.

Conclusions: Use of preferred EC device provides satiating effects on negative affect and urge in dual users, though the magnitude of suppression of smoking urge may not be as robust as CC-induced urge suppression. Future research on dimensions of EC product diversity that maximize smoking withdrawal suppression is warranted to inform possible harm reduction efforts.

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ADDRESSING UNMET ADDICTION NEED IN AN URBAN HOSPITAL.
Keith Ahamad1, Sconaida Nolan2, Evan Wood3; 1Urban Health Research Initiative, BC Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada, 2University of British Columbia, Vancouver, BC, Canada, 3Department of Medicine, University of British Columbia, Vancouver, BC, Canada

Aims: Patients with substance use disorders are heavy users of inpatient hospital care. Significant barriers exist in accessing evidenced based addiction care. Much of the issue is the lack of medical education and availability of specialty consultation with linkage to primary care follow-up. We aim to assess the impact of the creation of an academic teaching service on medical education and specialty consultation for addiction related hospitalizations in Vancouver, BC.

Methods: Following the creation of an Addiction Medicine Fellowship program in Vancouver, BC, an existing addiction consultative service was expanded to include medical students, residents and fellows. Data for trainees working on the service were tracked using administrative records between August 2013 and June 2016. Data for patient consultations were tracked using the hospital’s Patient Care Information System between January 2009 and December 2015.

Results: Overall, between July 2013 and June 2016 medical trainees increased from 33 in 2013-14 (4 fellows, 12 residents, 1 nurse, 12 medical students), 73 in 2014-15 (4 fellows, 5 practicing GPs, 43 residents, 1 nurse, 20 medical students), and 98 in 2015-16 (6 fellows, 5 practicing GPs, 47 residents, 2 nurses, 37 medical students). Patient consultations were tracked pre and post expansion. Pre-expansion consults between January 2009 and December 2012 averaged 940.25 per year. Post-expansion consults increased in 2013, 2014, and to 1144, 1623, and 1946 respectively.

Conclusions: In this setting, creation of an academic addiction training service has resulted in substantial increases in medical trainees and doubled the number of patients seen in consultation. Further study is needed to assess long-term patient outcomes.

Financial Support: Providence Health Care

HEALTHCALL ON SMARTPHONE: A BRIEF INTERVENTION TO REDUCE CONCURRENT DRUG AND ALCOHOL USE.
Erat Ataorovitch1, 2, Elana Greenstein3, Aline Le4, Deborah S Hasin2; 1Psychiatry, Columbus University Medical Center, New York, NY, 2NYSPI, New York, NY

Aims: Alcohol and drug abuse are often not addressed in primary care settings, where staff are busy and resources scarce, so we developed HealthCall to enhance brief intervention using interactive voice response. Recently, as part of the NIH Collaborative Research on Addiction initiative (CRAN), we migrated HealthCall to smartphone technology, and adapted it to have an integrated focus on both alcohol and drugs ("HealthCall-A/D"). For use in enhancing brief behavioral intervention in HIV+ individuals. Due to the innovations in HealthCall-A/D, feasibility information and patient engagement by end-of-treatment (60 days) was needed.

Methods: Participants were 41 HIV+ non-injection drug users who were concurrent binge drinkers recruited via ads in local NYC newspapers. Mean age was 50 (s.d., 8.2), 78% were male, 88% African-American, 71% had HS grad/GED. At baseline, mean days of drug use in the past 30 days was 14 (s.d., 6.2), mean drinks per drinking days was 6.4 (s.d., 5.4); mean drinks per day was 3.0 (s.d.,2.3) and mean percent days abstinent (PDA) was 53.5 (s.d., 22.7). Study is ongoing; here we present preliminary results.

Results: By end of treatment, reduction in mean days of drug use was significant (p<.0001), as was reduction in mean drinks per day (p<.0001) and mean PDA (p<.0001), while reduction in mean drinks per drinking day trended towards significance (p=0.08). Retention to date is very good, with 100% of participants due for their final visit attending. Engagement is very high; participants have used HealthCall-A/D 90.85% of possible days (i.e., nearly daily).

Conclusions: Significant drug and alcohol use reductions occurred by the end of treatment in this sample of low SES HIV+ individuals. HealthCall-A/D use (~91% of possible days) was substantially higher than in our previous HealthCall work in HIV+ drug users using interactive voice response (~65%). These preliminary results are promising as they show HealthCall-A/D to be highly feasible and engaging for HIV+ individuals abusing both alcohol and drugs.

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TAURINE’S EFFECTS ON COCAINE REWARD IN ADOLESCENT MALE AND FEMALE RATS.
Ugachukwu Akpara, Rina Liang, Avery Villa-Gonzalez, Denzel Harris, Adel Elzaein, Kirtin Chauhan, Cladimir Vasquez, Tianna Irving, Ayana Cole, Kalirii Yimar Salas-Ramirez; Department of Physiology, Pharmacology and Neuroscience, CUNY School of Medicine, New York, NY, Brooklyn, NY

Aims: According to the 2013 National Survey on Drug Use and Health (NSDUH), approximately 4.2 million United States residents are estimated to use cocaine in a year. The survey showed that approximately 3% of current users in the US are adolescents. Females begin using illicit drugs, like cocaine, at lower doses when compared to males; however, their use escalates very rapidly into addiction. Women also relapse more often and have a tougher time in rehab, therefore, when considering pharmacological interventions for cocaine addiction, one must consider sex and age of exposure. Previous studies from our laboratory determined sex specific effects of taurine on cocaine reward, males benefiting from taurine pre-treatment. Although it also decreased cocaine reward in females, it was dependent on time of exposure and gonadal hormones. The objective of this study was to test whether taurine would have a differential effect on adolescent rats.

Methods: Thirty-six male adolescent rats (P30), were treated with either taurine (100 mg/kg) or saline and tested for cocaine (10mg/kg) reward using a conditioned place preference paradigm.

Results: Adolescent male rats showed a strong preference towards the cocaine paired chamber, independent of taurine pre-treatment. Surprisingly, they also acquired a preference to taurine.

Conclusions: This was not observed in intact or gonadectomized adult males. The preference to cocaine in females is hormone dependent, so we hypothesized that taurine may exacerbate cocaine reward in adolescent females. These findings have strong implications for the relationship between compounds found in energy drinks and stimulant use and abuse. We will further investigate sex differences within this paradigm to determine whether these effects are sex-specific.

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ACUTE INHIBITORY CONTROL TRAINING IN COCAINE USERS.
Joseph I. Alcorn1, Erika Pike2-3, Joshua A Lile2-3, William Walton Stoops1-2,3, Craig R Rush1,2,3; 1Psychology, University of Kentucky, Lexington, KY, 2Behavioral Science, University of Kentucky, Lexington, KY, 3Psychiatry, University of Kentucky, Lexington, KY

Aims: This ongoing pilot study is assessing the effects of acute inhibitory control training on cocaine-related images in cocaine users. We hypothesized that acute inhibitory control training to cocaine-related images would improve response inhibition and decrease attentional bias to cocaine images.

Methods: Participants are current cocaine users. Target enrollment is 40 participants; 16 have completed. Participants undergo five blocks of inhibitory control training to cocaine or neutral images (n=8/group) on one day. Response inhibition and attentional bias are assessed at two time-points (before and after inhibitory control training) using the Stop-Signal Task (SST) and Visual-Probe Task (VPT), respectively.

Results: Response inhibition performance decreased as a function of stop-signal delay on the SST. Attentional bias to cocaine-images was observed on the VPT. Groups did not differ in inhibitory control training performance, nor were there significant effects of group or time-point on response inhibition or attentional bias.

Conclusions: These initial results suggest that acute inhibitory control training to cocaine-images does not alter response inhibition performance or attentional bias to cocaine-images in cocaine users. However, the current sample size might be insufficient to detect training effects. Future studies should investigate long-term implementation of inhibitory control training, possibly in conjunction with other treatments.

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IS RISK OF CANNABIS DEPENDENCE LOWER FOR ‘CANNABIS ONLY’ USERS?

Karl Alcover, Catalina Lopez-Quintero, James C Anthony; Epidemiology & Biostatistics, Michigan State University, East Lansing, MI

Aims: Epidemiological studies, to date, suggest that roughly 1 in 8-to-11 cannabis users in the United States (US) develop cannabis dependence, but underlying pathogenetic mechanisms are complex when ‘polydrug use’ is considered. Some recent estimates suggest that drug dependence risk might be much lower when drug involvement is narrowly constrained to cannabis and only cannabis, with no extra-medical use of cocaine, opioid compounds, or other internationally regulated drugs (IRD). Our aim is to look back to NIMH Epidemiologic Catchment Area (ECA) community samples of the early 1980s and to estimate cumulative occurrence of cannabis dependence with these complexities in mind.

Methods: The NIMH ECA probability sample surveys recruited adult household participants in four metropolitan areas, 1980-83, with standardized diagnostic assessments of > 18,000 adult participants, including coverage of DSM-III Drug Use Disorders and a syndrome construct of ‘drug dependence with maladaptive drug use’ (DDwMDU), ‘Cannabis only’ users (n=1086) and ‘polydrug’ cannabis users (n=903) are compared. Analysis-weighted estimates with Taylor series variances are derived.

Results: Ignoring subtype, the estimate for cannabis users shows 9.3% with the DDwMDU syndrome (95% CI= 7.4%, 11.3%). For ‘cannabis only’ users, the corresponding estimate is 1.7% (95% CI = 0.8%, 2.7%) versus 20.0% for ‘polydrug’ cannabis users with extra-medical use of other IRD (95% CI= 15.6%, 24.4%).

Conclusions: The ECA evidence is consistent with a proposition that drug dependence syndromes might be observed among only 1%-2% of ‘cannabis only’ users – i.e., when cannabis users do not start extra-medical use of other internationally regulated drugs. Before discussion of programmatic or policy implications, there are some conceptual and methodological issues to be faced in future investigations that build from this work, including potential heterogeneity of risk profiles within subgroups of cannabis users.

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EFFECT OF LOCAL HEALTH DEPARTMENT LEADERSHIP ON COMMUNITY OVERDOSE PREVENTION COALITIONS.

Apostolos Alexander Alexandridis, Nabaran Daugherty, Christopher Ringwalt, Catherine Sanford, Agnieszka McCort; Injury Prevention Research Center, University of North Carolina at Chapel Hill, Chapel Hill, NC

Aims: Community coalitions focused on prescription opioid overdose (PDO) prevention have shown promise in reducing overdose deaths. In North Carolina, the statewide rollout of Project Lazarus (PL) was initiated in 2011, led by community coalitions in each funded county. This study sought to determine if counties with PDO prevention coalitions and Local Health Department (LHD) leadership had lower rates of overdose.

Methods: This cross-sectional study utilized data from all 100 counties in North Carolina in 2013. We determined the funding status and leadership makeup of PL coalitions using leader survey data. We collected overdose-related ED visits using the statewide ED surveillance system, NC DETECT. Data for the number of outpatient dispensed prescriptions for opioid analogues (OA) in each county was obtained from the NC PDMP, the CSRS. Poisson regression was conducted using STATA 13.1.

Results: In 2013 there were 19,103 opioid-related hospital ED visits in NC, and 7.45M outpatient prescriptions for OA were dispensed. Compared to non-funded counties, those receiving funding for community coalitions had a 6% lower (IRR=0.94, p=0.430) rate of opioid-related ED visits per OA script dispensed. In counties where the coalition was led by the LHD, the rate of opioid-related ED visits was 27% lower (IRR=0.73, p=0.032) than all other counties (including those with coalitions not led by LHD).

Conclusions: NC counties with funded coalitions had marginally lower rates of opioid-related ED visits, and leadership of community coalitions by local health departments led to a further reduction. Professionalization of coalition activities may lead to more effective intervention implementation. Further research is needed to explore temporal relationships between coalition formation and overdose rates, and to account for baseline differences in rates between funded and unfunded counties.

Financial Support: This study was supported by a grant from the CDC, Kate B Reynolds Charitable Trust, the NC Office of Rural Health, and Community Care of North Carolina.

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WITHDRAWN

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ARE STRESSFUL LIFE EVENTS ASSOCIATED WITH SMOKING CIGARETTES AND MARIJUANA DURING PREGNANCY?

Alicia M Allen1, John Hughes2, Adam Alexander3, Andrine Lemieux4, Sharon Allen1, Kenneth Ward1, Mustafa al’Absi1; 1Family Medicine & Community Health, University of Minnesota, Minneapolis, MN, 2Biostatistics, University of Minnesota, Minneapolis, MN, 3Public Health, The University of Memphis, Memphis, TN, 4Biobehavior, University of Minnesota, Duluth, Duluth, MN

Aims: Although stressful life events (SLEs) are associated with smoking cigarettes during pregnancy, the association between SLEs and smoking marijuana during pregnancy remains unknown. This report explores the association between SLEs and smoking cigarettes and marijuana during pregnancy.

Methods: Data were obtained from 118,067 women who delivered live births in 1 of 40 states in 2009–2011, and responded to a questionnaire from the Pregnancy Risk Assessment Monitoring System (PRAMS)—an ongoing state and population-based surveillance system. Logistic regression models were used to explore the association between the number of SLEs (range 0–13) in the 12 months prior to delivery and smoking cigarettes during the last 3 months of pregnancy (yes/no), or for a subset of the sample, smoking marijuana at any time during pregnancy (yes/no). A total of 12 potential confounders (e.g., age, education, race, breastfeeding, parity) were assessed and adjusted for, if necessary. Data were weighted to be representative of all women who delivered live births in their respective states. Analyses were completed using R statistical software.

Results: Among the 14,503 women who reported smoking cigarettes three months prior to pregnancy, SLEs were associated with increased odds of smoking cigarettes during pregnancy (OR = 1.27; 95% CI = (1.18, 1.37)) after adjusting for age, education, marital status, race, ethnicity, prenatal care, parity, and insurance status. Among the 312 women who reported smoking marijuana prior to pregnancy, SLEs were associated significantly with increased odds of smoking marijuana during pregnancy (OR = 1.52; 95% CI = (1.03, 2.26)) after adjusting for age.

Conclusions: Results suggest that stressful life events are associated with smoking cigarettes and marijuana use during pregnancy. Additional research needs to examine the causal pathways of these associations.

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CANNABIS USE DURING PREGNANCY FOR THE UNITED STATES, 2005-2013.
Onayma Alshaarawy, James C Anthony; Epidemiology and Biostatistics, Michigan State University, East Lansing, MI, Epidemiology and Biostatistics, Indiana University, Bloomington, IN

Aims: The study aim is to estimate occurrence of cannabis use among pregnant and non-pregnant women of the United States (US), with consideration of cannabis dependence (CD). The study also investigates whether the perception of risk associated with cannabis use might explain why pregnant women continue their use.

Methods: The 2005-2013 National Surveys on Drug Use and Health recruit and assess large nationally representative samples of US civilians, including 12-34 year old women (n=194380). There are multi-item cannabis, CD, and harm perception assessments. Analysis-weighted estimates and delta method 95% CI were derived.

Results: Among pregnant women in the 1st trimester, as well as non-pregnant women, 8%-9% used cannabis at least once in the 30 days prior to assessment. Approximately 21.0% of recently active users in Trimester 1 qualified as a CD case, with no appreciable variation across trimesters. CD was associated with persistence of cannabis use in all trimesters and in non-pregnant women (p<0.05). Perceived cannabis harm is inversely associated with persistence of cannabis use only among non-pregnant women.

Conclusions: Evidence of a possible ameliorative pregnancy effect on cannabis use cessation was seen by the 2nd trimester. Persistence of use across pregnancy might be influenced by CD, but not harm perception.

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ACCESS TO AND RETENTION IN HARM REDUCTION SERVICES AMONG PERSONS WHO INJECT DRUGS IN WASHINGTON, DC.
Sean Travis Allen, Monica Ruiz, Susan Sherman; Epidemiology, Johns Hopkins University, Baltimore, MD, Prevention and Community Health, George Washington University, Washington, DC

Aims: Syringe exchange program (SEP) efficacy is dependent on a number of factors, including their accessibility. Studies have shown that persons who inject drugs (PWID) who reside in close proximity to SEPs are more likely to be retained (i.e., access services multiple times) than PWID who reside farther from SEPs; however, these studies define SEP access differently and are not generalizable. We examined if there are differences in SEP access between PWID who accessed services once and repeat SEP clients, with access operationalized as the walking distance in miles between zip code of home residence and where clients accessed SEP services. We hypothesized that single exchange SEP clients would travel a greater distance than repeat clients at the time of first engagement with the SEP. Secondly, we hypothesized that the distance single exchange clients traveled at their first exchange would be greater than the mean distance repeat clients traveled over their engagement at the SEP.

Methods: Exchange records from a SEP that operated in Washington, DC from 1996 to 2011 were used to calculate the walking distance PWID traveled to access SEP services. A geometric point distance estimation technique was used to calculate the estimated walking distance between zip code of home residence and where each person accessed SEP services. Independent samples t-tests were used to evaluate differences in access between single exchange and repeat SEP clients.

Results: Single exchange clients traveled significantly farther than repeat clients at the time of first exchange (3.7 and 2.9 miles, respectively; p<0.05). The mean distance repeat clients traveled across all their exchanges was shorter than the distance single exchange clients traveled at their first exchange (3.2 and 3.7 miles, respectively; p<0.05).

Conclusions: This research provides support for expanding the number and geographic diversity of SEPs.

Financial Support: This research was supported by a grant to Dr. Monica Ruiz from the National Institute on Drug Abuse (R01DA031649-03S1).

ABUSE-RELATED EFFECTS OF THE BIASED MU OPIOID RECEPTOR AGONIST TRV130 ON INTRACRANIAL SELF-STIMULATION IN RATS.
Ahmad Altarifi, Bruce Blough, Steven Negus; Pharmacology, Jordan University of Science & Technology, Irbid, Jordan, Virginia Commonwealth University, Richmond, VA, Research Triangle Institute, Research Triangle Park, NC

Aims: Mu opioid receptor (MOR) agonists are widely used clinically as analgesics; however, currently available mu agonists produce undesirable side effects including abuse liability, and chronic administration may lead to tolerance and dependence. The MOR couples to multiple intracellular pathways that include signaling through G-proteins and β-arrestins, and these different signaling pathways may contribute differentially to therapeutic and undesirable effects. TRV130 is a novel G-protein biased mu agonist that may retain G-protein mediated therapeutic effects while producing reduced β-arrestin-mediated undesirable effects. This study assessed effects of TRV130 enantiomers using a frequency-rate ICSS procedure that has been previously to evaluate abuse-related effects of morphine and other drugs.

Methods: Adult male Sprague-Dawley rats were equipped with electrodes targeting the medial forebrain bundle and trained to respond during daily experimental sessions for a range of brain-stimulation frequencies (56-158Hz) under FR1 schedule. The primary dependent measure was rate of reinforcement at each frequency.

Results: Acute treatment with (+)TRV130 produced weak abuse-related ICSS facilitation at low doses (0.1-0.32 mg/kg) and naltrexone-reversible ICSS depression at a higher dose (1.0 mg/kg). (-)TRV130 (1.0-10 mg/kg) did not alter ICSS. Repeated 7-day treatment with either (+)TRV130 (1.0 mg/kg/day) or morphine (3.2 mg/kg/day) produced tolerance to the rate-decreasing effects and enhanced expression of abuse-related rate-increasing effects of (+)TRV130.

Conclusions: These effects of acute and repeated (+)TRV130 administration are similar to effects of acute and repeated morphine administration, and as a result, these results predict that (+)TRV130 will display morphine-like abuse potential. Additionally, insofar as TRV130 is G-protein biased, these results suggest that MOR-associated G-protein signaling mediates abuse-related effects of mu agonists.

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SOCIAL TIES AND SUBSTANCE USE AMONG RESERVE SOLDIERS IN SINGLE AND DUAL MILITARY HOUSEHOLDS
Erin M Anderson Goodsell1, Sarah Cercone Heavey1, D Lynn Homish2, Gregory G Homish3, Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 2Community Health and Health Behavior, State University of New York at Buffalo, Buffalo, NY

**Aims:** Substance use is a major public health problem in the military that can be influenced by social network factors. This work extends existing research by examining associations between military household status and social ties, substance use and influence on military personnel substance use.

**Methods:** Data are baseline findings from Operation: SAFETY (Soldiers And Families Excelling Through the Years), an ongoing longitudinal study of US Army Reserve/National Guard Soldiers and their partners (N=373). Tests of group mean differences compare social ties’ past-year drinking and illicit drug use with substance use and social ties. Comparisons were done across military household types: husband-only, wife-only, and dual military.

**Results:** Dual military husbands had significantly lower proportions of past-year low drinking ties, compared to husbands in husband-only households (29% vs 40%, p<.05); similar findings were observed for wives in dual military and wife-only households (55% vs 47%, p<.05). Compared to wives in wife-only households, dual military wives were significantly more likely to be past-year moderate/heavy drinkers (p<.03) and have a marginally higher mean number of past-month drinking days with each drinking tie (4 vs 3 days). Compared to dual military wives, wives in wife-only households had significantly higher proportions of social ties who had past-year illicit drug use (4% vs 10%, p<.05) as well as ties with whom they used illicit drugs in the past year (1% vs 4%, p<.05). This finding was similar for husbands in dual military and husband-only households (0% vs 2%, p<.01).

**Conclusions:** Compared to their counterparts in single military households, husbands and wives in dual military households show evidence of having lower proportions of social ties who use substances as well as less substance use with these ties. Future work should leverage military partners as support for prevention and treatment efforts.

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DIMINISHED ALTERNATIVE REINFORCEMENT MEDIATES SOCIOECONOMIC DISPARITIES IN ADOLESCENT SUBSTANCE USE: A LONGITUDINAL STUDY.
Nafeesa Andrabi1, Adam Leventhal1, Rubin Khoddam2; 1Institute for Preventive Medicine, University of Southern California, Los Angeles, CA, 2Psychology, University of Southern California, Los Angeles, CA

**Aims:** The goal of the present study is to examine the role of healthy reinforcers as a mediator between teens of lower (vs. higher) socioeconomic status and substance use later in adolescence.

**Methods:** The current study performed a longitudinal, meditational analysis, utilizing three waves of data from 2630 adolescents (M age = 14.1). Students completed surveys across three time points. Baseline highest parental education taken at the beginning of 9th grade was used as a socioeconomic status marker. Alternative reinforcers (engagement in pleasurable substance-free activities, e.g., hobbies) at the six-month follow up at Wave 2 were examined at the mediator. Any substance use in the past 6 months (Yes/No) was examined as the outcome variable, use with social ties at the six-month follow up at Wave 2 was examined as the mediator. Compared to other cofactors were adjusted for in the analysis to make inferences about changes over time and rule out confounding factors.

**Results:** Lower parental education at baseline was associated with a greater likelihood of reporting past six-month substance use at follow-up. The inverse association between parental education and substance use was statistically mediated by diminished alternative reinforcement, such that, lower parental education was associated with lower engagement in alternative reinforcers, which, in turn, was associated with greater substance use (mediation effect = -0.007, 95% CI is [-0.017, -0.001]). These results suggest that diminished alternative reinforcement serves as a mechanism for socioeconomic disparities in adolescent substance use over time.

**Conclusions:** This study indicated that diminished alternative reinforcement may be a mechanism underlying socioeconomic disparities in adolescent substance use. Understanding this mechanism may be a fruitful target for prevention programs for this vulnerable population.

**Financial Support:** This research supported by NIH Grant R01-DA033296.

ASSOCIATIONS BETWEEN INTERVENTION INTENSITY AND UNDERAGE DRINKING OUTCOMES: A METHODOLOGICAL APPROACH FROM THE KANSAS SPF-SIG.
Kannon D Anderson-Waring1, Jeff Hennings2, John Rodziewicz3, Marvia Jones4, Lisa Chaney5; 1Integrated Substance Abuse Programs, University of California, Los Angeles, Los Angeles, CA, 2The University of Kansas, Lawrence, KS, 3Centers for Disease Control and Prevention, Atlanta, GA, 5Learning Tree Institute, Greenburgh, Girard, KS

**Aims:** The present study examines the association between the intensity of coalition-facilitated community changes and underage drinking outcomes in a multi-site substance use prevention intervention.

**Methods:** This study was a community-based, coalition-driven intervention using the Strategic Prevention Framework to address underage drinking. Data were collected on the number and types of community changes documented by 14 Kansas coalitions in an online documentation and support system from 2009 to 2012. Community-level changes were scored by dimension (duration, potential reach, target population, and behavior change strategy) and intensity (low, medium, high). An OLS regression was used to examine whether the intensity of implemented community changes was associated with underage drinking outcomes.

**Results:** The communities facilitated 802 distinct community changes. The intensity of community changes was associated with reductions in past 30-day alcohol use, F(1,10) = 10.54, p < .009. Intensity scores was also associated with reductions in binge drinking, F(1,10) = 5.22, p = .045.

**Conclusions:** The present study provides coalitions with a methodology for examining the intensity of community efforts to understand contributions towards improvements in population-level outcomes. An enhanced understanding of how to guide coalition efforts to implement a sufficient dose of community changes, with appropriate levels of cumulative intensity, may occasion marked improvements in underage drinking outcomes.

**Financial Support:** This research was supported in part by funding from the Kansas SPF-SIG, awarded by the Substance Abuse and Mental Health Services Administration to the Kansas Department of Social and Rehabilitation Services. Research reported in this publication was also supported by the National Institute on Drug Abuse of the National Institutes of Health under award number 5T32DA007272-23.
Aims: Research has shown that psychostimulants alter blood-brain-barrier function and increase neuroinflammation. However, how the various psychostimulant drugs specifically affect the cerebral endothelium has not been fully investigated. Our focus of this study was to examine the effects of 3 psychostimulant drugs (cocaine, methamphetamine and MDPV) on cerebral endothelial barrier integrity, adhesion molecule expression and extracellular microvesicle (eMV) production.

Methods: Primary human brain microvascular endothelial cells from 3 donors were treated with psychostimulants ranging from 100 nM to 250 μM. Barrier integrity was examined using trans-endothelial electrical resistance, adhesion molecule expression was evaluated using flow cytometry analysis and eMVs were isolated from the media and protein content was evaluated by western blot analysis.

Results: Both cocaine (100 μM) and methamphetamine (50 μM) disrupted BBB integrity and upregulated adhesion molecule expression within 24 hours of treatment. In addition, both induced the production of eMVs containing tight junction proteins as a result of a BBB breakdown. In the case of cocaine, increased eMV production occurred at concentrations lower than what was needed to disrupt the barrier and upregulate adhesion molecule expression. On the other hand, synthetic cathinones, which have been reported to be 10 times more potent than other psychostimulants, had no effect on barrier integrity, adhesion molecule expression or production of eMVs.

Conclusions: Overall we have found that psychostimulants have different effects, which likely plays an important role in the progression of drug-induced BBB dysfunction and neuroinflammation.

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VALIDITY OF THE MODIFIED CIGARETTE EVALUATION QUESTIONNAIRE IN PREDICTING THE REINFORCING EFFECTS OF CIGARETTES THAT VARY IN NICOTINE CONTENT UNDER DOUBLE-BLIND CONDITIONS.

Christopher Anthony Arger, Sarah Hughes Heil, Stacey C Sigmon, Jennifer W Tidey, M Stitzer, Diann Glaelema, Michael Desarno, Hanna Durand, Elizabeth Ruggieri, S T Higgins; University of Vermont, Burlington, VT, Psychiatry, Brown, Providence, RI, Psychiatry, University of Vermont, Burlington, VT

Aims: Subjective ratings are widely used as a proxy measure of the rewarding effects and associated abuse liability of tobacco products, however validity studies evaluating self-report measures in relation to behavioral preference of cigarettes varying in nicotine content are needed. We examined correspondence between ratings on the modified Cigarette Evaluation Questionnaire (mCEQ) and choices abstinent smokers made when given the opportunity to choose between cigarettes varying in nicotine content under double-blind conditions.

Methods: Current smokers (N=18) participated in a multi-site, pilot laboratory study evaluating Spectrum research cigarettes (0.4, 2.4, 5.2, 15.8 mg/g). In Phase I (4 sessions) the mCEQ (Satisfaction, Psychological Reward, Aversion, Respiratory Sensations, Craving Reduction subscales) was administered following ad-lib smoking of one cigarette dose. In Phase II (6 sessions) cigarette preference was assessed (two-dose concurrent choice tests). Simple effects of mCEQ scores at each level of cigarette preference were analyzed using mixed-model repeated-measures analyses of variance.

Results: Satisfaction ratings significantly predicted preference for the higher compared to the respective lower nicotine content cigarette in four of six choice tests (2.4 vs 0.4, p = .03; 15.8 vs 0.4, p = .001; 15.8 vs 2.4, p = .02; 15.8 vs 5.2, p = .03). Scores on the other mCEQ subscales were not significantly associated with cigarette preference.

Conclusions: These results provide support for the validity of the Satisfaction subscale in predicting the relative reinforcing effects and potential abuse liability of cigarettes varying in nicotine content.

Financial Support: University of Vermont TCORS P50 DA036114 award from NIDA/FDA

FACTORS PREDICTING METHAMPHETAMINE USE AMONG HOMELESS PEOPLE IN BANGKOK, THAILAND.

Chitlada Areesanitchat, Usanaya Pernggrarn, Linda Contler; Drug Dependence Research Center WCHO Collaborating Center for Research and Training in Drug Dependence (WHOCC), Chulalongkorn University, Bangkok, Thailand, 2Epidemiology, University of Florida, Gainesville, FL

Aims: In Thailand, people who are homeless often use illicit drugs and have a history of violence. There have been few studies on this population. It is aimed at finding factors predicting methamphetamine use among homeless people in Bangkok.

Methods: A cross sectional study was conducted among 213 homeless people recruited via snowball sampling with face to face quantitative and qualitative interviews. All questions were evaluated for content validity prior to the fielding of the study.

Results: Among the sample, predominantly male (66%), there was a mean age of 29 years. Nearly all (93%) lived in parks, at the train or bus station, under a bridge or in a temple. About 40% reported income of less than 500 Baht/month (about 17 U.S.). More than half (62%) reported lifetime use of at least 1 drug with 14% reporting being a drug dealer. The majority reported that the number one reason for homelessness was poor pressure to leave (31%). A history of methamphetamine use was common among the sample: 26.3% reported use and 73.7% reported no use. The factors associated with methamphetamine use, vs no use, were cannabis use (43% vs 9%), heroin use (18% vs 2%), inhalant use (55% vs 8%), binge drinking in the last 7 days (36% vs 10%), male gender (70% vs 64%), violence (18% vs 13%), peer pressure (29% vs 2%), and having traded sex (38% vs 24%). The logistic regression using STATA found that cannabis, heroin and inhalant use, as well as binge drinking in the last 7 days were significantly associated with methamphetamine use. Additionally, having a peer who influenced them to leave home was strongly associated with methamphetamine use.

Conclusions: These data point to specific prevention and intervention strategies for people who are homeless in Thailand.

Financial Support: The Office of Narcotics Control Board (ONCB), Thailand.

MORPHINE-INDUCED ANALGESIA IN THE SENSORY AND AFFECTIVE COMPONENTS OF INFLAMMATORY PAIN.

Alexander Armendariz, Arbi Nazarian; Pharmaceutical Sciences, Western University of Health Sciences, Pomona, CA

Aims: The experience of pain is characterized by the presence of an aversive sensory stimulus combined with negative affect, which is often mediated clinically through administration of analgesics such as morphine or other prescribed opioids. Dependence and abuse of these substances however, is at an all-time high among patients. The present study investigates the effects of morphine on sensory and affective components of pain following administration of Complete Freund’s Adjuvant (CFA), a model for inflammatory pain.

Methods: An intraplantar injection of CFA was administered into the left hind paw of male and female Sprague-Dawley rats. Hargreaves test for thermal nociception and conditioned place preference (CPP) data were obtained following subcutaneous administration of varying morphine doses (0, 1, 4, 8 mg/kg).

Results: Hargreaves Test results revealed sex differences in paw withdrawal latencies (PWL) in a dose dependent manner, with females being less sensitive to morphine than males. Preliminary findings suggest that morphine-induced CPP is evident in CFA-treated animals, but only at the highest dose tested.

Conclusions: These results indicate that systemic administration of morphine produces a negative reinforcing effect in CFA-induced inflammatory pain that can be associated with a greater preference for the drug-paired chamber in the CPP paradigm. Considering these findings, further investigation into the underlying mechanisms of morphine analgesia in the affective and sensory component of inflammatory pain is needed.

Financial Support: This research is made possible by funds provided by the Western University of Health Sciences
ENERGY DRINK USE TRAJECTORIES PREDICT SUBSTANCE USE OUTCOMES.

Amelia M Arriz1, Kimberley M Caldeira1, Britanny A Bugbee1, Kathryn B Vincent1, 2, 3, P.E. O’Grady2, 3, School of Public Health, University of Maryland, College Park, MD; 1, 2Psychology, University of Maryland, College Park, MD

Aims: Group-based trajectory modeling was used to characterize longitudinal patterns of energy drink consumption. A pattern of persistent use of energy drinks was hypothesized to predict higher probability of alcohol use disorder (AUD) and other drug use.

Methods: Five years of data spanning modal ages 21 through 25 were analyzed from a sample (N=1099) interviewed since college entry (modal age 18). Five-year trajectories of energy drink use were examined based on probability of use once or more in the past year, and group membership was used to predict 6 substance use outcomes at age 25 (AUD; past-year use of tobacco, marijuana, cocaine, and prescription stimulants and analgesics used nonmedically), holding constant demographics, sensation-seeking, caffeine consumption, and baseline substance use.

Results: Half the sample (47%) had a Persistent trajectory, with probability of energy drink use ≥90% annually. The other 3 trajectory groups exhibited Minimal (29%), Desisting (19%), or Incident (4%) use patterns. Relative to those who Desisted from using energy drinks, Persisting individuals had significantly higher risk of using cocaine (19% vs. 3%) and nonmedically using stimulants (11% vs. 4%) and analgesics (8% vs. 1%; all p<.001). Relative to the Minimal group, the Persistent group had significantly greater risk for AUD (54% vs. 37%), cocaine use (19% vs. 5%), and nonmedical stimulant use (11% vs. 4%) at age 25 (all p<.01), and the Incident group had significantly higher risk for nonmedical stimulant use (14% vs. 11%; p<.001). Neither marijuana nor tobacco use were associated with energy drink trajectory group membership, after accounting for demographics and other background variables.

Conclusions: The typical pattern of energy drink consumption in this college-educated sample was sustained use over several years in young adulthood. Such individuals appear to be at high risk for ongoing involvement in other substance use. More research is needed to understand the mechanisms underlying the connection between energy drink use and substance use.

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ALCOHOL, CANNABIS, AND CIGARETTE USE AND NON-MEDICAL PRESCRIPTION DRUG USE STAGES.

Brooke J Arterberry1, Steven R Horbal1, Hsien-Chang Lin1, Anne Buu2; 1Indiana University, Bloomington, IN, 2University of Michigan, Ann Arbor, MI

Aims: Non-medical prescription drug use (NMPDU) has reached epidemic levels. Alcohol, cannabis, and cigarette use has a relation to NMPDU initiation. Yet, studies have not examined NMPDU stages in relation to other drug use. Thus, we hypothesized 1) early-onset and frequency of alcohol, cannabis, and cigarette use differentiates stages (initiation, reinitiation, and persistence) of opioid use (OU) and sedative/tranquilizer use (STU); and 2) alcohol, cannabis, and cigarette use is related to OU and STU stages.

Methods: An adult sample from the National Epidemiologic Survey of Alcohol and Related Conditions Waves 1 (W1; 2001–2002) and Wave 2 (W2; 2004–2005) was used. Three groups of OU and STU were identified: (1) never used at W1, risk of initiation at W2 (OU n=33,154; STU n=33,312); (2) prior/ stopped use at/before W1, risk of initiation at W2 (OU n=948; STU n=1,282); and (3) continued use at W1, risk of persistence at W2 (OU n=547; STU n=563). OU and STU initiation/reinitiation/persistence were binary outcomes. We specified logistic regression models. Also, we computed predicted probabilities using estimates from the specified models as absolute risk of initiation, reinitiation, and persistence of OU and STU by low- or high-risk groups of cannabis and cigarette use, given all other covariates at their means.

Results: Findings indicated early-onset of cannabis/cigarette/alcohol increased the odds of OU reinitiation/persistence and STU initiation. Early-onset cannabis increased the odds of OU reinitiation/persistence. Cannabis/cigarette use predicted all OU stages and STU initiation/reinitiation. Cannabis use predicted STU persistence. High-risk cannabis/cigarette use compared to low-risk had 13.9% increased odds of OU reinitiation. For low-risk cigarette use, high-risk cannabis use compared to low-Risk had 12.18% increased odds of STU persistence.

Conclusions: This study suggested early-onset and frequency of drug use differentiated NMPDU stages. Thus, tailoring interventions by stage to reduce NMPDU is crucial.

Financial Support: No financial support was provided for this study.
Aims: New information technologies and communication media have a potential to improve teaching. Our objective was to describe the new e-learning course of addiction medicine at the University of Bordeaux (France, EU) and to provide evidence of its success.

Methods: Program description: This course is intended for students of medicine, psychiatry, neurosciences, and midwives. It has an hybrid structure, mixing distance learning and on-site workshops. Students are instructed to connect to an online platform (Moodle), to study by themselves short videos designed by the teachers (10 to 20 minutes sequences, for a total of 90 minutes). To ensure comprehension of key concepts, students must validate a quiz to unlock the next video. If unsuccessful, they are invited to review the problem areas. Documentation to download is proposed to complete videos. Students can ask questions directly to the teachers via an online forum. Answers remain visible for all. At the end of the semester, a face-to-face workshop is proposed with a teacher, in small groups (20 students). Content is determined by the performance of students with quiz, and addresses clinical cases. Finally, students are asked to fill a form to improve the program.

Results: Since 2012, 2000 students were involved. Validation of the online quiz (distance learning) varied between 85% and 96% of the students. Workshop participation increased from 80% to 95% (face-to-face learning). We noted a remarkable increase in participation, since less than 20% of the students participated in the previous usual group conference teaching process.

Conclusions: This e-learning program provides quality education for addiction. Students where able to organize themselves and take into account their optimal time for study, which allowed more participation. We think that stepped e-learning combined with small-group workshops is a very efficient method to improve teaching, which allowed more participation. We think that stepped e-learning combined with small-group workshops is a very efficient method to improve teaching, which allowed more participation. We think that stepped e-learning combined with small-group workshops is a very efficient method to improve teaching, which allowed more participation.
LONGITUDINAL HEALTH SERVICE PATTERNS OF PATIENTS WITH ALCOHOL, CANNABIS, AND OPIOID USE DISORDERS. Amber I. Balwick1, Derek Satre2, Andrea H Kline-Simon1, Kelly C Young-Wolff3, Constance Weinsier4, Cynthia Campbell5; 1Psychiatry, University of California, SanFrancisco, SanFrancisco, CA, 2Division of Research, Kaiser Permanente Northern California, Oakland, CA

Aims: 1) To investigate longitudinal utilization patterns for patients with alcohol, cannabis, and opioid use disorders from 2010 to 2014; and 2) identify predictors of higher odds of service use.

Methods: The sample consisted of patients with 1 of the 3 most common substance use disorders (SUDs) in an integrated healthcare system in 2010 (n = 20,655): alcohol, cannabis, and opioid. Predictors included: age, gender, race/ethnicity, medical comorbidities, polysubstance use, and psychiatric comorbidities. Health services utilization included emergency, inpatient, psychiatry, primary care, and chemical dependency. Utilization patterns and predictors of higher odds in such patterns were estimated using mixed-effects growth models.

Results: Utilization was highest in 2010 for each service, and subsequently declined over 5-years (all p < .001). Declines were the steepest from 2010 to 2011 for each service type, with smaller declines from 2011 to 2014. Patterns varied by patient characteristics; patients with opioid use disorders and medical comorbidities had 1.22 times the odds of emergency and 1.47 times the odds of inpatient utilization (all p < .001). Across the three groups, patients with psychiatric comorbidities had higher odds of using each type of service examined (OR range: 1.08–2.23; all p < .001).

Conclusions: Utilization declined in this healthcare system over 5-years. Medically complex opioid-diagnosed patients used the costliest services; psychiatric comorbidities were consistently associated with high utilization. Developing approaches to address medical and psychiatric comorbidities across service delivery in healthcare systems is critical for assisting this population with their complex needs.

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SMOKING CESSATION ASSISTANCE PRE- AND POST-IMPLEMENTATION OF STAGE 1 MEANINGFUL USE. Steffani R Bailey2, Megan J Hoopes1, Jon Furo3, Jennifer E DeVoe1,5, Timothy Burdick4, Deborah J Cohen1, John Heinrztman1, Miguel Marino6, Jessica Irene1, Dennis McCarty1, Stephen F Portmann3; 1CB 669 PHPM, Oregon Health & Science Univ, Portland, OR, 2Family Medicine, Oregon Health & Science University, Portland, OR, 3Research, OCHIN, Portland, OR, 4Family Medicine, OHSU, Portland, OR, 5Center for Health Research, Kaiser Permanente Northwest, Portland, OR

Aims: The study examined the extent to which rates of smoking status assessment and smoking cessation assistance changed in a network of Federally Qualified Health Centers (FQHCs) after implementation of Stage 1 Meaningful Use (MU) of electronic health records (EHR).

Methods: Data were extracted from 24 FQHCs primary care clinics with an EHR implementation before January 2010. Analyses included changes in rates of documentation of smoking status, and readiness to quit, counseling given, and smoking cessation medications prescribed (for patients identified as smokers) in Years 2010 (pre-Stage 1 MU implementation), 2012 (discrete fields to document readiness to quit and counseling given moved to vital signs in preparation for Stage 1 MU), and 2014 (post-Stage 1 MU implementation).

Results: Rates of assessment of smoking status, assessment of readiness to quit, counseling given, and cessation medications ordered increased over time (p<.001 for all outcomes). Participating clinics had high documentation of assessing smoking status throughout the study period and were already meeting both the Stage 1 (≥50% of patients) and Stage 2 (≥80% of patients) core measure requirements prior to MU implementation. Smoking cessation medications ordered increased by almost 5 percentage points from 2010 to 2014.

Conclusions: The MU program appeared to improve rates of smoking assessment and smoking cessation assistance among FQHC patients. Future analyses will examine whether receipt of smoking cessation assistance is associated with increased quit attempts and smoking cessation.

Financial Support: NIDA award (K23-DA037453) and NCAT award (UL1-TR000128).

EVALUATION OF THE EFFECTS OF JZP-110 IN NONCLINICAL MODELS OF ABUSE LIABILITY. Michelle Baladii, Lawrence P Carter2,3, Jed Black2, Jack Bergman1; 1McLean Hospital/Stanford Medical School, Belmont, MA, 2Jazz Pharmaceuticals, Palo Alto, CA, 3University of Arkansas for Medical Sciences, Little Rock, AR

Aims: Several stimulant medications are FDA approved to treat narcolepsy, but their utility is limited by their abuse potential. JZP-110 is a low potency reuptake inhibitor at dopamine (IC50 = 2.9 μM) and norepinephrine (IC50 = 4.4 μM) transporters and neither promotes norepinephrine release in rat brain synaptosomes nor produces rebound hypersomnia in mice. The aim of these nonclinical studies was to evaluate the abuse potential of JZP-110.

Methods: In these studies, standard conditioned place preference tests in Sprague-Dawley rats and drug discrimination and self-administration assays in rats and rhesus monkeys were used to evaluate the abuse potential of JZP-110.

Results: JZP-110 (10, 30, 90 mg/kg) did not produce conditioned place preference but, in drug discrimination studies, partially substituted for d-amphetamine (ED50 = 6.6 mg/kg). In rats, JZP-110 (0.25, 0.5, and 1.0 mg/kg per infusion), in contrast to cocaine (0.8 mg/kg per infusion), did not maintain self-administration (<5 infusions/session) under a fixed ratio schedule of reinforcement (FR1). In monkeys, pretreatment with JZP-110 (32 mg/kg) increased self-administration of low unit doses of cocaine and decreased self-administration of higher unit doses of cocaine.

Conclusions: JZP-110, which has stimulant-like discriminative stimulus effects, did not produce conditioned place preference or maintain self-administration in rats, and decreased the self-administration of high unit doses of cocaine in rhesus monkeys. JZP-110 is a second-generation wake-promoting agent with a mechanism of action distinct from traditional stimulants that may differ from those of the traditional stimulants.

Financial Support: Sponsored by Jazz Pharmaceuticals.

A LONGITUDINAL EXAMINATION OF THE IMPACT OF CHILDHOOD EMOTIONAL ABUSE ON CANNABIS USE TRAJECTORIES AMONG COMMUNITY YOUTH. Anne Nicole Banducci1,2, J W Felton2, Marcel O Bonn-Miller2, C W Lejuez2, L MacPherson1, 1VA Palo Alto Health Care System, The National Center for PTSD, Palo Alto, CA, 2University Of Maryland, College Park, College Park, MD

Aims: As childhood abuse is a potent risk factor for the development of substance use (SU), research has focused on understanding when and for whom abuse exerts its effects. Among adults, women appear to be more strongly impacted by child abuse than men, and across development, childhood emotional abuse (CEA) may place individuals at a greater risk for SU than physical/sexual abuse. Given that women are more likely to engage in SU when experiencing stress than men, it is possible CEA-exposed girls might be more likely engage in SU than CEA-exposed boys. Unfortunately, the majority of research in this area is cross-sectional, retrospective, or focused on adult samples. To address these limitations, we examined the impact of CEA on cannabis use (CU) trajectories among community youth. We hypothesized that (1) CEA would predict increases in CU over time and (2) sex would moderate relations between CEA and CU, such that CEA-exposed girls would have higher CU than CEA-exposed boys.

Methods: 115 boys and 89 girls (Mage baseline=13, SD=0.5) self-reported smoking SU (Youth Risk Behavior Survey) and CEA (Childhood Trauma Questionnaire) annually across 5 years. We tested a latent growth model of the CU trajectory from grades 9-12. We examined the influence of CEA, gender, and their interaction, on the latent CU intercept and slope.

Results: Cannabis use increased over time; more severe CEA was associated with greater baseline CU (std. est.=.025, p=.038), but did not predict changes in use over time. The addition of the sex by CEA interaction improved the model fit: χ2(17)=23.27, p=.14, CFI=.95, TLI=.93, RMSEA=.04 (.90%CI=0.00–0.08), BIC=–187.70. Post-hoc simple slope analyses demonstrated CEA predicted increases in CU over time for girls, but not boys.

Conclusions: These findings demonstrate the importance of addressing CEA among girls, as CEA-exposed girls may be particularly vulnerable to using cannabis during adolescence.
BASELINE PREDICTORS OF OUTPATIENT INDUCTION ONTO EXTENDED-RELEASE NALTREXONE.

Vincent A Barbieri1, Katlyn Mishlen1, Maria Sullivan1,2, A Bisgau2; 1Substance Abuse, Columbia University, New York, NY; 2Substance Abuse, Columbia University/ New York State Psychiatric Institute, New York, NY; 3Columbia University, New York, NY; 4Alkermes, Inc., Waltham, MA

Aims: Long-acting injectable naltrexone is a viable option for treatment of opioid dependence. Previous research of inpatient XR-NTX induction have shown that younger age, severity of use, and concurrent substance use are baseline predictors of successful induction. The aim of this study was to identify baseline predictors of outpatient induction onto XR-NTX.

Methods: Opioid-dependent patients (N=177) were treated using 3 different induction schedules. One group received a 7-day buprenorphine taper, 7-day washout and XR-NTX (N=52). A second group received a single day of buprenorphine, 1-day washout, and 4-day oral naltrexone taper and XR-NTX (N=106). A third group received 1-day of buprenorphine, 1-day washout, and 3-day oral naltrexone taper and XR-NTX (N=19).

Results: 50% of the participants completed detoxification and received XR-NTX. IN users (p=.001) and RX users (p=.002) were more likely to be induced onto XR-NTX (p < .001). Participants with a baseline cannabis toxicology were more likely to receive the 1st injection (p = .006). Lower likelihood of induction was predicted by: (1) heroin use (p < .001) and (2) family history of substance abuse (p=.053).

Conclusions: This research offers insight into the predictors of success for outpatient opioid detoxification and induction onto XR-NTX. Similar to findings of inpatient induction, higher opioid users were less likely to be induced onto XR-NTX, although younger age and concurrent substance use were not found to be predictive. Baseline toxicology for cannabis was correlated with greater likelihood of outpatient induction, contrasting findings of inpatient predictors. These differences likely reflect the role of continued cannabis use in mitigating XR-NTX. IN users (p=.001) and RX users (p=.002) were more likely to be induced onto XR-NTX (p < .001). Participants with a baseline cannabis toxicology were more likely to receive the 1st injection (p = .006). Lower likelihood of induction was predicted by: (1) heroin use (p < .001) and (2) family history of substance abuse (p=.053).

Financial Support: NIDA (DA 010746-09A1)

PSILOCYBIN IN LONG-TERM MEDITATORS: EFFECTS ON DEFAULT MODE NETWORK FUNCTIONAL CONNECTIVITY AND RETROSPECTIVE RATINGS OF QUALITATIVE EXPERIENCE.

Frederick Streeter Barrett1, Matthew W Johnson1, Roland R Griffiths1,2; 1Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, 2Neuroscience, Johns Hopkins University School of Medicine, Baltimore, MD

Aims: Descriptions of meditation experiences can bear striking similarity to descriptions of some experiences with classic (serotonergic) hallucinogens. Neuroimaging studies reveal striking overlap in the effects of psilocybin and the effects of meditation on functional connectivity of the default mode network (DMN). This ongoing study explored the effects of psilocybin on subjective experience and DMN connectivity in long-term meditators.

Methods: 16 meditators (mean lifetime meditation=4206 hrs) received either a placebo (n=8) or a high dose psilocybin (n=8) capsule before a laboratory session. Retrospective self-report measures of subjective experience and resting-state fMRI data were collected the day after the session. Seed-based functional connectivity analyses were used to identify targets of psilocybin effects in the DMN. Differences in fMRI connectivity between placebo and psilocybin conditions were compared.

Results: Participants who received psilocybin attributed significantly greater meaning, spiritual significance, psychological challenge, and psychological insight to their session experiences than those who received placebo. 75% of participants in the psilocybin group rated the experience as the highest dose psilocybin experience. Further analysis showed that participants who received placebo showed changes on brain function the day after a high dose of psilocybin. Further research should explore the relationship of these enduring changes in brain function to abuse liability and therapeutic outcomes with psilocybin.

Financial Support: NIH T32DA007209; the Heffter Research Institute.

IMAGES FOR SCIENCE COMMUNICATIONS PERTINENT TO DRUG DEPENDENCE RESEARCH AND TO THE GENERAL PUBLIC.

David Inhoff, James C Anthony; Epidemiology and Biostatistics, Michigan State University, East Lansing, MI

Aims: In this project we seek: (1) to draw attention to new images and visual arts resources that can be used in a graduate student’s thesis or dissertation, in books and monographs, and in public presentations on topics pertinent to the CPDD, and (2) to clarify several facets of current regulatory environments governing circumstances under which these resources can be employed. Multiple internet-based search features have created novel options for the discovery of photos and other visual arts resources that can enhance scientific communication in our field.

Methods: We have organized our effort around a set of commonly encountered questions/answers pertaining to the searchable image gallery resources maintained by the NIH Library of Medicine, the Smithsonian Institution, and other public and private entities, often without specific terms of use (e.g., commercial vs. non-commercial use). Basic principles governing an author’s rights and responsibilities about use and secondary adaptation of these forms of intellectual property are addressed.

Results: Questions (with answers) to be covered include: (1) What are some examples of ‘public use’ images of drugs, drug users, paraphernalia, and related CPDD topics that can be freely used in our publications and presentations? (2) What restrictions and penalties may be faced if incorrect assumptions are made about the ‘free use’ material that can be readily copied and pasted from the internet into our own work? (3) What are ‘best practices’ in this area of science communication?

Conclusions: We hope to encourage use of images and other visual arts resources in order to increase the effectiveness of our science communications within the field and to the public. Our NIDA T32 training program has created a web page with a set of basic principles and ‘best practices’ on this topic, and we share this resource to be used by other T32 programs and in graduate education generally.

Financial Support: NIDA K05DA015799 (JCA), T32DA021129 (DB) and MSU.

COMBINING MULTIPLE SCHEDULES OF REINFORCEMENT WITH GLUTAMATE BIOSENSORS TO EXAMINE THE EFFECTS OF COCAINE AND FOOD ON PRELIMBIC GLUTAMATERGIC SIGNALING IN FREELY-MOVING RATS.

Seth Richard Batten, J S Beckmann; Psychology, University of Kentucky, Lexington, KY

Aims: Drug-specific reward and associated effects on neural signaling are often studied between-subject, where one group self-administers drug and a separate group self-administers a natural reinforcer, like food. However, exposure to drugs of abuse can cause long-term glutamatergic neural adaptations that can affect how an organism responds to drug reward, natural reward, and their associated stimuli. Thus, to isolate drug-specific glutamatergic effects it is important to use models that expose the same organism to all of the aforementioned reinforcers and stimuli. Multiple schedules provide a means of dissociating the rewarding effects of a drug from the rewarding effects of food along with their associated-stimuli, within a single animal. We hypothesized that by using multiple schedules we will be able to assess differential glutamate signaling for cocaine and food within subject.

Methods: Sprague Dawley rats (n = 7) were trained to baseline on a FR3 cocaine-food multiple schedule procedure that included 6 cocaine components and 6 food components with 2-minute blackouts between components. After stabilization, we implanted glutamate biosensors into the prelimbic cortex. We then measured glutamate release while rats performed under the cocaine-food multiple schedule.

Results: The average amplitude of prelimbic glutamate release was greater for food responses compared to cocaine responses. The use of frequency distribution analyses showed that the frequency of glutamate release in the 0.1-1 μM and 10-20 μM range was greater for responses associated with food compared to cocaine.

Conclusions: Combining glutamate biosensors with multiple schedules provide a practical means for assessing differential glutamatergic signaling associated with cocaine and food. By using this method we were able to parse out cocaine-specific effects on glutamate in the prelimbic cortex.

Financial Support: DA033573
SEXUAL RISK AND SUBSTANCE USE BEHAVIORS AMONG PARTNERED AND NON-PARTNERED HIV-INFECTED ADULTS WITH SUBSTANCE DEPENDENCE.

Aim: To compare recent sexual risk behaviors and substance use among partnered and non-partnered HIV-infected adults with substance dependence or ever injection drug use.

Methods: From 2012-2014, at urban hospital- and community-based HIV primary care settings, we prospectively enrolled confirmed HIV-infected adults (≥18yrs) with past-year drug or alcohol dependence or who ever injected drugs (the Boston ARCH cohort). We compared sexual and substance use behaviors between those with and without a current partner (defined as a spouse, boyfriend or girlfriend).

Results: Among 250 participants, 138 (55%) had a current partner (67% of women, 48% of men). Compared to those without partners, in the past 6 months, more partnered individuals exchanged sex for money, alcohol or drugs (17% vs. 6%, p=0.01). In the past 3 months, more partnered individuals reported unprotected sex (31% vs. 7%, p<0.001) and used alcohol before sex (37% vs. 24%, p=0.04). Although nonsignificant, in the past month, those with partners reported more days of heavy drinking (mean 5.0 vs. 3.9 days, p=0.057) and were more likely to report cocaine use (35% vs. 25%, p=0.09), tranquilizer/opioid prescriptions: A=14.4% vs B=19.3% (p<0.0001). We also performed Satterthwaite tests, which assume unequal variances, with no material difference in significance.

Conclusions: Among HIV-infected adults with substance dependence, those with partners may engage in higher risk sexual and substance use behaviors than those without partners, which was surprising. To promote the health of HIV-infected individuals with substance dependence and their partners, research is needed to better understand substance use and sexual risk behaviors within partnership contexts.


THE AFFORDABLE CARE ACT AND HIV/HCV TESTING IN SUBSTANCE USE DISORDER TREATMENT PROGRAMS.

Aim: Persons with substance use disorders are at higher risk for HIV and HCV infection. Many substance use disorder (SUD) treatment programs do not offer HIV or HCV testing to their clients. Insufficient reimbursement and lack of financial resources for testing have been cited as possible explanations for the lack of availability of testing services. Aspects of the Affordable Care Act (ACA), including state Medicaid expansions, promotion of Accountable Care Organizations (ACOs) and Patient Centered Medical Homes (PCMHs), may address these barriers and increase access to HIV and HCV testing.

Methods: We examined the extent to which ACA implementation is associated with the offer of HIV and HCV testing in SUD treatment programs. Data came from the 2014 National Drug Abuse Treatment System Survey (NDATSS). The NDATSS is a nationally representative probability sample of SUDs that was supplemented with data from Single State Agencies (organizations overseeing addiction treatment programs). Multivariate regression models examined ACA-related correlates of HIV and HCV testing, controlling for program and client characteristics.

Results: Of the SUD treatment programs surveyed (N=598), 10.7% offered HCV testing only, 15.4% offered HIV testing only, 32.9% offered both HIV and HCV testing, and 41% did not offer testing. Approximately 16.7% of programs participated in ACO or PCMH and 63.6% were located in a state that had implemented Medicaid expansion. ACO or PCMH participation was significantly associated with offering both HIV and HCV testing (OR: 2.2, 95% CI: 1.1-4.2). There were no significant associations between testing and Medicaid expansion.

Conclusions: ACO/PCMH participation may increase the availability of joint HIV/HCV testing in treatment programs. Medicaid expansion on its own is insufficient to address barriers to HIV and HCV testing in SUD programs.

Financial Support: R01DA027379, R01DA045629, P30DA040500, R34DA038530.

MULTIPLE SOURCES OF PAYMENT AND RISKY OPIOID THERAPY AMONG MILITARY/VA.

Aim: Opioid overdose and other harms are a major source of morbidity and mortality among US military and veterans (VA), in part due to risky opioid therapy. In response, military/VA health systems have implemented myriad in-sycha approaches to limiting access to risky opioid therapy, but have limited control over outside-system access. We sought to determine whether multiple sources of payment are associated with risky opioid therapy among military/VA.

Methods: Using data supplied by the Kentucky All Schedule Prescription Electronic Reporting (KASPER) system, we grouped individuals receiving controlled substance prescriptions in Kentucky during fiscal year 2014-15 into two categories: A (source of payment = military/VA only) and B (source of payment = military/VA + other sources: Medicare, Medicaid, private insurance, cash). We used t-tests to compare differences between groups on proportion of risky opioid therapy, defined by three independent metrics: combination opioid/benzodiazepine therapy, morphine equivalent daily dose (MEDD) ≥100mg, and overlapping opioid prescriptions.

Results: Among 16,497 individuals, 10,393 were category A and 6,104 were category B. Regarding combination therapy: A=10.6% vs B=17.6% (p<0.0001); MEDD ≥ 106: A=3.0% vs B=5.6% (p<0.0001); and overlapping opioid prescriptions: A=14.4% vs B=19.3% (p<0.0001). We also performed Satterthwaite tests, which assume unequal variances, with no material difference in significance.

Conclusions: In this ecological analysis among individuals with military/VA sources of payment, additional sources of payment were associated with risky opioid therapy. Person-level demographic and clinical data are needed to further explore variance.


ACTIVITY BASED REWARD PROCESSING AMONG OPIATE USERS: VALIDATION OF THE BEHAVIORAL INCENTIVE DELAY TASK.

Aims: Behavioral activation (BA) treatment for substance use and depression is designed to improve outcomes via enhancement in environmental reward. To examine neural response to environmental reward, we designed a novel non-monetary reward version of the Monetary Incentive Delay Task (MID) task, called the Behavioral Incentive Delay (BID) Task, that utilizes images of engagement in daily activities.

Methods: Male opiate users (OU; n=13) (M age = 39.3; 74.1% Non-Hispanic White, 18.5% AA) and healthy controls (HC; n=14) completed the BID and MID tasks while undergoing fMRI. Activation profiles were examined within and between groups during reward anticipation (RA) and reward outcome (RO). A 2 (task x 2 group) ANOVA examined neural activation profiles unique to the BID.

Results: During the BID RA phase, OU displayed activations in the ACC and left precentral gyrus while HC displayed activations bilaterally in the caudate and thalamus. During the BID RO phase, OU displayed activation in the left caudate, bilateral hippocampus, right frontal pole, ACC, and right putamen. OU displayed less RO activation in the left hippocampus and left thalamus relative to HC. For the BID < MID RA contrast, OU displayed less activation in the precuneus and posterior cingulate gyrus relative to HC.

Conclusions: The BID produced neural activations associated with reward processing that distinguished between group and the MID task. Task design and validation details will be included, as well as a discussion of future research aimed at using the BID to identify biomarkers of reward processing as they relate to BA treatment response.

Financial Support: UNC.
OCD SYMPTOM SEVERITY AND TOBACCO WITHDRAWAL

Aims: Members of the U.S. Military have an increased risk of developing mental health and substance use problems, yet not many pursue treatment. We explored the link between mental health, substance use problems, perceived social support, and perceived barriers to use of mental health (MH) services in OIF/OND Veterans.

Methods: Using multiple and logistic regression analyses, we examined the relationships between marijuana use problems (MPS), current depressive symptoms (CES-D), current PTSD diagnosis (CAPS), perceived social support (DDS), perceived barriers to treatment (Hoge Scale), and MH service utilization in a sample of OIF/OND Veterans [N=180, mean age=32.6 (SD=9.5); 94% male].

Results: After controlling for relevant covariates, results illustrated that greater OCD symptom severity significantly predicted larger abstinence-provoked increases in urges to smoke, nicotine withdrawal, and several negative affect states (β = .12-.30; ps < .05), but did not predict abstinence-induced changes in positive affect states or motivation to reintstate smoking behavior.

Conclusions: Our novel findings suggest that higher severity of OCD symptoms may exacerbate specific types of tobacco withdrawal symptomatology (i.e., urges to smoke, negative affect, nicotine withdrawal). Hence, OCD symptom severity may be an important clinical target for the treatment of tobacco withdrawal in order to effectively reduce tobacco-related disparities in the African American smoker population.


COMPARING SMOKING TOPOGRAPHY OF USUAL BRAND CIGARETTES IN PREGNANT AND NON-PREGNANT WOMEN.

Aims: Most female smokers are unable to quit when they find out they are pregnant. Instead, most report reducing their cigarettes per day (CPD) by 50% and usually make this reduction rapidly upon learning of pregnancy. In the general population, reductions in CPD are associated with compensatory smoking (i.e., changes in smoking intensity to maintain a desired blood-nicotine concentration). Yet, no existing study has investigated the role of obsessive-compulsive disorder symptom severity in tobacco withdrawal utilizing a controlled laboratory design. This novel study examined OCD symptom severity as a predictor of tobacco withdrawal symptomatology among African American smokers—a racial group that has higher prevalence rates of smoking and OCD in comparison to other minority populations.

Methods: African American smokers (N = 253) attended a baseline session that assessed for OCD symptom severity and then subsequently completed two counterbalanced experimental sessions (non-abstinent vs. 16-hr abstinence). For both sessions, self-report measures of urge to smoke, nicotine withdrawal, and affect were administered and performance on an objective behavior task that evaluated the motivation to reinitiate smoking was recorded. Abstinence-induced changes (scores while abstinent vs. non-abstinent) were analyzed for each outcome variable.

Results: Of the relevant covariates, results illustrated that greater OCD symptom severity significantly predicted larger abstinence-provoked increases in urges to smoke, nicotine withdrawal, and several negative affect states (β = .12-.30; ps < .05), but did not predict abstinence-induced changes in positive affect states or motivation to reintstate smoking behavior.

Conclusions: Our novel findings suggest that higher severity of OCD symptoms may exacerbate specific types of tobacco withdrawal symptomatology (i.e., urges to smoke, negative affect, nicotine withdrawal). Hence, OCD symptom severity may be an important clinical target for the treatment of tobacco withdrawal in order to effectively reduce tobacco-related disparities in the African American smoker population.


OVERDOSE RISK BEHAVIORS DURING THE PERIOD PRECEDING NON-FATAL OVERDOSE EVENTS AMONG VETERANS.

Aims: To better understand overdose risks it is important to investigate the time period preceding overdose events (PPOEs).

Methods: As part of an ongoing mixed-methods cohort study, we used venue-based and chain referral methods to recruit opioid-using veterans in New York City during 2014-2015. We used qualitative interviews to develop 11 questions regarding overdose risk behaviors during the PPOEs. In monthly follow-up assessments we asked about any overdose events participants perceived that they experienced, and asked about overdose risk behaviors during the period preceding their most severe overdose event.

Results: Among 213 primarily minority and low-income veterans with an average age of 37 (SD=10.5) 67 reported at least one overdose event during any 30-day follow-up period. These 67 participants reported on 110 overdose events (mean = 1.7, SD = 1.4) during an average follow-up of 4 months (SD = 3.5). In the 48 hours preceding their most severe overdose event 59% used prescription opioids; of those, 69% used more than their usual amount; 29% used heroin; of those, 79% used more than their usual amount; 65% drank any alcohol; of those, 75% had 5 or more drinks; 31% used stimulant drugs; 36% used benzodiazepines; 54% used sleep medication; a total of 80% used multiple drugs. In the 5 days preceding overdose events 79% abstained or used fewer opioids than usual. Qualitative interviews indicated that relationships, unstable housing, unemployment, and denial of benefits often precipitated increased substance use patterns during the PPOE.

Conclusions: Known drug and alcohol-related risk behaviors, such as dose escalation, poly-drug use and use after a period of abstinence, are common preceding overdose events of veterans. Qualitative insights suggest that interventions should focus on these behaviors in the context of the complex physical, psychological and social challenges veterans face.

Financial Support: R01DA036754.

PREDICTORS OF BARRIERS TO MENTAL HEALTHCARE SERVICE UTILIZATION IN RETURNING VETERANS.

Aims: Recent literature demonstrates that smokers with anxiety disorders experience more severe withdrawal upon smoking cessation. Yet, no existing study has investigated the role of obsessive-compulsive disorder (OCD) symptom severity in tobacco withdrawal utilizing a controlled laboratory design. This novel study examined OCD symptom severity as a predictor of tobacco withdrawal symptomatology among African American smokers—a racial group that has higher prevalence rates of smoking and OCD in comparison to other minority populations.

Methods: African American smokers (N = 253) attended a baseline session that assessed for OCD symptom severity and then subsequently completed two counterbalanced experimental sessions (non-abstinent vs. 16-hr abstinence). For both sessions, self-report measures of urge to smoke, nicotine withdrawal, and affect were administered and performance on an objective behavior task that evaluated the motivation to reinitiate smoking was recorded. Abstinence-induced changes (scores while abstinent vs. non-abstinent) were analyzed for each outcome variable.

Results: After controlling for relevant covariates, results illustrated that greater OCD symptom severity significantly predicted larger abstinence-provoked increases in urges to smoke, nicotine withdrawal, and several negative affect states (β = .12-.30; ps < .05), but did not predict abstinence-induced changes in positive affect states or motivation to reintstate smoking behavior.

Conclusions: Our novel findings suggest that higher severity of OCD symptoms may exacerbate specific types of tobacco withdrawal symptomatology (i.e., urges to smoke, negative affect, nicotine withdrawal). Hence, OCD symptom severity may be an important clinical target for the treatment of tobacco withdrawal in order to effectively reduce tobacco-related disparities in the African American smoker population.

COMBINED EFFECTS OF A SEROTONIN 5HT2C RECEPTOR AGONIST AND A SEROTONIN 5HT2A RECEPTOR ANTAGONIST ON METHAMPHETAMINE-INDUCED SLEEP DISRUPTION EVALUATED WITH ACTIGRAPHY IN Rhesus Monkeys.
Lais Fernanda Berro, Maylen Peres Diaz, Monica Levy Andersen, Leonard Howell; Emory University, Atlanta, GA

Aims: Methamphetamine (METH) disrupts sleep in rhesus monkeys, which seems to be mediated by METH-induced nigrostriatal and mesolimbic dopaminergic (DA) overflow. Serotonin (5HT) signaling modulates the DA system, with 5HT2A and the 5HT2C receptors being key modulators of DA signaling within the limbic-corticostriatal circuit. To further elucidate the serotonergic mechanisms involved in the sleep-disrupting effects of METH, we investigated the effects of the 5HT2C receptor agonist WAY 163909 and the 5HT2A receptor antagonist M100907, administered alone or combined, on METH-induced sleep disruption in nonhuman primates.

Methods: Adult rhesus monkeys (Macaca mulatta, n = 5) reliably self-administered METH (0.03 mg/kg/injection, i.v.) under a fixed-ratio 20 schedule of reinforcer delivery on daily sessions throughout the experiments. Subjects received i.m. injections of vehicle, WAY 163909 (0.03, 0.1, 0.3 or 1.0 mg/kg), M100907 (0.03, 0.1 or 0.3 mg/kg) or a combination of subthreshold doses of WAY 163909 (0.3 mg/kg) and M100907 (0.1 mg/kg) at 6pm (60min prior to lights off). Each treatment was given for 5 consecutive days, with a 1-week interval between treatments. Sleep-like measures were evaluated with Actiwatch monitors.

Results: WAY 163909 and M100907 dose-dependently attenuated the effects of METH on both sleep efficiency and sleep latency, being significantly effective at the respective highest doses. When administered in combination, subthreshold doses of M100907 and WAY 163909 significantly increased sleep efficiency and decreased sleep latency.

Conclusions: Our data demonstrate an interaction of 5HT2A and 5HT2C receptors on METH-induced sleep impairment. Because 5HT is involved in both sleep and drug addiction, our results provide important insights for the understanding of sleep in the context of METH abuse.

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MEASURING CIRCADIAN ENTRAINMENT DURING OUTPATIENT OPIOID AGONIST MAINTENANCE.
Jeremiah W Betz,1 David H Epstein,1 Mark Rea,2 Martana G Figueiro2, Gregm P给大家, Kenzie L. Prestwood,1 Clinical Pharmacology and Therapeutics Research Branch, NIDA Intramural Research Program, Baltimore, MD, 2Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY

Aims: Circadian disruption has been associated with several neuropsychiatric disorders. However, specific measures of circadian entrainment in substance use disorders (SUD) have been lacking. We made field measurements of personal circadian light exposure and behavioral activity in opioid-dependent outpatients. We assessed the effect of time of daily opioid agonist maintenance treatment visits on circadian entrainment, hypothesizing that collateral light exposure from early-morning clinic attendance would produce greater entrainment.

Methods: Participants (n = 15 receiving methadone; n = 22 receiving buprenorphine) wore a wrist-mounted light and activity monitor (Daysimeter) for 24 h/day for 16 weeks. In a counterbalanced within-subjects design, participants were assigned in randomized order to early (07:00-09:00) and late (12:00-13:00) clinic attendance hours for 4 weeks at a time, followed by 8 weeks of “free” hours (the clinic’s standard hours, 07:00-11:30) for all. Circadian entrainment was quantified by phasor analysis based on the circular cross-correlations between daily light exposure and activity.

Results: The Daysimeter was acceptable to the participants, and data collection was feasible, with < 10% data loss due to device malfunction and participant noncompliance. Participants broadly had low-to-moderate circadian entrainment (mean phasor magnitude range: 0.08-0.52). Clinic-attendance hours significantly affected entrainment (F_{2,74} = 7.64, p < .001), but, contrary to our expectations, participants had greatest entrainment during the late clinic hour period.

Conclusions: Additional work is needed to understand the role(s) of circadian disruption in SUD and of medication dosing times on circadian entrainment, but these results show that our field monitoring of light and activity is sensitive to relevant schedule changes and suggest a role for the scheduling of daily treatment events in the circadian rhythms of SUD patients.

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THE SOCIAL INTERACTOME OF RECOVERY: NETWORK TOPOLOGY INFLUENCES SOCIAL MEDIA ENGAGEMENT.
Warren Kurt Bickel1, Amanda Quisenberry, Prashant Chandrasekar, Mikhail Nikolaos Kofmann, Edward A Fox, Chris Franck2; Addiction Recovery Research Center, Virginia Tech Carilion Research Institute, Roanoke, VA, 2Virginia Tech, Blacksburg, VA

Aims: The aim of the current study, part of a longer exploration of social network topology in support of recovery, was to determine whether one of two distinct social network connection topologies differentially influenced engagement by individuals in recovery. We hypothesized that highly clustered networks with more adjacent social network friends (i.e., lattice topology) will facilitate more engagement in network activities than a topology containing fewer redundant connections and fewer adjacent social network friends (i.e., small world topology).

Methods: Individuals in recovery from substance addiction were recruited from the International Quit & Recovery Registry to join a social network study. Two hundred and fifty-six participants were randomly assigned to either a lattice or small-world social network. Each participant was provided with six connected friends referred to as their “Recovery Buddies.” The administrator posted status updates twice daily. Measures of engagement included news stories read, photos posted, meetings attended, messages sent, comments on wall posted, learning modules completed, likes, and shares.

Results: Of the nine measures of engagement, eight favored the lattice network; that is, participants engaged in more social network activities. A 95% Bayesian credible interval for the proportion of measures favoring the lattice given the observed data is 58% to 98%, with a posterior mean of 85%. These results suggest that the lattice network engenders greater social network engagement.

Conclusions: Engagement in a social network is influenced by network topology. In comparison to a small-world network, the lattice network with highly redundant connections facilitated more social network activity among participants. These findings may have implications for recovery maintenance and adoption of health behavior.

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A COMPUTERIZED ADAPTIVE TESTING VERSION OF THE ASI.
Ryan A Black1,2, Stacey McCaffrey1, Stephen F Butler1, Inflexion, Inc, Newton, MA, 1Psychology, Nova University, Ft. Lauderdale, FL

Aims: Construct and validate an enhanced version of the seven-domain composite scores of the ASI-MV®, a computer administered version of the Addiction Severity Index (ASI) substance use assessment.

Methods: This large scale psychometric study consisted of: (1) developing items to measure the key domains of addiction from panels of experts followed by two waves of extensive patient cognitive interviewing; (2) determining the optimal Item Response Theory (IRT) measurement model for the domains; (3) performing simulated domain-specific IRT-calibrated computer adaptive tests (CATs); (4) in a clinical field trial, empirically evaluating the reliability, validity (i.e., correspondence with comparison measures), and sensitivity to change of the CATs.

Results: Over 500 candidate items were created for alcohol use, drug use, social functioning, medical issues, and psychological issues. Role functioning replaced the ASI’s employment domain and criminogenic factors replaced the legal domain. Items were tested on a non-clinical sample (n=4419) and a substance abuse treatment sample (n=8945). An average of 56 content valid items ranging from mild to severe were retained for each domain. After comparing various candidate IRT measurement models, the Rasch Rating Scale Model (RRSM) was determined to be the optimal model, and items were calibrated based on the RRSM in the construction of the domain-specific CATs. The field trial evaluated 138 patients in substance abuse treatment. The IRT-calibrated CAT domains revealed strong reliability, convergent and discriminant validity, and sensitivity to change. Notably, there was an average of 15 items or 9 minutes to complete each CAT, significantly lower (p=0.0002) than the original version.

Conclusions: The IRT-calibrated ASI-MV CATs show promise as enhanced versions of the traditional ASI composite scores, and provide further evidence that adaptive testing based on IRT modeling could prove useful in developing highly precise measurement in the areas of addiction and mental health more broadly, as has been demonstrated in the educational field.

Financial Support: NIDA Grant No. R44DA023322
THE ROLE OF GENETIC POLYMORPHISMS ON PATIENT RESPONSE TO OPIOID USE DISORDER THERAPY WITH NALTREXONE AND GUANIFACINE.

Elena Blotkina1, Evgeny Krupitsky1,4, Alexander Kibitov2, Elena Verbitskaya1, Elena Blokhina1, Evgeny Krupitsky1,4, Alexander Kibitov3, Elena Verbitskaya1,2.

Aims: The study was designed to evaluate the moderation of opioid receptor and dopamine system gene polymorphisms on treatment outcomes of the pharmacotherapy of opioid use disorder with naltrexone and guanfacine in a randomized placebo-controlled clinical trial.

Methods: 301 patients with opioid dependence were randomized into four treatment groups: naltrexone, 50 mg/day + guanfacine, 1 mg/day (N+G); naltrexone + placebo (N-GP); placebo + guanfacine (NP-G); and double placebo (NP+G). All participants provided a blood sample for genetic analysis of polymorphisms in the OPRM1 and kappa-opioid (OPRK1) receptors, dopamine type 2 (DRD2) and 4 (DRD4) receptors, and dopamine-beta-hydroxylase (DBH) gene.

Results: Regardless of the treatment provided, several alleles were associated with a higher chance to complete the treatment program: DRD4 C 521T (rs1800955) T allele (p = 0.039; OR=95%CI=3.7(1.1-12.7); log-rank test: p = 0.01); DRD2 C597T (rs6277) C allele (p = 0.05; HR=0.60(0.34-0.95); as well as a combination of genotypes: DRD2 C957T (TT) + OPRM1 (rs1074287) (CC), p = 0.025; DRD2 1414C (II) + OPRM1 (rs510769) (AA), p = 0.035; DBH 1021C/T (rs161115) (CC) + OPRM1 (rs1074287) (CC), p = 0.05. The associations were dependent on the treatment group: 1) patients in the N+G group with the DRD4 C 521T TT genotype had a higher probability of treatment program completion (log-rank test: p = 0.002); 2) patients in NP-GP group who were carriers of the OPRM1 rs510769 T allele had a higher risk of relapse compared to GG genotype patients (p = 0.008) (FDR p < 0.0125).

Conclusions: The study showed joint moderation of both opioid receptor and dopaminergic system genes on the treatment outcomes of opioid use disorder with oral naltrexone and guanfacine.

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IMPACT OF RECOVERY INTERVENTIONS ON OPIOID USERS: A SIMULATION STUDY.

Georgiy Bobashv1, Barry Eggleston1, Robert J Morris3, Carolina Barbosa4, William Dowd2, Michael L Dennis2, Christy K Scott2; 1RTI International, Durham, NC, 2Chesnut, Chicago, IL.

Aims: (1) to characterize life trajectories for opioid users transitioning between 12 mutually exclusive states that capture opioid recovery process. The states are characterized by a combination of use status, location (being in community, jail, special residence), being in treatment, being under criminal justice supervision; (2) to project the impact of continuum of services and community support interventions on life trajectories of opioid users.

Methods: Developed a microsimulation model that considers a cohort of opioid users being in treatment at baseline. Individuals move between 12 mutually exclusive states. The transition probabilities were estimated using an innovative Bayesian approach that combined published peer-reviewed literature with the estimates from the GAIN data. The GAIN sample contained 979 unique opioid users providing at least two consecutive responses during their baseline, 3-, 6- and 12-month assessments. Transition depended on age, sex, number of convictions and treatment episodes. Parameter values corresponding to the intervention effects were obtained from peer-reviewed literature.

Results: The analysis of simulated trajectories showed that the results of each: the continuity of services and community support intervention were moderate. In a long-term (5-year) simulation most important cohort statistics (percent incarcerated, percent non-using, percent using in the community, etc) have improved by 10%. An extreme hypothetical case of a powerful continuum of services intervention which reached the odds ratios of 10 and 5 has resulted in the increase of 50% in percent in recovery.

Conclusions: Recovery-focused interventions should consider multiple states and state transitions in the users’ life trajectories. Multiple interventions (such as continuum of services, and community support) are needed to achieve substantial reduction in use and the increase the percent of users in recovery. Validation analysis shows a strong heterogeneity in life trajectories across different populations.

Financial Support: Funded by NIDA R21 grant 5SR1DA32670

CHANGES IN QUALITY OF LIFE IN COCAINE-DEPENDENT PATIENTS PROVIDED TREATMENT WITH BUPRENORPHINE-NALOXONE & EXTENDED RELEASE NALTREXONE.

Dikla Blumberg1, Fermin Carrizales2, William Kazanz2, Maureen P Hillhouse4,Abigail G Matthews3, Jennifer Sharpe Potter2; 1NIDA Clinical Coordinating Center, The Emes Corporation, Rockville, MD, 2Psychiatry, UT Health Science Center, San Antonio, TX, 3Integrated Substance Abuse Programs, University of California, Los Angeles, CA, 4The Emes Corporation, Rockville, MD.

Aims: Quality of life is an important construct in assessing outcomes of substance use treatment interventions. The goal of the current analysis was to evaluate changes in participants’ quality of life in the Clinical Trials Network multi-site Cocaine Use Reduction with Buprenorphine (CURB) study in cocaine-dependent opioid users.

Methods: Participants were randomly assigned to 1 of 3 conditions provided with extended-release naltrexone: 16mg/day buprenorphine+naloxone (BUP) (BUP16), 4mg/day BUP (BUP4), 0mg/day BUP (placebo, PLB), plus weekly therapy. Participants completed the WHOQOL-BREF at screening, end of medication/treatment, and the 3-month follow up. This cross-sectional measure assessed quality of life across physical, psychological, social, and environmental domains.

Results: Of the 302 study participants, 219 completed QOL surveys at all time points and were used in the analyses. Baseline Quality of Life scores were lower than the norms established for individuals in a healthy population in all domains. No treatment effects were found, but there were statistically significant differences in mean ratings of QOL across the time points in all domains: Physical (F (2, 432) = 40.93, p < .001), Psychological (F (2, 432) = 40.32, p < .001), Social (F (2, 432) = 25.91, p < .001) and Environmental (F (2, 432) = 46.05, p < .001). Despite the significant increase in QOL at end of treatment, compared to the general population participants were still scoring low in Social and Environmental domains.

Conclusions: The results showed significant improvements in quality of life between the start and end of treatment. However, despite the improvement participants remained considerably lower than healthy population norms across some domains, suggesting the particular vulnerability of this substance using population.

Financial Support: HHSN271201000024C

ACCEPTABILITY AND FEASIBILITY OF AN INTERVENTION FOR OVERDOSE AND HIV RISK DURING ADDICTIONS TREATMENT FOR PATIENTS WITH PRESCRIPTION OPIOID MISUSE.

Amy S.B Bohnert, Maureen Walton, Frederic Blow, Laura Thomas, Mark Ilgen; Psychiatry, University of Michigan, Ann Arbor, MI

Aims: Prescription opioid overdose and HIV represent two highly critical public health problems related to substance use. The period after addictions treatment is particularly high risk for overdose, further, overdose and HIV share some behavioral risk factors. The purpose of this study was to examine the acceptability and feasibility of an overdose and HIV risk behavior intervention delivered during residential addictions treatment.

Methods: Data were collected during a pilot clinical trial conducted at a single residential addictions program in Michigan. Eligibility included at least moderate prescription opioid misuse before treatment. Groups of men and women were randomized to receive either an intervention or attention control intervention condition; both consisted of two group and one individual session. The intervention used a motivational interviewing approach.

Results: 94% of 62 intervention and 64 educational control participants attended all 3 sessions. Attendance did not differ by group (p = 5). Participants in both groups gave similarly high ratings for the likeability and helpfulness of the sessions. For example, no participants rated the likeability of the group sessions as negatively or neutrally; 67% in each group rated it at the highest level. Similarly, 79% of control participants and 86% of intervention participants found the therapist’s guidance during the group sessions as “Very helpful” (p > 0.34). Similar patterns were observed for the individual sessions. Based on a summary score of 3 items assessing self-efficacy to reduce overdose risk, both intervention and control participants reported significant increases (p < 0.05) in self-efficacy between baseline and post-intervention (mean intervention and control 2.89 and 2.52 in control, no difference between groups). The intervention was moderately liked and neutrally; 67% in each group rated it at the highest level. Similarly, 79% of control participants and 86% of intervention participants found the likeability of the sessions as “Very helpful” (p = 0.34). Similar patterns were observed for the individual sessions. Based on a summary score of 3 items assessing self-efficacy to reduce overdose risk, both intervention and control participants reported significant increases (p < 0.05) in self-efficacy between baseline and post-intervention (mean intervention and control 2.89 and 2.52 in control, no difference between groups). The intervention was moderately liked and 79% of control participants and 86% of intervention participants found the likeability of the sessions as “Very helpful” (p = 0.34). Similar patterns were observed for the individual sessions. Based on a summary score of 3 items assessing self-efficacy to reduce overdose risk, both intervention and control participants reported significant increases (p < 0.05) in self-efficacy between baseline and post-intervention (mean intervention and control 2.89 and 2.52 in control, no difference between groups). The intervention was moderately liked and...
PROPERTIES OF THE MARIJUANA MOTIVES QUESTIONNAIRE AMONG MEDICAL CANNABIS PATIENTS.
Kipling Bohnen1, Mark Igel1; Psychiatry, University of Michigan, Ann Arbor, MI. 1VA Center for Clinical Management Research, Ann Arbor, MI

Aims: Although 23 States and the District of Columbia have passed legislation allowing for the use of cannabis for those with qualifying medical conditions, the understanding of medical cannabis patients is limited. In particular, little research has evaluated motives for cannabis use among this population. In this study, we evaluate the properties of the 12 factor, 36-item Marijuana Motives Questionnaire (MMQ) developed by Lee et al. (2009) in a sample of medical cannabis patients.

Methods: Potential study participants were adult patients (≥ 21 years old) with a scheduled appointment to obtain medical cannabis certification for the first time or to renew an existing medical cannabis card. Patients were approached by research assistants (RAs) in clinic waiting areas. RAs provided a brief overview of the study and obtained written informed consent for screening. Consenting participants completed a 20-30 minute self-administered screening survey on either a touchscreen web-based tablet computer or on paper. The present study consisted of all those in the screening sample who had complete data on the MMQ (n=1191). Confirmatory factor analysis via SAS Proc CALIS was used to evaluate properties of the MMQ in the sample.

Results: Fit indices were acceptable, and as follows: the root mean square error of approximation (RMSEA) estimate was 0.054 (90% Confidence Limit 0.052-0.056); the Comparative Fit Index (CFI) was 0.923, the internal consistencies of the 12 factors were good to excellent, and as follows: 0.65 (Conformity); 0.77 (Coping); 0.79 (Enjoyment); 0.79 (Experimentation); 0.80 (Availability); 0.82 (Sleep); 0.84 (Relative Low Risk); 0.85 (Social Anxiety); 0.80 (Boredom); 0.88 (Alterred Perception); 0.49 (Alcohol); 0.92 (Celebration).

Conclusions: In this sample of medical cannabis patients, the MMQ performed similarly to samples of individuals using cannabis recreationally. Individuals using cannabis for medical conditions may have diverse reasons for use.

Financial Support: R01 DA033397

EFFECT OF A DOPAMINE D3 RECEPTOR PARTIAL AGONIST ON COCAINE-INDUCED LOCOMOTION AND SELF-ADMINISTRATION.
John Paul Bonadonna1, Gregory Powell1, Andrew K Carlson2, Rachel Mendoza1, Robert H Mach1, Robert R Luedtke2; 1School of Life Sciences, Arizona State University, Tempe, AZ, 2Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA. "Health Science Center, University of North Texas, Fort Worth, TX

Aims: Compounds selective for dopamine D3 receptors (D3R) may have thera- peutic effects for cocaine dependence. We have previously shown that D3R partial agonists are effective in decreasing cocaine self-administration (SA) on a high, but not a low, effort schedule of reinforcement. Here, we investigated the effects of a 168-fold selective partial D3R agonist, LS-3-134 (LS) on locomotor activity and cocaine and sucrose reinforcement rates on a multiple variable-interval (VI) 60 second schedule.

Methods: Male Sprague Dawley rats (N=15) were injected on separate days with either LS (0, 1.0, 3.2, 5.6 mg/kg) or LS+coc (15 mg/kg IP). 5 min post injection, locomotor activity was recorded for 1 hr. Rats were then trained on a VI-60 schedule that alternated components of coc (0.75 mg/kg/0.1 mL IV) and sucrose reinforcement. Rats were then given separate tests 5 min after pretreatment with varying doses of LS on the VI-60 multiple schedule with coc dose reduced to 0.375 mg/kg. IV. Stable reinforcement rates were reestablished between tests.

Results: A paired t-test (vehicle + coc vs. drug pretreatment + coc) found that the highest dose of LS (5.6 mg/kg) decreased coc-induced locomotion. In contrast, LS had no effect on spontaneous locomotion nor on reinforcement rates on the multiple schedule of reinforcement.

Conclusions: The highest dose of LS tested (5.6 mg/kg) reversed cocaine-induced locomotion but had no effect on spontaneous locomotion nor on cocaine or sucrose reinforcement rates on the low effort multiple schedule of reinforcement. We are currently examining the effect of the compound on extinction of responding as a measure of cocaine seeking. An effect of LS on cocaine seeking would be consistent with the selective effect of other D3R drugs on motivation for cocaine.

Financial Support: Supported by DA023957

ETHICAL ISSUES IN USING TEXT MESSAGE ASSESSMENTS FOR SENSITIVE BEHAVIORS: A PROSPECTIVE STUDY OF YOUNG ADULTS' DRUG USE AND RISKY SEXUAL BEHAVIORS.
Erin E Bonar2, Gerald P Koocher3, Rebecca Cunningham2, Lorraine Collins4; 2University of Michigan, Ann Arbor, MI, 3Psychiatry, University of Michigan, Ann Arbor, MI, 4DePaul University, Chicago, IL.

Aims: Research on the ethical issues with using mHealth methods for sensitive topics among vulnerable populations is scarce; yet, such methods are increasingly employed. Among 18-25 year-old urban, low SES, young adults, we assessed perceived harms following participation in a 28-day prospective text messaging (TM) survey study of drug use and risky sexual behaviors.

Methods: Patients presenting to an urban ER reporting past 28-day drug use and inconsistent condom use (n=54; M age=22; 48% African American; 57% male) enrolled in a longitudinal study using daily TM surveys about these risk behaviors for 28 days (M = 20 surveys completed). After 28 days, participants reported perceived harms and benefits (health, psychological, social, economic, and informational) of participation, which are descriptively analyzed.

Results: Few participants reported harms. One participant reported unintentional disclosure of the TMcs: 11% reported legal concerns and 2% had economic concerns. Psychological benefits were more frequent than psychological harms. Several participants reported improved relationships due to TM surveys (11-33% across relationship types). Most (87%) reported no change in drug use due to the TMcs: 11% reported reduced drug use and 1.9% reported increased drug use. Several (11%-35%) believed that they engaged in safer sexual behaviors (e.g., HIV/STI testing, talked to a partner about condom use) because of the daily TM surveys. Most (96%) would consider participating in a similar study again.

Conclusions: Responses from urban, emerging adults in a mHealth assessment study of drug use and risky sexual behaviors indicate that few have concerns regarding harm for daily TM measurement of these sensitive behaviors. Future analyses will examine participant characteristics (demographics, drug use) in relation to harms and benefits reported.

Financial Support: NIDA 056008, 31608

SEXUAL VIOLENCE AMONG PATIENTS WITH SUBSTANCE USE DISORDERS IN FQHCS.
Curtis William Bone2, Ronald Andersen3, Mani Vahidi1, Lillian Gelberg1; 1Family Medicine, UCLA, Woodland Hills, CA, 2Internal Medicine, Yale, New Haven, CT, 3UCLA School of Public Health, Los Angeles, CA

Aims: Sexual violence (SV) is common and underreported; 15% of women in the general population experience SV but variability exists in SV inci- dence based on demographics. Data regarding current demographics of FQHCSs is sparse. The aim of this study is to describe the demographics of women in FQHCSs that self-identify as having a substance use disorder (SUD) with an emphasis on SV.

Methods: Adult women in the waiting rooms of four FQHCSs who self-reported risky drug use on the screening instrument WHO ASSIST (score 4-26) who participated in the “Quit Using Drugs Intervention Trial (QUIT)” were included in this study. Descriptive statistics and logistic regression were used to esti- mate prevalence of SV among women in FQHCSs with SUD and assess whether associations exist between history of SV and both emotional and physical health. Results: Of the 124 women included, 61 (49%) reported history of SV, 51 (41%) reported SV prior to 18, and 43 (35%) reported SV after age 18. Finally, 33 of 124 (27%) experienced repetitive SV. Victims of repeat SV had increased odds of feeling limited in their accomplishments (OR 5.7) and unable to work because of their emotions (OR 3.8). Still, they were less likely than other participants to feel limited in their ability to work or func- tion because of their physical health (OR 0.57).

Conclusions: These data suggest that 49% of patients with SUDs in FQHCSs experience SV and 27% may suffer repetitive SV. These estimated levels of SV are far greater than estimates in the general population. Such traumas may be emotionally debilitating in otherwise physically healthy women. Given general underreporting of SV, providers caring for patients with SUDs in FQHCSs should remain vigilant in regards to SV history and con- sider screening for SV or referring for evaluation in patients with anxiety, depression, and SUDs refractory to standard interventions and pharmacotherapy.

ASSESSING THE ABUSE POTENTIAL OF BOTANICAL SUBSTANCES.
Katherine Bonson, Alan Trachtenberg, Michael Klein; Controlled Substance Staff, Food and Drug Administration, Silver Spring, MD

Aims: The FDA’s Botanical Drug Development (2015) describes the pathway for a drug of botanical origins to be tested for safety and efficacy so that it may become a marketed drug product. As with any drug under development, botanical drugs must comply with all regulations of the FDA/CA. Thus, when a botanical drug has CNS activity, it will need to undergo an abuse potential assessment by the Controlled Substance Staff at FDA, as described in the FDA’s Assessment of the Abuse Potential of Drugs (2010). A CSS evaluation also occurs when the DEA is considering whether to place a newly emerging drug street of botanical origins under the control of the Controlled Substances Act. Currently, only five plants or their constituent parts are scheduled under the CSA: Cannabis spp. (marijuana, Sch. I hallucinogen), Lophophora williamsii (peyote cactus; Sch. I hallucinogen); Opium poppy and poppy straw (Papaver somniferum, Sch. II opiate), and Coca leaves (only this plant part from Erythroxylum coca, Sch. II stimulant). In contrast, scheduled substances such as psilocypin and psilocycin (Sch. I hallucinogen), cocaine (Sch. II stimulant), cathinone (Sch. I stimulant), and cathine (Sch. IV stimulant) are derived from botanical sources that are not themselves scheduled. This presentation will detail the challenges involved in evaluating botanicals for abuse potential. These include whether it is necessary to evaluate the entire plant structure, how chemicals extracted from a plant may be tested in animal abuse-related studies, how to select an appropriate positive control, how to manage the presence of other constituents of the botanical substance, and how to test the botanical drug in a human abuse potential study.

Conclusions: A botanical drug with CNS activity must undergo an abuse potential assessment to fully evaluate its safety. Although there are challenges for these novel drug products, an appropriate assessment of these drugs is possible using the principles of regulatory science.

Financial Support: FDA

SYRINGE-SHARING AMONG A PROSPECTIVE COHORT OF STREET-INVOLVED YOUTH IN VANCOUVER, CANADA:
IMPLICATIONS FOR STRUCTURAL INTERVENTIONS.
Nikki Bozinoff1, Evan Wood1,2, Lindsey Richardson1,2, Huiru Dong1,4, Curtis Bradley5, E Moss Sanders, Emily A Williams, Matthew Ian Palmatier; Psychology, East Tennessee State University, Johnson City, TN

Aims: Street-involved youth are at risk for injection drug use (IDU) and for sharing needles to inject drugs. This behaviour increases the risk for infection with hepatitis C and HIV. This study examines the prevalence and correlates of syringe sharing among a prospective cohort of street-involved youth in a Canadian city with well-established harm reduction programs.

Methods: From September 2005 to May 2014, data were collected from the At-Risk Youth Study, a NIDA-funded cohort of street-involved youth age 14-26 and analyzed using generalized estimating equations.

Results: Among 505 street-involved youth who use injection drugs, 241 (47.7%) reported sharing a syringe at some point during the study period. In multivariable analysis, factors positively associated with syringe sharing in the past six months included: homelessness (Adjusted Odds Ratio [AOR] = 1.44, 95% Confidence Interval [CI]: 1.08-1.93), difficulty finding needles (AOR = 1.52, 95% CI: 1.14-2.04), attempting and being unable to access addiction treatment (AOR = 1.49, 95% CI: 1.07-2.02), sex work (AOR = 1.67, 95% CI: 1.17-2.38), and binging on drugs (AOR=1.54, 95% CI:1.19-2.00). Having accessed any healthcare was protective for syringe sharing (AOR = 0.72, 95% CI: 0.53-0.98).

Conclusions: The cumulative prevalence of syringe sharing among street-involved youth in this setting was high and independently associated with a number of structural barriers including difficulty accessing clean needles, difficulty accessing addiction treatment, and homelessness. Conversely, accessing health services was protective for syringe sharing. Findings underscore the influence of structural factors in shaping the risk environment for vulnerable youth.

Financial Support: The study was supported by the US NIH (U01DA038886).

CAFFEINE SELF-ADMINISTRATION IN RATS.
Curtis A Bradley, E Moss Sanders, Emily A Williams, Matthew Ian Palmatier; Psychology, East Tennessee State University, Johnson City, TN

Aims: No previous study has established repeatable and reliable self-administration of caffeine in non-human species. However, we have shown that caffeine can increase behavior by increasing responding for non-drug reinforcers. The goal of the present studies was to determine whether the reinforcement enhancing effects of caffeine could increase caffeine self-administration in rats.

Methods: In two experiments rats were shaped to respond for saccharin (0.2% w/v) under a progressive ratio (PR) schedule of reinforcement. After this shaping procedure, the reinforcer was shifted to one of the following stimuli: oral tap water, oral or intravenous (iv) caffeine, oral saccharin alone (no change) or caffeine (oral or iv)+saccharin. Rats were allowed to respond until reaching a breaking point, operationally defined as 30 min without earning a reinforcer.

Results: Caffeine was self-administered in oral and intravenous solutions, but only when it was accompanied by oral saccharin. Rats that self-administered oral or iv caffeine did not respond more than rats responding for tap water (F<1). Rats that self-administered oral or iv caffeine in conjunction with the saccharin reinforcer responded more and reached higher breaking points than all other groups (ps<0.05) and this effect was reliable and repeatable over test sessions (main effect of Session and Group x Session interaction, ps<0.05), and these differences maintained over maintenance phase of 5 test days. Additional tests with different concentrations of oral caffeine indicated that the effect was dose-dependent (main effect of Caffeine Concentration, p<0.05).

Conclusions: The findings replicate previous work that caffeine alone is not a primary reinforcer. However, they also demonstrate that response-contingent caffeine can increase operant responding in a reliable and repeatable manner when presented in conjunction with other non-drug rewards.

Financial Support: These studies were supported by East Tennessee State University’s Office of Research and Sponsored Programs.
CHARACTERIZING THERAPEUTIC USERS OF CANNABIS IN ONTARIO, CANADA.

Bruna Brandi1,2,3, Hayley Hamilton1,2, Anca Ialomiteanu1, Robert Mann1,4: 1Health Canada, Toronto, ON, Canada, 2Centre for Addiction and Mental Health, Toronto, ON, Canada, 3DLSPH, University of Toronto, Ontario, ON, Canada, 4Pharmacology, University of Toronto, Toronto, ON, Canada

Aims: There is much debate about the use of cannabis for therapeutic purposes. The purpose of this study was to examine therapeutic use of cannabis and its association with demographic characteristics, overall health factors, and other substance use.

Methods: Data on 401 adults who reported past year use of cannabis were derived from the 2013 and 2014 cycles of a repeated cross-sectional telephone survey of Ontario adults 18 years of age and over (CAMH Monitor). Therapeutic use of cannabis was defined as a ‘yes’ response on a question that asked: “In the past 12 months, have you ever used marijuana to treat pain, nausea, glaucoma, multiple sclerosis or any other medical condition?” Those who reported therapeutic use were asked: “In the past 12 months, did you have medical approval to use cannabis, marijuana or hash for medical purposes?” Bivariate statistics were used to investigate differences on demographic and other factors.

Results: Cannabis use for therapeutic purposes was reported by 28.8% of adults who reported using cannabis in the year prior to the survey (2014–30.1%; 2013–26.2%; p<.51). Among therapeutic users, 15.3% reported that they had “medical approval” to use it. Bivariate results indicated that cannabis users who were older (particularly, age 65 or older) and less educated were more likely to report using cannabis for therapeutic purposes. Therapeutic users were also more likely to be separated, divorced, or widowed; live alone; use prescription opioids; engage in more frequent use of cannabis; be at higher risk of cannabis problems; and report fair to poor overall physical health.

Conclusions: These findings suggest that therapeutic users may be at higher risk of developing problems with cannabis. Further research is needed to better understand the range of use and corresponding vulnerabilities.

Financial Support: Partial funding through ongoing support from the Ontario Ministry of Health and Long-Term Care, and through special grants for targeted questions.

THE PREVALENCE OF ADULT ATTENTION DEFICIT/ HYPERACTIVITY DISORDER AMONG TREATMENT-SEEKING PROBLEM GAMBLERS.

Lauren Brands1, Gabrielle Fisher1,2,3: 1Center for Public Health, Medical University of Vienna, Vienna, Austria, 2Department of Psychiatry and Psychotherapy, Medical University of Vienna, Vienna, Austria

Aims: 1) Examining the frequency of childhood ADHD and ADHD persisted in adulthood as well as other psychiatric comorbidities in problem gamblers (≤ 3 DSM-IV criteria for pathological gambling (PG)); 2) Providing detailed characteristics of the association between PG and ADHD; 3) Identifying risk factors for a history of ADHD.

Methods: 80 treatment-seeking problem gamblers (20% female) were examined using a structured and standardized interview (PG: DSM-IV criteria for PG, Gambling Attitudes and Beliefs Survey; ADHD: Wender Utah Rating Scale (childhood); Adult ADHD self-report scale; comorbidities: Mini International Neuropsychiatric Interview).

Results: 43% of the subjects screened positive for ADHD in childhood and in 11% ADHD persisted in adulthood. Patients with adult ADHD were characterized as having more severe gambling problems compared to those without a history of ADHD (p=.009, d=1.03). Moreover, they had a significantly higher number of psychiatric comorbidities (mean: 3.8) compared to subjects with ADHD in childhood only (p=.043, d=0.82) and those without a history of ADHD (p=.001, d=1.62). Substance abuse/dependence constituted a significant predictor for the likelihood of having a history of ADHD (OR: 4.07, p=.025); anxiety (OR: 3.07, p=.053) and mood disorders (OR: 3.56, p=.051) were predictors with a trend towards significance. Regarding gender differences, women had a significantly lower number of years from first gambling experience to developing problems compared to men (3.5 vs. 9.4 years, p=.003).

Conclusions: ADHD-PG comorbidity is linked to factors that worsen the prognosis, which highlights the clinical importance of screening for ADHD and verifying persistence in adulthood in the treatment of problem/pathological gamblers. A standardized diagnostic assessment and adequate treatment of ADHD and other psychiatric comorbidities is an inevitable (pre)condition to achieve a stabilization of PG and increase the quality of life of these patients.

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PERCEIVED SOCIAL SUPPORT AND SOCIOECONOMIC STATUS PREDICT MATERNL DELAY DISCOUNTING BEHAVIOR AND NEURAL FUNCTION IN HEALTHY POSTPARTUM WOMEN.

Lisa K Brents, Jonathan Young, Bettina Knight, Jessica L Coker, Shona I Ray-Griffith, Zachary Stowe, G Andrew James, Clint Kilts; University of Arkansas for Medical Sciences, Little Rock, AR

Aims: Mothers evaluate and execute decisions regarding temporally contingent outcomes for themselves and their children daily. Delay discounting (DD), which is the tendency to devalue delayed rewards, is exaggerated in people with drug use disorders. DD has not been studied in early postpartum mothers. This study provides groundwork to understanding perinatal drug abuse by examining the normative behavioral and neural representations of maternal delay discounting for oneself and child. We hypothesized that DD in healthy postpartum mothers is correlated with variables associated with maternal drug abuse, including stress, socioeconomic status (SES), perceived social support (PSS), and mother-infant bonding. Multiple regression models that predicted DD behavior were further hypothesized to predict the neural correlates preceding each choice type.

Methods: Healthy women ages 15-45 within 2 months of a full-term delivery (n=17) were assessed for the variables of interest and completed a novel maternal DD task during a functional magnetic resonance imaging (fMRI) scan.

Results: Impaired bonding and SES significantly (p < 0.007) predicted 44% of variance in DD for self. Controlling for PSS reduced the influence of impaired bonding and SES. These three variables significantly (p < 0.0009) predicted 64% of variance in a delayed choice-specific activation in the right frontal pole, a prefrontal region important in prospective thought. When DD for one’s infant, ethnicity and PSS significantly (p<0.002) predicted 51% of variance. Controlling the model for SES reduced the influence of ethnicity and PSS. Ethnicity, PSS, and SES predicted 35% of variance in a delayed choice-specific deactivation in the right dorsolateral prefrontal cortex, a region crucial to executive function.

Conclusions: These results indicate that maternal PSS and SES play important roles in postpartum maternal decision making.

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EXPANDED BRIEF INTERVENTION FOR SUBSTANCE USE IN PRIMARY CARE.

Adam C Brooks1, Carolyn M Carpene10, Jennifer Lauby5, David Metzger1,5, Elizabeth Byr11, Kevin Favor3, Kimberly C Kirby1,2: 1Treatment Research Institute, Philadelphia, PA, 2Public Health Management Corporation, Philadelphia, PA, 3Lincoln University, Lincoln University, PA, 4Rowan University, Glassboro, NJ, 5University of Pennsylvania, Philadelphia, PA

Aims: Brief interventions (BIs) for substance use demonstrates mixed results, but BIs offering multiple sessions have more positive outcomes. The purpose of this study is to assess the comparative effectiveness of a 1-session BI (SBIRT) against a 2-6 session intervention that combined motivational enhancement and brief CBT (SBIRT+) in a randomized controlled trial.

Methods: Primary care patients at three urban federally qualified healthcare centers were screened for risky substance use. Consenting patients were randomized to receive: 1) one session of SBIRT, with a follow-up within the next month, or 2) 2-6 sessions of SBIRT+ with ongoing monthly check-ups. We developed easy-to-use, evidence-based materials to help clinicians deliver the interventions. We collected self-reported substance use and specialty treatment attendance at baseline and every 90 days for 12 months.

Results: Participants in both conditions reported significant reductions in alcohol use (z2=77.08, p<.0001), illicit drug use (z2=77.08, p<.0001), and primary substance problem use (z2=132.38, p<.0001) from baseline. There was a group by time interaction trend for alcohol use (z2=9.25, p=.005), where SBIRT+ participants reduced their drinking more than SBIRT participants at 12-months. There was also a significant interaction effect for primary substance use (z2=9.68, p=.046), where SBIRT+ participants reduced their use more than SBIRT participants at 3 months. There were no differences between groups in illicit drug use. Rates of treatment entry were low (32.4%), and there were no differences between conditions.

Conclusions: Results show that all participants significantly reduced alcohol and illicit drug use, and that additional brief intervention sessions could further reduce alcohol use over a one-session intervention. However, additional sessions did not impact illicit drug use or engagement in specialty treatment.

Financial Support: PA DOH SAP 4100055578
PSYCHOLOGICAL INTERVENTION WITH WORKING MEMORY TRAINING INCREASES BASAL GANGLIA VOLUME: A VBM STUDY OF INPATIENT TREATMENT FOR METHAMPHETAMINE DEPENDENCE.

Samantha Jane Brown1, Dvora Shmulewitz 1,2, Silvia S Martins 1, Deborah Hasin 1,2, Qiana Brown1, Dvora Shmulewitz 1,2, Silvia S Martins 1, Deborah Hasin 1,2; 1Columbia University, New York, NY, 2New York State Psychiatric Institute, New York, New York.

Aims: Protracted methamphetamine (MA) use is associated with decreased control over drug craving and reduced brain volume in the frontostriatal network. Given that the nature of volumetric changes following a course of psychological intervention for MA dependence is not yet known, we aim to measure brain volume and psychological changes following treatment as usual (TAU) and an adjunctive working memory (WM) training intervention.

Methods: 66 males (41 MA dependent patients, 25 healthy controls, HC) between the ages of 18-50 were recruited, the MA patients from an in-patient drug rehabilitation centre and the HC via public advertisement in Cape Town, South Africa. 17 MA patients received 4 weeks of TAU, and 24 MA patients completed TAU plus daily 30 minute cognitive training (CT) using an N-back WM task. Magnetic Resonance Imaging (MRI) at baseline and 4-week follow-up, as well as questionnaire measures of impulsivity and self-regulation were acquired and Voxel-based morphometry (VBM) was used for analysis.

Results: TAU was associated with increased bilateral striatum (caudate/putamen) volume, whereas CT was associated with more widespread increases in volume incorporating other areas of the basal ganglia with reduced bilateral cerebellum volume, coinciding with improvements in impulsivity and self-regulation scores.

Conclusions: While psychological intervention is associated with increased volume in mesolimbic reward regions the utilisation of WM training as an adjunct to treatment may further normalise frontostriatal circuitry. Frontostriatal volumetric alterations may help to lower impulsivity and improve self-regulation and help to reduce high rates of relapse in methamphetamine dependent treatment-seeking individuals.

Financial Support: National Institute of Drug Abuse NIDA R21 DA040492- US PI: Professor Steve Shoptaw; South African PI: Dr Samantha Brooks

TRENDS IN MARIJUANA USE AMONG REPRODUCTIVE AGE WOMEN: 2002-2013.

Qiana Brown1, Dvora Shmulewitz 1,2, Silvia S Martins 1, Deborah Hasin 1,2; 1Columbia University, New York, NY, 2New York State Psychiatric Institute, New York, NY.

Aims: Marijuana use during, and pre/post pregnancy effects maternal and child health. We examined trends in use among reproductive age women by pregnancy status, age, race/ethnicity, education, and income from 2002-2013.

Methods: Women 18-44 years old were sampled from the 2002-2013 US National Surveys of Drug Use and Health (N=185,192). Using weighted logistic regression we examined trends in past year marijuana use. To determine if slopes differed between pregnant and non-pregnant women interactions between pregnancy status and time were tested, followed by demographic-stratified analyses. Models adjusted for age, race/ethnicity, education, income, and time.

Results: Among reproductive age women, from 2002-2013, past year marijuana use increased overall (p<0.0001), and in both non-pregnant (p=0.0001) and pregnant (p=0.042) women. Across all years, prevalence of use was higher in non-pregnant than pregnant women. Rates of change did not differ significantly by pregnancy status. In 2013, 1.71 million more non-pregnant women and 37,000 more pregnant women were marijuana users than in 2002. Past year use also increased within all demographic subgroups examined: ages 18-25 and 26+ (p<0.0001); non-Hispanic Whites, non-Hispanic Blacks, Hispanics, others (all p<0.001); less than high school (HS), HS, more than HS (p ≤0.01≤0.0001); family income $0-19,999, $20,000-49,999, $50,000-74,999, $75,000+ (p=0.05≤0.0001). There were no significant differences in these trends by pregnancy status, except for income (interaction p=0.02). Among women with a family income of $20,000-49,999 increases in marijuana over time were higher for pregnant versus non-pregnant women. Other income groups showed no interactions.

Conclusions: Increases in marijuana use among reproductive age women call into question prevention efforts targeting this population. Further research is warranted in effect to prevent poor maternal and child health outcomes among pregnant women and who may become pregnant.

Financial Support: NIH grants T32DA031099, R01DA037866, R01DA034244, New York State Psychiatric Institute.

INTEGRATED TELEMEDICINE-BASED TREATMENT FOR HEPATITIS C AT AN OPIOID AGONIST TREATMENT PROGRAM.

Lawrence S Brown1,2, Andrew Talal3,4, Phyllis Andrews5, Andrew Mcleod6,7, Marija Zeremski8, Yang Chen9, Clewert Sylvester1; 1Research & Evaluation, START: Treatment & Recovery Centers, Brooklyn, NY, 2Medicine, University at Buffalo, Buffalo, NY, 3Gastroenterology, Hepatology, and Nutrition, Cornell University, New York, NY, 4Medicine, START: Treatment & Recovery Centers, New York, NY, 5Medicine, University at Buffalo, Buffalo, NY, 6CEO, START: Treatment & Recovery Centers, Brooklyn, NY, 7Biostatistics, University at Buffalo, Buffalo, NY, 8Medicine, Weill Cornell Medical College, New York, NY.

Aims: To demonstrate the feasibility of treating Hepatitis C onsite at an Opioid Agonist Treatment Program via Telemedicine technology.

Methods: After an educational intervention, HCV RNA (+) patients are evaluated via telemedicine. All care is performed onsite. During weekly telemedicine visits, a physician assistant located onsite and a liver specialist located remotely both review and enter patient data directly into the electronic health record. Direct acting antivirals (DAA) are co-administered with methadone using directly observed therapy. The telemedicine satisfaction questionnaire (TSQ) assesses patient satisfaction.

Results: In 8 months, 24 HCV RNA(+)- patients received an evaluation via telemedicine. Mean age was 61 years, 71% were male, 79% were African-American, and 25% Hispanic. All were stable on methadone and 95% were HCV-genotype 1. Twelve patients have completed therapy, all with undetectable HCV RNA, and 3 achieved sustained viral response. A majority (82%) agreed that consultation via computer was easier and more convenient than going to an offsite clinic, all patients indicated the computer consultation met their medical needs, and the majority (95.5%) indicated that the experience was as satisfying as an in person consultation. Medication adherence has been excellent.

Conclusions: Telemedicine–based HCV care is a feasible, reimbursable model for HCV treatment delivery in an Opioid Agonist Treatment program with excellent patient acceptance. There were no restrictions on prescribing DAA therapy based upon drug use or fibrosis level.

Financial Support: Centers for Disease Control & Prevention (CDC) Foundation

TARGETED OVER-EXPRESSION OF BRAIN-DERIVED NEUROTROPHIC FACTOR IN THE NUCLEUS ACCUMBENS INCREASES GOAL TRACKING AND NICOTINE LOCOMOTOR SENSITIZATION, BUT REDUCES NICOTINE SELF-ADMINISTRATION IN RATS.

Russell W Brown1, Lauren A Beutel1, Sara A Dean1, Curtis A Bradley2, James Wherry3, Seth Kirby4, Matthew Ian Palmatier5, Meng-Yang Zhu6; 1Psychology, East Tennessee State University, Johnson City, TN, 2Biomedical Sciences, East Tennessee State University, Johnson City, TN, 3Achieved sustained viral response. A majority (82%) agreed that consultation via computer was easier and more convenient than going to an offsite clinic, all patients indicated the computer consultation met their medical needs, and the majority (95.5%) indicated that the experience was as satisfying as an in person consultation. Medication adherence has been excellent.

Conclusions: Telemedicine–based HCV care is a feasible, reimbursable model for HCV treatment delivery in an Opioid Agonist Treatment program with excellent patient acceptance. There were no restrictions on prescribing DAA therapy based upon drug use or fibrosis level.

Financial Support: Centers for Disease Control & Prevention (CDC) Foundation
GENDER DIFFERENCES IN REMISSION FROM ALCOHOL AND MARIJUANA DEPENDENCE IN COLLEGE STUDENTS.
Brittany A Bugbee1, Kimberly M Caldeira2, K E O’Grady2, Kathrym B Vincent1, Amelia M Arria3; 1U of Maryland School of Public Health, College Park, MD; 2Psychology, U of Maryland, College Park, MD

Aims: Examines the course and correlates of remission from substance dependence.
Methods: Prospective study of 1,253 college students interviewed annually since college entry to assess DSM-IV criteria for abuse and dependence on alcohol and/or marijuana. The subset who met criteria for dependence in Years 1-3 were coded as remitting or non-remitting based on whether they endorsed any subsequent DSM-IV problems by Year 4. Hypothesized correlates were help-seeking (substance use, mental health), perceived drug use by peers (cohabitors, close friends), demographics, college enrollment, extracurricular involvement, peer conflict, and perceived social support.

Results: Annually 13-16% met dependence criteria (n=337 cumulatively). Overall 13% subsequently remitted by Year 4, meaning they endorsed no DSM-IV problems. Relative to non-remitters (n=292), remitters (n=45) were significantly more likely to be female (80% vs. 47%, p<.001), live in a university residence hall (20% vs. 7%, p<.005), and perceived significantly less drug use among cohabitants (0.6 vs. 1.3 drugs) and close friends (0.6 vs. 1.4 drugs, both p<.001). No other hypothesized correlates were significantly associated with remission (p>.05). Perceived need for help (6%) and actual help-seeking (8%) were rare for substance use problems, but more common for mental health problems (57%, 30%); neither differed significantly by remission status (p>.05).

Conclusions: Remission from alcohol/marijuana dependence was rare and primarily spontaneous in this college student sample, which had minimal exposure to treatment and no access to a collegiate recovery program. Peer substance use might influence recovery during college. Spontaneous remission might be even more difficult for men than women. Research is needed on the patterns and correlates of remission in college students.

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Scott Burris1, Sterling K Johnson2, Jennifer Ibrahim3, Elizabeth Platé2, Leslie Allen1; 1Temple University Beasley School of Law, Philadelphia, PA; 2College of Public Health, Temple University, Philadelphia, PA; 3Legal Science, LLC, Philadelphia, PA

Aims: Overdose attributable to prescription opioids and heroin is a significant health problem in the United States. Expanding public and first-responder access to and administration of naloxone, has emerged as a promising intervention to reduce mortality. The purpose of the study was to trace the evolution and current state of the laws governing access to and use of naloxone, and to specify how state policies have apportioned naloxone to different groups.

Methods: A team of three legal researchers collected state laws and administrative rules governing access to naloxone using combinations of the search terms; “opioid,” “opioid antagonist,” “naloxone,” “Narcan,” “opioid overdose,” “opiate,” and overdose. The team redundantly coded the provisions according to an explicit quality control protocol.

Results: From 2001 to July 2015, 36 states and the District of Columbia passed laws to increase naloxone access to and administration by lay people and first responders. Legislators have deployed three legal strategies: authorizing naloxone training and distribution programs; creating legal immunities for prescribers and, in some cases, lay users; and explicitly authorizing third party prescription and administration, including through standing orders and direct protocol-based pharmacy dispensing.

Conclusions: Lay administration of naloxone represents a major policy intervention in one of the nation’s most serious health problems. Three distinct regulatory models are now in use, but there has been no research comparing the effectiveness or implementation of these models. Research is urgently needed to guide states in selecting and refining their regulatory strategies for this widely-adopted intervention to reduce drug overdose morbidity and mortality.

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VIDEO GAME ADDICTION: DURATION OF PLAY AND IMPULSIVITY.
Frank Daniel Bueno3, Brent A Moore4, Destiny M Brintz4, Daniel P Lloyd4, Christopher John Cutter5, matthew e sprong6; 3Internal Medicine, Yale School of Medicine, New Haven, CT; 4Psychiatry, Yale University, New Haven, CT; 5Psychiatry, Yale University School of Medicine, New Haven, CT; 6Rehabilitation Counseling, Northern Illinois University, DeKalb, IL

Aims: Delay discounting (DD) is the choice between sooner smaller amounts and larger delayed amounts. The current study assessed if weekly average duration of video game play (VGP) affected DD rates. We also evaluated gender and gender interaction effects and whether DD of money predicted the DD of VGP.

Methods: Participants (N = 93) were categorized based on number of self-reported video game hours played per week into control (0-5hr), mid-level (12-17hr), and high (24+). On a secure website, participants completed 2 adjusting amount DD programs (monetary and video game) in counterbalanced order. Primary outcomes were area under the curve (AUC) scores and indiffERENCE points for both monetary and VGP DD.ANOVA analyses evaluated whether VGP categories differed on monetary and VGP DD AUC scores. Linear regression evaluated whether monetary DD AUC score predicted VGP DD AUC score, as well as gender and gender by VGP category interaction.

Results: High gamers were more likely to choose a lesser, immediate amount of money compared to non-gamers (p<.003). VGP categories did not differ on VGP DD (p>.08). DD for money did not significantly predict DD VGP, and there were no gender effects or interactions. Comparisons to patterns of DD by level of use for a range of drugs of abuse will be presented.

Conclusions: High video game players were significantly more impulsive than both non-gamers and mid-level players within monetary discounting procedures. Video game discounting approached significance between high and non-players. Previous research has shown, individuals with substance use to be more impulsive than matched controls. These findings indicate that video game play has congruent patterns to discounting for substance use, suggesting that individuals who play high duration of video games may exhibit behavioral patterns similar to well-established addictions. Future research on video game use will examine other dimensions of addiction.

Financial Support: NA

ADDICTIVE DISEASES AND DEPRESSION COMORBIDITY: AGE TRAJECTORY AND GENDER COMPARISON.
Eduardo Butelman1, Silvia Bacciardi2, Angelo G I Maremmani2, Maya Darre-Campbell1, Brenda M Ray1, Elizabeth Ducat1, Mary Jeanne Kreek1; 1Laboratory on the Biology of Addictive Diseases, The Rockefeller University, New York, NY; “VP Dole” Dual Diagnosis Unit, Santa Chiara University Hospital of Pisa, Pisa, Italy

Aims: To determine how exposure to specific drugs of abuse (as quantified dimensionally with the KMSK scales) can affect age- and gender-related aspects of psychiatric comorbidity.

Methods: This is a case-control study, with two consecutive cohorts. Cohort 1 (n=617) was ascertainment 2002-2005, and Cohort 2 (n=579) was ascertainment 2005-2013. Male and female adults were ascertained with SCID-I / DSM IV criteria, and KMSK scales for heroin, cocaine, alcohol and cannabis (Kellogg et al., 2005-2013). Male and female adults were ascertained with SCID-I / DSM IV criteria, and KMSK scales for heroin, cocaine, alcohol and cannabis (Kellogg et al., 2003; Drug Alc Depend 69:137-150). Exposure to each drug was analyzed in three KMSK score “bins” (low, medium and high exposure). The highest KMSK score bin for each drug had the highest relative concurrent validity with the respective DSM IV diagnoses of dependence.

Results: a) Overall, females had a greater proportion of depression diagnoses, versus males. b) Age of onset of heaviest use, in persons with highest exposure to each of these drugs, did not differ according to depression diagnosis. c) There were typically increasing proportions of depression diagnoses with increasing exposure to each drug. Overall, both males and females with greatest exposure to each drug had the greatest probability of a depression diagnosis.

Conclusions: Age of onset of heaviest exposure to heroin, cocaine, alcohol or cannabis did not differ by depression status. For each of these drugs, increasing exposure was typically associated with greater risk of depression diagnoses. While females were more likely to have depression diagnoses overall, the aforementioned association of exposure and probability was typically observed in both genders.

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CHARACTERISTICS OF PAIN PATIENTS RELATED TO RISK OF ABDERRANT OPIOID MEDICATION BEHAVIORS.

Stephen F. Butler, Ryan A Black, Theresa A Cassidy, Kevin L Zacharoff, Simon H Budman; Inflexion, Inc., Newton, MA

Aims: Examine characteristics of patients evaluated for pain treatment related to scores on the SOAPP, a screener for risk of aberrant opioid medication behaviors.

Methods: Self-report data were collected during the clinic workflow using the Pain Assessment Interview Network-Clinical Assessment System (PainCAS), a comprehensive, electronic assessment for pain-related treatment. At intake and follow-up visits, patients self-report on pain, medical/family history, medications and other treatments, social/emotional functioning, and opioid risk; generating reports for providers and patients. Linear regression examined the range of SOAPP scores against age, gender, race, body area(s) affected by pain, validated measures of functional impairment, psychiatric problems, pain-related litigation, and pain ratings at worst, now, least, and average.

Results: De-identified data are uploaded and analyzed in real time. By October 2015, 4,795 assessments were collected at 18 clinics in 16 states; 73% from unique patients. Follow-up visits ranged from 2 visits to 11, suggesting potential for tracking outcomes. Most patients (60%) were female, white (80%) and 45 to 64 years old (51%). Back/neck pain was reported most (70%), followed by hip/leg pain (46%), shoulder/arm (24%), head (10%) and front torso (8%), with 25% reporting more than one body area. Mean pain rating for past-week-average was 6.2, worst-8.2, and least-4.9 (0 – 10). Among the unique patients, 75% (n=2,639) received some version of the SOAPP, of which 25% were positive for opioid risk. Regression analysis revealed a significant R² = .29 (p < .001) demonstrating higher SOAPP scores associated with greater psychiatric problems (standardized beta = .52), giving higher “least-pain” rating (beta = .12), and male gender (beta = -.88). Other predictors dropped out.

Conclusions: This exploratory analysis suggests that PainCAS data, collected in real-time from patients who are not participants in formal trials may be useful to further understand clinical presentations associated with higher risk scores for opioid aberrant medication behaviors.

Financial Support: Inflexion

COMMITTING DISTANCE TO MIAMI’S CLUB SCENE AND BINGE SUBSTANCE USE AND RELATED PROBLEMS AMONG YOUNG ADULTS.

Mary E Buttram1, Maria Pagano2; Steven P Kurtz2; 1Center for Applied Research on Substance Use and Health Disparities, Nova Southeastern University, Miami, FL; 2Department of Psychiatry, Division of Child Psychiatry, Case Western Reserve University, Cleveland, OH

Aims: To examine the association between commuting distance (miles between place of residence and primary club) and binge substance use, sexual risk behaviors, and related problems among young adults in Miami’s club scene.

Methods: Data are drawn from baseline assessments in an ongoing behavioral intervention trial (N=498). Eligible participants were 18-39 and reported frequent (past 90 days) and regular use of club drugs (cocaine, ecstasy, LSD, GHB, ketamine, or methamphetamine) and prescription drug misuse. Hierarchal linear regressions examined the impact of commuting distance on risk behaviors, controlling for demographics and social network substance use.

Results: Participants were Hispanic (N=320), Black (N=104), White (N=60), and other race/ethnicity (N=14). Mean age was 25 and nearly half of the sample was female (N=222). A majority of participants (62%) traveled ≥ 10 miles to their primary club. As the commuting distance increases participants more frequently reported substance dependence (p<.05), binge alcohol (p<.01), binge cocaine (p<.05) and condomless vaginal sex (p<.001). As commuting distance decreases, participants more frequently reported histories of arrest (p<.05).

Conclusions: The results demonstrate that participants living further from their primary club more frequently report binge substance use and related risks than participants living nearer. Greater commuting distance suggests intermittent, rather than regular access to the club scene. Thus participants traveling long distances, and overcoming related barriers (e.g., transportation access), have a greater investment in the club outing, which may rationalize greater binge substance use. Substance use and risk reduction interventions targeted toward suburban club participants are needed.

Financial Support: This research was supported by Grant DA1019048 from the National Institute on Drug Abuse.

MARIJUANA USE PROBLEMS PREDICT POST-COLLEGE EMPLOYMENT OUTCOMES.

Kimberly M Caldeira1, K E O’Grady2, Brittany A Bugbee1, Kathryn B Vincent1, Amelia M Arria2; 1School of Public Health, University of Maryland, College Park, MD; 2Psychology, University of Maryland, College Park, MD

Aims: We hypothesized that marijuana use problems during and after college would have a cumulative effect on predicting employment outcomes 7 years after college entry.

Methods: Beginning at college entry, 940 undergraduates (modal age 18) were prospectively studied for 8 years via annual personal interviews. Dependent variables assessed in Year 8 (modal age 25) were current employment status and full-time, duration of full-time employment was negatively associated with marijuana use problems (both p<.05), even controlling for demographics and other background variables (academic attainment, personality, childhood conduct problems, fraternity/sorority involvement). Among the subset who were ever employed were currently working full-time; 96% had completed a 4-year college degree, which may rationalize greater binge alcohol (p<.01), binge cocaine (p<.05) and condomless vaginal sex (p<.001). As commuting distance decreases, participants more frequently reported histories of arrest (p<.05). As commuting distance decreases, participants more frequently reported histories of arrest (p<.05).

Conclusions: The results demonstrate that participants living further from their primary club more frequently report binge substance use and related risks than participants living nearer. Greater commuting distance suggests intermittent, rather than regular access to the club scene. Thus participants traveling long distances, and overcoming related barriers (e.g., transportation access), have a greater investment in the club outing, which may rationalize greater binge substance use. Substance use and risk reduction interventions targeted toward suburban club participants are needed.

Financial Support: This research was supported by Grant DA1019048 from the National Institute on Drug Abuse.

FDA ROLE IN THE DRUG SCHEDULING PROCESS OF A DRUG UNDER DEVELOPMENT.

Silvia Nora Calderon, Dominic Chiapperino, Michael Klein; CDER/CSS, Food and Drug Administration, Silver Spring, MD

Aims: To provide an overview of the role of the Food and Drug Administration (FDA) in the drug scheduling process.

Methods: Abuse and misuse of prescription drugs is a serious and growing public health problem. The evaluation of the abuse potential of a drug is carried out as part of the general safety and efficacy evaluation for drugs under development and provides the basis for drug control recommendations.

Results: The FDA evaluates the scientific and medical data related to the abuse potential of a new drug, within the regulatory framework of the Federal Food, Drug and Cosmetic Act (FFD&CA) and the Controlled Substance Act (CSA). The assessment of the abuse potential of a drug under development serves two purposes: 1) to weigh the potential for abuse in the overall risk-benefit calculus, and to ensure appropriate labeling of the drug; 2) to provide the basis for a recommendation for scheduling under one of the CSA schedules. The roles of the Attorney General (delegated to Drug Enforcement Administration (DEA)) and the Secretary of the Department of Health and Human services (delegated to the Assistant Secretary for Health (ASH), with further delegation to the FDA, the Center for Drug Evaluation and Research (CDER) and the Controlled Substance Staff (CSS)) for drug scheduling are described in 21 U.S.C. 811 and 812, and in 21 CFR Part 1300. If, after the evaluation of the abuse potential of a drug under development, CSS determines that the drug warrants scheduling, CSS will draft a recommendation for scheduling, also known as an “eight factor analysis” (8FA), as described in 21 U.S.C. 811(c). With the concurrence of the National Institute on Drug Abuse, the 8FA is transmitted from FDA to the ASH for review approval, and transmittal to the DEA, which is the final authority on scheduling.

Conclusions: In addition to ensuring that the American public has access to safe and effective drugs, the FDA has an important role in the drug control process as established in the CSA.

Financial Support: N/A
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RELEASE FROM DRINKING-AGE RESTRICTIONS IS ASSOCIATED WITH INCREASES IN ALCOHOL-RELATED MOTOR VEHICLE COLLISIONS AMONG YOUNG DRIVERS IN CANADA.
Russell Callaghan$^{1}$, Jodi Gatley$^{2}$, Marcos Sanches$^{3}$, Claire Benny$^{1}$; $^{1}$Northern Medical Program, University of Northern British Columbia, Prince George, BC, Canada; $^{2}$Biostatistical Consulting, CAMHI, Toronto, ON, Canada; $^{3}$Community Health Sciences, UNBC, Prince George, BC, Canada

Aims: International debate about the effectiveness of minimum legal drinking age (MLDA) legislation is ongoing. The current study aims to provide current estimates of the impacts of MLDA laws on motor vehicle collisions (MVCs) in Canada.

Methods: Using all police-reported alcohol-related MVCs ($N = 50,233$) of drivers aged 15-23 years of age in provinces/territories comprising approximately 95% of the Canadian population, a regression-discontinuity approach was used to estimate the relation between drinking-age laws and alcohol-related MVCs occurring in population-based collision databases, starting from 1995-2007 and ending between 2010-2013.

Results: In comparison to male drivers slightly younger than the MLDA, those just older had significant and abrupt increases in alcohol-related collisions of: 40.6% (95% CI 25.1%-56.6%; $P < 0.001$) in Ontario; 87.1% (95% CI 2.6%-170.1%; $P = 0.043$) in Manitoba; 21.6% (95% CI 8.5%-35.0%; $P = 0.001$) in British Columbia; and 27.6% (95% CI 10.5%-44.5%; $P = 0.001$) in Alberta. For females, release from drinking-age restrictions was associated with significant and immediate increases in alcohol-related collisions in Ontario (34.2% (95% CI 0.9%-68.0%; $P = 0.044$)) and Alberta (82.0% (95% CI 38.9%-125.1%; $P < 0.001$)). At a national level, in comparison to male drivers slightly younger than the legislated MLDA, male drivers just older had significant and abrupt increases (53.4% (95% CI 2.4%-102.9%, $P = 0.043$)) in alcohol-related fatal collisions immediately following the drinking age.

Conclusions: Release from Canadian drinking-age restrictions is associated with significant and immediate increases in alcohol-related collisions, especially among male drivers.

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LONGITUDINAL PATTERNS OF E-CIGARETTE AND CIGARETTE DUAL USE IN ADOLESCENTS.
Deepra R Camenga, Krysten Bold, Grace Kong, Dana Anne Cavallo, Kevin Michael Gutierrez, Patricia Simon, Suchitra Krishnan-Sarin; Yale School of Medicine, New Haven, CT

Aims: There is growing concern that dual use of electronic (e-) cigarettes and cigarettes may accelerate or prolong cigarette use in adolescents. We examined changing patterns of tobacco use in a longitudinal cohort of adolescents who use both e-cigarettes and cigarettes.

Methods: We examined surveys from a cohort of high school students followed from Fall 2013 (wave 1) to Spring 2014 (wave 2) ($N = 1,404$). We analyzed a subset of 64 students (4.5%) who reported past-month e-cigarette and cigarette use (dual use) at wave 1 (51.3% female, 92.2% White, $M_{age} = 16.0$ (SD = 1.2)). We determined rates of e-cigarette and cigarette use at wave 2.

Results: Within this sample, the mean age of cigarette initiation was 13 years (SD = 2.1) and e-cigarettes was 15.2 years (SD = 1.5). A minority of dual users reported daily use of either cigarettes (10.9%) or e-cigarettes (25%). Overall, 51.6% of these dual users continued dual use at wave 2, 21.8% reported only past-month cigarette smoking; 10.9% reported only past-month e-cigarette use, and 15.6% reported neither. From wave 1 to wave 2, 63.6% of the persistent dual users reported increased cigarette frequency, 51.5% reported increased e-cigarette frequency and 39.4% reported increased frequency of both cigarettes and e-cigarettes.

Conclusions: Half of dual users persisted with dual use at follow-up. This study provides preliminary evidence that many adolescent dual users increase the frequency of cigarette use, however it also suggests that a sizable proportion will decrease cigarette smoking. Future studies of larger samples are needed to determine how e-cigarettes effect the trajectory of nicotine dependence in youth.

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CLINICIAN INVOLVEMENT WITH INTERNET-DELIVERED TREATMENT AND ASSOCIATION TO OUTCOMES.
Aimee Campbell$^{1}$, Edward V Nunes$^{1}$, Martina Pavlicova$^{2}$; $^{1}$Department of Psychiatry, Columbia University Medical Center, New York, NY, $^{2}$Columbia University, New York, NY

Aims: To explore level of clinician involvement in the use of an Internet-delivered psychosocial treatment intervention and the association with addiction treatment outcomes. We hypothesized that increased involvement would be associated with better outcomes.

Methods: Men and women in 10 outpatient addiction treatment programs affiliated with the National Drug Abuse Treatment Clinical Trials Network were randomly assigned to 12 weeks of treatment-as-usual (TAU) or TAU + Therapeutic Education System (TES), an Internet-based version of the Community Reinforcement Approach plus motivational incentives (N=255 TAU+TES participants included in this analysis). TAU clinicians conducted brief TES check-ins during individual counseling. Clinician involvement in the first 2 weeks of treatment was operationalized as: (1) none, (2) asked about TES but did not discuss, (3) discussed TES, or (4) discussed TES + suggested modules. Generalized linear mixed effect models were used to explore associations between involvement and outcomes: abstinence (last 4 weeks), retention, acceptability, and TES modules completed (controlling for age, baseline abstinence [negative urine drug and breath alcohol screens], primary opioid use).

Results: Participants were categorized into the following clinician involvement levels: none (n=128), asked about TES but did not discuss (n=31), discussed TES (n=70), discussed TES + suggested modules (n=26). Higher level of clinician involvement was associated with greater retention (F=-4.73, p=<0.003) and more modules completed (F=6.67, p=<0.001), but not abstinence or acceptability.

Conclusions: Understanding best practices for how providers should interact with technology-based interventions used by patients is an important area of research given the promise and increasing development of these interventions. Findings suggest greater, yet still relatively minimal, clinician involvement may enhance outcomes.

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USE OF A PRESCRIPTION OPIOID REGISTRY TO EXAMINE OPIOID MISUSE AND OVERDOSE.
Cynthia Campbell$^{1}$, Amber Bahorik$^{2}$, Constance Weisner$^{1,3}$, Paul VanVeldhuizen$^{1}$, Andrea Rubinstein$^{1}$, Tom Ray$^{1}$; Division of Research, Kaiser Permanente Northern California, Oakland, CA; $^{1}$The EMMES Corporation, Rockville, MD; $^{2}$Psychiatry, UCSF, San Francisco, CA; $^{3}$Anesthesiology, Kaiser Permanente, Santa Rosa Medical Center, Santa Rosa, CA

Aims: The United States is experiencing an epidemic of opioid misuse and overdose. We established a prescription opioid registry in a large health care delivery system to examine predictors of opioid misuse and predictors of opioid overdose.

Methods: The sample was all adult patients using prescription opioids during 2011 at Kaiser Permanente Northern California. We used measures of prescription opioid and sedative/hypnotic fills, patient demographics, physical and psychiatric comorbidities, and overdose. We established a prescription opioid registry in a large health care delivery system to examine predictors of opioid misuse and predictors of opioid overdose.

Results: The sample was all adult patients using prescription opioids during 2011 at Kaiser Permanente Northern California. We used measures of prescription opioid and sedative/hypnotic fills, patient demographics, physical and psychiatric comorbidities, and overdose. We established a prescription opioid registry in a large health care delivery system to examine predictors of opioid misuse and predictors of opioid overdose.

Financial Support: NIDA contract: HHSSH2712014000028C
DEFINING PROBLEMATIC PHARMACEUTICAL OPIOID USE AMONG PEOPLE PRESCRIBED OPIOIDS FOR CHRONIC NON-CANCER PAIN: DIFFERENT MEASURES, SAME PATIENTS? Gabrielle Gabrielle Campero-Ramirez, Wayne Hall, Suzanne Nielsen, Nicholas Lintzeris, Briony Larance, Richard Phillip Matick, Michael Farrell, Louise Degenhardt; 1Langston Centre, Sydney, NSW, Australia, 2School of Medicine, University of Tasmania, Hobart, TAS, Australia, 3Clinical School, St Vincents, Sydney, NSW, Australia, 4Centre for Youth Substance Abuse Research, University of Queensland, Brisbane, QLD, Australia, 5National Drug and Alcohol Research Centre, UNSW, Sydney, NSW, Australia

Aims: To examine the prevalence and characteristics of pharmaceutical opioid dependence/disorder according to the ICD and DSM, and the concept of 'addiction' in a community sample of chronic non-cancer pain patients prescribed pharmaceutical opioids.

Methods: National sample of 1,135 people across Australia (median 58 years, 55% female and in pain for a median of 10 years), being prescribed opioids for CNCP. Addiction, DSM and ICD-10 pharmaceutical opioid dependence were assessed using the Composite International Diagnostic Interview.

Results: Twenty-two percent of the cohort met criteria for 'addiction', 18% met criteria for DSM 5 opioid use disorder and 14% met criteria according to ICD 11 opioid use disorder. There was 'moderate' concordance between addiction and DSM IV, 5 and ICD 10 and 'good' agreement with ICD 11.

Conclusions: We found 'addiction' to be a broad concept that includes people that are less likely to have a high-risk profile than identified by ICD and DSM. Although the DSM 5 have attempted to address the issue of tolerence and withdrawal in people prescribed medication, the current paper found that the concept of 'addiction' was more closely related to ICD 11 diagnosis of pharmaceutical opioid use dependence.

Financial Support: This study received funding from the Australian National Health and Medical Research Council (NHMRC, #102252).

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IN-HOUSE OUTREACH: STRATEGIES TO PROMOTE AND ADVERTISE A SMOKING CESSATION PROGRAM IN A MEXICAN UNIVERSITY HOSPITAL OCTAVIO CAMPOLLO1,2, O Patricia Torres1; 1Center of Alcoholism and Addictions, University Of Guadalajara, Guadalajara, Mexico, 2Molecular Biology, Hospital Civil de Guadalajara FAA, Guadalajara, Mexico

Aims: To describe the best strategies to promote and advertise the smoking cessation program in a large regional specialty University Hospital (AHCGGFAA) in Guadalajara, Mexico.

Results: Our program is a combined medical & CRT program with part-time doctors, nurses and psychologists that opened at 05/2007 as a specialty clinic within the Hospital complex. To date we have attended over 1000 clients both in 8 weeks program or brief intervention. We started by sending letters to all heads of department introducing and explaining the purpose of the program, the location and schedule. We designed a pamphlet with general and specific information about our program. Other actions within and outside our institution in the following years included: letters to the local additions council, promotional yearly campaigns around the 31st of May, radio and TV interviews, distribution of prevention and treatment pamphlets, posting several types of posters, flyers, handling bookmakers with the paychecks and continued visiting and delivering pamphlets in the main departments including the outpatient building, cancer institute, employee medical service among others. Through the years the highest number of clients attending the program correspond to patients attending the Hospital for medical reasons. Most of them (44 %) knew about the program through a poster, 26 % were referred by a specialist of which 10 % were from Psychiatry, 7.5 % from internal medicine, 7.5 % from the breast clinic, 6.6 % from the outpatient building; 5.6 % knew about the program through word of mouth. There was a correlation between the level of attendance to the program and the number of hand-made posters posted around the hospital and with the participation of an administrative employee or social worker in the program.

Conclusions: The use of promotional posters among other strategies is an economic and cost effective strategy to advertise a smoking cessation program in a highly specialized medical institution.

Financial Support: This project had no external funding.

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MODERATE TBI INCREASES SUSCEPTIBILITY TO REWARDING EFFECTS OF A SUBTHRESHOLD DOSE OF COCAINE IN MICE.

Lee Anne Cannella1, Steven Merkel1,2, Roshanak Razmpour, Christopher S Tallarida3, Scott Rawlss3, Servio Ramirez1+2,3; Pathology, TUSM, Philadelphia, PA, 3CSAR, TUSM, Philadelphia, PA, 4Pharmacology, TUSM, Philadelphia, PA, 5Shiriners, Philadelphia, PA

Aims: Traumatic brain injury (TBI) is an important public health problem as 1.7 million occur annually in the U.S. The most common comorbidity seen in TBI patients is the development of a substance use disorder (SUD). Severity of TBI, age of injury, and repeated neurotrauma can distinguish patients with SUDs. To date there’s limited preclinical data related to the effect of TBI on SUDs, thus the mechanisms for this phenomenon remain unclear. Previously we found that moderate TBI inflicted by Controlled Cortical Impact (CCI) during adolescence increased susceptibility to the rewarding effects of 10 mg/kg cocaine during adulthood. The aim of the current study is to further investigate whether TBI enhances the effects of a subthreshold dose of cocaine that typically does not produce a CPP shift.

Methods: A single CCI impact with a speed of 4.5 m/s, dwell time of 0.5 sec, and depth of 2 mm produced moderate TBI in 6 week old, adolescent male C57BL/6 mice. Drug seeking behavior was assessed using CPP assay two weeks after injury. Expression of immune response-associated genes was measured using qRT-PCR.

Results: We observed that moderate TBI during adolescence augmented preference to the environment paired with 2.5 mg/kg cocaine indicative of enhanced stasis in the reward circuitry.

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INTRINSIC AND EXTRINSIC MOTIVATION PREDICT TREATMENT OUTCOME IN A SAMPLE OF HIV+ DRUG USERS.

Daniela Cannizzaro1, Malki Stohl1, Deborah Hasin1,2, Efrat Aharonovich1,2; 1New York State Psychiatric Institute, New York, NY, 2Psychiatry, Columbia University, New York, NY

Aims: Motivation is theorized to be a key component of one’s readiness to change. A better understanding of motivation may help predict treatment outcome. The Self Determination Theory distinguishes between motivation that is intrinsic, which originates from within a person, and extrinsic, which originates as a result of external factors. The Treatment Motivation Questionnaire (TMQ) has been in use in substance abusing samples to examine intrinsic and extrinsic motivation, but its predictive abilities have not been extensively studied. We revised the TMQ to be more concise, and examined its factor structure and ability to predict treatment outcome in a sample of HIV+ drug users.

Methods: The revised TMQ (TMQ-R) was administered to 145 HIV positive drug users entering treatment to reduce drug use. Exploratory factor analysis (EFA) was used to determine the TMQ’s factor structure. Logistic regression examined the relationship between baseline motivation and drug use 60 days, 3 months and 6 months post baseline.

Results: The EFA indicated three factors with eigenvalues >1. The TMQ-R distinguished between intrinsic, extrinsic and health related motivation. All items loaded on their factor with a loading of 0.58. Logistic regression models indicated that extrinsic motivation significantly predicted negative urine drug test 60 days (n=132, OR=.64, 95% CI=.44-.92) and 3 months (n=143, OR=.59, 95% CI=.41-.84) post baseline. Intrinsic motivation significantly predicted negative urine drug tests 6 months post baseline (n=145, OR=.56, 95% CI=.37-.84).

Conclusions: Results suggest that baseline intrinsic and extrinsic motivation can be used to predict treatment outcome. They suggest that extrinsic motivation might play an important role in the initial stages of treatment, while intrinsic motivation plays a role in the later stages of treatment and even after treatment termination. This is consistent with theories of motivation that posit intrinsic motivation to develop gradually over time as patients become more engaged in the treatment process.

Financial Support: R01DA024606, NYSPI

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Comprehensive Anomalies After Ingesting Psilocybin Mushrooms in Research and Non-Research Settings.

Aims: A broad range of phenomenological experiences have been reported after psilocybin ingestion. Both mystical-type and psychologically challenging experiences have been characterized. This report summarizes several data sets to characterize the range of other anomalous experiences associated with psilocybin when ingested in both research and non-research settings.

Methods: Three data sets were examined: 1) an internet-based survey of mystical-type experiences (ME; N=1602) after ingesting psilocybin mushrooms; 2) an internet survey of psychologically difficult/challenging experience (CE; N=1993) after ingesting psilocybin mushrooms; and 3) combined data from 3 laboratory studies conducted in healthy volunteers (LS; n=110-126) who received a high dose of psilocybin (50 mg/70 kg). The percentage of respondents who endorsed specific anomalous experiences as "moderate," "strong," or "extreme" were calculated for each of the three data sets.

Results: Mean (range) of percentage endorsement of the anomalous experiences across the 3 data sets were: loss of usual sense of time 88% (86-90%); visions of abstract geometric patterns 76% (71-79%); visions of art objects such as mosaics, statues, or jewelry 41% (33-48%); convincing feelings of obtaining information in an extrasensory manner 36% (26-45%); profound experience of own death 29% (22-34%); visions of blissful or compassionate deities 25% (13-38%); reliving situations and events form childhood 20% (17-22%); contact with people who have died 17% (10-27%); visions of demons, devils, or wrathful deities 16% (10-22%); sense of becoming a specific animal 15% (10-21%); reliving part of another life prior to birth (previous incarnation) 13% (10-16%); and reliving experiences as an infant during biological birth 11% (10-12%).

Conclusions: After ingesting psilocybin in both research and non-research settings, individuals endorse a wide range of phenomena including various anomalous and parapsychological experiences, the determinants of which are unknown.

Financial Support: NIH grants (T32DA007209, R01DA003889), Heffter Research Institute and Council on Spiritual Practices.
A FULLY AUTOMATED ALGORITHM FOR IDENTIFYING PATIENTS WITH PROBLEM PRESCRIPTION OPIOID USE USING ELECTRONIC HEALTH RECORD DATA

David Carrell1, Jack Mordeian2, Dave Cronkite3, Arvind Ramaprasan1, Kristina Hansen1, David E Gross2, Roy E Palmer2, Elizabeth Masters2, Michael Von Korff1; 1Group Health Research Institute, Seattle, WA, 2Pfizer Inc., New York, NY

Aims: Fully automated methods for identifying problem opioid use (POU) in large patient populations are needed for surveillance and epidemiological research. Prior studies demonstrate the feasibility of using natural language processing (NLP) and targeted manual review of electronic health records (EHRs) to identify such patients, but fully automated algorithms have not been published. We hypothesized that a fully-automated algorithm based on EHR data and chart note text could accurately identify patients with POU.

Methods: A random sample of 15,498 patients receiving chronic opioid therapy (≥70 days’ supply in 90 days) through a staff model health care system with an EHR in 2006-2012 was randomly divided into training and validation sets (N=7,749 each). We used a validated NLP-assisted manual review method to determine which charts had evidence of clinician-labeled prescription opioid misuse, abuse, addiction or death (POU). Our algorithm combined information from two classification models: 1) a logistic model with six predictors derived from the EHR data, and 2) a machine learned model based on NLP-extracted data from chart notes. A patient was considered POU positive if either model assigned the patient a risk score above an empirically determined cut-point.

Results: NLP-assisted manual review indicated that 1,455 (9.4%) patients had POU. In the validation set the algorithm achieved 56% sensitivity and 76% measures from EHR data and text.

POU using EHR data will require operationalizing additional and more precise measures from EHR data and text.

Financial Support: Pfizer Inc. provided financial support for this collaboration between Group Health Research Institute and Pfizer Inc.

EVALUATION OF HUMAN ABUSE LIABILITY OF JZP-110.

Lawrence P Carter1, Edward Sellers2, Jack Henningfield3, Grace Wang4, Yuan Lu5, Debra Kelsh6, Bradley Viola7,8; 7Jazz Pharmaceuticals, Palo Alto, CA, 8University of Toronto, Toronto, ON, Canada, 9Pinney Associates, Bethesda, MD, 10Vince & Associates Clinical Research, Overland Park, KS, 11University of Arkansas for Medical Sciences, Little Rock, AR, 12Johns Hopkins School of Medicine, Baltimore, MD

Aims: This randomized, double-blind, placebo (PBO)-controlled crossover study evaluated abuse potential of JZP-110 relative to the Schedule IV stimulant phentermine (PTN) as a positive control. JZP-110 is a second-generation wake-promoting agent that inhibits reuptake of dopamine and noradrenaline.

Methods: Adults (18-55 yrs) with a recent history of recreational polysubstance use including stimulants, and who met entry criteria in a Qualification Phase, were randomized to 1 of 6 sequences in a Test Phase. Each sequence in the Test Phase included a single administration of PBO, JZP-110 (300, 600, and 1200 mg), and PTN (45 and 90 mg), with 2-day washout between periods. Primary endpoint was peak rating of Liking at the Moment across first 12 hours on the bipolar liking-disliking visual analog scale (VAS); key secondary endpoints were VAS ratings of Drug Liking and how much the subject would like to Take the Drug Again. Safety also was assessed.

Results: Of 43 subjects (74.4% male; 67.4% African American; mean age 29.1 yrs), 37 completed the study. On the primary endpoint of peak liking, all doses of JZP-110 were rated significantly greater than PBO (p<0.01) and significantly less than PTN 90 mg (p<0.05). Overall Next Day Drug Liking for JZP-110 600 and 1200 mg was not significantly different from PBO and was significantly lower for all doses of JZP-110 relative to PTN 90 mg (p<0.02). Ratings of willingness to Take the Drug Again for all doses of JZP-110 were significantly lower than both doses of PTN (p<0.05). Treatment-emergent adverse events (TEAEs) were dose dependent for JZP-110 and PTN; none were severe or serious. The most common TEAEs for JZP-110 included hypervigilance, elevated mood, dry mouth, hyperhidrosis, and insomnia.

Conclusions: JZP-110 may have abuse potential similar to or lower than Schedule IV stimulants.

Financial Support: Sponsored by Jazz Pharmaceuticals.

HIV, OVERDOSE MORTALITY AND THE IMPACT OF ANTI-RETROVIRAL THERAPY ADHERENCE.

Alexander Caudarella3, Huiru Dong3, Kanna Hayashi1, Thomas Kerr3, Evan Wood4, MJ Milloy3; 1Urban Health Research Initiative, BC Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada, 2University of British Columbia, Toronto, ON, Canada

Aims: To describe and characterize the possible association between HIV infection and risk of fatal overdose.

Methods: Using data from two complementary cohorts of people who use injection drugs (PWID) in Vancouver, Canada, we examined if HIV status was associated with time to fatal overdose after adjustment for other behavioural, social and structural-level factors using Cox extended regression models. A sub-analysis was performed to determine if CD4 count and exposure to antiretroviral therapy (ART, >95% of period) were associated with time to fatal overdose.

Results: Between May 1996 and December 2013, 2848 individuals were recruited. Using serological markers, HIV infection was confirmed in 878 individuals. In a multin variable model, HIV infection was independently associated with swifter time to fatal overdose (Adjusted Hazard Ratio [AHR] = 1.47, 95% Confidence Interval [CI]: 1.04 – 2.09.) Among HIV-positive individuals, CD4 cell count was not associated with overdose (p = 0.709). In addition, exposure to ART was not protective against fatal overdose (p = 0.736).

Conclusions: Our results add to the growing weight of evidence of a positive association between HIV infection and greater risk of fatal overdose. However, our findings suggest that HIV disease progression, as measured by decreasing CD4 count, may not be a significant contributing factor. In addition, exposure to ART does not appear to change the fatal overdose risk.

Financial Support: US National Institutes of Health through R01 grants that support the VIDUS (R01DA011591) and ACCESS studies (R01DA021525). This research was undertaken, in part, thanks to funding from the Canada Foundation for Innovation, the Canadian Institutes of Health Research, and the American Foundation for AIDS Research (AMFAR). This research was supported by the National Institute on Drug Abuse (NIDA) of the National Institutes of Health (NIH). This research was also supported by the Canada Foundation for Innovation, the Canadian Institutes of Health Research, the Health Research Council of New Zealand, and the New Zealand Ministry of Health.

PEER NETWORKS, MARRITAL SATISFACTION AND NONMEDICAL USE OF PRESCRIPTION DRUGS AMONG RESERVE SOLDIERS AND PARTNERS.

Sarah Cercone Heavey9, D Lynn Homish10, Julia Devonish11, Erin M Anderson Goodell12, Gregory G Homish12; 1Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 2Community Health & Health Behavior, State University of New York at Buffalo, Buffalo, NY

Aims: Adult peer networks can significantly influence drug use behaviors; however not all individuals with substance-using peers are users themselves. The purpose is to understand whether there is an association between the availability of prescription drugs within the peer network and the individual’s lifetime NMUPD, and the role of marital satisfaction in a sample of US Army Reserve/ National Guard Soldiers (USAR/NG) and partners.

Methods: Data are from Operation: SAFETY (Soldiers and Families Excelling Through the Years), an ongoing, longitudinal study of USAR/NG and their partners. Logistic regression models examined associations between lifetime NMUPD and whether the participant has peers from whom s/he could get prescription drugs from, if s/he wanted. Subsequent models examined marital satisfaction as a protective factor, and what effect the couple’s military involvement (husband only, wife only, or both serve) has on NMUPD.

Results: Peer networks with prescription drug access were associated with significantly greater odds of lifetime NMUPD for men and women. For women, there was a significant protective effect with marital satisfaction such that the association between access and use was diminished for women with stronger marriages; there was no protective effect for men. When examining military involvement, men had five times greater odds of lifetime NMUPD if the wife was the soldier. There was no such effect for wives.

Conclusions: Having peer networks with access to prescription drugs is associated with lifetime NMUPD for both husbands and wives; marital satisfaction was protective for wives NMUPD use. Husbands were at greater risk of lifetime NMUPD if the wife was a soldier. Enhanced education on the acceptance of NMUPD should be provided to soldiers and partners. Treatment efforts should consider techniques to strengthen the couple’s relationship when treating NMUPD among women.

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SPECIALIZED COMMUNITY DISEASE MANAGEMENT TO REDUCE SUBSTANCE USE AND HOSPITAL READMISSIONS.

Jaclyn E Chambers, Adam C Brooks, Mary F Morrison, James R McKay, David R Gastfriend; Treatment Research Institute, Philadelphia, PA, 1Lewis Katz School of Medicine at Temple University, Philadelphia, PA, 2Department of Psychiatry, University of Pennsylvania, Philadelphia, PA

Aims: Hospitalized patients with substance use disorders (SUDs) face significant complications in their medical care. Due in large part to recent Medicaid lines for rehospitalizations, hospitals need better disease management strategies to help patients transition from inpatient to post-discharge. This study will test whether a Specialized Community Disease Management (SCDM) program can improve outcomes for patients with co-morbid medical conditions and SUDs.

Methods: Patients at Temple University Hospital who have a co-occurring medical condition and SUD are assigned to either 1) the existing Temple Advantage program – a 90-day, post-discharge program with medical monitoring by workers who have no special SUD training, or 2) the experimental SCDM program – a 90-day, post-discharge program based on Motivational Enhancement Therapy that utilizes specialized addiction care management teams. The teams include a social worker and a peer specialist who provide telephone continuing care, home visits, and increased focus on substance use. Participants are assessed at 3- and 6-months post-discharge for substance use and service utilization outcomes.

Results: We have enrolled 71 participants, with 36 patients in SCDM and 35 in Advantage. Participants are primarily male (59%) and African American (72%), and the mean age is 50. Current retention for the SCDM group shows successful 3- and 6-month follow-up rates of 86% and 80%, vs. rates for the Advantage group of 77% and 60%.

Conclusions: The hospital setting is an opportunity to engage patients with SUDs and recurrent hospitalizations. Interventions beginning in inpatient medical settings are understood. This design can potentially help determine whether interventions for SUDs that are integrated into the hospital setting and continue post-discharge can improve health outcomes, service utilization, and overall healthcare costs.


NEW EPIDEMIOLOGICAL RESEARCH ON ‘SCHOOL BONDING’ AND DRUG INVOLVEMENT.

Madhur Chandra; Epidemiology and Biostatistics, Michigan State University, East Lansing, MI

Aims: Conceptual models for research at the intersection of public health and public education include a focus upon constructs such as ‘school attachment’ and ‘bonding to schools as institutions’ in efforts to predict youthful drug involvement. An alternative construct of ‘affiliation with drug-using peers’ often is specified in competition with these school attachment or bonding constructs.

In this research project, an affiliation with peers who drink alcohol at the start of secondary schooling is investigated as a potential determinant of the longitudinal latent growth trajectory of school bonding. Via this research approach, the affiliation with peer drinkers early in secondary school is hypothesized as a potential determinant of the ‘school bonding’ trajectory intercept and slope parameters.

Methods: Data for this 4-wave, 7-year follow-up study come from four schools of a mid-western United States metropolitan school district (1994-97), standardized questionnaires assessed ‘school importance’ (SI) in Grades 9-12 (i.e., a rating of ‘importance for later life of things learned in school), as well as affiliation with peers in Grade 9 who drink alcohol at all ages. Adjusted estimates of peer drinking on LLGM outcomes are derived via Mplus7 software.

Results: While male-female differences held constant, affiliation with peer drinkers in the first year of secondary schooling predicts LLGM intercept values (i.e., baseline propensity to value schooling), but does not predict LLGM slope values (i.e., growth or decline in SI values). In addition, being male predicts LLGM intercept but not slope values.

Conclusions: The main discovery is that early affiliation with peer drinkers in secondary school might exert a generally dampening influence on an adolescent’s initial bonding with school achievement as an important life goal, but this early affiliation does not seem to influence subsequent youth evaluations of the importance of schooling. Extensions of this research will estimate effects of early-onset alcohol use.


FAIR HEARING OUTCOMES FOR PATIENTS RECOMMENDED DISCHARGE FROM METHADONE MAINTENANCE.

Jamie S Chang, Joshua Chiu, Valerie Gruber, James Sorensen; U.C. San Francisco, San Francisco, CA

Aims: California law states that patients in methadone treatment (MT) who are discharged against their will have the right to a fair hearing (FH) to reverse the discharge recommendation. In a retrospective analysis of 73 FH reports from a MT between 2000-2015, the aims of the study were to 1) identify the factors involved in patient discharge from MT, 2) describe the factors involved when FH outcomes weighed in favor of the clinic, and 3) describe the factors involved when FH outcomes weighed in favor of the patient.

Methods: We transferred the files, de-identified, and analyzed the program’s 73 FH reports from 2000-2015. Each report contained a summary of the FH findings, conclusions, and recommendations. First, fair hearing reports were uploaded to Atlas.TI. Two researchers independently reviewed the reports, developed an initial code list, and then coded all of the reports. Through successive iterations of coding and analyzing, the reports were organized into data-driven thematic categories. Data queries were generated to analyze the data thematically.

Results: Of the 73 FH meetings, 52 cases (71%) ruled in favor of the clinic. The client was present at the FH meeting in 31/52 cases (60%) in favor of the clinic and 18/21 cases (86%) in favor of the client. The reasons for discharge were 1) suspected diversion or “double dosing” (outcome: 20/52 clinic favored; 11/21 patient favored), 2) clinic policy violations (e.g., interpersonal, behavioral) (14/52 clinic favored; 3/21 patient favored), 3) repeat unexcused absences (11/52 clinic favored; 5/21 patient favored), and 4) co-occurring substance use (7/52 clinic favored; 2/31 patient favored).

Conclusions: The reasons for recommended discharge from the methadone program were suspected diversion, “double dosing”, unexcused absences, other clinic policy violations (e.g. loitering, conflicts with staff or other clients), and co-occurring substance use. FHs were more likely to rule in the patient’s favor when patients were present.


CAUSES OF DEATH AND EXPECTED YEARS OF LIFE LOST AMONG OPIOID-DEPENDENT INDIVIDUALS USING AGONIST THERAPY IN THE U.S. AND TAIWAN.

Kun-Chia Chang, Andrew Saxøn, George E Woody, Jung-Der Wang, Yih-Ing Hser; 1General Psychiatry, Jiaonan Psychiatric Center, Ministry of Health & Welfare, Tainan, Taiwan, 2Tainan, Taiwan, 3Department of Psychiatry & Behavioral Sciences, UCLA, Los Angeles, CA, 4Psychiatry, University of Pennsylvania, Philadelphia, PA, 5Veterans Affairs Puget Sound Health Care System, USA, Seatle, WA, 6Public Health, National Cheng Kung University, Taiwan, TAINAN, Taiwan

Aims: Opioid addiction is associated with substantial mortality, which is decreased but not eliminated by Opioid Agonist Therapy (OAT). This study compared the cause-specific mortality ratios (SMRs) and expected years of life lost (EYLL) between two different regions: US and Taiwan.

Methods: Survival data through 2014 came from two cohorts: 1) the U.S. (START) study was a randomized controlled trial of 1,267 opioid dependent participants between 2006 and 2009; 2) an analysis of 983 patients entering OAT in Taiwan since the 2006 implementation of OAT. A Kaplan-Meier estimation was extrapolated for 70 years to obtain the life expectancy using a semi-parametric method. EYLL for both cohorts were estimated by subtracting their life expectancies from the age- and gender- matched referents of the general population. SMRs were calculated and compared with each national cohort to demonstrate the real world picture.

Results: Compared with each age- and gender- matched referent, the EYLLs and the SMRs were higher in the Taiwanese cohort: START (7.7 years; 3.2); Taiwan (16.4 years; 7.8). Half of decedents among both cohorts were due to unnatural causes; overdose deaths dominated that of START sample, suicide in OAT.

Conclusions: Given differences in social contexts and the disparity of cause-specific mortality between these two cohorts, health policies toward opioid dependence and its treatment should be developed and implemented according to the need of each region.

Financial Support: START study funding was provided by the National Institute on Drug Abuse (NIDA) through the Clinical Trials Network (CTN). Funding was also provided by NIDA through grant number P30DA016383. Taiwan OAT study was supported by grants DOH 12-050 and DOH98-NNB-1036 from the Taiwan Department of Health.
MICROSTRUCTURAL BRAIN DEVELOPMENT IN INFANTS WITH PRENATAL STIMULANT EXPOSURE DURING FIRST THREE MONTHS OF AGE.

Linda Chang1, Jon Skrastins2, Eric Cunningham3, Caroline Jiäng4, Daniel Aicaita4, Robyn Yamakawa4, Sara Hayama4, Thomas Ernst1; 1University of Hawaii, John A. Burns School of Medicine, Honolulu, HI, 2Johns Hopkins Medicine, Baltimore, MD, 3Norwegian University Science and Technology, Trondheim, Norway.

Aims: Stimulants, such as tobacco (TOB) and methamphetamine (METH), use by pregnant women may lead to abnormal brain development in their offspring, and is associated with macroscopic brain anomalies. The aim is to evaluate whether development of microstructural brain structures are abnormal in infants with prenatal TOB or METH+TOB exposure.

Methods: 139 healthy infants ([71 unexposed to drugs; 68 stimulant-exposed (32 TOB, 36 METH+TOB)]) were evaluated with Amiel-Tison neurodevelopmental assessment, and completed up to three diffusion tensor imaging (DTI) scans prior to 3 months old. DTI was analyzed with an automated atlas-based technique with large deformation diffeomorphic metric mapping in MRGBio.

Results: Mothers who used TOB or METH+TOB during pregnancy had lower education level (p=0.0001) and lower socioeconomic status (p=0.0001) compared to the non-user mothers. TOB mothers smoked 3,643±341 cigarettes, but METH+TOB mothers smoked 271±407 cigarettes in addition to 96±18.9 grams of METH, primarily during the first two trimesters. Despite similar neuropsychological assessments, in the superior corona radiata, compared to unexposed infants, the stimulant-exposed infants showed lower fractional anisotropy (FA) and higher diffusivity, primarily in the boys (Group×Age×Sex-p=0.001-0.0007). Similar patterns of lower FA and higher diffusivity in male infants with stimulant exposure (Group×Age×Sex-p=0.01-0.008) were observed in the anterior and posterior corona radiatae.

Conclusions: The slower age-related decline of brain diffusion and slower age-dependent increases of FA in the corona radiata suggest slower brain development in stimulant-exposed infants, especially in the boys. These findings are consistent with lower glial metabolites seen in young children with prenatal TOB-exposure and reduced myelin in the optic nerves of rats treated with METH or nicotine prenatally.

HIGH PREVALENCE OF MAJOR DEPRESSION AMONG TREATMENT-SEEKING KETAMINE-DEPENDENT PATIENTS.

Lian-Yu Chen1, Ke Xu2, Chih-Ken Chen1, Ming-Chi Huang1; 1General Psychiatry, Taipei City Psychiatric Center, Taipei City Hospital, Songde Branch, Taipei, Taiwan, 2Yale School of Medicine, New Haven, CT, 3Taipei City Psychiatric Center, Taipei, Taiwan, 4Department of Psychiatry, Chang Gung Memorial Hospital, Keelung, Taiwan.

Aims: To examine the socio-demographics, psychopathology, and ketamine use patterns of treatment-seeking ketamine-dependent patients in Taiwan.

Methods: A total of 74 treatment-seeking ketamine dependent patients (mean age: 30.2±5.7 y/o) from Taipei City Psychiatric Center were recruited. Ketamine use was assessed using Time-Line Follow-Back method. Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI) and Diagnostic Interview for Genetic Studies were used to evaluate their psychopathology and Visual Analogue Scale (VAS) used for craving. Ketamine use amount and frequency were also investigated. We further dichotomized these patients into depressed and non-depressed group and compared their socio-demographics, psychopathology and ketamine use patterns. Pearson correlation was used to examine the association between craving and depression severity.

Results: The average ketamine dose in our patients was 4.5 g/day while the duration of ketamine use was 7.5±4.3 years. 59.5% of them reported moderate to severe depression (BDI >19) and 42.9% had a previous diagnosis of major depressive disorder (MDD). We found a positive correlation between depression severity and ketamine use amount (r=0.46, P<0.05). There was no association between craving and ketamine use frequency (r=-0.19, P=0.05) or maximum amount (r=-0.19, P=0.04) and a greater craving scores (P<0.006). We also found a strong correlation between craving and depression severity (r=0.46, P<0.05). However, there was no association between craving scores and ketamine use frequency (r=-0.19, P>0.05) or maximum amount (r=-0.19, P>0.05).

Conclusions: We found a high prevalence of depression in treatment-seeking ketamine-dependent patients and craving was associated with depression severity, not with ketamine use patterns. As craving was the major relapse risk factor for ketamine dependence, our findings highlight the significance of treating comorbid depression among ketamine-dependent patients.

EXTENDED-RELEASE VS. ORAL NALTREXONE FOR ALCOHOL DEPENDENCE TREATMENT IN PRIMARY CARE.

Jenny Chen1, Ryan D McDonald1, Rita Ooi1, Shadie Wong2, Mara Flannery3, Babak Toghi1, Andrea Kermack1, John Rotsen1, Marc Gourevitch1, Joshua D Lee1; 1Population Health, New York University, New York, NY, 2Psychiatry, New York University, New York, NY.

Aims: To compare the treatment- and cost-effectiveness of extended-release naltrexone (XR-NTX) versus oral naltrexone (O-NTX) among those with alcohol use disorder, in a primary care setting.

Methods: This study is a randomized, open-label, comparative effectiveness trial evaluating 24 weeks of XR-NTX vs. O-NTX as alcohol use disorder treatment in primary care at a public hospital in New York City. N=234 adults (>18yrs) with a DSM-V diagnosis of alcohol use disorder and no contraindications to naltrexone were randomized to O-NTX (50mg/day) vs. XR-NTX (380mg/month). Medical Management visits occur biweekly (weeks 1-8), then monthly. Major research assessments occur at baseline, weeks 12, 24, 48. The primary outcome is a dichotomous Good Clinical Outcome, defined by abstinence or moderate drinking and ≥2 days of heavy drinking per month during weeks 5-24.

Financial Support: NIH, NIAAA; R01AA020836-01A

STASTICAL ASSESSMENT OF ABUSE-DETERRENT OPIOIDS.

Ling Chen; FDA/CDER, Silver Spring, MD.

Aims: In April of 2015, FDA finalized the FDA Guidance for Industry: Abuse-Deterrent Opioids – Evaluation and Labeling. In the Statistical Analysis section under the section of Clinical Abuse Potential Studies, the Guidance specifies the unknown abuse-deterent margin δ in the primary hypothesis for the comparison of means between crushed, chewed, or otherwise modified test drug (T) and positive control (C) on Drug Liking VAS (bipolar scale), that is, δ=50 (μC-50), where μC is the mean of C, and 0<δ<1. The actual value of δ is related to μC. Hence, it may vary according to abuse potential measures and the route of drug administration. For the responder analysis, the Guidance recommends to define a responder as a subject who had at least 50% reduction of, in Emax for T relative to C, and also define the test margin DR%=50% in the analysis of median percent reduction. Since the Guidance published, questions have arisen on how to perform the primary and secondary analysis with an unknown δ involved in the primary hypothesis, and in the definition of a responder as well as DR% in the analysis of the median percent reduction. In this presentation, I will give details on how to perform these analyses, and provide a closed testing procedure for obtaining possible better claim than the pre-specified one for the drug label.

Conclusions: The recommended statistical methodologies in the 2015 FDA Guidance are applicable, and the results from the statistical analyses can contribute to an informative drug label.

Financial Support: N/A

High Prevalence of Major Depression Among Treatment-Seeking Ketamine-Dependent Patients. L. Chen et al., 101

Extended-Release vs. Oral Naltrexone for Alcohol Dependence Treatment in Primary Care. J. Chen et al., 102

Statistical Assessment of Abuse-Deterrent Opioids. L. Chen, 103
SMARTPHONE ENHANCED BEHAVIORAL ACTIVATION TREATMENT FOR STANCE SUBSTANCE USE AND DEPRESSION.

Yun Chent, Joseph Anthony DeLeo, Laura Matalemen, Anne Collins McLaughlin, Antonio Petrouza, Elizabeth Jones, Stacey B Daughters. 1Department of Psychology, North Carolina State University, Raleigh, NC; 2Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill, Chapel Hill, NC.

Aims: The Life Enhancement Treatment for Substance Use (LETS ACT) is a brief behavioral activation treatment for comorbid substance use and depression that has demonstrated effectiveness in improving environmental reward, depressive symptoms and rates of post treatment relapse. We developed a smartphone enhanced LETS ACT to increase the accessibility and quality of treatment engagement outside of clinician administered sessions.

Methods: In study 1, 37 substance users (8% female; 8% Caucasian/AAN) entering inpatient treatment received standard LETS ACT clinician administered sessions. Participants were randomized to also receive either a smartphone enhanced LETS ACT web-based homework (n=21), or the standard paper based LETS ACT homework (n=16). In study 2, a mock smartphone wire-frame was developed and qualitative data was collect from substance users (n=6) in inpatient treatment.

Results: Study 1 data indicated high feasibility and acceptability of the web-based application with high rates of treatment engagement in the experimental group. Further, treatment engagement was associated with -1 month post treatment abstention among experimental participants, but not control participants. In study 2, user experience data informed application functions that need further iteration, such as simplicity in user interface, timely reminders, and effective gamification strategies.

Conclusions: With a few limitations, preliminary studies demonstrated the feasibility and acceptability of smartphone technology in extending the accessibility and quality of treatment engagement outside of clinician administered sessions. These data informed the development of a highly-functional smartphone application for LETS ACT.

Financial Support: R01 DA026424

MALE-FEMALE DIFFERENCES OF ANTECEDENT CANNABIS USE AMONG NEWLY INCIDENT YOUNG ALCOHOL DRINKERS: DOES AGE MATTER?

Hui G Cheng, Catalina Lopez-Quijano, James C. Anthony; 1Epidemiology and Biostatistics, Michigan State University, East Lansing, MI, 2Michigan State University, East Lansing, MI.

Aims: We study cannabis use that predates onset of drinking, and estimate sex-, age-, and cohort-specific proportions of newly incident 12-to-23-year-old drinkers who have a prior history of cannabis use. Three questions are framed: (1) Is this proportion lower among ‘law-abiding’ newly incident drinkers who delay their first drink to age 21 vs. those who drink before age 21? (2) Will the proportion increase by age-related monotonic increase? (3) Will a male excess in this proportion emerge in mid-adolescence, before age 21?

Methods: The 2002-2013 US National Surveys on Drug Use and Health identified 32,878 newly incident drinkers via confidential standardized computer-assisted self-interviews, and assessed alcohol and cannabis onset timing. Newly incident drinkers are those with first drink in the 12 months before assessment. Analysis- weighted proportions and delta method variances are derived, with meta-analysis summaries.

Results: Looking across age strata of newly incident drinkers, we found monotonically rising age-specific cannabis history proportions across adolescence, with a peak estimate seen at age 17 years (Males: 26%; 95% CI=24%, 29%; Females: 17%; 95% CI=15%, 19%). A male excess in antecedent cannabis use emerges at age 14 and persists until the legal drinking age at 21. Therefore, males and females have similar proportions. Evaluated using an epidemiological moutoscope view, individual cohorts show a generally congruent pattern, with starting age held constant.

Conclusions: The observed proportion shows monotonic increase to age 17, running congruent with age-specific cannabis incidence rates generally, then drops, suggesting that any increase in the proportion after age 18 must be driven largely by greater persistence of cannabis use among established cannabis users. Therefore, we expect to find different latent classes of newly incident drinkers before and after age 17. The observed male-female differences suggest age-related variation in underlying mechanisms.

Financial Support: NIDA T32 DA021129 & K05DA015799; Michigan State University.

CHANGES IN NONMEDICAL USE OF OXYCONTIN AFTER REFORMULATION WITH ABUSE DETERRENT PROPERTIES.

Howard Chilcoat, Paul Coplan, Nelson Sessler, Venkatesh Harikrishnan; Risk Management and Epidemiology, Purdue Pharma, Stamford, CT.

Aims: To estimate trends in nonmedical use (NMU) of OxyContin before and after reformulation with abuse deterrent properties in Aug 2010, using data from the National Survey on Drug Use and Health (NSDUH). Past-year initiation and past month NMU were estimated adjusted for population and prescriptions of 1) OxyContin and 2) extended-release (ER) oxycodone, including generic versions of OxyContin, which comprised 18% of ER oxycodone prescriptions prior-reformulation in 2009 but <1% post-reformulation.

Methods: The NSDUH uses a complex design to assess drug use from a sample of approximately 60,000 individuals age 12+ each year in the US. Respondents are shown images of brand OxyContin and queried about NMU in past year and past month. IMS National Prescription Audit (NPA) data was used as a measure of total prescriptions dispensed from retail, long-term care, and mail-order sources. Changes in rates were estimated from the pre-reformulation period (2009) to each year post-reformulation (2011-2014) with 2010 as a transition.

Results: Changes in OxyContin NMU varied by type of adjustment. Past-year initiation declined from the year prior (2009) to each year post-reformulation (2011-2014) with 2010 as a transition. Rates in 2012-2014 were estimated adjusted for population -15%, -37%, -26%, and -49%, respectively) and OxyContin prescription-adjusted rates (-14%, -36%) but changes were small for ER oxycodone-adjusted rates (-2%, -11%, -8%, -23%). Past-month NMU generally declined adjusted for population (-15%, -4%, -15%, -30%) and for OxyContin prescriptions (-14%, -19%, 16%, -13%) but generally increased when adjusted for ER oxycodone prescriptions (6%, -1%, 41%, 6%).

Conclusions: The magnitude of change in OxyContin NMU varied by adjustment. Because the NSDUH does not explicitly query about NMU of generic ER oxycodone in addition to brand OxyContin, declines observed in population- and OxyContin prescription-adjusted rates are likely more valid than estimates adjusted by ER oxycodone prescriptions.

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WHEN BIGGER ISN’T BETTER: WIDESPREAD BRAIN ACTIVATION DURING ATTEMPTED INHIBITION OF THE RESPONSE TO 6 SEC COCAINE VIDEO CUES PREDICTS POOR DRUG USE OUTCOME.


Aims: Addicted individuals who can inhibit their response to drug reminder cues may have better clinical outcomes. We hypothesized that cocaine patients’ brain activity during attempted inhibition of their response to brief cocaine videos might predict future drug use outcomes.

Methods: Using BOLD fMRI, we scanned stabilized cocaine inpatients during exposure to a quasi-random alternation of 6 sec (Cocaine and NEUTRAL) videos, with instructions to either “WATCH” or try to reduce (“DOWN”) their response to the cocaine videos. The SPM 8 pipeline was used for pre-planned contrasts (e.g., DOWN vs. NEUTRAL; thresholded t<2) in two outcome subgroups: GOOD (≤ 30% cocaine urines pos/missing across 12 outpt. weeks; n=9); vs. POOR (>90% cocaine urines pos/missing; n=12).

Results: GOOD outcome pts. had a very “quiet” brain with only a few small, localized activations during attempted inhibition. In contrast, POOR outcome pts. evidenced “big”, widespread brain activation — including classical motivational circuitry, and several other regions — even when attempting to inhibit their response to the cocaine videos (DOWN vs. NEUTRAL).

Conclusions: Cocaine patients with a “smaller” response to the brief cocaine videos — consistent with successful inhibition — had GOOD drug use outcomes. The majority of the cohort had a “big”, widespread response to the cocaine cues — suggesting failed inhibition — and POOR outcome. The results suggest that: 1) brain responses to cues predict clinical outcome; 2) cue paradigms may be useful for screening anti-inhibitory interventions, and 3) that cue paradigms can help us identify the “cue-vulnerable” patients who will need brain-targeted inter-ventions to achieve sustained recovery.

REMIFENTANIL VS. FOOD CHOICE UNDER A DEPENDENT SCHEDULE.
Jonathan J Chow, J S Beckmann; Psychology, University of Kentucky, Lexington, Ky
Aims: Drugs of abuse, such as opioids, are a significant public health problem. Research has demonstrated that the presence of a concurrent alternative can reduce the reinforcing effects of a drug of abuse. Herein, we assessed the relative value of remifentanil, a µ-opioid agonist, against a food pellet alternative.
Methods: Male Sprague Dawley rats were initially trained to lever press for food pellets. After lever training, rats were placed on a response chain where the onset of the houselight signaled an orienting response into the magazine, which turned off the houselight and extended the response levers. Rats were then catheterized and trained to lever press for remifentanil (10 µg/kg). Rats were then placed on a dependent schedule or a free choice procedure. Each procedure consisted of 5 blocks, where drug dose increased by block (0, 0.32, 1.0, 3.2, and 10 µg/kg). Each block was accompanied by a distinct tone. Under the free choice procedure, rats could distribute 6 choices across either the drug and food option within 20-minute blocks. Under the dependent schedule drug and food preference was assessed while keeping experience equivalent across each reinforcer (3 drug and 3 food) by randomizing the allocation of reinforcement across options within each block. Finally, the effect of food restriction and drug-associated cues on remifentanil choice was tested.
Results: Nonlinear mixed-effects modeling was performed on the percent remifentanil choice made across block. While there were individual differences in the relative preference for drug, the results demonstrate that remifentanil preference increased with dose. Food restriction reduced the relative value of drug, shifting choice right. By removing the drug-associated cues the maximum value of remifentanil decreased, shifting choice down vertically. Finally, removing the orienting response increased the relative value of drug, shifting choice left.
Conclusions: Collectively, the results indicate that remifentanil value is relative. Future use of choice procedures will help to isolate the reinforcing effects of drugs of abuse.
Financial Support: NIH R00 DA033373 and T32 DA016176

THE COMPUTER-BASED DRUG AND ALCOHOL TRAINING ASSESSMENT IN KENYA.
Veronic Clair1,2, Victoria Mutiso3, Abednego Musau3, Erica Frank1, David Ndetei2; 1University of British Columbia, Vancouver, BC, Canada, 2Urban Health Research Initiative, British Columbia Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada, 3Africa Mental Health Foundation, Nairobi, Kenya.
Aims: NextGenU.org, the Annenberg Physician Training Program in Addiction Medicine (APTAPM), and Africa Mental Health Foundation (AMHF) assessed Nairobi, Kenya with this free coursework.

BUPRENORPHINE DURING PREGNANCY: CLEARANCE AND FETAL EXPOSURE.
Jessica L Coker1, Cody McLeod1, Sreedharan L Narayanan1, Thomas David2, James Ritchie2, Michael J Mancino1, Zachary Stowe1; 1Psychiatry, University of Arkansas for Medical Sciences, Little Rock, AR, 2Castle Medical, Smyrna, GA, 3Emory University, Atlanta, GA
Aims: Previous studies have shown that BUP crosses the placenta, though pharmacokinetic data in pregnancy is limited. The current study examines the clearance of BUP during pregnancy to quantify the impact, if any, of gestational physiology on serum [BUP].
Methods: Pregnant women in a BUP maintenance program were enrolled in the study. Study visits during pregnancy included collection of current BUP dose, medication/exposure tracking, urine and blood samples. At delivery, maternal blood and umbilical cord blood samples were collected. Assays for maternal plasma and cord blood concentrations of BUP and norbuprenorphine were conducted using LC/MS.
Results: 13 subjects have completed this study with a total of 45 maternal samples. 7 women increased their daily dose of BUP over pregnancy with average BUP dose rising from 7.5 mg per day in 1st trimester, to 11.2 mg in the 2nd trimester and 15.3 mg in 3rd trimester. Initial inspection of the individual clearance plots indicated a pattern of increasing clearance from early gestation – peaking between 20-26 wks, and then noticeably trending back towards baseline. 10 of the women had available delivery and neonatal records. 8 neonates were not diagnosed with NAS after delivery. 2 neonates with NAS were treated with methadone.
Conclusions: Preliminary analyses indicate that BUP clearance changes across pregnancy with a high degree of individual variability. These findings suggest that the current recommended strategy of dose titration of BUP dose during this window to prevent additional cravings, potential for relapse and withdrawal symptoms. In contrast, the relative decrease in clearance in the 3rd trimester suggests dose reductions may be feasible and potentially improve neonatal outcomes. Improving our understanding of the gestational timing of such changes has direct clinical import in the management of opioid dependent pregnant women.
Financial Support: Drug Abuse Treatment Systems grant from UAMS NIDA T32 Translational Research Grant
TRAJECTORY OF MENTAL HEALTH AMONG LOW-INCOME SMOKERS ACROSS PREGNANCY AND POSTPARTUM.
Victoria H Coleman-Cowger1, Bartose Koszowski1, Mishka Terplan2; 1Health & Analytics, Battelle, Baltimore, MD, 2Behavioral Health System, Baltimore, MD
Aims: The purpose of this study is to examine the trajectory of mood and stress among low-income cigarette smokers across pregnancy through six months postpartum.
Methods: The sample of 87 pregnant smokers was drawn from women attending their first prenatal visit at a public obstetrics clinic in 2013. Mental health measures (including the PSS, internalizing and externalizing disorder screeners, and sources of stress screener) were collected each trimester and at 6 weeks, and 6 months postpartum. Scale scores were averaged and compared across each of the six time points, with significance determined at p<.05. Scale ranges are as follows: EPDS 0-30; PSS 0-40; IDS-sr 0-6; EDScr 0-7; SSScr 0-8.
Results: The sample was predominately African-American (78%) and never married (74%), with a mean age of 27. At intake, participants reported smoking 66 of the past 90 days and 11 times per day (TPD). Pregnant smokers reported relatively stable mental health over time. Stress and depression levels, as well as internalizing and externalizing scale scores, were moderate throughout pregnancy and postpartum. Stress was significantly higher than the general population at each time point. There was a decrease in sources of stress (1.6 to 1.1), depressive symptoms (9.7 to 7.2), and perceived stress (17.8 to 14.7) from the third trimester of pregnancy to 6 weeks postpartum, though these differences did not reach significance. Mental health did not vary significantly by how often or how much a woman reported smoking.
Conclusions: Although pregnant women who smoke are more likely to report stress and depression than non-smokers, we found no difference in the trajectory of mental health within smokers across pregnancy and postpartum. Furthermore mental health indicators did not differ by smoking quantity and appeared to decrease postpartum, a time usually of increased stress.
Financial Support: Supported by a grant from the National Institute on Drug Abuse (7R3DA032683).

5.4-METHYLEDIOXYPYROVALERONE MAINTAINS DIFFERENTIAL PATTERNS OF RESPONDING IN MALE SPRAGUE-DAWLEY RATS.
Gregory C Collin1, Brenda M Gannon1, Kenner Rice1; 1Pharmacology, University of Texas Health Science Center at San Antonio, San Antonio, TX, 2South Texas Veterans Health Care System, San Antonio, TX, 3Chemical Biology Research Branch, NIDA/NIAAA, Bethesda, MD
Aims: To characterize the reinforcing effects of MDPV relative to those of cocaine, a drug of abuse with a similar mechanism of action.
Methods: 32 male Sprague-Dawley rats were trained to self-administer 0.032 mg/kg MDPV under various fixed ratio (FR) and progressive ratio (PR) schedules of reinforcement.
Results: When available under an FR1, a rapid acquisition of responding for MDPV was observed in 28 of 32 rats with most rats taking ~35 infusions by the end of the 10 day acquisition period. Upon increasing the FR to 5, two distinct patterns of responding emerged, with 15 of the 32 rats taking ~35 infusions of 0.032 mg/kg MDPV per session, whereas the remaining 17 rats began taking ~85 infusions per session. These differential levels of responding were observed over a range of MDPV doses (0.0032-0.32 mg/kg), and regardless of whether responding was reinforced under a fixed or progressive ratio schedule. Despite dramatic differences in the rate of MDPV self-administration under simple FR5 schedule, implementing a chained FR4:FR1 schedule resulted in comparable levels of drug intake; however, high-responders made significantly more perseverative responses than low-responders prior to completing the chain. Subsequently, rats were required to track the position of MDPV across a two lever, multiple component FR5 schedule. Although comparable numbers of infusions were generally earned across components, the high-responders made significantly more unreinforced responses on the lever that was historically reinforced with MDPV than low-responding rats.
Conclusions: Together, these findings suggest that MDPV is capable of inducing unusually high levels of unreinforced “drug-seeking” and/or “habitual” responses in a subset of rats, an effect that may underlie compulsive patterns of MDPV use in humans.
Financial Support: Supported by U.S.P.H.S. grant R01DA0093146 (GTC) and the NIDA/NIAAA-IRP (KCCR).

REGULATION OF GENE EXPRESSION OF THE DELTA OPIOID RECEPTOR, CORTICOTROPIN-RELEASING HORMONE, AND CRH-1 RECEPTOR DURING WITHDRAWAL FROM CHRONIC COCAINE.
Krista Lynn Connelly, M Unterwald; Center for Substance Abuse Research, Temple University Lewis Katz School of Medicine, Philadelphia, PA
Aims: This study characterized the time course of expression of DOR, CRH, and CRHR1 mRNA in the hypothalamus and amygdala of the rat during withdrawal from chronic cocaine. Additionally, the ability of the selective delta opioid receptor agonist SNC80 to normalize increases in CRH expression during withdrawal was studied.
Methods: Male Sprague Dawley rats were injected with saline or cocaine (15mg/kg ip) three times per day for 14 days. Brain tissues were collected at varying withdrawal times ranging from 30 minutes to 7 days. A separate cohort of rats was injected with cocaine or saline as above, and received SNC80 (10mg/kg sc) twice before tissue collection at 24 hours withdrawal, DOR, CRH, and CRHR1 mRNA levels were measured by quantitative RT-PCR.
Results: In the hypothalamus, CRH mRNA levels were increased (1.8-fold, p<0.01) after 24 hours withdrawal and this increase was attenuated by SNC80 administration. In the amygdala, CRH mRNA levels were increased (1.6-fold, p<0.01) 30 minutes after the last cocaine injection. CRHR1 mRNA levels in the hypothalamus were decreased throughout the 24 hours, especially at 3 hours post-injection (p<0.01). A similar trend was seen with levels of DOR mRNA. In the amygdala, CRHR1 mRNA levels were unchanged, but DOR mRNA levels were higher 30 minutes (p<0.01) and 3 hours (p<0.05) after the last cocaine injection, before returning to baseline at 24 hours.
Conclusions: These results demonstrate a critical window in which CRH expression is significantly increased during cocaine withdrawal, and suggest that anxiety-related gene expression fluctuates daily during repeated cocaine exposure. SNC80 reversed elevations in CRH expression produced by cocaine withdrawal, indicating that delta opioid receptor agonists may be efficacious in the treatment of cocaine withdrawal-induced anxiety.
Financial Support: Supported by NIH/NIDA T32 DA007237 and R01 DA018326

NOVEL ENVIRONMENT RESPONSE AS A PREDICTOR OF MIDAZOLAM SELF-ADMINISTRATION IN RATS.
James E Cook1, Sally L Huskinson1, Barak W Gunter2, Kevin Freeman1, James K Rowlett1; 1University of Mississippi Medical Center, Jackson, MS, 2Vanderbilt University, Peagram, TN
Aims: Animal self-administration models may be useful in studying factors affecting benzodiazepine (BDZ) abuse. The purpose of this project was threefold: Demonstrate that midazolam (MDZ) functions as a reinforcer in rats, determine a dose-response function, and evaluate a factor that may relate to BDZ abuse. Specifically, determine whether a behavioral phenotype related to differences in cocaine self-administration (i.e., high-responder (HR) and low-responder (LR) rats) would indicate differences in MDZ self-administration.
Methods: 18 food-deprived male albino Sprague-Dawley rats were identified as HRs or LRs based on a novel-environment locomotor activity assessment (each group n = 6). Rats were implanted with chronic i.v. catheters and trained to self-administer 0.3 mg/kg doses of the MDZ on a fixed-ratio 2 schedule in 3-hr sessions. After training, responding for multiple doses (0.10-1.78 mg/kg) of MDZ was assessed .
Results: More responding occurred on the active vs. inactive lever for both groups across multiple doses. Varying the doses of MDZ resulted in an inverted U-shaped dose-response function for both groups. Trends in responding indicate that HR rats tended to respond marginally more than LR rats. Though trends towards differences in MDZ self-administration between HR and LR rats were observed, differences were much less robust when compared to cocaine. Individual differences in responsiveness to a novel environment were not a clear predictor of differences in the reinforcing effectiveness of MDZ. Lastly, this project helped refine a rodent model of BDZ self-administration that may prove useful in studying the effects of environmental and pharmacological factors and behavioral phenotypes related to BDZ use and abuse.
Financial Support: Project supported by NIH grants DA011792 and DA033795.

Financial Support: Supported by a grant from the National Institute on Drug Abuse (7R3DA032683).
CONCLUSIONS: variables (p=.004). Components did not. Using the likelihood ratio test, the model that also included neural
predictive utility over and above two known risk factors for substance use prob-
inhibitory control, respectively. Independent components analysis and logistic
tasks to examine the hemodynamic response to reward anticipation and failed
33 subjects did not (FS-After; N= 1526) or abused at first sex and again thereafter (FS-Both; N= 287). I used weighted logistic and linear regressions to test the hypotheses.
RESULTS: There is a statistically significant difference in number of partners; women in the FS-After group and the FS-Both group averaged 3 more sexual partners than did non-abused women. There is no difference in number of part-
ners between women in the FS-First group and non-abused women. Women in the FS-After and FS-Both groups had approximately 3 times higher odds of ever having anal sex compared to non-abused women. There is no difference in anal sex between FS-First women and non-abused women. Substance use was higher among abused women overall compared to non-abused women. Women in the FS-After group had higher odds of marijuana use (OR= 1.84, P<0.001) and cocaine use (OR=2.01, P<0.01). There are no differences in substance use between women in the FS-First or FS-Both groups compared to non-abused women.
CONCLUSIONS: This study investigates whether consensual first sex is protective against sexual risk behaviors and substance use. Women in the FS-After group consistently report a greater number of risk behaviors and more substance use, which indicates that having consensual first sex is not a protective factor against sexual risk behaviors and substance use among abused women.

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NEURAL ACTIVITY IN CHILDHOOD PREDICTS ADOLESCENT SUBSTANCE USE INITIATION.
Lora M Cope, Joseph Hefferman, Chandra S Sripada, Jillian E Hardee, Robert A Zucker, Mary Heitzeg; University of Michigan, Ann Arbor, MI
AIMS: Substance use at an early age conveys substantial risk for later substance-related problems. One study found that those who began using drugs before age 14 had a lifetime dependence rate that was twice as high as those who started after 21. A better understanding of the early risk factors could result in more timely and effective intervention. The aim of this study was to investi-
gate the predictive utility of neural functioning as a risk factor for early substance use initiation.
METHODS: Subjects were 53 children (16 F) from an ongoing longitudinal func-
tional magnetic resonance imaging study, scanned at a mean age of 10.5 yrs (SD 1.1). Twenty subjects later initiated substance use (mean age 13.6, SD 1.2; users); 33 subjects did not (control). We used monetary incentive delay and go/no-go tasks to examine the hemodynamic response to reward anticipation and failed inhibitory control, respectively. Independent components analysis and logistic
regression were used to test the hypothesis that brain response patterns would have predictive utility over and above two known risk factors for substance use prob-
lems—externalizing behavior and family history (FH) of substance use disorder (SUD)—in the differentiation of users and controls.
RESULTS: Nucleus accumbens activation during reward anticipation significantly predicted group membership (p=0.06), whereas failed inhibitory control compo-
nents did not. Using the likelihood ratio test, the model that also included neural data was significantly better than the model that had only externalizing and FH
variables (p=0.004).
CONCLUSIONS: Heightened reward responsivity in the nucleus accumbens may predispose individuals to early substance use, beyond the risk conveyed by other
known factors. In contrast, failed inhibitory control appears to be less influential at this age. Future studies should investigate the possibility that, later in develop-
ment, both reward responsivity and inhibitory control components are predic-
tive of SUD in young adults.
FINANCIAL SUPPORT: R01DA027261, R01AA12217, R01AA07065, T32DA007267, T32AA07477, T32DA007268, UL1TR000433

OPIOID MODULATION OF CANNABIS-INDUCED ANALGESIA AND SUBJECTIVE EFFECTS IN CANNABIS SMOKERS.
Ziva D Cooper, Sandra D Comer, Margaret Haney; Psychiatry, Columbia University and NYU, New York, NY
AIMS: Preclinically, opioid agonists enhance cannabinoid effects, including ant-
inoception. Clinically, patients with pain report greater pain relief when can-
nabis is used with opioids. This double-blind, placebo-controlled, within-subject study assessed opioid modulation of cannabis-induced analgesia by investigating effects of an opioid agonist and antagonist on cannabis’ effects.
METHODS: Over 8 sessions, the effects of naloxone (NTX; 25 mg, PO) and oxycodone (OXY; 2.5 & 5.0 mg, PO) on cannabis-induced analgesia and sub-
jective ratings were assessed in healthy cannabis smokers. Placebo (PBO), NTX or OXY capsules were administered 45 min before inactive (0.0% THC) or active
(5.6% THC) cannabis was smoked. Analgesia was assessed using the Cold
Pressor Test (CPT); participants immersed their hand in cold water (4°C) and
times to report pain (pain threshold) and withdraw the hand from the pain
tolerance) were recorded. Subjective drug effect ratings were measured using visual analag scales.
RESULTS: Fifteen volunteers (9M, 6F) completed this study. Active cannabis, 2.5 and 5.0 mg OXY alone increased pain tolerance compared to PBO (p < 0.05); 5.0 mg OXY increased pain threshold (p<0.05). 2.5 mg OXY increased active cannabis’ effects on pain threshold and tolerance relative to active cannabis
alone (p ≤ 0.05); 5.0 mg OXY also increased effects of cannabis on pain toler-
ance (p < 0.05). NTX alone had no effect on these measures nor did it alter cannabis’ effects. Active cannabis increased subjective ratings of ‘High’, cannabis
strength, and positive drug effects relative to inactive cannabis (p < 0.001). OXY
(2.5 & 5.0 mg) alone did not affect subjective ratings but NTX alone produced
modest increases in ratings of ‘High’ (p ≤ 0.05) relative to PBO. NTX and OXY
(2.5 & 5.0 mg) did not alter cannabis-induced subjective effects.
CONCLUSIONS: Low doses of opioid enhance cannabis analgesia without increas-
ing its positive subjective effects. These findings suggest the potential therapeutic
use of opioid-cannabinoid combinations for the treatment of pain.
FINANCIAL SUPPORT: Research supported by NIDA DA09236, DA19239, DA02775

COMPARISON OF BRIEF VERSUS EXTENDED FEEDBACK IN AN ONLINE INTERVENTION FOR CANNABIS USERS: A RANDOMISED CONTROLLED TRIAL.
Jan Copeland1, Sally Rooke1, Lisa Gibson2; 1Nil, Sydney, NSW, Australia, 2National Cannabis Prevention and Information Centre, University of NSW, Sydney, NSW, Australia
AIMS: The current study was a randomised controlled trial aimed at testing the effectiveness of Grassemnt, a short online intervention for cannabis users that provides individualised feedback from questions surrounding their use and moti-
vations for using. Methods: 287 participants who had reported at least one symptom of cannabis abuse or dependence were recruited using both online and offline advertising
methods. All participants completed the same intervention; however the feed-
back received was randomised with either brief or extended feedback.
RESULTS: Of the n=194 participants that completed the one-month follow-up; Wilcoxon analyses showed a significant decrease in past-month quantities of
leisure use (P<0.01), a decrease in the number of cannabis abuse symptoms
(P<0.01) and lower scores on a severity of dependence scale (P<0.02) for the brief
feedback condition. The extended feedback group showed similar significant
 differences except for scores on a severity of dependence scale (P<0.09). A negative binomial regression showed no significant interaction between experimental
and post-month cannabis use (P<0.97), cannabis abuse symptoms (P<0.87),
and scores on a severity of dependence scale (P<0.56).
CONCLUSIONS: This study supports the use of brief online interventions and
findings suggest that Grassemnt can reduce cannabis use and related harms, however no additional benefit was found with extended feedback when com-
pared to brief feedback.
FINANCIAL SUPPORT: The Australian Government funding of the National Cannabis Prevention and Information Centre.
AN EXPLORATORY FACTOR ANALYSIS OF A BRIEF SELF-REPORT SCALE TO DETECT NEUROCOGNITIVE IMPAIRMENT AMONG MMT PATIENTS.

Michael Copenhaver1,2, Roman Shrestha3,4, F.L. Altece1,2; 1Allied Health Sciences, University of Connecticut, Storrs, CT, 2Center for Health, Intervention, and Prevention, University of Connecticut, Storrs, CT, 3Community Medicine & Health Care, University of Connecticut Health Center, Farmington, CT, 4Department of Medicine, Yale University, New Haven, CT

Aims: There is growing evidence that people who use drugs are characterized by neurocognitive impairment (NCI). Though a number of diagnostic tools are designed to measure NCI, many of them are complex and time-consuming. Recent studies have stressed the importance of rapid self-report screening tools to detect NCI. The Neuropsychological Impairment Scale (NIS) is a self-report measure that was originally designed to assess NCI among clinical (neuropsychiatric) patients and non-clinical (healthy adult) patients. We conducted an exploratory factor analysis to examine the factor structure of the original NIS after administering it to a sample of MMT patients and then optimized the scale for use within this treatment context.

Methods: Stabilized patients on MMT (n=339) in New Haven, CT who report-ed drug- or sex-related HIV risk behaviors in the past 6-months were adminis-tered the full (original) 95-item NIS. An EFA was conducted using principal axis factoring and orthogonal varimax rotation. Reliability was examined using Cronbach’s alpha.

Results: The EFA of the original 95-item NIS resulted in retaining 57 items with a 9-factor solution that explained 54.8% of the overall variance. Factors that were identified ranged from generalized neurocognitive symptoms to more specific forms of impairment (e.g., Learning-related, Memory-related, Language-related) with excellent to good reliability (i.e., F1 α=0.97 to F9 α=0.73).

Conclusions: This EFA suggests the potential utility of using the revised/abbreviated 57-item NIS in the context of drug treatment given its ease of administration, sound psychometric properties, and straightforward interpretation when used among MMT patients. Further research should examine the utility of the revised NIS tool for detecting NCI and informing treatment strategies.

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WHAT’S IN YOUR MEDICINE CABINET?: GENDER DIFFERENCES.

Linda Cotterl, Evan Kwiatkowski, Catherine Woodstock Striley; Epidemiology, University of Florida, Gainesville, FL

Aims: The aim of these analyses is to describe the association between what participants reported to have in their family’s medicine cabinet when a teenager and future opioid dependence in a community sample of drug users.

Methods: Data was analyzed from the Prescription Drug Misuse, Abuse, and Dependence NIDA funded study (PI Dr. Linda Cotterl). Participants aged 18+ were screened for use of prescription sedatives, stimulants and opioids in the past 12 months with the Risk Behavior Assessment and the Substance Abuse Module. As part of the information assessed, interviewers asked: “If we looked in your family’s medicine cabinet when you were about 14, what medicines would we have found?” and “Where you were growing up, did you feel there was a pill for everything?” Participants described up to 12 medications; any who mentioned an opioid were counted as medicine cabinet opioid positive. Lifetime opioid depen-dence was determined via self-report using DSM-IV criteria with dependence vs abuse/no dependence. Chi-square tests and logistic regression described the associations.

Results: Of the 418 respondents, 378 (90%) reported current use of opioids and are included in these analyses. Of them, 9% reported a drug in their family’s medicine cabinet at age 14 that counted as an opioid, 40% met criteria for opioid dependence at some point in their lifetime, and 27% reported that there was a pill for everything. The logistic regression found that controlling for gender there was a strong trend for the association between opioids and content of opioids being recollected in the medicine cabinet; persons who were currently opioid dependent were more likely to feel that growing up there was a pill for everything (OR=1.15; CI 1.02-1.29).

Conclusions: There was a significant association between feeling there was a pill for everything growing up and DSM-IV dependence, but a trend for the contents of the family’s medicine cabinet. A larger study is needed on this important indicator.

Financial Support: National Institute on Drug Abuse R01 DA20791

CHANGE IN OVERDOSE/POISONING DIAGNOSES IN PATIENTS PRESCRIBED OXYCONTIN AFTER IT’S REFORMULATION WITH ABUSE-DETERRENT PROPERTIES.

Paul Coplan1,2, Aditi Khandelwal3,4,5, Rich Sprich1,4, Angela DeVeugle-Geiss1; 1Risk Management and Epidemiology, Purdue Pharma, Stamford, CT, 2Purdue, Stamford, CT

Aims: Background The impact of opioid analogues with abuse deterrent properties (ADPs) on overdose/poisoning diagnoses rates in patients prescribed opioids has not been assessed. Opioid overdose and poisoning events can be accurately measured by ICD-9 codes of opioid poisoning, with a positive predictive value of 84% (Janoff CPDD 2015), but ICD-9 codes do not differentiate between overdoses and poisonings. Aims 1) To assess changes in rates of overdose/poisoning diagnoses among patients prescribed OxyContin after introduction of OxyContin with ADPs in August 2010 in commercially insured and Medicaid populations. 2) To compare changes for OxyContin versus changes for two extended-release (ER) and two immediate-release (IR) opioids to distinguish OxyContin-specific changes from temporal trends for all opioids.

Methods: ICD-9 codes (965.0x) were used to identify overdose/poisoning in MarketScan commercially insured and Medicaid databases covering about 100 million members. Change from 1 year before to 3 years after August 2010 in rates of overdose/poisoning diagnoses per 100 person-years were calculated using Poisson regression.

Results: Overdose/ poisoning diagnoses decreased by 32% among patients prescribed OxyContin (95% CI: -49%, -9%, p<0.01), from 4.9 to 3.4 per 1000 person years of opioid use. It increased by 7% (-19%, 41%) for patients pre-scribed ER morphine, 16% (+31%, 179%) for ER Opana, +7% (-24%, 14%) for IR oxycodone single-entity, and 13% (+20%, 57%) for IR hydromorphone. While changes were consistent among commercial and Medicaid populations, overdose/ poisoning diagnosis rates were 2.7 times higher in the Medicaid population.

Conclusions: Rates of overdose/ poisoning diagnoses among patients prescribed OxyContin decreased significantly after reformulation of OxyContin and did not change significantly for other opioids during the same time frame, suggesting decreases were due to the abuse-deterrent properties of OxyContin.

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PREVALENCE AND CORRELATES OF RECOVERY FROM DRUG DEPENDENCE.
James A Cranford1, Carol Jane Boyd1, Sean McCabe1; 1Health Behavior and Behavioral Science, University of Michigan, Ann Arbor, MI, 2Psychiatry, University of Michigan, Ann Arbor, MI, 3Institute for Research on Women & Gender, University of Michigan, Ann Arbor, MI

Aims: Determine the prevalence and correlates (e.g., stressful life events) of recovery from drug dependence. The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC-II) was used.

Methods: Adults (n=31,772) in the NESARC-II and interviews were conducted with the Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS), which included substance-specific criteria for prior-to-past-year (PPY) and past-year (PY) for 10 drug classes. Among participants meeting criteria for PPY, drug dependence we examined PY recovery status based on DSM diagnostic criteria (N=9,597). We conducted multiple logistic regression was used to estimate the odds of hypertension medication use across groups of marijuana users (past 30d, lifetime, never). Hypertension medication use was defined as use of hypertension medications by self-report at baseline. Multivariable logistic regression was used to assess health conditions/concerns among community members.

Conclusions: Of 615 members with self-reported history of hypertension, 65% of those with PPY drug dependence, the prevalence of PPY recovery was: Abstainer (60.5%), Asymptomatic User (18.8%), Partial Remission (7.1%), and Still DUD (13.5%). Design-based weighted multinomial logistic regression analysis showed that past-year stressful events predicted higher odds of being an asymptomatic user (OR = 1.3, 95% CI = 1.2, 1.4), partial remission (OR = 1.3, 95% CI = 1.2, 1.5), and Still DUD (OR = 1.5, 95% CI = 1.3, 1.7) relative to being an abstainer.

HYPERTENSION MEDICATION USE AMONG PAST 30-DAY MARIJUANA USERS IN A COMMUNITY SAMPLE FROM NORTHEAST FLORIDA.
Hannah Renee Crooke, Linda Cottler, Evan Kwiatkowski, Catherine Woodstock Striley; Epidemiology, University of Florida, Gainesville, FL

Aims: Determine the odds of hypertension medication use for lifetime and past 30d marijuana users compared to never users, among a sample of those with self-reported history of hypertension.

Methods: Data was collected by HealthStreet community health workers (CHWs). HealthStreet, a UF community engagement program, uses the CHW model to assess health conditions/concerns among community members. Among a sub-sample with self-reported history of hypertension, multiple logistic regression was used to estimate the odds of hypertension medication use across groups of marijuana users (past 30d, lifetime, never). Hypertension medication use was elicited by asking participants to “list medications you currently take and what you take them for.” Covariates included insurance and age.

Results: Of 615 members with self-reported history of hypertension, 65% were African American, 53% obese. In the sample, 48% were never marijuana users, 38% were lifetime users, and 14% were past 30-day users. There was no difference in the odds of hypertension medication use between lifetime users compared to never users after controlling for insurance status and age. However, the odds of hypertension medication use were significantly less among past 30d users compared to never users after controlling for insurance status and age (OR 0.59, 95%CI 0.35,0.98).

Conclusions: Odds of hypertension medication use were significantly less among past 30d marijuana users compared to never users. This may suggest a prescribing bias in hypertension medication, non-adherence among past 30d marijuana users, or another factor. This analysis points towards further exploration of factors that contribute to decreased medication use among current marijuana users.

Financial Support: This research was supported by the National Institute on Drug Abuse, National Institutes of Health (grant research no. R01DA036541).

COMPARATIVE ANALYSIS OF TRANSCRIPTOMICS AND PROTEOMICS OF ENVIRONMENTAL ENRICHMENT AND COCAINE.
Elizabeth Crofton, Yafang Zhang, Fanping Kong, Bruce Luxon, Heidi Spratt, Cheryl F Lichi, Thomas A Green; University of Texas Medical Branch, Galveston, TX

Aims: Cocaine is a highly addictive drug but most cocaine users do not become addicted. Understanding variation in susceptibility to addiction is important for discovery of novel therapeutic targets. We previously conducted large-scale transcriptomic and proteomic analyses of cocaine and the protective addition of environmental enrichment with RNA sequencing and high performance liquid chromatography with tandem mass spectrometry, respectively. We hypothesized that comparing these primary analyses would provide a better understanding of the overall molecular effects of cocaine and environmental enrichment and aid in novel therapeutic target identification.

Methods: Male Sprague-Dawley rats (30) were reared in enrichment (group housed with plastic toys changed daily) or isolation (single housed sans toys). After 30 days, rats lever pressed for sucrose pellets then self-administered cocaine (0.5mg/kg) or saline through an indwelling catheter for 2h daily for 14 days. After the final session, rats were decapitated and the right nucleus accumbens was used for protein and the left for RNA. Following primary analysis, a 2D annotation enrichment was conducted using Perseus software and a comparison analysis of Ingenuity Pathways Analysis and Gene Set Enrichment Analysis was conducted.

Results: In the primary analysis, enrichment regulated 683 of 14,309 transcripts and 117 of 1917 proteins and cocaine regulated 106 transcripts and 52 proteins. We found good correspondence between mRNA and protein at the gene set level but little coordinated regulation at the individual target level. Several gene sets were identified in both cocaine and enrichment with a positive relationship between mRNA and protein and also gene sets with an inverse relationship. Enrichment overall produced better correspondence than cocaine.

Conclusions: This secondary analysis of mRNA and protein from the same animals provides a unique examination of the molecular effects of enrichment and cocaine and indicates novel pathways for exploration that were initially overlooked.

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EFFECTS OF MIXED AMPHETAMINE SALTS DOSE AND BELIEF ABOUT DRUG ASIGNMENT ON COGNITIVE PERFORMANCE IN COLLEGE STUDENTS.
Karen Cropsay, Morgan Froelich, Peter Hendricks, Rachel Fargason; University of Alabama at Birmingham, Birmingham, AL

Aims: The purpose of this study was to examine the effect of stimulants on cognitive performance based on pharmacological effect vs. expectation of benefit in healthy college-aged students.

Methods: Following screening, participants (n=39) completed four 2-hour laboratory sessions in which they received mixed amphetamine salts (10 mg Adderall) on two study visits and matched placebo on two visits. On two trials participants were told accurately that they were given stimulant or placebo at the start of each visit, while on the other two trials they were told inaccurately about the medication. Participants were administered the following cognitive battery at each lab visit: WKTAR, Digit Span, COWAT, CVLT-II, CPT-II, Trails A&B, and the Stoop Test. GEE was used to examine the change between the groups on each of the cognitive variables.

Results: Participants (53.8% female, 46.2% White, age: 21.1 years, IQ=11.3, 2) were no better than chance in identifying when they received stimulants (47% agreement; k=0.047, p=0.590). While participants showed some modest improvement in attention, they did not demonstrate significant improvements in short or long-term memory, executive functioning, or word fluency. However, belief in the receipt of stimulants, irrespective of actual medication received, was significantly associated with better performance on several memory subtests of the CVLT.

Conclusions: This study demonstrated that stimulants do not enhance high level cognitive abilities or learning over placebo in healthy controls. Participants who believed they had received stimulants had the best performance although it is not clear if this belief preceded their performance or if better performance was attributed to taking stimulants. Expectancies for improved cognitive performance with stimulants may have more of an effect on performance than use of actual stimulants.

Financial Support: UAB Department of Psychiatry funds.
SELF-REPORTED IMPULSIVITY IS RELATED TO AGE AT FIRST METHAMPHETAMINE USE.

Anita Cievenka,2, Lara Ray1,2; 1Psychology, University of California, Los Angeles, Los Angeles, CA, 2Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA, 3Brain Research Institute, University of California, Los Angeles, Los Angeles, CA

Aims: Methamphetamine (MA) users report higher levels of impulsivity relative to healthy controls, which may result from their substance use. Further, there is some evidence that female stimulant users are more impulsive than male stimulant users. It is uncertain however, whether age at first MA use may be explained by self-reported impulsivity, which could be a risk factor for initiation of MA use. It was hypothesized that in a community sample of MA users, self-reported impulsivity would be negatively related to age at first MA use in females, controlling for total years of MA use at the time of study visit.

Methods: A community sample of MA users was recruited for this study (N=157; 113 males, 44 females). The Barratt Impulsiveness Scale (BIS-11) was used to assess self-reported impulsivity on three different subscales (Motor, Attention, Nonplanning). Age at first MA use served as dependent variables in a series of multiple regression models with BIS-11 subscales, sex, and their interaction as independent variables, controlling for total years of MA use.

Results: While total years of MA use was related to age at first MA use, Attention and Motor impulsivity significantly contributed to age at first MA use when added to the model (Attention: ΔR²=0.05, β=-23, t=-2.69, p=0.008; Motor: ΔR²=0.05, β=-27, t=-3.06, p=0.003). However, sex and its interaction with impulsivity, were not significant predictors of age at first MA use.

Conclusions: Individuals who report higher impulsivity started using MA at an earlier age, which could suggest that personality factors, such as impulsivity levels during adolescence, may be an important marker for the vulnerability of MA use. These findings indicate that prevention efforts may need to be targeted towards individuals who report high levels of Attention and Motor impulsivity, as they may be at greatest risk for earlier initiation of MA use.

PROSOLAR EFFECTS AND NEUROTOXICITY OF
(–)-3,4-METHYLENEDIOXYMETHAMPHETAMINE IN MICE.

Daniel Curry1, Andie Belkoff1, Leonard Howell1, Yerkes National Primate Research Center, Emory University, Atlanta, GA
Aims: (+/-)-3,4-methylenedioxymethamphetamine (MDMA) is an amphetamine derivative that became popular as a recreational drug and therapeutic tool during the 1970’s and early 1980’s. Escalating use led to its prohibition but scientific interest in the drug has persisted due to its unique prosocial effects. Under clinical observation, volunteers report that MDMA increases feelings of closeness towards others, empathy, and gregariousness. There is also evidence of enduring therapeutic effects such as improved interpersonal functioning and significant symptom reduction in PTSD patients. However, serious limitations remain to wider clinical use of MDMA, including its abuse liability and suspected neurotoxicity. There is thus significant impetus to isolate the prosocial mechanisms of MDMA from the neurotoxic and abuse related effects. We investigated the hypothesis that (–)-MDMA may retain the prosocial effects of racemic MDMA but lack neurotoxicity.

Methods: The effects of racemic MDMA and (–)-MDMA on social interaction and locomotor activity were tested in male Swiss Webster mice. The neurotoxicity of MDMA and (–)-MDMA were assessed by measuring gliosis in the striatum 48 hours after treatment and monoamine content in the prefrontal cortex, striatum, and hippocampus two weeks after treatment.

Results: Both racemic MDMA (7.8 mg/kg) and (–)-MDMA (17 mg/kg) significantly increased murine social interaction. However, unlike racemic MDMA, (–)-MDMA did not induce hyperthermia or neuronal markers of toxicity including gliosis or decreased brain dopamine content. Also, unlike racemic MDMA, (–)-MDMA did not increase spontaneous locomotor behavior in mice.

Conclusions: These results indicate that the prosocial effects of MDMA are separable from the neurotoxic and locomotor stimulant effects. (–)-MDMA has prosocial effects similar to racemic MDMA but does not increase locomotor behavior or induce markers of neurotoxicity in mice.

DEVELOPMENT OF A CONCEPTUAL FRAMEWORK REGARDING CONSUMER PERCEPTION, HEALTH, AND USE PATTERNS OF ELECTRONIC CIGARETTES.

Taryn M Dailey, E C McNaughton, Kelly Manser, M Behling, Stephen F Butler; Inflexion, Inc., Newton, MA
Aims: To develop a conceptual framework regarding consumer perception, health, and use patterns of e-cigarettes using group concept mapping.

Methods: Current and former tobacco cigarette consumers, e-cigarette consumers, and experts were recruited to participate in a group concept mapping exercise. Through an Internet survey, a group of participants brainstormed statements. These statements were synthesized into 98 unique statements.

Results: A total of 1,379 statements were generated by 36 participants during brainstorming. These statements were synthesized into 98 unique statements which were sorted and rated by 55 participants. Results from the MDS and hierarchical cluster analysis were reviewed and the eight cluster map was selected as the best conceptual fit for the data. The clusters included in the final concept map were characterized as pertaining to: health benefits, personal health risks, negative public health concerns, regulation/safety considerations, consumer attributes, positive product attributes, new users’ experiences, and neutral statements.

Conclusions: The concept map derived from this evaluation provides a pictorial representation of participants’ thoughts regarding e-cigarettes and was used to establish content validity of a qualitative coding manual for postmarket surveillance of Internet forum data related to e-vapor products.

ALTERED RESTING STATE fMRI RESPONSE IN YOUNG ADULT MARIJUANA USERS AND HEAVY DRINKERS.

Alecsa D Dager1, Shashwath Meda2, Howard Tennen1, Sarah Raskin3, Carol Austad1, Rebecca Wood4, Carolyn Faillah5, Godfrey Pearlson1; 1Radiological Sciences, Johns Hopkins University, Baltimore, MD, 2Neurology, New York University, New York, NY, 3RADARS System, Denver Health, Denver, CO, 4Rocky Mountain Poison and Drug Center, Denver, CO, 5Research, Rocky Mountain Poison and Drug Center, Denver, CO
Aims: Young adults ages 18-22 show the highest rates of alcohol and marijuana (MJ) use, and this may impact brain maturation. Young adult MJ users and heavy drinkers show altered task-related functional magnetic resonance imaging (fMRI) response, yet it is unclear if they may also show aberrant resting state fMRI (rs-fMRI) activity. Most MJ users in this age group also drink heavily, making it difficult to differentiate the effects of MJ. We examined rs-fMRI in young adult MJ/alcohol users, heavy drinkers, and nonusers.

Methods: Participants were 51 18-19-year-olds, who completed 5-min rs-fMRI. Groups were defined based on their previous 6-month substance use: 14 MJ users typically used 28 times/month and had moderate to heavy drinking, 13 heavy drinkers (Alc) had no MJ use and similar drinking as the MJ group, and 24 controls were nonusers. We compared fractional Amplitude of Low Frequency Fluctuations of rs-fMRI response between groups with ANOVA; we explored significant clusters (p < 0.07/4, pc<0.05 whole-brain) with Tukey tests in SPSS.

Results: We observed 5 clusters with group differences. Subcortically, MJ had less signal than controls. In cerebellum, Alc had less signal than others. In left inferior frontal gyrus, Alc had less, but MJ had more response than controls. In left parietal cortex, MJ had more response than others. In right precentral gyrus, controls had less response than others.

Conclusions: This study reveals different resting brain response in young adult MJ users and heavy drinkers, mainly in areas subserving executive function and learning. This may contribute to altered cognition and task-related IMRI response in these individuals. Overall, MJ users showed more increases in signal and drinkers more decreases. Future studies should assess longitudinal changes in resting state activity and connectivity linked to substance use trajectories.


Richard C Dart1, Becki Bucher Bartelson2, Steven G Severtson3, Gabrielle Bau2, Jody L Green4; 1Radiological Sciences, Johns Hopkins University, Baltimore, MD, 2RADARS System, Denver Health, Denver, CO, 3Rocky Mountain Poison and Drug Center, Denver, CO, 4Research, Rocky Mountain Poison and Drug Center, Denver, CO
Aims: To determine if abuse of gabapentin and pregabalin are changing over time and to describe the outcomes of poison center cases involving abuse.

Methods: Data from the Nation Poison Data System from January 2006 to December 2014 were queried for gabapentin and pregabalin product codes and were utilized to determine if the category of Intentional Abuse cases were increasing in the US. The total number of cases of Intentional Abuse where the exposure was to gabapentin, pregabalin or both was computed and divided by the estimated population of the US and scaled per 100,000 population. A Poisson regression model was used to determine the percent change per quarter in the intentional abuse population rates.

Results: Of 4,152 Intentional Abuse cases exposed to gabapentin or pregabalin, 2,279 (54.9%) were male. The median age of 3,907 cases in which age was perceived similarity and rated according to its importance for understanding e-cigarettes. A similarity matrix was generated from these data, from which multidimensional scaling (MDS) and a hierarchical cluster analysis was performed. Participants were recruited via Craigslist in 12 U.S. cities with varying exposure was to gabapentin, pregabalin or both was computed and divided by the estimated population of the US and scaled per 100,000 population. A Poisson regression model was used to determine the percent change per quarter in the intentional abuse population rates.

Results: Of 4,152 Intentional Abuse cases exposed to gabapentin or pregabalin, 2,279 (54.9%) were male. The median age of 3,907 cases in which age was reported was 30 years (IQR: 21-42). Only 1,325 (31.9%) of the exposures involved only a single substance. The rate in first quarter 2006 was 0.0144 per 100,000 population while the rare for quarter 2014 was 0.0618 per 100,000 population a 4.3 fold increase. Using Poisson regression Intentional Abuse population rates increased at a rate of 4.0% (95% CI: 3.6 - 4.3%) per quarter. The medical outcomes were death 18 (0.4%), major effect 254 (6.1%), and moderate effect 1,238 (29.8%) with the balance of minor effects.

Conclusions: Population based rates of intentional gabapentin and pregabalin abuse have increased since 2006. A high proportion of cases had an outcome that was moderate, major, or death. Continued monitoring and increased awareness of these rates is warranted.

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A REVIEW OF RECENT DEVELOPMENTS (2012-15) ON THE USE OF FINANCIAL INCENTIVES WITH PREGNANT SMOKERS.
Daniele Rose Davis1,2, Laura J Solomon3, Stephen Higgins4,5; 1Psychology, University of Vermont; Burlington, VT; 2Psychiatry, University of Vermont; Burlington, VT

Aims: Smoking during pregnancy is a leading preventable cause of poor pregnancy outcomes and immediate and longer-term adverse health outcomes among exposed offspring. Developing more effective smoking-cessation interventions for pregnant women is a public-health priority. We reviewed developments over the past three years (2012-15) on the use of financial incentives for smoking cessation among pregnant women using PubMed, bibliographies of published articles, and input from colleagues.

Conclusions: The search revealed several important developments, with the following three being especially noteworthy. First, the review identified four new randomized controlled trials, three of which further supported the efficacy of this treatment approach. One of the three trials supporting efficacy also included the first econometric showing financial incentives with pregnant smokers to be highly cost-effective. Second, two Cochrane reviews were reported supporting the efficacy of the approach. Lastly, the first effectiveness trial was reported demonstrating that financial incentives increased abstinence rates above control levels when implemented by obstetrical clinic staff in a large urban hospital working with community tobacco interventionists. Overall, there is a growing and compelling body of evidence supporting the efficacy and cost-effectiveness of financial incentives for smoking cessation among pregnant women.

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ROLE OF ACCUMBENS NICOTINIC ACETYLCHOLINE RECEPTORS IN CUE-INDUCED NICOTINE SEEKING AND SYNAPTIC PLASTICITY.
Armani del Franco1,2, Gregory Powell1, Broc Pagni1, Julianna Goenaga1, Michael Scofield1, Cassandra Gipson-Reichardt1; 1Psychology, Arizona State University, Tempe, AZ, 2School of Life Sciences, Arizona State University, Tempe, AZ, 3Neurosciences, Medical University of South Carolina, Charleston, SC

Aims: Addiction to nicotine (NIC) produces long-term changes in brain synaptic physiology that could contribute to relapse vulnerability. Understanding the mechanisms involved is important in identifying novel pharmacotherapies. In the nucleus accumbens core (NAcore), glutamatergic signaling and synaptic plasticity has been shown to be involved in cue-induced nicotine seeking and are modulated by nicotinic acetylcholine receptors (nAChRs). We therefore investigated the effects of two intra-NAcore nAChR antagonists, methyllycaconitine (MLA) or dihydro-beta-erythroidine (DHβE), on cue-induced NIC seeking and relapse-associated synaptic plasticity as measured by changes in dendritic spines on NAcore medium spiny neurons.

Methods: Male Sprague Dawley rats were trained to self-administer NIC (0.02 mg/kg/infusion, paired with a light + tone cue). Rats were then placed into extinction for 14 days. Following intra-NAcore infusion of either MLA (11 nmol), DHβE (84 nmol), or aCSF, rats were placed into cue-induced reinstatement test for 15 min. Rats were then transcardially perfused, and tissue was prepared for morphological analysis.

Results: Both MLA and DHβE inhibited cue-induced NIC seeking compared to vehicle treated animals, as evidenced by a significant reduction in active lever presses for nicotine-paired cues. MLA, but not DHβE, inhibited the rapid, transient increase in spine head diameter compared to vehicle at 15 min.

Conclusions: Our results show that both NAcore nAChRs mediate cue-induced NIC seeking. However, morphological analysis indicates that only MLA inhibits relapse associated synaptic plasticity, suggesting a potential role of o6 nAChRs but not o4β2. The location of these receptors as well as their ability to modulate glutamate transmission and synaptic activity within the NAcore remains unclear, thus future research will explore the impact of acetylcholine signaling on neurotransmission and synaptic plasticity.

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ARE DSM-5 CRITERIA FOR SUD TRANSFERABLE TO FOOD ADDICTION? IRT ANALYSIS FOR ALCOHOL, TOBACCO, CANNABIS, OPIATE AND FOOD ADDICTION IN A CLINICAL SAMPLE.
Cécile Marianne Denis1,2, Marco Aurélio Camargo da Rosa1,2, Fuschia Sere1, C Kervran1, Maud Henry2, B Cherifi1, Marc Auriaombe3, M Fatseas2; 1Univ. Pennsylvania, Philadelphia, PA, 2Addiction Psychiatry, Univ. Bordeaux / CNRS USR 3413, Bordeaux, France, 3Obesity Clinic, CHU de Bordeaux, Bordeaux, France, 4Univ. Rio Grande, Porto Allegre, Brazil

Aims: Some studies showed that DSM-5 criteria for SUD might be transferable to Food Addiction (FA). We aimed to examine criterion severity and discrimination for FA and to compare them with SUD criteria for alcohol, tobacco, cannabis and opiates.

Methods: Patients from addiction and obesity clinics in Bordeaux (France, EU) were assessed with the modified ASI, the Mini International Neuropsychiatric Interview, DSM-5 criteria for SUD and FA criteria based on DSM-5 criteria for SUD. We ran 2-parameter logistic item response theory (IRT) model and ranked criteria by their estimated severity. To quantify the similarity in severity ranking of the criteria across substance and food, we computed Spearman correlations.

Results: 730 consecutive patients were enrolled. 66% males, mean age 41.5 years (SD=6.7). Current use of tobacco (n=423), alcohol (n=422), cannabis (n=372), opiates (n=149) or food-related disorders (n=143). The prevalence of each endorsed criteria varied across substance and food disorders, however the same 3 criteria (using in larger amount, unsuccessful attempt to cut down, and craving) were found among the most prevalent across groups. Discrimination parameters across groups ranged from 0.55 to 9.40, with FA criteria exhibiting the highest discrimination estimates. Severity rankings of the criteria were not identical across substances and food addiction. However, correlations were high between food and tobacco (r=0.92) and food and opiates (r=0.59).

Conclusions: FA criteria, as SUD criteria, have a strong ability to delineate subjects. The correlations between food and other substances (tobacco, opiates) indicate that the criteria have similar patterns of severity. These findings showed that SUD criteria could be applicable to diagnose FA.

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ASSOCIATIONS BETWEEN EDUCATIONAL ATTAINMENT, SMOKING HISTORY, QUIT ATTEMPTS AND INTEREST IN QUITTING.
Rachel Denlinger1, Jennifer W Tickey2, Dorothy Hatuskami3, Eric Donny4; 1University of Pittsburgh, Pittsburgh, PA, 2Brown University, Providence, RI, 3University of Minnesota, Minneapolis, MN

Aims: A recent multisite clinical trial of non-treatment seeking smokers assessed the impact of smoking cigarettes that varied in nicotine content on smoking behavior during a 6-week intervention. For this secondary analysis, we examined whether educational attainment was associated with differences in tobacco use history, interest in quitting and likelihood of making a post-intervention quit attempt.

Methods: T-tests and ANOVA were conducted to compare continuous data while chi-square analyses were used to compare categorical data.

Results: Participants with ≤12 years of education (n=368) vs. those with >12 years of education (n=471) were more likely to be male (62 vs.54%, p<0.05), African American (47 vs 32%, p<0.001), and menthol smokers (64 vs.52%, p<0.01). At baseline, participants with lower educational attainment reported smoking more cigarettes per day (18.4 vs 16.1, p<0.001), began smoking daily at an earlier age (18.1 vs 19.3, p<0.01), were less likely to have ever made a quit attempt (61 vs 78%, p<0.001) and were less interested in quitting in the next 6 months (19 vs 26%, p<0.05) than those with higher educational attainment. Participation in the study increased motivation to quit in both groups (p<0.001) and increased it to a greater extent in the more educated participants (p<0.05 for the interaction). Those with higher educational attainment trended towards a greater number of actual quit attempts after the trial (20 vs 26%, p<0.08).

Conclusions: Data from this trial provide further corroboration that smokers with lower educational attainment are a vulnerable population, reporting smoking initiation at a younger age, greater cigarette exposure, less interest in quitting and fewer quit attempts. A 6-week intervention with very low nicotine cigarettes increased motivation to quit in both lower- and higher-educated participants. Novel, multi-modal public health interventions are needed to help this vulnerable population quit smoking.

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THE TRANSITION TO RECOVERY: KEY PREDICTORS AND HOW THEY RELATE TO AGING.
Michael L. Dennis1, Christy K Scott2, John G Cernansky1, Hans C Breiter3; 1Lighthouse Inst., Chestnut Health Systems, Normal & Chicago, IL; 2Dep. of Psych. and Beh. Sci., Northwestern University School of Medicine, Chicago, IL

Aims: To 1) Identify predictors of transitioning from substance use to abstinence in the community one year later; and 2) Examine how these predictors of the transition are related to age.

Methods: Data are from 678 adults interviewed annually for 17 years post intake to substance use treatment: 93% alcohol, 64% opioids, 36% stimulants, and 36% cannabis. The sample was 62% female and 76% African-American, with a median age of 48. Univariate and multivariate logistic regression were conducted on 49 variables to predict the probability of transitioning from use to abstinence in the community by the end of the next year.

Results: Logistic regression analysis identified 15 variables associated with increasing the probability of transitioning from using to abstinence in the community: Female; years of abstinence; % days abstinence; less than weekly use of any substance, alcohol, or marijuana; and no past year use of opioids, stimulants or tobacco; all clean and sober friends; mod+ level of self-help engagement; mod+ physical health problems; any ER visits; high health care utilization costs; and lower quality of life. Another 5 variables were associated with decreasing the probability: past year substance disorder; past year opioid use disorder; symptoms of withdrawal; high level of craving; and a history of child abuse. Multivariate logistic stepwise regression simplified this to 9 variables: female, % days of abstinence, opioid disorder, no use of marijuana, craving, self-help engagement, cognitive impairment, and child abuse. Age was related to trends in many of these variables, but varied in direction.

Conclusions: Contrary to expectation, aging was not a main effect that explained the transition from using to abstinence a year later. However, aging was associated with multiple factors (particularly health & physical deterioration) that in turn predicted abstinence. Transition to abstinence may be a last resort for some people if they want to live.

Financial Support: NIDA grant DA015523

MONITORING INTERNET POSTINGS FOR MENTIONS OF AN EXTENDED-RELEASE HYDROCODONE FORMULATION WITH ABUSE-DETERRENT PROPERTIES.
Angela DeVeauagh-Geiss1, Howard Chilcoat1, Paul Coplan1, Venkatesh Harikrishnan1, Andrea Carrig Besharar1, Jody L Green2; 1Purdue Pharma LP, Stamford, CT; 2Denver Health RADARS System, Denver, CO

Aims: The first single-entity (SE) extended-release (ER) hydrocodone formulation with abuse deterrent characteristics, Hysingla® ER, was approved by FDA in November 2014 and launched in January 2015. Because of the potential for abuse of opioids it is important to understand the interest of potential abusers. Therefore, internet mentions of Hysingla were examined before (3-4Q2014) and after (1-3Q2015) launch.

Methods: Over 150 million websites (eg, public social media websites, forums, blogs) worldwide, that are using a commercially available web monitoring platform (operated by the RADARS® System Web Monitoring Program). All posts that mentioned Hysingla ER, regardless of content, were identified. Trained coders reviewed posts to characterize salient themes and identify posts related to misuse, abuse, addiction, overdose, death, route of administration, and source of drug acquisition. Addicts, because understanding availability during this time is important for context, monthly prescriptions dispensed were also examined using IMS Xponent data.

Results: The highest number of posts about Hysingla occurred prior to launch, increasing from 70 in 3Q2014 (385 themes) to a peak of 1,295 in 4Q2014 (4,920 themes). After launch, the number of posts was low: 149 posts (319 themes) in 1Q2015, 120 posts (347 themes) in 2Q2015, and 49 posts (140 themes) in 3Q2015. After launch, the most common theme for posts (>90%) was opinion or sharing experience. Few posts mentioned abuse/misuse (3Q2014-1Q2015: 0%; 2Q2015: <1%; 3Q2015: 6.1%) and none mentioned addiction, overdose, death, or route of administration. During this time, dispensed prescriptions increased from approximately 8,000 in 1Q15 to over 25,000 in 3Q2015.

Conclusions: There was a peak in internet discussion after FDA approval in anticipation of the launch, though overall discussion of Hysingla has been low that in turn predicted abstinence or misuse.

Financial Support: Purdue Pharma LP

BORDERLINE PERSONALITY DISORDER AND BRIEF INTERVENTION FOR DRUG USE IN HIV PRIMARY CARE.
Jennifer Derri1, Aline Le2, Deborah S Hasin1, Efrat Aharonovitch1,2; 1Psychiatry, Columbia University Medical Center, New York, NY; 2New York State Psychiatric Institute, New York, NY

Aims: Brief intervention for drug use in health settings is increasingly popular. Substance use disorders (SUD) are often co-morbid with borderline personality disorder (BPD). Among persons living with HIV, patients with SUD and BPD are considered “triply diagnosed.” Because BPD is associated with substance use, medication non-adherence, and poor interpersonnal functioning, the need for intensive intervention appears indicated. Brief intervention may be sufficient and more readily available, yet efficacy has not been studied.

Methods: Data was drawn from a randomized controlled trial (n=190) of a brief intervention for non-injection drug use in HIV primary care. Exploratory factor analysis of responses to the AUDADIS-IV diagnostic module was used to characterize endorsement of BPD. We used mixed-effect modeling to explore differences between patients with and without BPD in number of days of drug use during the study. Differences in treatment retention were assessed using chi-square analysis.

Results: 20 (10.5%) patients met criteria for BPD. An exploratory factor analysis revealed a single diagnostic factor. Patients showed statistically significant reductions in days of use at end of treatment (60 days, p < 0.0001) and end of study (12 months, p < 0.0001). No differences were observed in reduction of days of use between patients with and without BPD. A higher number of endorsed symptoms did not impact the reduction in days of use. Retention during the treatment was high (82.6%), and no significant difference in retention was found between patients with and without BPD.

Conclusions: Our findings indicate that HIV+ individuals with BPD who are engaged in HIV primary care responded as well to brief intervention for drug use as those without BPD. More intensive treatments such as DBT are shown to be efficacious with this population, yet brief and more cost-efficient treatments may be sufficient and should be considered.

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NEURAL EFFECTS OF TREATMENT IN A TRIAL OF BEHAVIORAL THERAPIES AND DISULFIRAM FOR COCAINE DEPENDENCE.
Elise Eva DeVito1, Guanghong Dong2, Hedy Kober1, Jiansong Xu1, Kathleen Carroll1, Marc N Potenza2; 1Psychiatry, Yale University School of Medicine, New Haven, CT; 2Psychology, Zhejiang Normal University, Jinhua, Zhejiang, China

Aims: To investigate how changes in neural activity across treatment for cocaine dependence relate to engagement in treatment components, which purportedly act via distinct mechanisms of action.

Methods: Cocaine-dependent participants (N=35) in a randomized clinical trial received cognitive behavioral therapy (CBT) plus, in a 2x2 design, contingency management (CM) or no-CM, and disulfiram or placebo. Participants performed an EMRI Stroop Task, a measure of cognitive-control (Stroop) before and after the 12-week treatment. Analyses assessed changes in Stroop-related neural activity overall, in relation to measures of treatment-engagement, and by treatment conditions.

Results: Stroop-related neural activity was diminished at post- versus pre-treatment in thalamus, cingulate, precentral, postcentral, and lingual gyri and culmen regions (pFWE<.05), consistent with prior work. Greater reductions in Stroop-related activity were associated with more treatment engagement: ‘days in treatment’ with precentral gyrus; ‘CBT sessions’ with cingulate, precentral and postcentral gyri; ‘CM prizes’ with thalamus and postcentral gyrus. ‘Disulfiram medication days’ were not associated with changes in Stroop-related activity in these clusters. Reductions in Stroop-related activity were more pronounced in the CM, versus no-CM, group in midbrain, medial frontal, cingulate, superior temporal, and lingual gyri; findings did not differ between disulfiram versus placebo groups.

Conclusions: Findings suggest key process indicators of CBT and CM are associated with functional changes in cognitive-control-related neurocircuitry, possibly indicating increased efficiency of cognitive-control-related neurocircuitry as one treatment mechanism.

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IMPACT OF SMOKING REDUCED NICOTINE CONTENT CIGARETTES ON SENSITIVITY TO CIGARETTE PRICE: RESULTS FROM A MULTI-SITE CLINICAL TRIAL.

Eric Donny1, Tracy Taylor Smith1, Rachel Cassidy2, Jennifer W Tidey3, Xianghua Luo3, Chap Le3, Dorothy Hatsuksami4, 1Psychology, University of Pittsburgh, Pittsburgh, PA, 2Brown University, Providence, RI, 3University of Minnesota, Minneapolis, MN, 4University of Minnesota Medical School, Minneapolis, MN

Aims: Research is currently underway to investigate the potential public health impact of reducing the nicotine content of cigarettes. This study aimed to determine the impact of reducing nicotine content on estimated cigarette consumption across a range of prices using the cigarette purchase task (CPT), a measure of reinforcing efficacy.

Methods: Smokers (n=839) at 10 sites were assigned to a research cigarettes with reduced nicotine content versus a reference cigarette. Participants were given two cigarettes at a time and instructed to use them as they normally would. The smoking behavior and self-reported tobacco use were monitored for 6 weeks. Participants were subsequently given 2 different sets of cigarettes with lower nicotine content.

Results: The CPT results for the study cigarette from Week 6 showed that the number of study cigarettes participants would smoke if they were free was lower in nicotine content groups (p<.0125), the maximum amount of money participants would spend on study cigarettes was lower in lower content groups (p<.0125), and sensitivity to increases in cost was increased in the lowest nicotine content group (p<.0125). CPT results for usual brand cigarettes from Week 6 were consistent with the results for study cigarettes.

Conclusions: These data suggest that reducing the content of nicotine within cigarettes results in a reduction in the reinforcing efficacy of those cigarettes and of usual-brand cigarettes. Financial Support: Research reported in this publication was supported by the National Institute on Drug Abuse and FDA Center for Tobacco Products (CTP) (U54 DA031659 awarded to E.C.D.). The funding source had no other role other than financial support. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

DOPAMINERGIC MEDIATION OF THE DISCRIMINATIVE STIMULUS EFFECTS OF THREE CATHINONE ANALOGS OF MDMA.

Sean Dolan1, Michael B Gatch1, 1Pharmacology & Neuroscience, UNT Health Science Center, Fort Worth, TX, 2Institute for Healthy Aging, Center for Neuroscience Discovery, University of North Texas Health Science Center, Fort Worth, TX

Aims: In recent years, various synthetic cathinones have supplantated MDMA as the primary psychoactive constituent of "ecstasy" formulations. Although many of these compounds’ mechanisms have been investigated in vitro, fewer behavioral mechanisms studies involving putatively entactogenic cathinones have been performed. Thus, we aimed to investigate the dopaminergic mechanisms mediating the discriminative stimulus effects of three cathinone analogs of MDMA: methylone, butylone, and pentylone.

Methods: Rats were trained to discriminate methamphetamine (1 mg/kg) from vehicle. Dose-response studies were performed with each of the test compounds and the lowest, substituting dose was then tested in the presence of a range of doses of the D1-selective antagonist SCH23390.

Results: Each test compound fully substituted for the discriminative stimulus effects of methamphetamine, with methylone being the most potent (5 mg/kg) and butylone and pentylone being equipotent (10 mg/kg). SCH23390 fully and dose-dependently antagonized the methamphetamine-appropriate responding produced by these compounds with methylone being the most sensitive to the effects of SCH23390, followed by butylone, then pentylone.

Conclusions: These findings indicate that the size of the side-chain length of these compounds increases, they become less sensitive to dopaminergic antagonism. This decreased sensitivity may be due to increased activity of other transmitters associated with shorter side-chains, which become a more prevalent component of the discriminative stimulus when D1-like receptors are antagonized. Future studies will investigate the serotonergic components of the discriminative stimulus effects of these compounds.

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SEX DIFFERENCES ON CORTICAL BRAIN MORPHOMETRY AND BEHAVIORS IN ADOLESCENT MARIJUANA USERS.

Vanessa Douet, Linda Chang, Borislava Stoytcheva, Thomas Ernst, The PING Consortium; Department of Medicine, University of Hawaii, John A. Burns School of Medicine, Honolulu, HI

Aims: Prior neuroimaging studies suggest that long-term marijuana (MJ) use leads to brain abnormalities. This study aims to evaluate whether adolescent MJ users have brain abnormalities that differ by sex.

Methods: We examined cortical thickness and surface area from T1-weighted brain MRIs (processed by modified version of FreeSurfer 5.1), behavioral (PhenX Toolkits) and neurocognitive (NIH Toolbox) assessments performed in 146 healthy adolescents [13.5-21 years old, 58 MJ users (17.5±0.3, 52% boys) and 88 non-MJ users (16.5±0.2, 53% boys)]. These data were extracted from the cross-sectional data collected for the PING study. General additive and linear mixed models were used for the analyses.

Results: Across all participants, MJ users had larger frontal cortical surface areas, smaller parietal and antero-medial temporal lobule areas (p<0.0001, FDR-corrected), but no difference in cortical thickness compared to non-user controls. The larger frontal cortices, which correlated with MJ usage, were specific to boys but not girls, while the antero-medial temporal lobules were smaller in both sexes. MJ users were also more impulsive, perceived more stress, and more prone to panic disorder symptoms, than non-users controls, with the MJ-using girls showing even higher (additive effect) panic disorder indices. Lastly, MJ-using girls performed worse on cognitive flexibility than MJ-using boys. However, MJ-using girls scored better on attention/inhibition control tasks, while the boys had poorer working memory scores with longer lifetime MJ use. These findings remain unchanged when alcohol and tobacco use were included as co-variates.

Conclusions: Adolescent MJ users show abnormal cortical surface areas, greater impulsivity and more anxieties that may be mediated differentially by sex. Future studies in adolescent MJ users should account for sex differences and evaluate how sex hormones might play a role in their brain development.

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PPAR γ AGONISM TO TREAT WHITE MATTER DAMAGE IN COCAINE USE DISORDER.

Andrea Dimet1, Larry Demler2, Ryan Miller3,1, Kathrynn A Cunningham4, Matt Fuentes4, Scott D Lans2, Kelly Dineley3,3, UTMB, Galveston, TX, 1Psychiatry & Behavioral Sciences, University of Texas Health Science Center - Houston, Houston, TX, 2Center for Addiction Research, University of Texas Medical Branch, Galveston, TX, 3Translational Genomics Research Institute, Phoenix, AZ

Aims: Cocaine use disorder elicits behavioral and structural changes in human subjects and rodents alike. One behavioral change is increased reactivity to cocaine-paired (CP) cues, and one structural change is damage to white matter (WM) tracts that interconnect gray matter (GM) structures thought to underlie drug-seeking behaviors. We discovered that the FDA-approved peroxisome proliferator-activated receptor γ (PPAR γ) agonist pioglitazone (PIO, Actos™) antagonizes CP cue reactivity in rats after forced abstinence (FA) from self-administration (SA), and this was reversed by the PPARγ antagonist GW9662. Thus, we hypothesize that PPAR γ agonism counteracts the cocaine-mediated damage to WM and GM underlying CP cue reactivity through induction of markers for functional and structural integrity in WM.

Methods: Using published research, Searcher et al.3 genetic analysis software, and the NCBI/ENCODE databases, we identified proteins which met the following criteria: 1. Modulated by cocaine.2. Modulated by PPAR/ERK3. Contain ERK or PPAR response element. Important to WM integrity. Quantitative immunoblot of dissected WM tracts in rats which have undergone FA from drug-seeking behaviors is ongoing. Future directions will include quantitative immunoblot of dissected WM tracts in rats which have undergone SA from cocaine SA +/- PIO.

Conclusions: Complete analysis of cocaine-induced damage to WM and GM, and its subsequent restoration with PIO, in the tracts and brain regions important to drug-seeking behaviors is ongoing. Future directions will include quantitative immunoblot of dissected WM tracts in rats which have undergone FA from cocaine SA +/- PIO.

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EXAMINING FRONTAL-STRIATAL CIRCUIT INTEGRITY IN MALE AND FEMALE COCAINE USERS WITH TMS.

Logan Thorne Dowdle, William DeVries, Melanie Canterberry, Colleen A Hanlon; Medical University of South Carolina, Charleston, SC.

Aims: Cocaine users show deficits in responses to natural rewards, losses of cognitive control and abnormally heightened responses to drug cues – activities regulated by the frontal-striatal cognitive (DLFPC) and limbic (MPFC) loops. Based on evidence that these loops are 1) involved in the transition from use to dependence and 2) that women tend to escalate to dependence at a faster rate compared to men, the aim of this study was to determine if female cocaine users have significantly a) greater connectivity within the limbic circuit and b) deficits within the executive circuit when compared to males.

Methods: Twenty-four (12 male) healthy controls and 18 (9 female) non-treatment seeking cocaine users were invited to the Center for Biomedical Imaging to undergo a session of interleaved TMS/MRI to the left DLPFC and left MPFC. A full factorial model was used, with functional data analyzed in SPM12 following conventional preprocessing techniques, with TMS pulses modeled as events to determine brain regions activated.

Results: There were no differences within groups on demographic or drug use variables. Both males and females reliably showed activation in cortical (bilaterial insula, ACC) and subcortical (striatum, thalamus) regions of the frontal-striatal loops in response to stimulation (p=.001 FWE corrected). However, there were no areas in which female users showed significantly greater activation to MPFC or less activation in response to DLPFC stimulation when compared with male users, nor was there a significant interaction with respect to gender.

Conclusions: While our findings were consistent with TMS activating projection targets of the frontostriatal system, we failed to find a reliable difference in connectivity between men and women. These data suggest that while the psychosocial variables that contribute to altered limbic arousal in male and female cocaine users may vary, their ability to mobilize frontal striatal circuitry is not fundamentally different.

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DELIVERING HIV-PREVENTION SERVICES TO CRIMINALLY-INVOLVED ADOLESCENTS IN SUBSTANCE ABUSE TREATMENT.

Karen L. Dugosh, David S Festinger; Law and Ethics, Treatment Research Institute, Philadelphia, PA.

Aims: Adolescents are at substantial risk for acquiring HIV. This risk increases as a function of arrest history and substance use. Although entry into treatment provides a perfect opportunity to address HIV risk, limited resources can preclude this. Computerized interventions may provide a less burdensome and more cost efficient way of delivering such services. Building on a prior study with adults, this pilot study examined the preliminary efficacy of a computerized HIV-prevention intervention among adolescents who complete the program and did not significantly decrease smoking behaviors.

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RANDOMIZED CONTROLLED EVALUATION OF TRAMADOL FOR OPIOID DETOXIFICATION.

Kelly E Dunn, D A Tompkins, George Bigelow, Eric C Strain; Johns Hopkins University, Baltimore, MD.

Aims: Over 1.3 million people in the U.S. received treatment for opioids in 2013. Buprenorphine is a widely used method for opioid withdrawal but legal restrictions limit its availability. Tramadol extended release (ER) is a schedule IV medication that is available generically, has opioid activity, and has shown promise in laboratory studies as a potential opioid treatment medication but has not yet been evaluated for this indication in a RCT.

Methods: This study enrolled 102 opioid-dependent participants into a 28-day residential detoxification study. Participants were maintained on morphine (30mg, SC, QID) for a mean (SD) of 10 (1.1) days before abrupt morphine discontinuation and then randomly assigned to receive clonidine (n=36, day 1 dose 0.4 QID, oral), tramadol (n=36, day 1 dose 300mg, oral), or buprenorphine (n=30, day 1 dose 8mg, SL) in a double-blind, double-dummy manner. Study drug doses were tapered to zero over 7 days. Self-reported and observer ratings of withdrawal were collected 7 times daily and mean peak withdrawal during the 7-day taper phase was evaluated.

Results: Participants were 85% male, 41.1 (10.2) years old, and 43% Caucasian. There were significant within (p<.01) and between-group (p<.01) effects on mean daily peak observer withdrawal ratings, and significant within-group (p<.03) effects on mean daily peak self-reported withdrawal ratings; a between-group effect on self-reported withdrawal ratings also trended towards significance (p=.07). Visual inspection indicated that tramadol produced withdrawal ratings midway between clonidine and buprenorphine. Participants in the clonidine group (61%) were significantly less likely to complete the taper relative to the buprenorphine group (93%; p<.01); the tramadol group (72%) did not differ significantly in retention from the other medication groups.

Conclusions: These results suggest that tramadol may have value as an opioid withdrawal treatment medication.

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REASONS FOR PRESCRIPTION OPIOID MISUSE WHILE PLAYING IN THE NFL ASSOCIATED WITH CURRENT USE AND MISUSE AMONG RETIRED PLAYERS.

Eugene C. Dunsmur1, Kristine Woodstock Stiley1, Nicole Ennis Whitehead1, Linda Costler2, 1Clinical and Health Psychology, University of Florida; Gainesville, Florida, 2Epidemiology, University of Florida, Gainesville, Fl.

Aims: Professional athletes may be at increased risk for prescription opioid use due to serious injuries and concussions. The present study examined the association between reasons for prescription opioid use among athletes while in the NFL and current use and misuse.

Methods: Former NFL players (N = 336, M age = 47.1, 56.8% Caucasian) reporting prescription opioid use during their playing career were included in this secondary analysis. Reported reasons other than pain management for prescription opioid use included use to function, to improve mood, to reduce stress, and to aid sleep. Correlations were examined and significant variables were included in logistic regression models.

Results: Current use was reported by 88 (35.4%) retired players. Specifically, 48 (14.2%) reported using only as prescribed by a physician and 40 (11.9%) reported using other than as prescribed. Prescription opioid use to function while in the NFL (player use) was associated with current use (OR=1.30, 95% CI: 1.12-1.50, p<0.01), while player use to reduce stress and anxiety was associated with increased odds of current misuse of prescription opioids among retired athletes (OR=1.32, 95% CI: 1.01-1.72, p<0.04).

Conclusions: The present study adds to the literature on elite athletes at high-risk for prescription opioid use and misuse. The findings presented suggest that monitoring reasons for opioid use in the NFL may help to identify and provide early intervention to those most at risk for use after retirement.

Financial Support: The present study is supported through the NIDA-funded UF Substance Abuse Training Center in Public Health (T32DA035167), Eugene M. Dunne is a predoctoral fellow on the training grant, Linda B. Costler is Director and Principle Investigator, and Catherine W. Stiley and Nicole Ennis Whitehead are mentors. The content presented is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

HIV PRE-EXPOSURE PROPHYLAXIS FOR PEOPLE WHO INJECT DRUGS: WILLINGNESS TO PRESCRIBE AMONG GENERAL INTERNISTS.

Jeanette Tetrault 1, Minesh Shah 5, Oni Blackstock 4; 1Yale, New Haven, CT, 2Johns Hopkins, Baltimore, MD, 3NIDA-IRP, NIH, Baltimore, MD, 4Monteriemplo, Bronx, NY, 5UC, Chicago, IL.

Aims: Among general internists, to determine willingness to prescribe HIV pre-exposure prophylaxis (PrEP) to people who inject drugs (PWID) compared to other HIV risk groups, and determine characteristics associated with willingness to prescribe PrEP to PWID.

Methods: Online survey (April - May 2015) of practicing clinicians who were members of a society for general internists. Survey assessed provider and practice characteristics and PrEP-related knowledge, attitudes and behaviors. Willingness to prescribe was assessed with a Likert scale [low = 1 or 2 vs. high = 3 or 4]. We conducted descriptive statistics and used logistic regression.

Results: Among 250 respondents, 74% (n=185) of providers reported high willingness to prescribe PrEP to PWID. In contrast, providers were more likely to report high willingness to prescribe PrEP to the following risk groups (p<0.001 for all comparisons): 91% (n=228) female with current known HIV+ male partner; 84% (n=211) female who has unprotected sex with high-risk male partners with unknown HIV status; 86% (n=216) male with a current known HIV+ male partner and 88% (n=219) male who had sex with multiple male partners and has had unprotected anal sex. Among provider and practice characteristics, providers with less than 10 HIV+ patients were less likely to report high willingness to prescribe PrEP to PWID compared with those with more than 10 HIV+ patients (p<0.05).

Conclusions: Over 25% of providers reported low willingness to prescribe PrEP to PWID. Providers were less likely to report high willingness to prescribe PrEP to PWID compared to other risk groups. Interventions to improve general internists’ willingness to prescribe PrEP to PWID are needed.

Financial Support: K12DA033312-05; UL1TR00142

CORRELATING VISCOSITY AND IN VITRO DISSOLUTION TO IN VIVO PHARMACOKINETIC PROFILES OF PROPRIETARY INJECTED-MOLDED TABLET FORMULATIONS WITH ABUSE-DETERRENT CHARACTERISTICS.

Torben Elhauge, Nikolaj Skak, Martin Jan Overgård, Karsten Lindhardt; Egalet Corporation, Værløse, Denmark

Aims: Egale Corporation developed Guardian™ technology, based on manufacturing a proprietary plastic injection molding process, resulting in tablets that are very hard with extremely low porosity. The tablets have physical properties expected to deter accidental misuse and rigorous attempts at abuse. An extended-release profile is achieved by tablet polymer matrix erosion. The objective of this study was to test the hypothesis that strong abuse-deterrent (AD) features do not limit predictable drug delivery, and correlations exist between the polymer viscosity, the in vivo dissolution profile, and the pharmacokinetic (PK) profile.

Methods: AD features were tested according to FDA guidance (Cat 1). A scanning electron microscope (SEM) assessed tablet porosity. The viscosity of polyethylene-oxide (PEO) in different tablets was measured using standard conditions. Dissolution profiles (the time for 50% drug release) were obtained with a USP apparatus I. The PK profiles of tablets with different PEO viscosities were compared in a phase 1 clinical trial (n=30). The correlation coefficient was calculated for viscosities and dissolution rates. Prediction error (PE) was calculated for viscosities and PK profiles (%PE(Cmax)=8.12; %PE(AUC)=7.03, average values). This demonstrated a level A nonlinear in vitro/in vivo correlation between in vitro dissolution profiles and PK profiles, providing a correlative link between polymer viscosity and PK profiles.

Conclusions: By determining the viscosity of the polymer applied to tablets manufactured by the proprietary plastic injection molding technique one can predict the tablet PK profile. Importantly, tablet polymer viscosity can be used as a predictive tool in development of new AD products.

Financial Support: Provided by Egale Corporation

ALTERATIONS IN BRAIN NEUROTRANSMITTER LEVELS AFTER SINGLE AND REPEATED INHALATION OF TOLUENE IN RATS.

Alaaeldin Ahmed Elkoussi; Pharmacology, Assiut College of Medicine, Assiut, Egypt

Aims: Toluene is a toxic solvent inhalant which is widely abused in many countries; especially among adolescents. This work was devoted to evaluate the effect of Toluene on brain neurotransmitters after its single and repeated inhalation in 2 different concentrations in rats. A trial was undertaken to find out the link between the alterations in brain excitatory and inhibitory neurotransmitters and the behavioral as well as neurotoxic effects of Toluene.

Methods: Glutamate, GABA, dopamine and 5 HT levels were measured spectrophotofluorometrically in rat’s brain homogenate after single and repeated daily inhalation (30 min/day for 10 days) in 2 concentrations. (28225 and 56450 ppm). Toluene was administered in a specially designed sealed inhalation box. A control group of rats was used after air inhalation.

Results: Toluene significantly (P<0.01) increased the level of glutamate in rat’s brain in a concentration-dependent manner. Besides, single and repeated daily inhalation of the two concentrations of Toluene significantly decreased GABA level in rat’s brain. Single inhalation of Toluene also increased 5-HT level in rat’s brain, but this increase was insignificant compared to the control group. However, repeated inhalation of Toluene for 30 minutes daily; significantly increased 5-HT level in rat’s brain after its inhalation in both concentrations. Moreover, both single and repeated daily inhalation of the two concentrations of Toluene also significantly increased dopamine level in rat’s brain.

Conclusions: Single and repeated daily inhalation of Toluene significantly alter the levels of central neurotransmitters in rats. Toluene inhalation increased the level of glutamate; the “excitatory” neurotransmitter; whereas it decreased the level of GABA; the “inhibitory” neurotransmitter. Meanwhile, Toluene single as well as repeated daily inhalation increased 5-HT and dopamine levels in rat’s brain. These results could explain the various behavioral changes and neurotoxicity induced by inhalation of this toxic solvent inhalant.

Financial Support: NONE
Conclusions: Male rats received surgically-implanted sc temperature transponders under isoflurane anesthesia. One week later, rats received single daily injections of JWH-018 (1.0 mg/kg, sc) or its vehicle for 7 days. Body temperature was measured and catalepsy was scored at 1, 3, and 4 h post-injection each day. At 1 and 7 days after the final JWH-018 treatment, rats received a challenge injection of DOI (0.1 mg/kg, s.c.) or 8-OH-DPAT (0.3 mg/kg, sc); temperature and behavioral responses were assessed every 15 min for 2 h. DOI behaviors included wet dog shakes and back crawls, while 8-OH-DPAT behaviors included ambulation, forepaw treading and flat body posture.

Results: Acute JWH-018 administration produced significant hypothermia (decreases of 3°C) and catalepsy which lasted up to 4 h. Upon repeated injections, the effects of JWH-018 were blunted by day 4, indicating tolerance development. Repeated JWH-018 did not affect behaviors induced by DOI, but there was a small, albeit significant, enhancement of behaviors induced by 8-OH-DPAT (20% increase) in JWH-018-treated rats.

Conclusions: JWH-018 produces typical cannabinoid effects like hypothermia and catalepsy in rats, but tolerance develops to these responses upon repeated exposures. We found no substantial changes in responsiveness to DOI or 8-OH-DPAT after repeated administrations of JWH-018, suggesting no changes in 5-HT2A or 5-HT1A receptors. Thus, our data do not support the contention that exposure to synthetic cannabinoids alters 5-HT2A receptors implicated in hallucinations and psychosis. On the other hand, our data suggest that development of tolerance to JWH-018, and perhaps other synthetic cannabinoids, could lead to dangerous dose escalation in human users.

Financial Support: Supported by IRP, NIDA, NIH, DHHS.
ELEVATED COTININE LEVELS IN RECENTLY ACTIVE CANNABIS USERS ABSENT RECENT CIGARETTE OR OTHER TOBACCO EXPOSURE: UNMEASURED BLUNT OR ENVIRONMENTAL SOURCES?  
Brian J. Fairman1, Oseumia Alshaaarawy2; 1Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 2Epidemiology and Biostatistics, Michigan State University, East Lansing, MI

Aims: Cannabis smokers could be exposed to higher levels of tobacco via blunts (i.e., cannabis rolled in cigars) or environmental sources not typically measured in surveys. We sought indirect evidence of unmeasured sources of tobacco exposure based upon serum cotinine measured among nationally representative samples who reported no recent personal or home/work tobacco exposure.

Methods: We used cross-sectional, nationally representative data from the US National Health and Nutrition Examination Survey (NHANES), 2005-2012. Analytical samples were restricted to adults aged 20-59 (n=6,908) who reported no cigarette use in the past month, no other tobacco products in the past 5 days (including cigars, smokeless, and nicotine replacement), no household/workplace tobacco exposure, and serum cotinine levels <15 ng/mL. Cotinine levels were dichotomized at detectable (0.015 ng/mL) and optimal tobacco smoker discrimination (3.0 ng/mL) cutpoints. Logit models compared cotinine by past-month, prior, and never cannabis use status controlling for sex, age, race/ethnicity, education, alcohol use, and survey year.

Results: About 5% recently smoked cannabis, while 45% and 50% were prior or never users, respectively. In adjusted models, recent cannabis smokers, but not prior users, had significantly higher odds (OR=3.0; 95%CI=1.9, 4.8) of detectable and tobacco-smoker-discriminant cotinine levels (OR=12.1; 95%CI=5.8, 25.5) compared to never users. Odds were highest for those smoking cannabis for 15+ days in the past month.

Conclusions: Recently active cannabis users are exposed to higher levels of nicotine despite no recent tobacco use or home/work exposure. Levels could be evidence of significant tobacco exposure via blunts or unmeasured environmental sources. Findings could impact tobacco-related health risk among cannabis users.

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INTERACTIONS BETWEEN ALCOHOL AND MEPHEDRONE IN HUMANS.  
Magí Farré1,2,3, Esther Papaseit2,1,3, Clara Pérez-Mañá2,3, Eliza de Souza Fernandes1, Julian Farré Mateus2, Evelaia Olesti4, Kim Kuyper1, Eef Theunisen1, Francina Fonseca1, Marta Torres1, Jan Ramakers1, Rafael Farré de la Torre2,5; 1Clinical Pharmacology, Hospital Universitario Germans Trias i Pujol, ISTCTP, Badalona, Spain; 2Pharmacy, Hospital del Mar Medical Research Institute-IMIM, Barcelona, Spain; 3Institut de Neurociències del Comportament, UAB, Barcelona, Spain, 4Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, Netherlands, 5Institut de Neuropsiquiatria i Addiccions, Hospital de la Santa Creu i Sant Pau, Barcelona, Spain

Aims: Mephedrone is a synthetic cathinone derivative included in the class of “New-Novel Psychoactive Substances” and marketed as “bath salt”. Mephedrone is commonly consumed simultaneously with alcohol as other psychostimulants. The aim of the present study was to evaluate the interactions between mephedrone and ethanol in humans.

Methods: Twelve healthy male, recreational users of psychostimulants participated as outpatients in four experimental sessions. They received a single oral dose of mephedrone (200 mg) and alcohol (0.8 g/kg), mephedrone placebo and alcohol (0.8 g/kg), mephedrone (200 mg) and placebo alcohol, and both placebo. Design was double-blind, double-dummy, randomized, cross-over controlled with placebo. Study variables included: vital signs (blood pressure, heart rate, temperature, and pupil diameter), subjective effects (visual analogue scales-VAS, ARCI-49 item short form, and VESSPA questionnaire).

Results: The combination produced an significant increase in the cardiovascular effects of mephedrone and induced more intense feeling of euphoria and well-being in comparison to mephedrone and alcohol. Mephedrone reduced the drunkenness and sedation produced by alcohol.

Conclusions: These results are similar to those obtained with the combination of other psychostimulants as amphetamines and MDMA. Abuse liability of the combination is greater that induced by mephedrone.


GABBR2 GENE VARIANTS AFFECT CIGARETTE SMOKING PATTERN IN ALCOHOL-DEPENDENT INDIVIDUALS: A GENETIC ASSOCIATION STUDY.  
Monserrat Lozano1, Mehmet Cekic2,3, Colin A Hodgkinson1; 1Section on Clinical Psychoneuroendocrinology and Neuropsychopharmacology, NIAAA and NIDA, NIH, Bethesda, MD, 2Laboratory of Clinical and Translational Studies, NIAAA, NIH, Bethesda, MD, 3Laboratory of Neurogenetics, NIAAA, NIH, Rockville, MD

Aims: GABAergic signaling has been implicated in both alcohol drinking and nicotine smoking behaviors. GABBR2 receptors are widely expressed throughout the brain; play an important role in GABA neurotransmission; and are thought to be involved in addictions. This study aimed to examine the effects of single-nucleotide polymorphisms (SNPs) of GABBR2 receptor genes on alcoholism and smoking pattern in alcohol dependent (AD) individuals.

Methods: DNA samples were genotyped from 812 people with lifetime diagnosis of AD (67% AD smokers) and 442 controls enrolled in the NIAAA clinical program. A total number of 135 SNPs (Illumina OmniExpress BeadChip array) on the GABBR2 receptor genes (GABBR1-8, GABBR2-127) were analyzed by PLINK v1.07. In addition to performing a case-control study, we analyzed the association of these SNPs with severity of drinking and smoking in AD individuals.

Results: There were no significant differences between AD cases and controls. No significant association was found with drinking measures. The minor alleles of six SNPs on GABBR2 (rs2779552, rs2779558, rs2779562, rs2779572, rs7657357, rs944761) were associated with lower Fagerström Test for Nicotine Dependence (FTND) scores (p<0.05). These significant associations were all moderated by average drinks per day (p<0.05). Two other SNPs on GABBR2 (rs1930130, rs1930421) were associated with age at first cigarette (p<0.05).

Conclusions: A protective role was demonstrated for the minor alleles of GABBR2 variants against smoking in AD individuals. This association seems to be moderated by drinking levels. This study provides new evidence on the importance of the GABBR2 gene in alcohol and nicotine co-use.

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EATING DISORDER, FOOD ADDICTION AND ASSOCIATED FACTORS IN OBSESE PATIENTS.  
M Fatas1, Maud Henry1, Marco Aurélio Camargo da Rosa1, Julie Collombat1, A Gregoire2, C Kervran3, B Cheriti3, M Archiombac1; 1Center for Drug and Alcohol Research, Federal University of Rio Grande do Sul, Porto Alegre, Brazil, 2Obesity Clinic, CHU de Bordeaux, Bordeaux, France

Aims: The hypothesis of food addiction (FA) has been suggested to describe some cases of excessive intake of palatable foods. Prior research suggests a link between FA and obesity. However, few studies have examined obesity in an addiction perspective. Our objective was to describe eating patterns, FA and its associated factors in a sample of obese subjects (BMI> 30) seeking treatment for obesity.

Methods: After informed consent, patients where interviewed at their enrollment in an obesity clinic. FA based on DSM-IV criteria for substance dependence adapted to food was diagnosed with the Yale Food Addiction Scale. The Mini International Neuropsychiatric Interview was used for assessment of psychiatric comorbidities. A modified version of the Addiction Severity Index was used to assess use of food and substances, and BMI.

Results: 58 patients were included (mean BMI 41.8 (SD=6.3)). 48% reported problems with food for an average of 20.4 years (SD=9.9) and for an average of 17.7 years (SD=12.3) in past 30 days. 19% of the total sample met FA diagnosis and 36.4% of these met criteria for binge eating disorder. Patients with FA reported more problem with use of sweets (p=0.002) and craving for sweet (p<0.001), and exhibited more psychological impairment (p=0.0025). They also had more psychiatric disorders.

Conclusions: In this sample of patients seeking help from an obesity clinic, a cut-off met criteria for FA. FA was associated with a preference for sweet and craving for sweet. These patients were also more likely to exhibit psychiatric comorbidities as is reported in patients with SUD. A systematic assessment of FA among obese patients might be important for successful weight control.

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ILLICIT DRUG USE AMONG YOUNG ADULT MARIJUANA USERS IN LOS ANGELES: IMPLICATIONS FOR MEDICAL USE.
Ekaterina V Fedorova, Stephen E Lankenau; Community Health and Prevention, Drexel University, Philadelphia, PA

Aims: We hypothesized that among a sample of marijuana users (aged 18-26 years) patient status (medical marijuana patients (MMP) vs. non-patient marijuana users (NPU)) and self-reported medical purpose of marijuana use (for medical reasons at least on half occasions in the past 90 days) will be associated with lower prevalence of 90-day illicit drug use.

Methods: 210 MMP and 156 NPU were recruited in Los Angeles during 2014-15. Study participants were surveyed about patterns of marijuana use, illicit drug use, and health outcomes. Logistic regression analysis investigated effects of patient status and marijuana use for medical purposes on 90-day illicit drug use while controlling for other covariates.

Results: Among both MMP and NPU, 59% reported using marijuana for medical purposes at least on half or more occasions in the past 90 days. 31.4% reported 90-day illicit drug use, such as cocaine, MDMA and mushrooms. No differences in 90-day illicit drug use were found between MMP and NPU. However, participants who reported using marijuana for medical purposes on half or more occasions were significantly less likely to use illicit drugs (OR=0.62, p<0.05), more likely to use marijuana with higher frequency (73 vs. 64 days in the past 90 days, p<0.001), and more likely to report using marijuana to cope with anxiety (OR=2.07, p<0.01) and depression (OR=2.3, p<0.001). Stratified analysis showed that among participants who reported using marijuana for medical purposes on half or more occasions, higher marijuana use frequency (p<0.01) and ever using marijuana as a substitute for illicit drugs (OR=3.02, p<0.05) were associated with illicit drug use while these associations disappeared in a subsample of participants who reported using marijuana for medical purposes on less than half occasions.

Conclusions: Marijuana use for medical purposes (but not medical marijuana patient status) was associated with lower rates of illicit drug use. Our results also suggest that marijuana use for medical purposes modifies relationship between patterns of marijuana use and illicit drug use.

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IS TAAR1 A POTENTIAL THERAPEUTIC TARGET FOR IMMUNE DYSREGULATION IN DRUG ADDICTION?
Lisa M Fleischer, Nina Tamashunas, Gregory M Miller; Pharmaceutical Sciences, Northeastern University, Boston, MA

Aims: Trace Amine Associated Receptor 1 (TAAR1) is a direct target of methamphetamine (METH). It is expressed in the brain reward circuitry where it modulates dopamine (DA) transporter function and DA neuron firing rates. It is also expressed in immune cells and signals through CAMP, similar to adenosine A2 receptors which play a critical role in the immune response. Newly-developed TAAR1-specific compounds have recently been investigated in rodents as candidate therapeutics for METH abuse. These studies involving classic behavioral measures of drug response as well as self-administration strongly implicate TAAR1 as a potential therapeutic target. Immune dysregulation is common in METH abusers. Accordingly, our aims are to define whether TAAR1 and adenosine A2 receptors synergistically elevate cAMP through their Gs coupling in immune cells, and to determine whether TAAR1-specific compounds are therapeutically beneficial via immunomodulatory actions through this shared signaling mechanism.

Methods: We are investigating the relationship between TAAR1 and the adenosine A2 receptor at the level of receptor co-localization in specific immune cells, cellular signaling through cAMP, and potential TAAR1/A2 receptor dimerization.

Results: In addition to its central actions, we show that TAAR1 is upregulated in peripheral blood mononuclear cells (PBMC) and B cells following immune activation, robustly expressed in immortalized T cell lines, and signals through cAMP in response to METH.

Conclusions: TAAR1 and A2 may signal similarly and/or synergistically to regulate immune cell function. A2 signaling through cAMP is immunomodulatory, whereas the immunological consequences of TAAR1 signaling remain unknown. METH has profound effects on the immune system in abusers. Accordingly, deciphering the role of TAAR1 in METH action and immune regulation may lead to the development of novel addiction therapeutics that combat central addictive mechanisms as well as immunological aberrations that occur in drug abuse.

Financial Support: GMM: Lab start-up funds; LMF: Teaching Assistantship.

ATTITUDES AND PRACTICES ON THE USE OF EXTENDED-RELEASE NALTREXONE IN CRIMINAL JUSTICE SETTINGS.
David S Festingher1, Karen L Dugosh1, David R Gastfriend1, Chloie Sierka1; 1Law and Ethics, Treatment Research Institute, Philadelphia, PA, 2Treatment Research Institute, Philadelphia, PA

Aims: Extended release naltrexone (XR-NTX) is an opioid antagonist delivered as a subcutaneous injection that makes it virtually impossible for individuals to get the euphoric effects of opioids for approximately one month. Despite the empirical support for XR-NTX’s efficacy and low diversion potential, it remains underutilized in criminal justice settings. Newer compounds that have significant potential could significantly benefit from these attributes. The aim of this survey was to better understand the practices and perceptions of programs with criminally involved clients that have utilized XR-NTX.

Methods: A total of 72 programs were identified as current or past users of XR-NTX. These included re-entry programs, jails/prisons, and diversion programs such as drug courts. Individuals from 45 programs responded (63% response rate).

Results: Programs had favorable attitudes towards XR-NTX, especially relative to agonist medications (i.e., methadone and buprenorphine). Over two-thirds indicated that XR-NTX was “very effective” overall compared with 27% for the agonist medications. A total of 70% reported XR-NTX was “very effective” for preventing relapse compared with 30% for the agonist medications. Almost 40% responded that XR-NTX was “very effective” for preventing re-arrest compared with 6% for the agonist medications. The majority (79%) of programs adopted XR-NTX because of published research, and the greatest barrier to obtaining XR-NTX was cost.

Conclusions: XR-NTX has the potential to significantly improve the lives of those involved in the criminal justice system who suffer from opioid addiction. Findings from the survey strongly support this point with programs reporting positive experiences with and attitudes about XR-NTX, suggesting it should be a standard course of treatment for criminally involved and opioid addicted populations. Future research should examine ways to expand its use in criminal justice settings.

Financial Support: Unfunded pilot survey.

A MIXED METHODS ASSESSMENT OF FAMILISM’S (FAMILISMO) INFLUENCE ON THE INITIATION, CESSATION, AND TREATMENT OF INJECTION HEROIN USE.
David V Flores1, Luis Torres1, Jason Burnett1, Rui Xia1, Patrick Bordnick2; 1University of Houston, Houston, TX, 2University of Texas Medical School, Houston, TX

Aims: Culture and more specifically the cultural value of familismo (familism) influences injection drug use (IDU) behaviors. IDU risk factors include HIV/ Hep and risks are growing for elder substance users (ESU). ESUs will double by 2020 due retiring baby boomers-the generation with the highest rates of SU. Mexican Americans are disproportionately representative with high rates of morbidity/mortality due to IDU. This study examined the role of familism in the initiation, cessation, and treatment of IDU among aging Mexican-Americans.

Methods: A mixed method analysis of 227 MexicanAmerican IDU were assessed with an extensive ethnographic interview and a semi-structured instrument of detailed SU history.

Results: Multivariable regressions of age of first IDU to regular weekly IDU found that males with familismo scores < 3.75 had greater delays between the age of first IDU and age of regular use. For every 1 unit increase in the age of first IDU there was a 35% decrease in the delay of regular use onset (B=0.35, SE=0.14, t=-2.56, p<0.01) indicating that older age at first heroin use the greater the likelihood of earlier regular heroin use. Qualitatively, all participants reported being introduced to IDU by a male family member while the vast majority ceased IDU use or initiated TX at the beseeching of a female family member.

Conclusions: Culture influences perceptions of substance use, treatment, personal responsibility, and enabling. These findings suggest that after first use there is roughly one month in which an intervention may be imposed at any potential level of success. Recognizing opportunities for early intervention become paramount. A better understanding of the impact of cultural values on SU can provide direct and inform cultural relevant interventions for SU.

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BUPROPION THERAPY DURING PREGNANCY: CONCENTRATIONS OF THE DRUG AND ITS MAJOR METABOLITES IN UMBILICAL CORD PLASMA AND AMNIOTIC FLUID.
Valentina M Fokkens, Holly West1, Cheryl Oncken2, Shannon Clark1, Mahmoud S Ahmed1, Gary Hankins1, Tatiana Nanovskaya1; 1OB/GYN Maternal Fetal Medicine, University of Texas Medical Branch, Galveston, TX, 2University of Connecticut Health Center, Farmington, CT
Aims: Bupropion (BUP) is used for treatment of the pregnant patients with depressive disorders. Use of BUP as an aid for smoking cessation for pregnant patients is currently under evaluation. The major and pharmacologically active metabolites of bupropion are hydroxybupropion (OHBP) and threohydrobupropion (TB). The aim of this study is to investigate the in vivo steady state transcplacental transfer of BUP and its major metabolites and determine the concentrations of BUP, OHBUP and TB in the amniotic fluid.
Methods: Twenty-three pregnant patients under treatment with BUP participated in this study. At delivery the following samples were collected: maternal blood (n=23), umbilical cord venous (n=23) and arterial blood (n=16), and amniotic fluid (n=9). Individual placental passage for each of BUP, TB and OHBUP was calculated as the concentration ratio of umbilical cord venous plasma to maternal plasma.
Results: The concentrations of OHBUP and TB in umbilical cord venous and arterial plasma were lower than their corresponding concentrations in maternal plasma. The mean cord-to-maternal ratios were: BUP, 1.1±1.37; OHBUP, 0.22±0.09; and TB, 0.6±0.11. The median concentrations in umbilical cord venous plasma were: BUP, 6.1 ng/ml; OHBUP, 104.2 ng/ml, and TB, 62.9 ng/ml. BUP and its metabolites were detectable in the amniotic fluid, but TB concentrations were higher than those of the corresponding umbilical cord venous plasma.
Conclusions: BUP and its major pharmacologically active metabolites cross the placenta to the fetal circulation. The higher levels of TB in the amniotic fluid than in umbilical cord venous plasma could be explained by the activity of fetal enzymes involved in the metabolism of bupropion.
Financial Support: The study was supported by RO1 DA030998 to GH and TN, and NICHD U10-HD47891 to TN.

THE INTERACTION OF MASCULINE GENDER NORM CONFORMITY AND DEPRESSION PREDICT ALCOHOL USE IN AFRICAN AMERICAN YOUNG ADULT MEN.
Frank Fonseca, Cristina Maria Risco, Megan Leigh Boyd, Taimur Shahab Chaudhry, Gloria Maria Munayo, Cameran Isiah Burt, C.W Lejuez, Richard Yi; Psychology, University of Maryland, College Park, MD
Aims: Endorsement of playboy norms (i.e., seeking sexual adventure, having multiple sexual partners, and noncomittal relationships) has been shown to predict problematic alcohol use in previous research with samples of predominately of White male college students. Among African American young adult men, the impact of adapting to dominant masculine norms on alcohol use may be amplified by depressive symptoms. The current study examined depressive symptoms as a moderator of the relationship between playboy norms and alcohol use among African American young adult men.
Methods: A community sample of 101 African American men (M(SD)=22(2)) completed self-report assessments of playboy norms, depression, and alcohol use. Participants were taking part in a larger study on race-based stress as a unique vulnerability for risk behavior.
Results: Results revealed a conditional effect of playboy norms on alcohol use such that the effect was greater among men who were relatively higher on depression (unstd. beta = .03; p < .04). Prebing the interaction revealed that, among men at the 50th, 75th and, 90th percentiles of depression, the unstd. beta coefficients for the effect of playboy norms on alcohol use were .15, .23, .28 respectively (all ps <.02) while the effect of playboy norms was not significant among men below the 50th percentile on depression. The main effect for depression was marginally significant (p = .051) while the main effect for playboy norms was not significant.
Conclusions: Findings highlight the importance of conformity to dominant masculine norms and depressive symptoms as predictors of problematic alcohol use among African American young adult men. Results are discussed within the context of social learning theory.
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INCREASING MEDICATION USE FOR ALCOHOL AND OPIOID DISORDERS THROUGH ORGANIZATIONAL CHANGE.
James H Ford1, Amanda Abraham3, Nicoleta Lupulescu-Mann1, Raina Croff2, Kim Johnson3, Mady Chalk6, Laura Schmidt7, Dennis McCarty1; 1CB 669 PHPM, Oregon Health & Science Univ, Portland, OR, 2University of Wisconsin-Madison, Madison, WI, 3Public Health & Preventive Medicine, Oregon Health & Science University, Portland, OR, 6Hospital Universitari Germans Trias i Pujol-IGTP, Badalona, Barcelona, Spain, 7UCSF, San Francisco, CA
Aims: The Medication Research Partnership (MRP) worked with a large national health plan and 9 of their contracted addiction treatment programs to test organizational and system change strategies to facilitate use of medications to treat alcohol and opioid disorders.
Methods: Diagnoses, services, and pharmacy data were extracted from the health plan’s utilization and claims files one year prior to the intervention and three years post intervention (2012 to 2014). Difference-in-difference analyses compared MRP sites offering residential care services (n=7) with non-intervention comparison sites also offering residential care (n=15), controlled for co-variates and assessed change in the percent of episodes receiving FDA approved medication for alcohol or opioid use disorders.
Results: Patients with medications to treat alcohol use disorders increased from 8% (baseline) to 28% (3 years post intervention) within MRP sites; comparison sites increased from 10% to 25%. The difference-in-difference change (from 2% to 5%) was not significant. Use of medications to treat opioid use disorders increased from 12% (baseline) to 34% (3 years post intervention) within MRP sites; comparison sites changed from 22% to 26%. The difference-in-difference increased from 4% (year 1, p <.04) to 13% (year 2, p<.01) and to 18% (year 3, p<.001).
Conclusions: Complex interventions are required to implement medications to support recovery. Organization and system change strategies were more likely to increase the use of opioid treatment medications, especially the use of extended-release naltrexone. A single commercial payer, however, has relatively little impact on program operations because they are one of many payers.
Financial Support: A NIDA award (R01-DA029716) supported the analysis.
IN VIVO AND IN VITRO CANNABINOID EFFECTS OF THREE SYNTHETIC COMPOUNDS.

M J Forster, Michael B Gatch; Center for Neuroscience Discovery, UNT Health Science Center, Fort Worth, TX

**Aims:** Novel cannabinoid compounds continue to be marketed as “legal” marijuana substitutes. To assess the abuse liability of these compounds, RCS-4, JWH-122, and JWH-210 were tested for in vivo and in vitro cannabinoid-like effects.

**Methods:** The ability of these compounds to bind to CB1 cannabinoid receptors and act as agonists was tested. Locomotor activity in mice was tested to screen for behavioral activity and to identify behaviorally active dose ranges and times of peak effect. Discriminative stimulus effects of the six compounds were tested in rats trained to discriminate Δ⁹-tetrahydrocannabinol.

**Results:** RCS-4, JWH-122, JWH-210 showed high affinity binding at the CB1 receptor and all acted as full agonists when compared to the CB1 receptor full agonist CP 55,940. All compounds depressed locomotor activity and fully substituted for the discriminative stimulus effects of Δ⁹-THC. 3,4-Methylenedioxy-methamphetamine (MDMA) was tested as a negative control for the drug discrimination assay and did not substitute for Δ⁹-THC.

**Conclusions:** All 3 compounds acted at the CB1 receptor and produced behavioral effects common to abused cannabinoid compounds, which suggest that these compounds have substantial abuse liability common to controlled synthetic cannabinoid compounds.

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A CAREFUL ASSESSMENT OF COGNITIVE FUNCTIONING IN INDIVIDUALS WITH COCAINE USE DISORDER.
Kirsten Michelle Frazer1, Jennifer J Manly1, Geraldine Downey1,2,3,4, Carl L. Hart1,2,3,4; 1Psychology, Columbia University, New York, NY; 2Neurology, Columbia University College of Physicians and Surgeons, New York, NY, 3Division on Substance Abuse and Department of Psychiatry, New York State Psychiatric Institute, New York, NY; 4Columbia University College of Physicians and Surgeons, New York, NY

Aims: Findings assessing the impact of regular cocaine use on cognitive functioning have been mixed. This study employed a comprehensive cognitive battery to compare the performance of individuals diagnosed with cocaine use disorder against two control groups: 1) nondonor users and 2) drug users who report no cocaine use.

Methods: This one-session, outpatient study was conducted at the New York State Psychiatric Institute. Participants: Sixty research volunteers completed the study.

Results: There were no group differences across cognitive tasks with one exception: the drug-using control group outperformed the cocaine use disorder and nondrug-using control groups on the dimensional card sort task. Cognitive performance means of all groups fell within the normal range for all tasks.

Conclusions: Cognitive functioning of individuals diagnosed with cocaine use disorder is similar to control group participants and overwhelmingly falls within the normal range when compared against normative data.

Financial Support: Columbia University

GENDER DIFFERENCES IN METHADONE DOSE PATTERNS AND LENGTH OF TREATMENT IN OUTPATIENT METHADONE MAINTENANCE TREATMENT PROGRAMS.
Peter Friedmann1; 1Columbia University, New York, NY

Aims: Methadone maintenance treatment (MMT) is an effective method for treating opioid addiction. Higher doses of methadone are required to achieve optimum therapeutic and related beneficial effects, along with length of treatment, an important predictor of post-treatment success. Yet, patients often receive less than the recommended (≥60 mg/day) dose required for effectiveness. Gender differences in the methadone dose patterns and length of treatment are understudied.

Methods: We described gender differences in methadone dose and length of treatment in outpatient MMT programs (N=180) in the US. We used data from the 2014 wave of the National Drug Abuse Treatment System Survey (NDATSS), a nationally representative survey of drug treatment programs. Multivariate regression models examined differences in methadone dose patterns and length of treatment by gender, controlling for program and client characteristics.

Results: The median proportion of female patients in MMT was 45%. Approximately, 43% of clients were in continuous treatment for >2 years. Multivariate models showed that an increasing proportion of Black female patients in a program was associated with an increasing proportion of patients receiving a moderate (60-99mg/day) methadone dose (p<0.01), and a decreasing proportion of patients receiving higher (≥100mg/day) methadone dose (p<0.01). An increasing proportion of female patients was associated with a higher proportion of patients being in treatment for 3-12 months (p<0.01) and a lower proportion of patients being in treatment for more than 1 year (p=0.01).

Conclusions: Multidimensional and innovative strategies focusing on reducing/eliminating gender and racial variations in methadone dose and length of treatment in MMT programs are needed, in order to improve treatment practices and patient outcomes.

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RIGHT INFERIOR FRONTAL GYRUS STRUCTURE AND FUNCTION PREDICT SMOKING (RE)LAPSE IN REAL-WORLD AND LABORATORY CONTEXTS.
Brett Froeliger1,2, Patrick McConnell1, Spencer Bell2, Christie Eichberg2, Maggie Sweetzer2, Kevin Michael Gray2, Joseph Mc Clermon2; 1Neuroscience, MUSC, Charleston, SC, 2Psychiatry, MUSC, Charleston, SC, Psychiatry, Duke, Durham, NC

Aims: Nicotine addiction is associated with inhibitory control (IC) deficits and neuroplasticity in circuitry subserving IC; however, relations between brain structure, function and smoking cessation outcomes remain poorly characterized. We assessed relations between neutral indices of IC and smoking in two independent studies. Study 1: examined baseline differences in grey matter volume (GMV) and IC-BOLD response as predictors of treatment outcomes over a 10-week trial. Study 2: examined IC-BOLD response as a predictor of time to smoke during a brief lab visit.

Methods: Study 1: Smokers were scanned prior to quitting, followed for 10-weeks and classified as Abstinent (n = 41) or Relapsed (7 consecutive days ≥1 cigarette/day; n = 40). Group differences in baseline GMV and IC-BOLD response were examined. Study 2: Sated smokers (N=26) were scanned during the IC task. Immediately following, subjects performed a monetary incentive-to-delay-smoking task in the lab, where time to smoke was recorded. Relations between IC-BOLD response, time to smoke and IC task performance was examined.

Results: Study 1: Relative to Relapsed, Abstinent smokers had less IC-BOLD response in thalamus and right IFG and more GMV within IFG. There were no regions where Relapsed > Abstinent in IC-BOLD/GMV. Study 2: IC-BOLD response in right IFG and dACC were inversely related to time to smoke during the delay to smoking task and IC task performance (all p’s <0.05).

Conclusions: Prior work has shown that increased activity in IFG modulates excitatory action from pre-SMA to STN, resulting in STN inhibition of MI. Current study findings suggest that structural/functional differences in the prefrontal node of the IC network may present a risk for lapse/relapse over an acute and protracted time-frame. Findings will be discussed in the context of an IFG mediated inhibitory control smoking phenotype and strategies for elucidating causal relations between IC and relapse vulnerability.

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EXPRESSION OF THE CANNABINOID CB1 RECEPTOR IN CHINESE HAMSTER OVARY CELLS: A SPECIFIC CELLULAR MODEL TO INVESTIGATE THE ACUTE AND CHRONIC EFFECTS OF SYNTHETIC CANNABINOID.
Mashiko Funada, Kin-ichi Tomiyama; Drug Dependence Research, NIMH, NCNP, Kodaira, Japan

Aims: In order to assess the usefulness of Chinese hamster ovary cells (CHO-CB1) as a cellular model to clarify the acute and chronic effects of synthetic cannabinoids, we investigated the adaptive changes in the expression of the human central cannabinoid CB1 receptor in CHO-CB1 cells.

Methods: Functional assays measuring the changes in the intracellular calcium levels have been commonly used to screen for compounds that modulate the activities of target receptors or ion channels. Therefore, in the present study, we performed a calcium flux assay with the Fluo-4 calcium indicator to measure changes in intracellular calcium levels and investigate the agonist activities of the CB1 receptor.

Results: Acute treatment with synthetic cannabinoids (CP 55,940 and alkylated naphthoylindoles) stimulated intracellular calcium mobilization in a concentration-dependent manner. These effects were significantly blocked by pretreatment with the CB1 receptor antagonist AM251. These findings highlight the importance of assays that measure changes in intracellular calcium levels for drug discovery of selective CB1 receptor agonists. On the other hand, AM251 robustly stimulated intracellular calcium mobilization in CHO-CB1 cells after subchronic treatment with CP 55,940 for 6 hours, which is a phenomenon similar to that seen in physical dependence and withdrawal.

Conclusions: These results suggest that CHO-CB1 cells could be a useful model of synthetic cannabinoid dependence in relation to the functional adaptation of the cannabinoid CB1 receptor.

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ULTRASOUND CORRELATES OF LIVER DISEASE IN PATIENTS SEEKING TREATMENT FOR ALCOHOL USE DISORDER.

J. R. Gaither, J. Goulet, W. Becker, S. Crystal, E. D. Rimland

Aims: To determine whether the presence of a substance use disorder (SUD) modifies the association between guideline-concordant care and 1-year all-cause mortality among patients receiving long-term opioid therapy (LOI) for pain.

Methods: Among HIV+ and HIV- patients initiating LOI (≥90d opioids) between 2000 and 2010 as part of the Veterans Aging Cohort Study, we used time-updated Cox regression and propensity-score matching to examine -stratified by SUD status—the association between 1-year all-cause mortality and 3 quality indicators derived from national opioid prescribing guidelines. Specifically, we examined the relationships between NMR and smoking topography characteristics within a group of participants with current addictive disorders.

Results: Overall NMR was only significantly correlated with age (r = .38, p<.01) and gender (r = .27, p<.04). However, when broken down by gender different associations emerged. Within females, age and NMR were highly correlated (r = .61, p<.01) but NMR was not correlated with any of the smoking topography measures. Within males, the age and NMR relationship was not significant but NMR was significantly correlated with mean puff volume (r = .39, p<.04). No significant relationships were found between NMR and education, cigarettes per day, use of menthol, BDl, BMI, or measures of nicotine dependence.

Conclusions: Within this population of those with addictive disorders, associations between NMR and demographic and smoking topography variables varied based on gender. While overall NMR was associated with age and gender, within males and females associations vary. Within females NMR was not strongly associated with measures of smoking topography while in males having a higher NMR correlated with taking larger pulls.

A SYSTEMATIC REVIEW OF BARRIERS AND FACILITATORS TO IMPLEMENTING A PRESCRIPTION DRUG MONITORING PROGRAM.

Aims: Prescription drug monitoring programs (PDMPs) are state-run systems used to mitigate misuse and diversion by tracking scheduled medications e.g., opioid analogues. We conducted a systematic literature review in an effort to better understand the current state of PDMP effectiveness and factors influencing their utilization.

Methods: 193 English-language studies published between January 2000 and August 2015 were identified through a PubMed database search. After removing irrelevant articles and applying inclusion criteria, (“effectiveness”, “barriers”, “facilitators”, “perception & awareness”, and “utilization”) the number of original studies left for qualitative analysis was 35. We categorized findings regarding implementation by applying PARIHS Implementation Framework containing three elements of successful evidence-based practices: Evidence, Context, and Facilitation.

Results: The literature reveals mixed findings about the efficacy of PDMPs. This may be due to variations in implementation approaches, inconsistent measures of effectiveness, and weak evidence limited by study design. Barriers of use cited by providers include interface complexity, time burden, data delia, limited staff access, lack of awareness, and training on how to use PDMP reports. Facilitators indicate providers use PDMPs as a clinical tool, upon suspicion of abuse or diversion, after receiving PDMP training or education, or per workplace requirement.

Conclusions: The success of a PDMP relies heavily on the extent to which it can be supported and perceived as useful by its users. The gaps in the literature illustrate a lack of evidence, resources, and best practices for adoption of PDMPs. In order to promote PDMP uptake, there is a need for more implementation research.


ENTACTOGENIC EFFECTS OF SYNTHETIC CATHINONES.

Aims: Many of the synthetic cathinones are not only sold as "legal" alternatives to psychostimulants like cocaine and methamphetamine, but as an alternative to the entactogen 3,4-methylenedioxy-methamphetamine (MDMA); however, none of the cathinone compounds have been assessed for MDMA-like activity. The purpose of this study was to test whether a range of cathinones with and without putative entactogenic effects produced MDMA-like discriminative stimulus effects.

Methods: Butylone, flephedrone, mephedrone, and 5,6-methylenedioxy-2-aminoindane (MDAI) were tested for substitution in rats trained to discriminate MDMA.

Results: All compounds depressed locomotor activity and fully substituted for the discriminative stimulus effects of MDMA. A'-THC was tested as a negative control and did not substitute for MDMA. The potency of compounds when tested in MDMA-trained rats did not differ significantly from potencies when tested in cocaine- or methamphetamine-trained rats.

Conclusions: All of the cathinones produced MDMA-like discriminative stimulus effects. There was no difference in the potency ratio of MDMA to methamphetamine in compounds reputed to have entactogenic effects versus those not thought to be entactogenic which suggests psychostimulant and entactogen efficacies may not be entirely dissociable.

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A MULTI-COMPONENT BRIEF INTERVENTION FOR RISKY DRUG USE AMONG LATINO PATIENTS OF A FEDERALLY QUALIFIED HEALTH CENTER IN EAST LOS ANGELES: A RANDOMIZED CONTROLLED TRIAL OF THE QUIT INTERVENTION (QUIT) BRIEF INTERVENTION.

Lillian Gelberg1, Ronald Andersen1, Mani Vahidi1, M Rico1, Sebastian Baumeister,2, Barbara Leake1; 1UCLA, Los Angeles, CA, 2University of Regensburg, Regensburg, Germany

Aims: One efficacy randomized controlled trial (RCT) of a primary care-based (PC) brief intervention (81) found effects among risky drug users (RDU) in the U.S., the QUIT intervention. In this study we tested the QUIT BI among Latino PC patients, the majority ethnic group of East Los Angeles (ELA) and its federally qualified health centers (FQHC).

Methods: Design: Multicenter single-blind two-ARM of patients enrolled in the PC waiting room of a FQHC in ELA from March-October 2013 with 3-month follow-up. Participants: 65 adult PC patients (32 intervention; 33 control) with RDU (range 4-26 on the WHQ Smoking, Alcohol and Substance Involvement Screening Test (ASSIST) self-administered on tablet computers; 51 (78%) completed follow-up. Mean age was 30.8 years; 59% male; 94% Latino. Intervention(0): Intervention patients received: 1) brief (typically 3-4 minutes) clinician advice to quit/reduce their RDU, 2) a video doctor message reinforcing the clinician’s advice 3) health education booklet, and 4) up to two 20-30 minute follow-up telephone drug use reduction coaching sessions. Control patients received usual care and cancer screening information. Measures: Primary outcome was the number of highest scoring drug use days (HSD) over the past 30 days at 3-month follow-up.

Results: Intervention and control patients reported equivalent baseline characteristics. In an intent-to-treat regression analysis, intervention patients used their highest scoring drug on 4.5 fewer days in the previous 30 days relative to controls (95% CI 0.2, 8.7; p<.05).

Conclusions: The QUIT brief intervention was efficacious in reducing RDU In the study clinic of this study and in the 5 clinics of the previous original QUIT study despite differing drug use and patient and clinic characteristics. An implementation study of QUIT is needed to confirm its general applicability.

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ARE DISTINCT PARENTING PRACTICES ALL EQUALLY PROTECTIVE AGAINST ADOLESCENT SUBSTANCE USE?

Lilian A Ghandour, Noura Joseph El Salibi, Nasser Yassin, Rima Afifi; American University of Beirut, Beirut, Lebanon

Aims: Investigate the association between distinct parenting practices and past year use of various substances among adolescents.

Methods: Data from a 2011 highschool survey on 986 private and public students from Beirut was used. Adjusted (for sex and age) odds ratios, 95% confidence intervals, and p-values are presented (accounting for sampling weights).

Results: Past year use of substances were as follows: cigarettes (10%), waterpipe (25%), any illegal drugs (6%), prescription drugs (nonmedically, 10%) and alcohol (45%). Parent-child joint activities (movies, lunch, religious services…) was not associated with adolescent substance use after adjusting for age/sex. Students whose parents regulated their social media/TV/phone calls even ‘sometimes’ versus ‘never’ were less likely to report current regular alcohol drinking [OR=0.41, 95%CI: (0.21, 0.77)], and there was a clear trend observed with illegal drugs [higher levels of regulation linked with lower odds of any current use]. Adolescents whose parents were involved with schooling very often/often (versus never) were at a 60% reduced odds of waterpipe smoking and NMPDU. Higher perceived parental monitoring of friends/whereabouts was also associated with reduced odds of any past year illegal drug use [very often versus never/rarely: 0.16 (0.07, 0.38) and NMPDU [0.35 (0.16, 0.80)]. Students who shared a little/lot in decisions (versus not at all/or made up all the rules) were less likely to report past year any illegal drug use (p-value=0.002) and NMPDU (p-value=0.023). Frequent parent-child communication about important topics was only associated with a reduced odds of any illegal drug use (p-value=0.02).

Conclusions: Distinct parenting practices are shown to be differentially associated with use of different substances among adolescents, and future studies need to investigate what aspects of these practices are protective and why, and the extent to which parental/societal values/norms come into play.

Financial Support: Swiss Academy for Development
RESEARCH TO PRACTICE: FIDELITY MONITORING AND LESSONS LEARNED WITH PATIENT NAVIGATION AND HIV.
Kathryn Gilmore1, Dace Sykis1, Anne Rhodes2, Thomas Moore3, Lauren Yerkes4,5; 1Virginia Commonwealth Univ., Richmond, VA, 2Virginia Department of Health, Richmond, VA

Aims: Patient Navigation (PN) is an evidence-based practice that assists patients as they traverse the confusing, and often overwhelming health system. Motivational interviewing (MI) is central to successful PN implementation. The Virginia Department of Health (VDH) implemented PN to improve linkage, retention and viral suppression rates among Persons Living with HIV (PLWH). This presentation describes the program, with a focus on implementation obstacles and fidelity monitoring results. Findings are presented in the context of lessons learned, with the goal of informing future dissemination and translation efforts.

Methods: The VDH program was developed and implemented from 2011-2015 in 3 Virginia sites. Program components focused on Fidelity Monitoring to evaluate protocol adherence, quality of service delivery, and client-centered communication. Fidelity Monitoring toolkit included patient and navigator surveys, a chart review instrument, and a training documentation tool. MI implementation was monitored with: audio-taping (minimum 2 client sessions/month), standardized coding of sessions using MI-IT, and supportive feedback. In addition, a PN incentive program was implemented, with monthly opportunities to win a gift card.

Results: Overall, we found an increase in MI-adherent statements and greater acceptability of MI principles among patient navigators. Also, number of fidelity monitoring tape submissions per month increased following incentive program implementation (4.3 tapes/mo pre-incentives vs. 8.8 tapes/mo post-incentives (p=.02)). These measures varied across sites which included both urban and rural settings.

Conclusions: Intervention fidelity is critical to effective implementation of EBPs. While VDH PN program fidelity monitoring efforts have yielded promising results, site differences affirm the need for tailoring of these often time-intensive and cost-prohibitive programs.

Financial Support: Project supported through Health Resources and Services Administration (HRSA) Special Projects of National Significance (SPNS).

ARE GREATER CONSEQUENCES IN POLYSUBSTANCE--USING WOMEN RELATED TO ANXIETY?
Kathryn Glanton Holzhauer1, Edgeld Wulfert2; 1Psychiatry, University of Massachusetts Medical School, Worcester, MA, 2Psychology, University at Albany, SUNY, Albany, NY

Aims: Research has shown that women who use substances to cope with internalizing symptoms are at particular risk for developing a substance use disorder. The current study aimed to explore whether greater alcohol-related consequences in polysubstance users is related to this association. The following hypotheses were tested: 1. Women who used other substances in addition to alcohol (PS; n=37) will report significantly more alcohol-related consequences compared to women who used alcohol only (AO; n=58); 2. The PS group will demonstrate greater physiological arousal in response to stress; 3. Anxiety and relaxation expectancies will interact to be a better predictor of consequences in the PS women (vs. AO).

Methods: Female students aged 21 and over were fitted with a skin conductance monitor and completed the PASAT-C, a distress-induction task. We assessed their stress reactivity via tonic skin conductance (SCL) during the first two levels of the task.

Results: Women in the PS group reported significantly more drinks per week, days drinking, binge episodes (p<.05), and more alcohol-related consequences (p<.01). Furthermore, the PS group demonstrated significantly more stress reactivity as evidenced by SCL during the PASAT-C, as well as significantly greater relaxation expectancies (p<.05). The moderation model entered anxiety, expectancies, and group (AO vs. PS) in a 3-way interaction model predicting alcohol consequences and controlling for past 30 day’s substance use. Results showed a significant 3-way interaction (p=.02), with a significant conditional effect of anxiety*expectancies for the PS group only (p=.01). Specifically, PS women who reported high anxiety and expectancies reported significantly more consequences than all other women.

Conclusions: These findings have important implications for the risk that is associated with women’s polysubstance use, and especially women with co-occurring anxiety. Interventions targeted toward more effective relaxation/coping in women with anxiety and substance use may have broad effects on use and related consequences.

Financial Support: None

Sara Nelson Glick1, Judith Tsui2, Michael Hanrahan3, Caleb J Banta-Green1; 1Seattle’s National HIV Behavioral Surveillance (NHBS) system, a serial cross-sectional survey conducted in 2009, 2012, and 2015. Local questions asked about naloxone acquisition and use in an overdose situation in the past year.

Aims: Recent legislative changes in Washington State expanded the ability to possess and access naloxone for reversing the effects of opioid overdose. Naloxone uptake and use have been evaluated within specific programs in the US, but the extent of distribution within a larger population is unclear. We used a community sample of people who inject drugs (PWID) in the Seattle area to describe trends and correlates of naloxone acquisition and use.

Methods: Using respondent-driven sampling, we recruited 1,224 PWID in Seattle’s National HIV Behavioral Surveillance (NHBS) system, a serial cross-sectional survey conducted in 2009, 2012, and 2015. Local questions asked about naloxone acquisition and use in an overdose situation in the past year. We evaluated temporal trends of these outcomes and identified independent correlates using multivariable log binomial regression models.

Results: In 2015, 44% of Seattle NHBS PWID reported obtaining naloxone from any source in the past year. Obtaining naloxone from a local needle exchange in the past year increased from 0% in 2009, to 20% in 2012, and to 35% in 2015. Using 2012 and 2015 data adjusted for year, PWID who obtained naloxone in the past year were more likely to be younger (adjusted risk ratio [aRR]=0.87, per year, 95% confidence interval=0.87-0.98), primarily heroin injectors (aRR=1.3, 1.1-1.6), local needle exchange users (aRR=2.9, 2.0-4.1), experienced an overdose (aRR=1.3, 1.1-1.5), or witnessed an overdose (aRR=1.7, 1.4-2.1) in the past year. Among PWID who obtained naloxone, 42% used it to reverse an overdose in 2012, which increased to 56% in 2015.

Conclusions: Naloxone uptake and use among PWID in Seattle increased substantially from 2009-2015, congruent with expanded distribution by local needle exchanges. However, the large proportion of PWID without naloxone may benefit from further expansion. Moreover, the local opioid overdose mortality rate also increased during this time, suggesting that higher naloxone saturation levels among PWID may be needed to lower overdose mortality rates.

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GENDER DIFFERENCES AMONG PWID WITH REGARDS TO HIV TRANSMISSION RISK IN ST. PETERSBURG, RUSSIA.
Natalia Gnatienko1, Judith Tsui2, Jennifer A Wagnman3, Debbie M Cheng4, Anita Rai5, Elena Blakhina6, Olga Toussova7, Leah Forman8, Dmitry Lizovenov9, Jeffrey H Samet10; 1First Pavlov State Medical University of St.Petersburg, St. Petersburg, Russian Federation, 2University of Washington, Seattle, WA, 3University of California, San Diego, CA, 4Boston University, Boston, MA, 5Boston Medical Center, Boston, MA

Aims: The HIV epidemic in Russia is driven by injection drug use. Among people who inject drugs (PWID) in global settings, women usually have higher HIV prevalence than men. Using data from a cohort of HIV-infected Russian PWID we examined whether gender is associated with HIV transmission risk: drug and sexual risk behaviors.

Methods: This study involved secondary analysis of data from Russia ARCH, a longitudinal cohort of HIV-infected persons in St. Petersburg, Russia. Current analyses were restricted to PWID (injected prior to HIV diagnosis or in the past 30 days). The main independent variable was gender. The primary outcomes were sharing of injecting equipment and unprotected sex. Secondary outcomes were alcohol use prior to sharing injecting equipment and unprotected sex; and simultaneous reporting of drug and sex risk behaviors. Analyses used logistic regression models.

Results: The mean age of the sample (N=294) was 33 (SD=5) years, 22% had less than grade education, 26% were female and the median CD4 cell count was 470 (IQR: 304, 698). Shaving drug equipment in past 30 days was reported by 18% of participants and 9% used alcohol prior to sharing; 48% reported unprotected sex in past 90 days and 56% used alcohol prior to sex: 11% reported recent simultaneous drug equipment sharing and unprotected sex. Women had significantly higher odds of reporting unprotected sex (AOR = 3.04, 95% CI: 1.60-5.81, p<0.001), but not other risk behaviors.

Conclusions: Among HIV-infected Russian PWID, women had significantly higher odds of unprotected sex in the past 90 days. Better understanding of HIV risk behaviors among women and men who inject drugs can support more gender-tailored HIV prevention interventions.

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INTRANOVENOUS AND SMOKED METHAMPHETAMINE PRODUCE DIFFERENT SUBJECTIVE AND PHYSIOLOGICAL EFFECTS IN WOMEN

Nicholas E Goeders; LSU Health Sciences Center, Shreveport, LA

Aims: Methamphetamine (meth) is unique since women are as likely to use meth as men are. But few studies have compared the route of meth administration and the perceived subjective effects of the drug. This study was designed to determine potential differences in the subjective effects of intravenously administered (IV) meth when compared to other routes of administration in women using unstructured interviews.

Methods: After obtaining IRB approval potential subjects were recruited. A consent letter was provided for potential subjects to read, but they were not required to sign it so that confidentiality could be maintained. The inclusion criteria included being female, over the age of 18, and with meth as their primary drug of choice. When these unstructured interviews were completed, the interview notes were searched for the emergence of common themes regarding differences between IV and smoked or snorted meth using grounded theory, whereby key points were extracted from information contained in the interview notes.

Results: Fifty-six women participated in the 2.5-year study. The mean age of the subjects was 34.5 (± 10.2; range: 18 to 56). Twenty-three women said that they would experience "vapors" following an IV injection of meth, resulting in an immediate "cough" or a "taste" of the drug. Of the 51 women who used meth IV, 45 (88%) reported the perception of an immediate sexual indistinguishable from an orgasm following an injection of sufficient purity. None of the participants reported a similar response experienced when meth is smoked or snorted. The subjects also reported several additional subjective and physiological responses only experienced with IV meth.

Conclusions: The major finding of this study is that the IV administration of meth produces subjective (and physiological) responses that are readily perceived as different from the responses experienced when meth is smoked or snorted. These differences should be taken into account when treating female IV methamphetamine users. Potential mechanisms underlying these effects will be discussed.

Financial Support: This work was supported by the Department of Pharmacology, Toxology & Neuroscience

ASSOCIATIONS BETWEEN NON-TRADITIONAL TOBACCO PRODUCT USE AND ADHD SYMPTOMS IN ADOLESCENTS

Nicholas Goldenson 1, Rubin Khoddam 2, Adam Leventhal1,2; 1Preventive Medicine, University of Southern California, Los Angeles, CA, 2Psychology, University of Southern California, Los Angeles, CA

Aims: While cigarette smoking is declining among U.S. adolescents, there has been a dramatic increase in the initiation and continued use of new and non-traditional tobacco products such as electronic cigarettes (e-cigarettes) and hookah (water pipe). Previous research has shown that attention-deficit hyperactivity disorder (ADHD) is an important risk factor for combustible cigarette use among adolescents, yet there is little data assessing possible associations between ADHD symptoms and non-traditional tobacco products.

Methods: High school students in the Los Angeles area (N=3383) completed longitudinal surveys assessing lifetime and current use of e-cigarettes and hookah and ADHD symptoms at 2 timepoints. Logistic regression in repeated-measures, generalized-linear mixed models assessed relations between standardized scores of ADHD symptoms and measures of tobacco product use after controlling for pertinent demographic, interpersonal and substance-related covariates.

Results: Among teens who never used e-cigarettes, the odds of reporting e-cigarette initiation increased by 23% with each 1 SD increase in ADHD score (odds ratio [OR], 1.23 [95% CI, 1.0-1.5]; p<.04). Among teens who never used hookah, the odds of reporting hookah initiation increased by 30% with each 1 SD increase in ADHD score (OR, 1.30 [95% CI, 1.1-1.6]; p<.001). Among current users, the odds of reporting continued use increased by 18% (OR, 1.18 [1.0-1.4]; p<.02) and 26% (OR, 1.26 [1.1-1.4]; p<.001) with each 1 SD increase in ADHD score for e-cigarettes and hookah, respectively.

Conclusions: These results indicate that ADHD symptomology may be a risk factor for both the initiation and maintenance of non-traditional tobacco products. Understanding the relations between ADHD symptomology and alternative tobacco products could play a key role in developing effective programs for preventing and/or reducing use of these products among adolescent populations.

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AGE- AND GENDER-SPECIFIC IMPACTS OF SOCIAL INFLUENCES ON LAST 30-DAY MARIJUANA USE

Jason Elliott Goldstick, Quyen Epstein-Ngo, Justin Heinze, Hsing-Fang Hsieh, Maureen Walton, Rebecca Cunningham, M Zimmerman; University of Michigan, Ann Arbor, MI

Aims: We seek to precisely characterize how the association between past 30-day marijuana use and social (peer/parental) influences varies as a function of age, and how these age patterns differ by gender.

Methods: Using data from an 18-year longitudinal study of students at high risk for high school dropout in Flint, Michigan (at baseline: n=850; 51% female; average age = 14.8; 80% African American), we examined associations between past 30-day marijuana use and six variables measured using validated tools: friend drug use, friend aggression, friend theft, friend support, maternal support, and paternal support. Logistic generalized additive models (GAMs) were used to estimate non-linear interactions between age and each social influence variable on the indicator of past 30-day marijuana use. We chose GAMs over generalized linear models after finding evidence of non-linear relationships between the odds of marijuana use and several independent variables under study. Models were fit to the full data set and stratified by gender.

Results: The effects of friend drug use and friend aggression were significantly moderated by age in both genders (all p<.01); the effects of maternal and paternal support were only moderated among males. Both friend drug use and aggression were strongly risk-enhancing during adolescence in both genders; by age 30, shrunken effects were still present in males and no effects were present in females. Among males, the protective effects of maternal and paternal support during adolescence were not present by early adulthood; among females, maternal and paternal support were not protective at any age. Friend support and friend theft were not significantly moderated by age in either gender.

Conclusions: Our results suggest that drug use prevention strategies targeting social influences should be age- and gender-specific; such strategies may be most important during adolescence, and those involving parental support may more important for males.

Financial Support: This work was supported by NIDA grants R03 DA 039003 01 (PT: Goldstick) and R01 DA035811-03 (PT: Zimmerman).

ATTITUDES TOWARDS TOBACCO USE AMONG PARENTS OF ADOLESCENTS

Sandra E Gomez Luna1, Dana Anne Cavallo2, Suchitra Krishnan-Sarin3; 1School of Medicine, RAMS/YALE, Stamford, CT, 2Psychiatry, Yale University, New Haven, CT, 3Psychiatry, Yale School of Medicine, New Haven, CT

Aims: Hispanic adolescents have high rates of tobacco product use. Parental attitudes toward tobacco use and cessation may influence their child's use behaviors. This pilot project examined differences in attitudes towards teen tobacco use and participation in smoking cessation programs among Hispanic (US born and non-US born) and non-Hispanic parents, and further explored if attitudes varied by the parents' immigrant status.

Methods: In Fall 2013, we mailed surveys to all parents of students of an ethnically diverse CT high school. Respondents (n=89) were mostly women (82%), married (76%), college educated (78.6%) and born in the US (75.3%). 19.8% were Hispanic/Latino and 24% were immigrants (the majority in the US for over 20 years). Others were African American (20%) or Caucasian (47.2%). Hispanic and non-Hispanic parents did not differ in rates of lifetime use of most tobacco products, except hookah (Hispanic: 25%; Non-Hispanic: 4.4%, p<0.05). Chi-square analyses examined differences between Hispanic vs. non-Hispanic and US-born vs. non-US born parents on attitudes toward adolescent tobacco use and child's participation in a smoking cessation program.

Results: There was no significant difference between Hispanic and non-Hispanic parents in attitudes about disallowing cigarette use, disapproval of adolescent use of tobacco products, including e-cigarettes and cigars, or participation of their child in a smoking cessation program. However, among Hispanic, 71.8% of those who were US born were willing to have their child participate vs. 28.2% of non-US born Hispanic parents (p<0.05).

Conclusions: Parental attitudes regarding the use of tobacco products among children is generally not supportive and approval of child participation in school-based tobacco cessation programs differed significantly by immigrant status. Given the limited sample size, more data is being collected to assess perceptions of adolescent tobacco use among Hispanic parents and possible influences by immigration, acculturation and tobacco use status.

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EXECUTIVE FUNCTIONING AND OUTPATIENT TREATMENT ADHERENCE AFTER INTENSIVE INPATIENT CARE IN COCAINE DEPENDENCE: A SIX-MONTH FOLLOW-UP STUDY.
Priscila Dib Goncalves3, Mariella Ometto2, Andre Malbergier2, Paula Martins4, Livia Beraldo1, Bernardo Santos5, Sergio Nicastri2, Arthur Andrade1, Paulo Jannuzzi Cunha1; 1Department of Psychiatry, Laboratory of Psychiatric Neuroimaging (LIM 21), São Paulo, Brazil, 2Psychiatry, University of São Paulo, São Paulo, Brazil, 3Psychiatry, University of California San Diego, San Diego, CA, 4University of São Paulo, São Paulo, Brazil

Aims: Understanding predictors of outpatient adherence, after inpatient treatment, is essential to design treatment strategies to increase positive outcomes in SUD. Our aim was to investigate predictors of outpatient treatment adherence after a 4-week-inpatient-treatment in cocaine dependence.

Methods: Eighty inpatients at the Impulsive Behavior ward (São Paulo, Brazil) participated of this study. At baseline (1st week of inpatient treatment), they were submitted to the Structured Clinical Interview for DSM-IV, the Addiction Severity Index, neuropsychological assessment (IQ, Trail Making Test, Stroop Color-Word Test, Digit Span, Wisconsin Card Sorting Test, Frontal Assessment Battery, Iowa Gambling Task) and the Barratt Impulsiveness Scale. After their discharge, they were followed for 1, 3, 6 months. Patients received 1 point if they were adhered to each follow-up, and the sum of these 3 time points was the outcome measure.

Results: Adherence to treatment was negatively correlated with years of cocaine use, and positively related with economical status, IQ and Executive Functioning as measured by the Frontal Assessment Battery (FAB). These baseline variables significantly correlated with treatment adherence were included in a simultaneous entry multiple regression analysis. This regression equation explained 17% (R² = .17) of the variance, and the only significant variable that survived was the FAB.

Conclusions: Our results highlight the prominent role of executive functioning predicting outpatient treatment adherence rates. Future studies should investigate whether and how cognitive training during inpatient treatment could increase the adherence rates after discharge.


HAS NICOTINE DEPENDENCE INCREASED AMONG SMOKERS IN THE UNITED STATES: A NEW TEST OF THE HARDENING HYPOTHESIS.
Renee Goodwin2, Melanie Wall1, Sandro Galea1, Michael J Zvolensky1, Misato Gbedemah2, Mei-Chen Hu3, Deborah S Hasin1; 1Psychology, City University of New York, Queens, NY, 2Epidemiology, Columbia University, New York, NY, 3Psychology, Columbia University, New York, NY, 4Psychology, University of Houston, Houston, TX, 5Epidemiology, Boston University, Boston, MA, 6Sociomedical Sciences, Columbia University, New York, NY

Aims: The hardening hypothesis posits that one reason for the slowed smoking decline in recent years is an increasing prevalence of nicotine dependence among remaining smokers. The current study examined trends in cigarette smoking and the prevalence of nicotine dependence among smokers from 2003 to 2013.

Methods: Data were drawn from the National Household Survey on Drug Use (NSDUH), an annual cross-sectional study of U.S. persons 12 years and over (N=52,000-58,000 per year). Nicotine dependence was examined annually from 2003 to 2013. Linear time trend analyses were then adjusted for age, gender, income, and number of cigarettes smoked per day during current daily and non-daily smokers.

Results: Unadjusted estimates suggest that the prevalence of nicotine dependence declined among daily smokers and remained relatively unchanged among non-daily smokers from 2003 to 2013. However, after adjusting for demographics and number of cigarettes smoked per day, a significant increase in the prevalence of nicotine dependence is evident among both daily and non-daily smokers from 2003 to 2013.

Conclusions: This study provides new information supporting the hardening hypothesis with empirical, population-based data, using an approach that examines prevalence of nicotine dependence while accounting separately for the changing number of cigarettes smoked per day and demographic changes among smokers from 2003 to 2013. In order for tobacco control efforts to make further progress in bringing the prevalence lower, our results suggest that treatment of nicotine dependence, in addition to smoking cessation efforts, needs to be made widely available.

Financial Support: This work was supported by NIDA grant #DA02892 (Goodwin).

THE PATHWAY TO SUBSTANCE MISUSE FOR YOUNG PEOPLE WITH ADHD AND CONDUCT DISORDER.
Rafael A Gonzalez1, Gislid Gudjonsson2, Kim Wolf2, Kitakos Xenidi2, Laura Murdock3, Isabella Mallet-Lambert4, Frances R Levin4, Susan Young2; 1Centre for Mental Health, Imperial College London, London, United Kingdom, 2Center for Evaluation and Sociomedical Research, University of Puerto Rico Medical Sciences Campus, San Juan, PR, 3IoP, King’s College London, London, United Kingdom, 4Division on Substance Abuse, New York State Psychiatric Institute, New York, NY

Aims: There is currently a reasonable theoretical base for understanding the possible causes and motivation behind substance misuse and its dependency. There is a need for a reliable and valid measure that delineates the pathway of substance use from its initiation, and identifies different motivations for drug use transitioning, maintenance and dependency. The current paper addresses this gap in the literature by examining and validating a new instrument, the Substance Transitions in Addiction Rating Scale (STARS).

Methods: 390 male prisoners were screened for ADHD and conduct disorder (CD) and assessed with a clinical diagnostic interview for ADHD. They completed the four STARS subscales regarding their substance use pathway. A factor analysis using an Exploratory Structural Equation Modelling framework was performed to assess the STARS structure and to derive factors to assess validity against ADHD and CD diagnostic categories.

Results: Each of the subscales of the STARS produced meaningful and reliable factors, which supported the self-medication and behavioural disinhibition hypotheses of substance use motivation and showed them to be independent factors. The findings robustly show that ADHD is significantly associated with the need for self-medication as a way of managing primary and comorbid symptoms. The findings were strongest for the combined ADHD type. There were differential effects of factors in associations with CD.

Conclusions: The STARS has a great potential to further the understanding of the motivation behind substance use and its dependency in different populations and mental health settings.

Financial Support: This study was funded by Shire Pharmaceutical Development Limited.

A PHASE III, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY OF THE SAFETY AND EFFICACY OF LOFEXIDINE FOR RELIEF OF SYMPTOMS IN ADULTS UNDERGOING INPATIENT OPiOIDE DETOXIFICATION.
Charles Gorodetzky1, Sharon I Walsh2, Kristen Gullo1; 1USWM (Cons.), Kansas City, MO, 2Univ. KY, Lexington, KY, 3USWM, Louisville, KY

Aims: This study investigated the safety and efficacy of LFX, an α2-receptor agonist, in reducing withdrawal symptoms in adults undergoing opioid detoxification.

Methods: This was a 1-week inpatient, multicenter, randomized, double-blind, placebo-controlled study in adults dependent on short-acting opioids. Subjects were randomized in a 1:1 ratio to receive LFX (0.8 mg QID) (n=134) or placebo (n=130) for 5 days, followed by 2 days of blinded PBO, with study discharge on Day 8. The co-primary efficacy endpoints were the mean SOWS-Gossop (SOWS-G) score on Day 3 of withdrawal and time to dropout. A key secondary endpoint was the proportion of subjects who completed the 5-day treatment period.

Results: The mean Day 3 SOWS-G score was 2.4 points higher with PBO than with LFX and was statistically significant with (p=.0212) and without (p=.0136) imputation of missing data. Fewer subjects on LFX (n=59) were early terminators than those on PBO (n=80); and subjects who dropped out early stayed longer in the trial if they were taking LFX (p=.0034). The proportion of subjects who completed the 5-day detoxification was higher when on LFX (49%) than when on PBO (35%) (p=.0087). Overall 97% of LFX subjects and 94% of PBO subjects reported adverse events with most judged to be withdrawal-related. AEs significantly higher on LFX than on PBO were hypotension, dizziness, dry mouth and bradycardia. These did not require therapeutic intervention. Serious AEs occurred in 16 subjects (8/group). No SAEs were life threatening or led to death and all resolved promptly without sequelae. There was no evidence of QTc prolongation in safety ECGs and there were no clinically significant changes in other ECG parameters.

Conclusions: LFX reduced the subjective severity of opioid withdrawal and led to superior retention compared to PBO. These data suggest that LFX provides a safe and effective non-narcotic treatment option for patients undergoing acute withdrawal from opioids.

Financial Support: Supported by US WorldMeds, LLC.
EXTINCTION AND REINSTATEMENT OF COCAINE-REINFORCED BEHAVIOR IN RAT LINES SELECTED FOR LOW AND HIGH LEVELS OF INTRAVENOUS DRUG SELF-ADMINISTRATION.

Ken Graising, Hayang Xu; Kansas City VA Medical Center, Kansas City, MO

Aims: The LS and HS rat strains were developed in our laboratory through selective breeding for Low- and High- levels of intravenous drug self-administration. HS rats self-administer cocaine at higher levels than LS animals, and exhibit greater cocaine-induced activation dopaminergic neurons in the accumbens. This study was undertaken to compare extinction and reinstatement behavior in the two strains.

Methods: Following six generations of selective breeding, LS and HS lines were inbred for an additional 10 generations. Current generation LS and HS rats were initially trained to self-administer cocaine under a fixed-ratio (FR)-1 schedule in which each lever press was followed by 0.32 mg/kg-injection of cocaine. Afterwards, response requirement and post-injection time out were gradually increased to FR-5 and 20 seconds, respectively. Drug self-administration was then allowed to extinguish over 7 daily sessions, during which responding had no consequence; followed by injection of saline or 10 mg/kg of cocaine delivered intraperitoneally.

Results: HS rats self-administered 2- to 3-fold more cocaine injections than LS animals. The HS strain also exhibited a qualitatively different pattern of extinction, responding at lower levels during extinction sessions 3 through 6 than LS animals (8.44 + 0.93 vs 20.7 + 1.80 respectively, p < 0.001). HS response latency was prolonged during these sessions, with no difference for inactive lever responding. Non-reinforced responding did not differ between strains during early extinction, late extinction, or cocaine-induced reinstatement.

Conclusions: In addition to increased levels of cocaine-reinforced behavior, HS rats have a different temporal pattern of extinction responding. Unexpectedly, non-reinforced responding declines more rapidly over days 3 to 6 of extinction in HS animals. Drug taking, extinction, and cocaine-induced reinstatement appear to be mediated by different biologic mechanisms in these strains.

Financial Support: Grants R21 DA029787 (NIDA) and 589-KG-0012 (VA).

FEASIBILITY AND SATISFACTION OF THE WOMEN’S RECOVERY GROUP FOR PATIENTS WITH CO-OCCURRING SUBSTANCE USE AND EATING DISORDERS.

Shelly F Greenfield,1,2, Dawn E Sugarman1,2, Brittany Iles, Esther Dechante,3 Thomas Weigel,5 Patricia Tarbox;1 Harvard Medical School, Boston, MA; 1Division of Alcohol and Drug Abuse, McLean Hospital, Belmont, MA; 2Division of Women’s Mental Health, McLean Hospital, Belmont, MA

Aims: Despite the high rate of co-occurrence among women with substance use disorders (SUDs) and eating disorders (EDs), no integrated treatments exist. The Women’s Recovery Group (WRG) for women with co-occurring SUDs and EDs. The goal of this study is to assess feasibility and satisfaction of the WRG for women with co-occurring SUDs and EDs.

Methods: Women admitted to ED residential treatment were included if they were ≥ 18 years and had a co-existing SUD. Crating to use substances and engage in ED behaviors, and motivation to abstain from substances and ED behaviors were assessed pre and post-treatment; satisfaction with the WRG was assessed at post-treatment.

Results: Of 19 participants enrolled, mean age=22 years (SD=2.7), 94.7% were white, and 77.8% attended some college. Alcohol was most frequently used (68.4%), then cannabis (52.6%), and prescribed stimulants (15.8%); mean EDE-Q score was 4.3 (SD=1.5; range 0-6). Those who completed follow-up (n=14, 73.6%) were moderately satisfied with the WRG (M=34.9, SD=9.1; range 14-56). Craving for substances (r=0.6, df=13, p=0.001) and to engage in ED behaviors (r=0.3, df=13, p=0.01) decreased from pre- to post-treatment; no significant changes in motivation to abstain were observed. Topics “How to manage triggers and high-risk situations” and “Can I have fun and not use drugs or alcohol as a risk factor for IPV subtypes and identifying high-risk subgroups.”

Financial Support: Grants R21 DA029787 (NIDA) and 589-KG-0012 (VA).

ALCOHOL USE AND INTIMATE PARTNER VIOLENCE AMONG WOMEN AND THEIR PARTNERS IN SUB-SAHARAN AFRICA.

M Claire Greene1, Debra M Furr-Holden2, Wiese A Tol3; Mental Health, Johns Hopkins Bloomberg School of Public Health, Washington, DC; 1Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Aims: Intimate partner violence (IPV) is a significant, preventable public health problem for which partner’s alcohol use has been implicated as a risk factor. The present study seeks to better characterize this relationship by investigating the effect of alcohol use on IPV subtypes (emotional, physical, sexual) and evaluating socioeconomic (SES) factors as effect measure modifiers. The hypotheses are that odds of all forms of IPV are greater among women whose partner uses alcohol and this risk is exacerbated in women of low SES.

Methods: The sample consists of 84,878 women aged 15-49 from 14 countries in sub-Saharan Africa who were enrolled in the sixth wave of the Demographic and Health Survey (DHS; 2010-2014). The DHS recruits a nationally representative sample from each included country and contains survey questions on IPV and alcohol use. Logistic mixed effects models were used to evaluate the relationship between partner’s alcohol use and IPV. To assess effect measure modification, we included interaction terms between alcohol use and indicators of SES in the model.

Results: Thirty-six percent of women reported experiencing IPV. Women whose partner consumed alcohol had 2.6-fold greater odds (95% CI: 2.5, 2.6) of experiencing any form of IPV, especially severe physical IPV (OR=3.0, 95% CI: 2.9, 3.2), relative to women who did not report partner alcohol use. SES indicators moderated this relationship such that odds of IPV for women whose partner used alcohol was significantly greater among women that were illiterate or in the lowest wealth tertile within their country.

Conclusions: Partner’s alcohol use is associated with an elevated risk of IPV in women; however, certain subgroups, particularly those of low SES, are especially vulnerable to this risk. This study builds upon existing literature by evaluating alcohol as a risk factor for IPV subtypes and identifying high-risk subgroups.

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RECENT COCAINE USE BEHAVIOR DIFFERS BY GLT1 GENOTYPE: A PILOT STUDY.

Mark Greenwald1, Eric A Woodcock2, Leslie H Lundahl1, Margit Burmeister3; 1Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI; 2Psychiatry and Human Genetics, University of Michigan, Ann Arbor, MI

Aims: The neuronal glutamate (GLU) transporter GLT1 helps maintain GLU homeostasis. Chronic cocaine use and withdrawal dysregulates GLU function; a current target for cocaine medication development is normalization of GLU function. SNPs in the gene that encodes GLT1 (SLC1A1) may offer insights into cocaine use patterns.

Methods: We genotyped two SLC1A1 intron variants (rs301435, rs301979) in chronic cocaine users being screened for a laboratory study. Phenotyping measures included urinalysis, drug use history, Cocaine Selective Severity Assessment (CSSA), and past 2-week timeline followback (TLFB) of cocaine use. 57 of 61 cocaine (mostly) ‘crack’ users (primarily African American) had complete data. For each participant, we computed measures of cocaine use ($10 unit amounts) and between-day variability in cocaine use across the TLFB period.

Results: The two SNPs were in linkage disequilibrium; we analyzed rs301435 due to its association with obsessive-compulsive disorder and independence from race in this sample. Relative to CC homozygotes (n=23) and TC heterozygotes (n=27), TT homozygotes (n=11) reported less peak and total cocaine use (total $10 units: Ms= 38.6, 43.8, 13.5; F[2,55]=3.59, p=0.034), less binge use (total $10 units + number of cocaine-use days: Ms= 6.85, 5.49, 1.98; F[2,55]=8.55, p<0.001), less cocaine-use variability (average SDs= 30.4, 24.1, 25.7; F[2,55]=3.40, p=0.041), and less cocaine craving (CSSA: Ms= 4.35, 5.37, 3.27; F[2,55]=7.05, p<0.001).

Conclusions: SLC1A1 rs301435 TT-homozygotes exhibit a less-severe recent cocaine use profile than C (common)-alleles carriers. These pilot study findings further suggest a role of GLT1 in modulating cocaine use, and can offer complementary efforts to develop GLU-normalizing medications.

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CHAPTER 1

PARTIAL KAPPA OPIOID RECEPTOR AGONIST EFFECTS IN VIVO IN MICE: BIASED VERSUS UNBIASED.

Catherine Guariglia, Amelia Dunn, Kyle Windsch, Edward Butelman, Brian Reed, Mary Jeanne Kreek; The Rockefeller University, New York, NY

Aims: Recent findings indicate that GPCRs, and the kappa opioid receptor (KOR) in particular, can have differential signaling through G-protein mediated pathways versus beta-arrestin pathways, which in turn can mediate different downstream effects. Recent studies of KOR ligands biased towards G protein mediated signaling indicate that KOR effects on sedation, as determined using rotarod assays, are likely mediated via arrestin mediated signaling. Here, we aim to test biased and unbiased KOR partial agonists in animal models.

Methods: In vitro GTPγS studies were done using KOR-expressing HEK cells, and arrestin signaling was done using the DiscoveRX U2OS KOR cell line and assay. In vivo mouse rotarod experiments were carried out over 300 seconds, ramping from 3-30rpm.

Results: We have observed that the mu opioid receptor antagonist nalmefene is a partial KOR agonist using GTPγS assays (21%), and an antagonist of KOR arrestin signaling. Conversely, we have found that the recently discovered novel kappa agonist, 3,5-[2-(Cyclobutylmethyl)phenethyl]aminoethylpheno1 (HS665), has partial KOR agonism in both GTPγS (14%) and arrestin assays (33%). In the rotarod assay, we found nalmefene (10 mg/kg) to have no effect, whereas HS665, at 30 mg/kg (but not 3 or 10 mg/kg), caused a decrease in rotarod time. The maximal effect was observed at 120 minutes post-injection (-47%). Nalmefene pretreatment completely blocked the sedative effect of HS665.

Conclusions: Further comparison, for instance in prolactin biomarker assays and conditioned place aversion assays, of nalmefene, a biased partial KOR agonist, with HS665, an unbiased partial KOR agonist, is warranted. Continuing investigation of KOR-signaling is important, as the modulatory role of the KOR could be exploited as a target for therapeutic use and diseases of addiction or mood-related psychiatric conditions.

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CHAPTER 2

THE ROLE OF ADVERSE CHILDHOOD EXPERIENCES IN INITIATION OF SUBSTANCE USE AND SEXUAL BEHAVIORS AMONG OPIOID-USING YOUNG ADULTS.

Honoria Guarino1, Pedro Mateu-Gelabert1, Sultip (Jill) Sirikantraporn2, Kyle Ruggles3, Cassandra Sykes1, Elizabeth Goodbody4, Samuel R Friedman5; NDRI, New York, NY, 1Alliant International U, San Diego, CA, 2NYU, NY

Aims: To assess associations between childhood trauma and ages of first substance use and sexual behaviors among young adult opioid users.

Methods: 1495 NYC young adults ages 18-29 who used prescription opioids (POs) nonmedically and/or heroin in the past 30 days were recruited by respondent-driven sampling. Computer-assisted interviews collected self-report data. The ACE Questionnaire assessed extent of childhood trauma from 0 (low) to 10 (high), with a score of ≥5 indicating elevated risk for negative health consequences. Spearman’s correlations measured associations between ACE score and ages of first substance use and sexual behaviors to test the hypothesis that higher ACE scores are associated with earlier ages of initiation.

Results: Participants were 66% male, 27% Latino, 81% White and 19% other races (mean age=24.5 yrs). Childhood trauma prevalence was high: 89% reported at least 1 adverse experience, and 47% reported 4 or more. Participants’ ACE scores were inversely correlated with age when first got drunk (r=-0.20, p<.01); age when began drinking regularly (r=-0.10, p<.05); age at first marijuana use (r=-0.22, p<.001); age when began using marijuana regularly (r=-0.23, p<.001); age at first sexual intercourse (r=-0.12, p<.01); age at first nonmedical PO use (r=-0.17, p<.001); age when began using POs regularly (r=-0.15, p<.01); and age at first heroin use (r=-0.15, p<.01).

Conclusions: For most substance use and sexual behaviors assessed, greater experience of childhood trauma was associated with younger age of initiation. Childhood trauma should be further explored as a risk factor for early onset of PO misuse. Integrating a trauma focus into efforts to prevent initiation and escalation of PO misuse may increase intervention effectiveness.

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Racial, Ethnic and Gender Disparities in Substance Use at Discharge.
Erick Guerrero1, Karissa Fenwick1, Yinfei Kong1, Hortensia Amaro1; 1School of Social Work, University of Southern California, Los Angeles, CA, 2Social Work and Preventive Medicine, University of Southern California, Los Angeles, CA

Aims: The aim of this study was to identify racial and ethnic and gender group differences in substance use at discharge by comparing (a) Latino, African American, and Asian clients with Caucasian clients; and (b) women in each racial and ethnic group with Caucasian men.

Methods: Analyzed client and program data collected in 2010 and 2011 from publicly funded treatment programs in Los Angeles County, CA. The analytic sample consisted of 11,533 primarily African American and Latino clients nested in 106 treatment programs. Severity of client substance use at discharge was measured as the number of days clients used their primary drug during the 30 days prior to discharge. Negative binomial regressions were used to examine the relationships between client race and ethnicity and gender and client substance use at discharge, while controlling for both client and program-level variables.

Results: At discharge, African American clients used their primary drug on fewer days than Caucasian clients (p < .01). Compared to Caucasians and men, Latinos and women used their primary drug on fewer days (p < .05). Compared to self-referred clients, clients who were referred from other sources such as the community and criminal justice system reported fewer days of drug use (p < .05). Program factors, such as program accreditation and organizational cultural competence, were also significantly associated with fewer days of drug use for members of all racial and ethnic and gender groups (p < .01).

Conclusions: Findings highlight the need to consider gender differences by race and ethnicity in developing culturally competent interventions. Findings have implications for the role of the organizational context of substance abuse treatment in reducing outcome disparities.

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Anxiety Sensitivity as a Predictor of Acute Subjective Effects of Smoking in African Americans.
Casey Guillot, Raina Pang, Matthew Kirkpatrick, Adam Leventhal; University of Southern California, Los Angeles, CA

Aims: Anxiety sensitivity (AS)—fearfulness of anxiety symptoms and their consequences—has been tied to indicators of smoking motivation and maintenance. Most prior experimental work has associated AS with negative reinforcement processes (e.g., withdrawal symptoms and negative affect), though a few experimental studies have related AS to positive reinforcement processes (e.g., reward and positive affect). To the best of our knowledge, no prior study has examined if AS predicts the acute subjective effects of smoking in African Americans.

Methods: African American non-treatment-seeking smokers (N = 211; 43.6% female; M age 48.1 years; 10+ cigarettes per day) completed the Anxiety Sensitivity Index during a baseline session. Participants then were asked to smoke normally before a subsequent experimental session. At the start of the experimental session, each participant smoked a single cigarette of their preferred brand in the laboratory. Self-report measures of affect and cigarette craving were completed before and after smoking, and post-cigarette subjective effect ratings were also provided. Linear regressions controlled for baseline dysphoria symptoms and education level (and for repeated measures only, corresponding pre-cigarette scores).

Results: AS predicted smaller smoking-induced decreases in negative affect (β = .17, p = .003). After performing a median split according to AS scores, post hoc paired samples t-tests revealed that smoking decreased negative affect among low-AS participants (t185 = -2.16, p = .033), whereas smoking did not significantly alter negative affect among high-AS participants (p = .65). There was also a nearly significant trend in regard to AS predicting greater post-cigarette smoking satisfaction (β = .14, p = .064).

Conclusions: Current findings suggest that AS may be related to both positive and negative reinforcement smoking processes during non-abstinence in African Americans.

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Anxiolytic-Like and Discriminative Stimulus Effects of Benzodiazepine-Neuroactive Steroid Combinations in Rats.
Barak W Gunter1, Sherman A Jones1, Donna Platt1, James K Rowlett1; 1University of Mississippi Medical Center, Jackson, MS, 2Vanderbilt University, PeGram, TN

Aims: Benzodiazepines (BZs) are effective anxiolytics but unwanted side effects limit their use. We have shown that combinations of the short-acting BZ triazolam and the short-acting neuroactive steroid pregnanolone increase the anxiolytic-like but not the reinforcing effects of triazolam. The present study extends these earlier findings to the longer-acting drugs clonazepam and ganaxolone and to additional models of anxiolytic-like (elevated zero maze, EZM) and abuse-related (drug discrimination) effects in rats.

Methods: Adult male Sprague-Dawley rats (Harlan, Indianapolis, IN) weighing between 260-300 g were used (n=7/group in EZM, n=8 in discrimination). The EZM consisted of a custom-made circular track with runways divided into four alternating quadrants, two with closed and two with open arms. Rats were administered drug or drug combinations (10-min pretreatment) and tested for 5 min. For discriminative stimulus effects, rats were trained to discriminate triazolam (0.1 mg/kg, i.p.) from saline under a FR 10 schedule of food pellet delivery. Combinations were analyzed using isobolograms and dose-addition analysis.

Results: Triazolam + pregnanolone, as well as clonazepam + ganaxolone combinations produced additive or supra-additive anxiolytic-like effects depending on the fixed-proportion that was tested. In triazolam discrimination, all drugs fully substituted for triazolam. In combination, triazolam and pregnanolone and clonazepam and ganaxolone produced predominantly additive effects, except for one dose-ratio of clonazepam + ganaxolone which had supra-additive effects.

Conclusions: These results support the idea that combining BZs and neuroactive steroids is an effective means to enhance anxiolytic-like effects. However, the supra-additive interoceptive effects of a clonazepam-ganaxolone combination raises the possibility of enhanced abuse-related effects under some conditions.

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Switching Gears: Shifts in Reward Function Associated with Age of Onset of MJ Use.
Nathan Hager1, K Jagannathan1, Reagan Wertherill1, Paul Regier1, Yasmin Mashhoon2, Heather Pater1, Charles P O’Brien1, Anna Rose Childress1, Teresa Franklin1; 1Psychiatry, University of Pennsylvania, Philadelphia, PA, 2Psychiatry, Harvard, Belmont, MA

Aims: Evidence suggests that early age of onset (EO) of cannabis use, compared to later onset (LO) is associated with structural abnormalities and functional deficits. We hypothesize that EO individuals might also exhibit disrupted reward function, as reflected in the brain response to drug reward cues.

Methods: Using functional MRI and an event-related BOLD backward-masking task, we compared neural responses to backward-masked 33 msec cannabis cues vs neutral cues in treatment-seeking, cannabis-dependent adults (N=44; 27 males). To determine specificity, comparisons with sexual and aversive cues were also examined. Individuals were grouped as EOs (<16 years old; n=16) or LOs (≥16 years old; n=27). SPM8 software within the MATLAB environment, was used to generate contrasts of evocative vs neutral cues.

Results: Age and recent cannabis use did not differ between the two groups; however, lifetime cannabis consumption was greater in EOs. EOs showed widespread cortical and dorsal striatal activity to cannabis vs neutral cues, whereas LOs had greater activity in the ventral striatum (VS). This differential pattern was repeated when comparing sexual to neutral cues. Aversion cues activated the dorsal striatum (DS) in EOs while no striatal activity was observed in LOs. Insula activity was observed within all 3 contrasts in both groups. Results were unchanged when including lifetime cannabis consumption in the model as a covariate.

Conclusions: Current BOLD findings, indicating VS incentive goal-directed activation in LOs and DS habit-based cannabis-seeking behavior in EOs are among the first to parallel previous preclinical studies in exhibiting a shift between goal-directed and habitual drug-related processing. Additional elevated DS activity in EOs to both sexual and aversive cues, relative to neutral cues, suggests persistent dysfunctional reward-related anticipation and responding, possibly based on the valence and intensity of the affective stimulus. Prospective studies are needed to determine causality.

Financial Support: PA CURE
THE PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR ALPHa AGONIST FENOFLIBRATE ATTENUATES ALCOHOL SELF-ADMINISTRATION IN RATS.

Colin N. Haid1,2,3, Therese A. Kosten1,2; Psychiatry, Baylor College of Medicine, Houston, TX; 1Psychology & TIMES, University of Houston, Houston, TX; 3Michael E. DeBakey VA Medical Center, Houston, TX

Aims: Fibrates are indcated for the treatment of hypercholesterolemia and dyslipidemia. Studies suggest that fenofibrate acts through central nuclear peroxisome proliferator-activated receptors (PPARs) to decrease voluntary alcohol consumption. However, the impact of fenofibrate on alcohol self-administration, alcohol-seeking and metabolism in rats is unknown.

Methods: We evaluated the ability of the PPARa agonist, fenofibrate (25, 50 and 100mg/kg), to alter alcohol (10%, v/v) and sucrose (2%, v/v) self-administration and -seeking in rats under FR2 and progressive ratio schedules of reinforcement over five days of treatment. The effects of each dose of fenofibrate on blood alcohol concentrations over time (5, 15, 30, 60, 90 and 120 min) were also assessed.

Results: Fenofibrate dose-dependently decreased alcohol self-administration and alcohol-seeking behaviors with the greatest effects seen following four days of treatment. Although fenofibrate decreased responding for sucrose, this effect was less dose-dependent. The highest dose of fenofibrate significantly delayed alcohol metabolism.

Conclusions: These findings provide evidence that fenofibrate may act peripherally to alter the behavioral effects of alcohol.

Financial Support: None

PARENTAL PERMISSION FOR ADOLESCENT ALCOHOL USE AT HOME WITH FRIENDS: ASSOCIATIONS WITH DEMOGRAPHIC FACTORS AND RISKY DRINKING IN ONTARIO, CANADA.

Hayley Hamilton1, Angela Beal2, Robert Mann2; 1Centre for Addiction and Mental Health, Toronto, ON, Canada; 2Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada

Aims: Much research shows that risky drinking may have adverse consequences. The objective of this study is to describe underage drinkers whose parents allow them to drink alcohol at home with friends or while partying, and to examine the association between permission to drink and alcohol use.

Methods: Data were derived from the 2015 Ontario Student Drug Use and Health Survey, a province-wide survey of students in grades 7 to 12, which utilized a stratified two-stage (school, class) cluster design. Analyses were based on 2049 high school (Gr. 9-12) students 18 years of age or younger (underage) who reported alcohol use in the past year. Parental permission to use alcohol was based on a question that asked: “Do your parents (or guardians) allow you and your friends to drink alcohol in your home while you are having a party or get-together?”

Results: Almost 26% of high school students 18 years or younger reported being allowed to drink with friends in the home, whereas 43% of past year drinkers reported such parental permission. Results indicated that students with parental permission were older, white background, reported higher subjective social status relative to peers, and reported splitting their time between two or more homes. Ordered logistic regression results indicated that students whose parents allowed them to drink at home with friends were at greater odds of more frequent drinking and more frequent binge drinking, even after adjusting for demograph-ic factors.

Conclusions: Findings suggest that permitting students to drink at home with friends may be associated with risky drinking. Further research is needed to investigate the nature and level of underage drinking with friends within the home.

Financial Support: Partial funding through ongoing support from the Ontario Ministry of Health and Long-Term Care, and through special grants for targeted questions.

MODAFINIL REDUCES COCAINE SELF-ADMINISTRATION IN HUMANS: EFFECTS VARY AS A FUNCTION OF COCAINE ‘PRIMING’ AND COST.

Margaret Haney1, Eric Rubin2, Richard Folkins; 1Psychiatry, Columbia University Medical Center, New York, NY; 2Psychiatry, Harlem Hospital, New York, NY

Aims: The failure to develop an effective cocaine pharmacotherapy may partly reflect the use of one medication for both abstinence initiation (interrupting ongoing cocaine use) and relapse prevention (decreasing re-initiation of drug use). In human laboratory models, modafinil is the only medication to reduce cocaine self-administration, yet modafinil has produced mixed results clinically. Our objective was to test modafinil’s effects on cocaine self-administration under a range of conditions to define how modafinil influences the decision to use cocaine.

Methods: Nontreatment-seeking cocaine smokers (never alcohol-dependent), enrolled in a 52-day inpatient/outpatient study, received placebo and modafinil (300 mg/day) capsules in counter-balanced order. They chose to self-administer up to 7 doses of smoked cocaine (25 mg) under 9 conditions: when exposed to: (a) cocaine-paired cues and a ‘prime’ (non-contingent, single cocaine administration), (b) cocaine cues only, and (c) neither cues nor cocaine. Each condition was tested when cocaine cost was $5, $10 and $15.

Results: Participants [3F,15M], 44 ± 5 years of age, spending $401 ± 225/week on cocaine completed the study. Modafinil robustly decreased self-administration when cocaine cost $10 or $15 per dose and there was no ‘prime’. If ‘primed’ with cocaine, modafinil did not robustly reduce cocaine choice at any cost. Further, when cocaine was inexpensive ($5/dose), modafinil had little effect on self-administration relative to placebo.

Conclusions: Modafinil’s effects on cocaine-taking significantly varied as a function of cocaine exposure and cost. Modafinil was highly effective at reducing cocaine use if participants had no cocaine on board. Once cocaine use had begun, modafinil had little effect. Similarly, modafinil had little influence on choice when cocaine was inexpensive ($5), but decreased cocaine choice when the cost of cocaine was high. These findings may help explain modafinil’s mixed clinical effects.

Financial Support: Supported by NIDA DA023650.

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Dennis J Hand, Karol Kaltenbach, Vanessa Short, Diane J Abatemarco; Pediatrics, Thomas Jefferson University, Philadelphia, PA

Aims: The prevalence of opioid use during pregnancy has risen rapidly over the past 10 years. It is not presently clear whether rates of concomitant use of other drugs during opioid-exposed pregnancies have changed during this time. Of particular interest is concomitant gestational exposure to methadone and benzodiazepines, which increase the severity of Neonatal Abstinence Syndrome and length of post-delivery hospital stay. We determined the prevalence and patterns of and factors related to benzodiazepine and other drug use among methadone-maintained pregnant women.

Methods: Clinical data from 603 pregnancies occurring between 2002 and 2011 and analyzed. Urine drug screens were conducted at least biweekly and tested for benzodiazepines, cocaine, opiates, marijuana, amphetamine, propoxyphene, barbiturates, and phencyclidine via CEDIA immunoassay. For each urine screen, the pregnant woman’s age, estimated gestational age, weeks in treatment, and methadone dose were also gathered. Chi-square and McNemar tests and logistic regressions were used for statistical comparisons.

Results: The percentage of benzodiazepine-exposed pregnancies in our clinic remained around 40% from 2002-2011 with no statistically significant trend. Women who used benzodiazepines were significantly more likely than non-users to also use cocaine (p < .01), heroin (p < .02), or marijuana (p < .01). Half of benzodiazepine-using women discontinued their use prior to delivery. Those who ceased using benzodiazepines were significantly more likely than continuing benzodiazepine users to cease using heroin and marijuana (p < .01), but not cocaine (p = .08), with cessation of heroin and cocaine use tending to occur before, and cessation of marijuana use tending to occur after cessation of benzo-diazepine use.

Conclusions: Benzodiazepine use has remained common among pregnant women receiving methadone maintenance and is associated with use of other illicit drugs. Interventions that minimize benzodiazepine use during pregnancy stand to provide significant maternal and child health benefits and may produce significant cost savings.

Financial Support: None

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MODAFINIL REDUCES COCAINE SELF-ADMINISTRATION IN HUMANS: EFFECTS VARY AS A FUNCTION OF COCAINE ‘PRIMING’ AND COST.

Margaret Haney1, Eric Rubin2, Richard Folkins; 1Psychiatry, Columbia University Medical Center, New York, NY; 2Psychiatry, Harlem Hospital, New York, NY

Aims: The failure to develop an effective cocaine pharmacotherapy may partly reflect the use of one medication for both abstinence initiation (interrupting ongoing cocaine use) and relapse prevention (decreasing re-initiation of drug use). In human laboratory models, modafinil is the only medication to reduce cocaine self-administration, yet modafinil has produced mixed results clinically. Our objective was to test modafinil’s effects on cocaine self-administration under a range of conditions to define how modafinil influences the decision to use cocaine.

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Financial Support: Supported by NIDA DA023650.

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REDUCED PRECURSIVE ACTIVATION IN ADOLESCENTS AT RISK FOR FOOD ADDICTION.
Jillian Harder, Ashley Geazhiah, Lora M Cope, Robert Zucker, Mary Heitzeg; Psychiatry, University of Michigan, Ann Arbor, MI

Aims: Theorists propose that addictive processes may be involved in obesity etiology, and addictive-like eating behaviors have been linked to neural activation patterns mimicking those of substance dependence, such as reduced inhibitory control. However, it is unknown whether these same patterns are present during general inhibition tasks when food cues are not present. The aim of this study was to investigate how food addiction risk is associated with response inhibition circuitry.

Methods: Participants were 20 adolescents from an ongoing longitudinal MRI study. Ten participants had an elevated score (z-score ≥1.0) on the Yale Food Addiction Scale for Children (YFAS group; mean age=14.3yrs; mean symptom score=2.4; 2 females). Individuals in the Control group (n=10; mean age=14.7; 7 females). We used a go/no-go task to examine the hemodynamic response during successful response inhibition (i.e., correct rejection trials versus correct go trials). A two-sample t-test was conducted in SPM8 to look for differences between groups.

Results: There were no significant performance differences between groups with respect to percent hits, hit reaction times, or number of errors (p>0.05). Relative to controls, the YFAS group showed significantly blunted activation in bilateral precuneus during successful inhibitory control (p<0.05 FWE corrected; x=-50, y=14, z=0.8; p<0.05). The precuneus is a core region of the default network, and deactivation during cognitive tasks, particularly when tasks become more difficult. The significance of the precuneus indicates that these individuals may require greater attentional effort in order to attain comparable task performance as controls. Further, these results have implications for potential mechanisms of food addiction.

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DIFFERENCES IN CLINICAL PRESENTATION BETWEEN HIGH AND LOW IMPULSIVE METHAMPHETAMINE USERS.
Emily E Hartwell 2,3, Lara Ray 2,1; 1Psychiatry, UCLA, Los Angeles, CA, 2Psychology, UCLA, Los Angeles, CA, 3Integrated Substance Abuse Programs, UCLA, Los Angeles, CA

Aims: Previous work has shown interesting associations between impulsivity and clinically meaningful variables in methamphetamine (MA) users (Tziortizis et al., 2011). Impulsivity has also been linked to treatment non-completion (Winhusen et al., 2013) and relapse (Newton et al., 2009). The aim of this study was to further examine clinical presentation in a sample of diverse, current MA users as a function of impulsivity.

Methods: Non-treatment seeking, current MA users were recruited from the greater LA area for participation in a larger pharmacotherapy trial. During the baseline assessment, participants completed the Barratt Impulsivity Scale (BIS), the Timeline Follow-Back (TLFB), the Structured Clinical Interview for DSM-IV, the MA Urge Questionnaire (MAUQ), the Beck Depression Inventory (BDI-II), the Beck Anxiety Inventory (BAI), and the MA Withdrawal Questionnaire (MAWQ). A series of correlations and Proc GLM analyses were completed in SAS 9.3.

Results: The BIS total score significantly and positively correlated with MAUQ (ρ=0.01), total number of MA symptoms of abuse and dependence (ρ=0.001), MAWQ (ρ=0.001), BDI (ρ=0.001), and BAI (ρ=0.001). BIS scores were not associated with MA or alcohol use as assessed by the TLFB. Using a median split, participants who fell into the high impulsivity group reported greater number of MA symptoms (F=12.5, p<0.001), higher MA withdrawal (F=34.1, p<0.001), higher BDI scores (F=33.5, p<0.001), and higher BAI scores (F=39.9, p<0.001). A trend towards greater craving (F=3.27, p=0.07) was also found in the more impulsive group compared to the less impulsive group.

Conclusions: Results indicate that individuals with higher levels of impulsivity may require additional assessment and specialized treatment as they may represent a unique subtype of MA users. Given that impulsivity is a predictor of relapse, addressing these individuals’ comorbid withdrawal and affective symptomatology may aid in improving outcomes.

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E-CIGARETTE EXPECTANCIES: INITIAL QUALITATIVE ASSESSMENT FOR MEASURE DEVELOPMENT.
Paul Truman Harrell1, Gwendolyn Quinn2, Bryanna Vesely1, Thomas Brandon1; 1Pediatrics, Eastern Virginia Medical School, Norfolk, VA, 2Health Outcomes & Behavior, Moffitt Cancer Center, Tampa, FL

Aims: Use of electronic nicotine delivery systems (“ecigs”) has increased dramatically, with as yet unknown risks and benefits. Various ecig “expectancies” (beliefs about effects of using ecigs) are associated with ecig use, smoking cessation, and intentions to quit ecigs. However, the expectancies examined to date are based on cigarette expectancies, which may be less relevant for ecig users. As a first step to develop an ecig expectancy measure, we will conduct 2-4 focus groups (FGs) of young adults (18-24).

Methods: To evaluate an array of relevant expectancies, eligibility criteria (e.g., daily use, lifetime use, etc.) were developed for 4 FGs stratified by cigarette and ecig use status. FGs assessed beliefs about immediate, short-term, and long-term ecig effects, with additional prompts to ensure discussion of expectancies previously found relevant for cigarettes.

Results: To date, 48 individuals were screened, 26 met criteria, and 16 participated (age M=20.75, SD=2.11, 56.3% White). Non-users (n=8) felt ecig use would lead to addiction, physical harm, and cause them to lose their current friends. Ecig exclusive users (n=8) felt ecigs caused minimal, avoidable negative effects (“pneumonia lung”, “vape mouth”), reduced harm from smoking, provided an avenue for self-expression, and helped make friends.

Conclusions: Initial qualitative data suggest that, despite some overlap, ecig expectancies are distinct from previously identified cigarette expectancies. Public health efforts that target these expectancies may reduce harm from ecig use. Future FGs with smokers and dual users will help enhance understanding of messaging which may be useful to support ecig use as a smoking cessation tool. Full results will be reported at meeting.

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SINGLE ADMINISTRATION OF OXYTOCIN ATTENUATES CRAVING TO SMOKE CANNABIS.
Karen J Hartwell1,2, Nate Baker1, James R Walker1, Aimee McRae-Clark1; 1MUSC, Charleston, SC, 2Ralph H Johnson VAMC, Charleston, SC

Aims: Oxytocin is known to promote trust as well as reduce anxiety. Little is known about the potential therapeutic effects of oxytocin in cannabis-dependent adults. This pilot study examined craving response and cannabis use following (Tziortizis et al., 2011). Oxytocin has also been linked to treatment non-completion (Winhusen et al., 2013) and relapse (Newton et al., 2009). The aim of this study was to further examine clinical presentation in a sample of diverse, current MA users as a function of impulsivity.

Methods: Non-treatment seeking, current MA users were recruited from the greater LA area for participation in a larger pharmacotherapy trial. During the baseline assessment, participants completed the Barratt Impulsivity Scale (BIS), the Timeline Follow-Back (TLFB), the Structured Clinical Interview for DSM-IV, the MA Urge Questionnaire (MAUQ), the Beck Depression Inventory (BDI-II), the Beck Anxiety Inventory (BAI), and the MA Withdrawal Questionnaire (MAWQ). A series of correlations and Proc GLM analyses were completed in SAS 9.3.

Results: The BIS total score significantly and positively correlated with MAUQ (ρ=0.01), total number of MA symptoms of abuse and dependence (ρ=0.001), MAWQ (ρ=0.001), BDI (ρ=0.001), and BAI (ρ=0.001). BIS scores were not associated with MA or alcohol use as assessed by the TLFB. Using a median split, participants who fell into the high impulsivity group reported greater number of MA symptoms (F=12.5, p<0.001), higher MA withdrawal (F=34.1, p<0.001), higher BDI scores (F=33.5, p<0.001), and higher BAI scores (F=39.9, p<0.001). A trend towards greater craving (F=3.27, p=0.07) was also found in the more impulsive group compared to the less impulsive group.

Conclusions: Results indicate that individuals with higher levels of impulsivity may require additional assessment and specialized treatment as they may represent a unique subtype of MA users. Given that impulsivity is a predictor of relapse, addressing these individuals’ comorbid withdrawal and affective symptomatology may aid in improving outcomes.

Financial Support: R24DA038240 (AMC)
DOMESTIC PREVALENCE OF SUBSTANCE USE DISORDERS IN HIV CARE SETTINGS:
Bryan Hartzler, Dennis Donovan, Blair Beadnell, Heidi M Crane, Joseph J Eon, Elvin H Geng, William C Matthews, Kenneth H Mayer, Richard D Moore, Michael Mugavero, Sonia Napravnik, Benigno Rodriguez, Julia C Dombrowski; 1University of Washington, Seattle, WA, 2University of North Carolina-Chapel Hill, Chapel Hill, NC, 3University of California-San Francisco, San Francisco, CA, 4Harvard University, Boston, MA, 5New York University-Santa-Diego, San Diego, CA, 6Johns Hopkins University, Baltimore, MD, 7University of Alabama-Birmingham, Birmingham, AL, 8Case Western Reserve University, Cleveland, OH, 9Prevention Research Institute, Louisville, KY

Aims: Substance abuse and HIV infection are long-recognized as a domestic health syndemic. Published prevalence estimates for substance use disorders (SUDs) among HIV care enrollees are limited by data from single-site trials, historical artifact, and lack of specificity for involved substances. The current work sought to address these issues.

Methods: A multisite longitudinal HIV care database, the CFAR Network of Integrated Clinical Systems (CNICS), incorporates domestic data from which the scope of substance-specific SUDs was determined in a large, diverse sample. Analyses are based on data of 10,984 persons enrolled in one of seven CNICS sites between 1/1/2007 and 12/31/2014, who completed: 1) demographic data, 2) an abbreviated Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), and 3) the Alcohol Use Disorders Identification Test-C (AUDIT-C).

Results: Based on validated ASSIST/AUDIT-C diagnostic thresholds, prevalence of any SUD and of polysubstance use disorder was ≥48% and ≥20%, respectively. For five available substance-specific SUD categories, prevalence was: marijuana (14%), alcohol (8%), amphetamine (3%), cocaine (2%), and opiate (1%). Findings to be reported will include geographic differences in SUDs prevalence, as well as associations with patient demography.

Conclusions: Findings document the domestic scope of this syndemic, with nearly half of HIV care enrollees evidencing an SUD and a sizable subgroup exceeding diagnostic thresholds for multiple substances. Implications for the HIV care continuum will be discussed.

Financial Support: R03 DA039719

PREDICTING CONTINGENCY MANAGEMENT TREATMENT EFFICACY AMONG ADOLESCENTS BY USING MEASURES OF IMPULSIVITY.
Ari Harvanko, Justin C Strickland, Brady Reynolds; University of Kentucky, Lexington, KY

Aims: Few studies have examined the impact of impulsivity on tobacco cessation therapies. The current study examined whether self-report and performance measures of impulsivity were associated with contingency management smoking cessation therapy outcomes, and whether therapy altered impulsivity.

Methods: Data from two contingency management smoking cessation therapy studies (combined N = 189 adolescents, 93 females) were examined. Participants' breath carbon monoxide (CO) levels were assessed 3x/day during five separate phases: baseline, shaping, abstinence, thinning, and return to baseline. During abstinence and thinning phases participants in the active condition (N = 94) were compensated if breath CO levels were below 4 ppm, while participants in the control condition (N = 95) were compensated regardless of CO level. During the baseline and return to baseline phases, participants in both the active and control conditions were compensated for providing timely CO measurements regardless of CO level. Before and after therapy impulsivity was assessed with the Barratt Impulsivity Scale, a measure of delayed discounting, experiential discounting, continuous performance, and a go/no-go task.

Results: Individuals in the active condition had significantly lower CO levels during the shaping, abstinence, thinning, and return to baseline phases compared to controls. Preliminary analyses indicate a significant relationship between pre-treatment delayed discounting and reductions in breath CO during the return to baseline phase for those in the active condition. Ongoing analyses will assess relationships between impulsivity measures and changes in smoking behavior across therapy, as well as the influence of therapy on impulsivity.

Conclusions: These data confirm that contingency management therapy is effective at decreasing CO levels in adolescent smokers and that certain types of impulsive behavior predict treatment outcomes. Identifying predictors of contingency management therapy response may lead to tailored treatment recommendations for more impulsive individuals.

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DSM-5 CANNABIS USE DISORDERS IN THE UNITED STATES, 2012-2013.
Deborah S Hasin,1,2 Bridget F Grant; 1Columbia University, New York, NY, 2New York State Psychiatric Institute, New York, NY, 3National Institute on Alcohol Abuse and Alcoholism, Rockville, MD

Aims: Americans increasingly see marijuana as a harmless substance, the prevalence of cannabis use and DSM-IV cannabis use disorder has increased, and DSM-5 modified the diagnostic criteria for cannabis use disorders. Therefore, updated information is needed on the prevalence, demographic characteristics, psychiatric comorbidity, disability and treatment for DSM-5 cannabis use disorders in the US adult population.

Methods: In 2012-2013, a nationally representative sample of 36,309 participants was interviewed in the National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III). Psychiatric and substance use disorders were assessed using the Alcohol Use Disorders and Associated Disabilities Interview Schedule-5.

Results: Prevalence of 12-month and lifetime marijuana use disorder was 2.5% and 6.3%. Among those with 12-month and lifetime marijuana use disorder, marijuana use was frequent; mean days used per year was 225.3 (s.e. 5.7) and 274.2 (s.e. 3.8). Odds of 12-month and lifetime marijuana use disorder were higher for men, Native Americans, those unmarried, with low incomes, and young adults, (e.g., OR=7.2, 95% CI 5.5-9.5 for 12-month disorder among those 18-24 years compared to those ≥45 years). Marijuana use disorder was associated with other substance disorders, affective, anxiety and personality disorders. Twelve-month marijuana use disorder was associated with considerable disability. Across disorder severity levels (mild, moderate, severe) virtually all associations became stronger. Only 24.3% with lifetime marijuana use disorder participated in professional treatment or 12-month use.

Conclusions: DSM-5 marijuana use disorder is prevalent, associated with comorbidity and disability, and often untreated. Findings suggest the need to improve prevention methods, and to educate the public, professionals and policy makers about the risk of harms associated with marijuana use disorders, and available interventions.

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ATTITUDES AND PRACTICES OF CANNABIS DISPENSARY STAFF.
Nancy A Haug,1 Dustin Kieschnick,1 James E Sottile,1 Ryan Vandrey,2 Kimberly Babson3, Marcel O Bonn-Miller,2,3 Palo Alto University, Palo Alto, CA, 4Johns Hopkins University, Baltimore, MD, 5VA Palo Alto Health Care System, Menlo Park, CA

Aims: Due to policy changes at the state level, medical and recreational cannabis dispensaries have proliferated across the United States. Little is known about the front-line dispensary staff, who manage the sale of cannabis. The purpose of this ongoing study is: (1) to assess attitudes, knowledge, and practices of cannabis dispensary staff, and (2) to identify cannabis dispensary staff observations of patient symptoms and subsequent recommendations.

Methods: Dispensary staff (current n=27) were identified through online dispensary databases and social media. Participants were recruited by direct e-mail, provided consent and completed an online survey via Qualtrics.

Results: Preliminary data indicate that dispensary staff are predominately young (mean age=33.4 years, SD=10.6), Caucasian (85%), female (56%), 2-year college educated or higher (67%), and employed more than 40 hours per week (58%) at a mean rate of $12.50/hour (range=$8.00-18.50). Fifty-six percent of the sample describe prior training, including: customer service (36%), business (24%), scientific (20%) and medical (12%). A majority of dispensary staff report that they provide advice or counsel to patients (95%) regarding: benefits of cannabis (68%); particular strains to use (74%); side effects/negative consequences (63%); and administration methods (74%). Recommendations for cannabis strains are based on patient ailments (67%), their own experience (44%), experience of other patients (59%), dispensary owner or staff (41%), scientific articles (48%), websites (37%) and patient preferences (63%). Dispensary staff suggest specific cannabinoids (i.e., high THC, high CBD, equal THC/CBD) or cannabis strains (sativa, indica, hybrid) for particular psychological or medical conditions (e.g., anxiety, appetite, arthritis, chronic pain, depression, headaches, and insomnia).

Conclusions: This research will provide valuable information regarding current cannabis dispensary staff practices to inform education and training, and ultimately improve patient care.

Financial Support: None.
INSURANCE IS NOT ENOUGH: SIGNIFICANT INCREASES IN INSURANCE COVERAGE DO NOT INCREASE SUBSTANCE TREATMENT ENTRY AMONG RURAL APPALACHIAN DRUG USERS.

Jennifer K. Havens1, Hannah K. Knudsen, Michelle R. Lofwall, Sharon L. Walsh; Center on Drug and Alcohol Research, University of Kentucky, Lexington, KY

Aims: For many states, Medicaid expansion under the Affordable Care Act (ACA) has led to dramatic increases in the number of newly insured. Another hallmark of the ACA is the great potential for substance abuse treatment access among the insured. The purpose of the current analysis was to examine increases in insurance coverage over the course of an 8-year cohort study and to determine whether coverage was predictive of treatment entry at the most recent follow-up visit (data collection ongoing).

Methods: Data were collected longitudinally (90%+ follow-up rates) at seven time points from a cohort of 503 rural drug users in Appalachian Kentucky (2008-2015). Poisson regression was used analyze insurance rates over time and logistic regression was used to analyze the predictors of treatment entry (defined as medication assisted treatment [MAT; methadone or buprenorphine], residential, and outpatient) at follow-up.

Results: Insurance coverage (via Medicaid/Medicare) more than doubled from baseline to the most recent assessment (30.2% at baseline, 29.9% at 6-, 31.2% at 12-, 31.2% at 18-, 32.4% at 24-, 41.3% at 30-, and 75.5% at 36-months post-baseline: p<0.001). Less than 8% of participants had sought substance abuse treatment in the past year, yet 73.5% met past-year DSM-IV dependence criteria for prescription opioids. While there was a significant increase in the numbers insured, Medicaid/Medicare coverage was not predictive of treatment entry (p=0.629) in the logistic models.

Conclusions: While there have been laudable increases in insurance coverage among marginalized rural drug users, entry into treatment is still low, despite great need. This points to a lack of viable treatment options in rural areas. The focus should now be shifted to increasing access to MAT and other evidence-based treatments in order to combat substance abuse and dependence in rural populations.

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PREScribing OPIODs SAFELY IN THE EMERGENCY DEPARTMENT STUDY: PREDICTORS OF EMERGENCY DEPARTMENT DISCHARGE WITH HIGH MORPHINE MILLIGRAM EQUIVALENT PRESCRIPTION (HMHEP).

Kathryn Hawk1, Scott Weiner 2, Jim Dzurak, David A Fiellin3, Dana DaEun4, Lewis Nelson1, Jason Hoppe5, Jeanmarie Perrone6, Gail D’Onofrio7,1; 1Emergency Medicine, Yale University, New Haven, CT, 2Emergency Medicine, Brigham & Women’s Hospital, Boston, MA, 3Internal Medicine, Yale University, New Haven, CT, 4Harvard Medical School, Boston, MA, 5Emergency Medicine, New York, NY, 6Emergency Medicine, University of Colorado, Denver, CO, 7Emergency Medicine, University of Pennsylvania, Philadelphia, PA

Aims: To determine patient characteristics associated with Emergency Department (ED) discharge with high morphine milligram equivalent prescription (HMHEP).

Methods: The POSED consortia collected patient and prescription characteristics on individuals discharged from 19 EDs with an opioid prescription over a week in 2012. We calculated total morphine milligram equivalents (MME) for each prescription based on medication, dose, and quantity supplied and used logistic regression, adjusting for race, ethnicity, gender, insurance status, triage ESI score, pain score, and site to identify characteristics associated with high MME. HMHEPs were defined as prescriptions with the highest quartile of MME.

Results: Of 3,111 patients, total MME ranged from 10 to 2,422, with an inter-quartile range of 75 to 149. HMHEP for ≥150 MME were prescribed to 895 patients. Multivariate analysis demonstrated less frequent HMHEP for black (OR=0.54, 95% CI 0.34-0.86) and Asian (OR=0.38, 95% CI=0.16-0.89) patients and increased HMHEP for males (OR=1.32, 95%CI=1.07-1.6). Compared to patients with pain scores of 10, those with scores of 4-6 were less likely to receive HMHEP (OR=0.59, 95%CI=0.43-0.8). Variation across sites was noted. Higher triage acuity was associated with HMHEP, while age and insurance status were not.

Conclusions: Asian and black patients are less likely, and males and those with more acute triage ESI score were more likely to be discharged from EDs with HMHEP. Strategies to better understand and address practice variation in ED prescription of opioids are needed.

Financial Support: K. Hawk is supported by NIDA K12 DA033312-03.

EMOTION REGULATION MODERATES THE RELATIONSHIP BETWEEN PERCEIVED DISCRIMINATION AND RISK BEHAVIORS IN AFRICAN AMERICAN COLLEGE STUDENTS.

Angela Michele Heads1, Linda G Castillo2, Angel Glover2, Joy Schmitz2, 1University of Texas HSC Houston, Houston, TX, 2Texas A&M University, College Station, TX

Aims: College students have been identified as susceptible to health risks due to behaviors such as alcohol/drug use and unsafe sexual behaviors. Prior research has identified perceived discrimination as a contributing factor in health and mental health disparities including these risky behaviors. We hypothesized that higher levels of ethnic socialization (ES) and emotion regulation (ER) would have a moderating effect on the association between perceived discrimination (PD) and risk behaviors. The current research explores the role that cultural factors may play in the tendency to engage in or the ability to avoid these risky behaviors.

Methods: The sample consisted of 721 African American and Afro-Caribbean students (77.7% female, m=20.6). Participants completed the Familial Ethnic Socialization Measure, Scale of Ethnic Experience, and Emotion Regulation Questionnaire. Health risk behaviors were assessed using the sexual risk taking and illicit drug use subscales of the Youth Risk Behavior Surveillance Survey.

Results: Hierarchical logistic regression analyses were conducted to test the degree to which PD, ES and the interaction between PD and ER predict risk behaviors. A test of the full model predicting risk behaviors, was statistically reliable (χ²=59.818, p<.01, df=8) indicating that the set of predictors reliably distinguished between individuals reporting higher versus lower risk behaviors. A significant interaction effect indicated that higher ER scores weakened the relationship between PD and health risk behaviors. ES did not interact with PD to predict risk behaviors.

Conclusions: Findings indicate that PD was associated with greater risk behaviors and that ER moderated the relationship. Implications for intervention and prevention in African American college students are discussed.

Financial Support: No financial support.

INVESTIGATION OF THE κ-OPIOID RECEPTOR AGONIST CR845 AND REFERENCE COMPARATOR, BUTORPHANOL, IN RATS TRAINED TO DISCRIMINATE (-)-PENTAZOCINE FROM SALINE.

David John Heal1, Jane Gosden1, Nigel Slater2, Robert H Spencer3, Frédérique Menzaghi1; 1Cara Therapeutics, Shelton, CT, 2RenaSci Ltd, Nottingham, United Kingdom

Aims: CR845 is a peripherally-acting κ agonist being developed to treat pain and pruritus. CR845 has no activity at μ or δ receptors. Its peptidic structure restricts its entry into the CNS and differentiates it from other clinically used opioids. The present study has investigated whether CR845 could generalise to the discriminative cue elicited in rats by the centrally-acting mixed κ/σ agonist and μ partial agonist, (-)pentazocine.

Methods: Groups of 6-7 Lister hooded female rats were trained to discriminate (-)pentazocine (5 mg/kg IP) from saline (IP). Butorphanol, a κ agonist / μ partial agonist, was the reference comparator. Drugs were tested 15 min after IV injection. Results are reported as mean ± SD % generalisation to the (-)pentazocine cue. CR845 was evaluated across a range of doses including those yielding >3x the clinical exposure in man.

Results: The model was validated by the dose-dependent generalisation of IV (-)pentazocine (0.017, 0.05, 0.17 and 0.5 mg/kg) to the training cue (17.7 ± 8.9% [n = 6], 29.9 ± 16.0% [n = 7], 36.4 ± 23.6% [n = 6], 75.8 ± 8.2% [n = 6], respectively). Butorphanol (0.001, 0.01, 0.05 and 0.25 mg/kg IV) also dose-dependently generalised to the (-)pentazocine cue (17.1 ± 11.7% [n = 6], 52.9 ± 30.9% [n = 6], 60.8 ± 22.4% [n = 6], 76.6 ± 17.5% [n = 7], respectively). CR845 at antinociceptive doses in rats (0.05, 0.125, 0.25 and 0.5 mg/kg IV) generalised to saline at the lowest dose, (23.6 ± 10.5% [n = 7]) and partially generalised to (-)pentazocine at all other doses (35.4 ± 20.2% [n = 7], 59.2 ± 17.9% [n = 7], 34.5 ± 10.1% [n = 7], respectively) with no evidence of dose-dependence.

Conclusions: IV (-)pentazocine and butorphanol, both generalised fully to the cue elicited by IP(-)pentazocine validating the model for detecting drugs with μ and κ agonist properties. CR845 produced low-level, non-dose-dependent, partial generalisation to (-)pentazocine. This result is consistent with CR845 having μ partial agonist κ agonist with potent κ partial agonist effect on κ receptor.

Financial Support: Funded by Cara Therapeutics
EFFECT OF VASOPRESSIN AND OXYTOCIN ON ACTH SECRETION IN COCAINE-DEPENDENT PATIENTS.

Matthew Scott Heller, Frances R Levin, Edward V Nunes, Willrid N Ruby; Psychiatry, Columbia University, New York, NY

Aims: Chronic stress models describe Vasopressin (VP) control over ACTH secretion and reduced regulatory control by Oxytocin (OT) as consequences of stressor chronicity. If cocaine-dependence is a form of chronic stress, can OT restore stress regulation of ACTH secretion? In cocaine-dependent patients (CDP) we measured serum ACTH levels under 3 conditions: 1) after administration of intranasal (IN) Desmopressin (DDAVP); 2) in response to IN DDAVP after a pretreatment with IN OT; 3) after 6-wks of IN OT vs. placebo (PBO). This study is conducted as part of a 6-wk clinical trial investigating if daily IN OT (24 IU) can reduce relapse risk in CDP.

Methods: Phase 1 tests effects of IN DDAVP vs. IN OT on serum ACTH in cocaine deprived subjects. Phase 2 is a 6-wk, double-blind, randomized, PBO-controlled trial of daily IN OT vs. PBO for CDP. Phase 3 repeats Day 1 of Phase 1.

Results: Compared to baseline, ACTH levels increase in CDP (t=-5.27; p<0.0001) and CON (t=4.71; p=0.0011) after IN DDAVP. However, ACTH levels are not elevated in both CDP (t=1.23; p=0.2382) and CON (t=0.937; p=0.3762) after IN OT. In CDP, compared to the effect of IN DDAVP alone, pretreatment with IN OT at study entry increased ACTH secretion induced by IN DDAVP (t=2.12; p=0.0482). This effect was also seen in CON (t=0.436; p=0.6744). To date for 8 CDP who completed 6-wks of IN OT vs. PBO, the effect of IN DDAVP on ACTH did not differ from study entry (t=1.09; p=0.3886).

Conclusions: IN DDAVP elevates ACTH in CDP and CON. IN OT by itself does not. Pretreatment with IN OT appears to increase the ACTH stimulating effect of IN DDAVP in CDP by 44% compared to CON. So far, 6 weeks of treatment with IN OT or PBO does not alter the ACTH response to IN DDAVP in CDP.

Financial Support: NIDA: R21DA035461

EFFECTS OF ZOLPIDEM ALONE AND IN COMBINATION WITH NABILONE ON CANNABIS WITHDRAWAL AND RELAPSE AMONG NON-TREATMENT-SEEKING CANNABIS USERS.

Evan Sullivan Herrmann, Ziva Cooper, Gillinder Bedi, Divya Ramesh, Stephanie Collins Reed, Sandra D Comer, Richard Foltin, Meg Haney; New Psychiatry, Columbia University, New York, NY

Aims: Each year over 300,000 individuals in the U.S. enter treatment for Cannabis Use Disorder (CUD). The development of effective pharmacotherapies for CUD is a public health priority. This placebo-controlled laboratory study examined the effects of zolpidem alone and in combination with nabulone on cannabis withdrawal and relapse.

Methods: Eleven daily, non-treatment-seeking cannabis users completed three, 8-day inpatient phases; each phase tested a different medication condition in counter-balanced order. On the first day of each phase, participants were administered placebo capsules TID and smoked experimenter-administered active cannabis (5.6% THC). On days 2-8, participants were administered capsules containing either placebo (0 mg at 0900, 1800, and 2300), zolpidem (0 mg at 0900 and 1800 and 12.5 mg at 2300) or zolpidem (12.5 mg at 2300) and nabulone (3 mg at 0900 and 1800). Cannabis withdrawal, subjective capsule effects, and neurocognitive performance were examined on days 3-4, when only inactive cannabis (0.0% THC) was available. Relapse was examined on days 5-8, when participants could self-administer active cannabis purchased using study earnings.

Results: Both medication conditions decreased withdrawal-related disruptions in sleep, but only zolpidem in combination with nabulone decreased withdrawal-related disruptions in mood and food intake. Zolpidem in combination with nabulone, but not zolpidem alone, decreased self-administration of active cannabis. Zolpidem in combination with nabulone produced modest increases in some subjective drug effects associated with abuse liability, while zolpidem alone produced no such effects. Neither medication produced measurable neurocognitive impairment.

Conclusions: The present findings on zolpidem in combination with nabulone are consistent with those of an earlier study examining the effects of nabulone alone. Clinical testing of nabulone, either alone, or in combination with zolpidem is warranted.

Financial Support: P50 DA009236 and T32 DA007294 from NIDA.

HALLUCINOGEN USE IS ASSOCIATED WITH A DECREASED LIKELIHOOD OF POSITIVE URINE DRUG SCREEN FOLLOWING ENTRY INTO COMMUNITY CORRECTIONS SUPERVISION.

Peter Hendricks1, Sara Lappan1, Karen L Cropsy2; 1Health Behavior, University of Alabama at Birmingham, Birmingham, AL; 2Psychiatry, University of Alabama at Birmingham, Birmingham, AL

Aims: Hallucinogens may have potent anti-addictive effects and may be especially beneficial for correctional populations, as involvement in the criminal justice system frequently stems from drug use behavior. In a prior study, we found that hallucinogen use predicted a reduced likelihood of recidivism among more than 25,000 individuals under community corrections supervision with a history of substance involvement. To better understand the potential mechanisms underlying this finding, we sought to evaluate the prospective relationships between naturalistic hallucinogen use and positive urine drug screen for several drugs of abuse following entry into community corrections supervision.

Methods: Cox proportional hazard survival models tested the associations of hallucinogen use disorder (HUD) diagnosis at baseline (yes or no; a proxy for hallucinogen use) with positive urine drug screen following entry into supervision among alcohol (N = 3,831; 69 HUD diagnoses), amphetamine (N = 2,083; 124 HUD diagnoses), cannabis (N = 14,706; 251 HUD diagnoses), cocaine (N = 10,487; 206 HUD diagnoses), opiate (N = 7,833; 198 HUD diagnoses), and sedative (N = 5,001; 145 HUD diagnoses) users.

Results: Unadjusted models indicated that HUD predicted a decreased likelihood of positive urine drug screen for alcohol (HR = .46 [0.25, 0.84]), amphetamine (HR = .69 [0.54, 0.88]), cannabis (HR = .69 [0.50, 0.82]), cocaine (HR = .62 [0.51, .74]), opiate (HR = .54 [0.45, 0.66]), and sedative (HR = .64 [0.51, .80]) use. In models adjusted for a wide range of potential confounding factors (between 21 and 26 covariates), HUD remained a significant predictor of positive urine drug screen for cocaine (aHR = .79 [0.65, 0.98]) and opiate (aHR = .78 [0.62, .99]) use.

Conclusions: The impact of hallucinogen use on recidivism may be mediated by reduced drug use. The possible benefits of hallucinogen-based interventions among criminal justice populations will be discussed.

Financial Support: No financial support was provided.

SUBSTANCE USE DISORDER AND HOME NEIGHBORHOOD DISORDER DO NOT PREDICT POSTTRAUMATIC STRESS SYMPTOMS.

Sara K Hertzl, Landling Moran, William J Kowalczyk, David H Epstein, Kenzie L Preston, Karran A Phillips; Treatment Section, NIDA IRP, Baltimore, MD

Aims: People with substance use disorder (SUD) are disproportionately likely to have posttraumatic stress symptoms (PTSS). We assessed predictors of PTSS in terms of both environmental factors such as lifetime trauma exposure and current neighborhood disorder, and psychological factors such as coping behaviors.

Methods: Participants (301 drug users, 128 non-drug users) completed the PTSD Checklist- Civilian Version, COPE, and Life Events Checklist. The observer-rated Neighborhood Inventory for Environmental Typology (NBIET) was used to score neighborhood disorder of home address. Trauma exposure was defined as the number of traumatic events that were directly experienced or witnessed. PTSS was used as a score of ≥ 38 on the PTSD checklist. Predictors of PTSS with bivariate values ≤ 0.20 were included in a multivariate logistic regression.

Results: Drug users were more likely to report PTSS than non-drug users (27% vs. 11%, X2 = 27; p = 0.001). In bivariate, PTSS was associated with substance use, number of trauma exposures, education and many coping variables (all p<0.05). In multivariate logistic regression, predictors remaining significant were trauma exposure (OR 1.14; 95 CI 1.0, 1.2; p ≤ 0.05) and focusing on and
CONCURRENT TREATMENT WITH PROLONGED EXPOSURE FOR CO-OCCURRING PTSD AND SUBSTANCE USE DISORDERS: A RANDOMIZED CLINICAL TRIAL.

Dennis K. Lockwood1, 2, Christine A. Cuffel1, 2, 3, Sudie Back4, Sudie Back4, "Psychiatry, Columbia University College of Physicians and Surgeons, New York, NY, 1Psychology, City College of New York, New York, NY, 2Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, SC

Aims: Research suggests prolonged exposure (PE) may be safely utilized to address PTSD symptoms without risk of relapse among those with substance use disorders (SUD). We conducted an integrated treatment for PTSD and SUD (Concurrent Treatment of PTSD and SUD using Prolonged Exposure; COPE) to a treatment for SUD only (Relapse Prevention Therapy; RPT) and an active monitoring control group (ACMG).

Methods: Participants (n=110) met DSM-IV TR criteria for PTSD and substance dependence and were randomly assigned to COPE (n=39), RPT (n=43), or AMCG (n=28). COPE and RPT were delivered in 12 weekly 90-minute sessions. AMCG group completed weekly measures of PTSD and SUD symptoms. PTSD symptom severity was measured by the Clinician Administered PTSD Scale and Modified PTSD Symptom Scale-Self Report. Substance Use Inventory and ASI-Lite were utilized to assess frequency of drug use and SUD severity.

Results: At the end of treatment, COPE demonstrated greater improvement in PTSD symptom severity than AMCG (Mean differences=-23.61, 95% CI: -37.25 to -9.96, p<.001), but differences between COPE and RPT or RPT and AMCG did not reach significance. RPT demonstrated an advantage over COPE (IRR=0.37, 95% CI: 0.21 to 0.76, p<.001) and AMCG (IRR=0.20, 95% CI: 0.11 to 0.36, p<.001) and COPE was superior to AMCG (IRR=0.51, 95% CI: 0.31 to 0.85, p<.001) in reducing days of primary substance use outcome at end-of-treatment. By the 3-month follow up, COPE and RPT were not significantly different in PTSD symptom severity, or addiction severity; however, RPT showed significantly fewer days of primary substance use (IRR=0.50, 95% CI: 0.35 to 0.70, p<.001).

Conclusions: COPE and RPT were similarly efficacious in reducing PTSD symptom severity and RPT outperformed COPE in reducing days of substance use among those with these co-occurring disorders. COPE was not associated with worsening of substance use.

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THEORETICAL IMPLICATIONS OF GENDER, POWER, AND SEXUAL SCRIPTS FOR HIV PREVENTION PROGRAMS AIMED AT YOUNG, SUBSTANCE-USING AFRICAN AMERICAN WOMEN.

Mandy Hill1, Angela Stotts2; 1Emergency Medicine, University of Texas Health Science Center, McGovern Medical School, Houston, TX, 2University of Texas Medical School at Houston, Houston, TX

Aims: This proposed program moves the concept of ED-based HIV prevention programs for substance users further by: 1) focusing on young, substance-using African American women (YSAAW) and 2) applying a theoretical premise with the Theory of Gender and Power (TCP) and Sexual Script Theory (SST).

Conclusions: Despite an overall decline in new HIV cases, HIV continues to be a major public health problem for African American women. The imposed burden of each new individual HIV case to our societal network is significant because each case is at risk of infecting others. Substance use worsens the risk of HIV transmission to African American women. This population is vulnerable to HIV based on race, gender, and sexual network. Emergency department (ED) populations have high sexually transmitted infection (STI) rates nationally; thus, HIV/STI prevention studies in this setting are needed. Some studies support Screening, Brief Intervention, and Referral to Treatment as an intervention strategy for substance users, yet others do not. Targeting interventions to specific populations (YSAAW) in the ED may be a more desirable strategy. We believe the TGB and SST used to design and adopt existing evidence based interventions for substance use and HIV risk behavior will demonstrate improved efficacy for YSAAW, a challenging and hard-to-reach population. Cultural predictors of sexual decision making patterns among YSAAW are unknown. Framing a theoretical basis for YSAAW would benefit from a theoretical modeling linking the SST with the TGP because these two theories address foundational cultural elements. Consistent use of a program designed to exploit fear, powerlessness, and sexual scripts as barriers to adoption of healthy sexual behaviors has the potential to permeate sexual and substance use networks within African American populations.

Financial Support: Proposal conceptualization was supported by a career development award from the American Psychological Association (R25MH83635).
A MODIFIED SINGLE PROLONGED STRESS EPISODE DELAYS ACQUISITION OF COCAINE SELF-ADMINISTRATION.

Rebecca S Hofford, Mark A Prendergast, M T Bardo; Psychology, University of Kentucky, Lexington, KY

Aims: Patients with post-traumatic stress disorder (PTSD) have rates of drug abuse higher than the average population, but many of these individuals report anhedonia. One explanation for this discrepancy could be differences in individuals’ stress history. Patients with PTSD that also experience mild stress early in life might be at greater risk of developing substance abuse compared to patients that do not. The current preclinical study examined the effects of stress on cocaine self-administration in rats raised in isolation (isolated condition, IC), standard housing (standard condition, SC), or enrichment (enriched condition, EC) using a rodent model of PTSD (modified single prolonged stress, mSPS).

Methods: Rats were housed in IC, SC, or EC after arrival to the colony at 21 days of age. Upon reaching adulthood and 7 days following implantaion, half the rats underwent mSPS. This consisted of a two hour restraint immediately followed by a 15 minute cold swim. Seven days later, stressed rats (S) and non-stressed rats (NS) from IC, SC, and EC groups were trained to self-administer cocaine where they were allowed to lever press for 0.56 mg/kg/infusion cocaine on a fixed ratio 1 (FR1) over the course of 60 minutes. This continued once daily until rats reached stable responding. The dose of cocaine was then decreased to 0.32 mg/kg/infusion for 3 days, then 0.18 mg/kg/infusion for 3 days.

Results: Analysis indicated a main effect of day and a main effect of stress on acquisition, with stressed rats from all groups showing a delayed acquisition of cocaine self-administration. Analysis of the dose response data indicated a main effect of dose and a dose x environment interaction, with IC rats being most sensitive to dose adjustments.

Conclusions: This data suggests that mSPS rats may be initially resistant to the reinforcing efficacy of cocaine or may have a deficit in reward learning. Further work is needed to understand the neural mechanisms underlying the interaction between stress exposure and drug abuse.

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RATES OF HOMELESSNESS AND FACTORS THAT PREDICT THEM AMONG HOMELESS, ALCOHOL-DEPENDENT ADULTS IN A THERAPEUTIC WORKPLACE CLINICAL TRIAL.

August Holzyn1, Emily Carlson1, Brantley Jarvis2, M Fingerhood1, Kenneth Silverman1; 1Johns Hopkins, Baltimore, MD, 2Johns Hopkins University School of Medicine, Baltimore, MD

Aims: A clinical trial showed that the therapeutic workplace, an employment-based intervention for drug addiction, can promote alcohol abstinence in homeless, alcohol-dependent adults. This secondary analysis examined rates and predictors of homelessness during the trial.

Methods: In the original trial, homeless, alcohol-dependent adults could work in the therapeutic workplace and were randomly assigned to Unpaid Training, Paid Training, or Contingent Paid Training groups. Unpaid Training participants were not paid for working. Paid Training participants were paid for working. Contingent Paid Training participants were paid for working if they provided alcohol-free breath samples. Of the original 124 participants, 27 completed 0–6 of monthly assessments, and were not included in this analysis. For the remaining participants (N = 97), the percentage of the study spent homeless was calculated for each participant. A one-way ANOVA examined whether homelessness differed between the groups. Pearson correlations assessed the relation between participant characteristics and homelessness, and significant characteristics were entered into a multiple regression analysis.

Results: Unpaid Training, Paid Training, and Contingent Paid Training participants did not differ in the percentage of the study spent homeless (31%, 28%, 17%; respectively; p = .183). Being usually homeless in the past 3 years, days homeless in the past 30 days, baseline, and days of heavy drinking during the study were significantly correlated with the percentage of the study spent homeless (r = 0.29; r = 0.40; r = 0.51; respectively; p < .01). These variables significantly predicted the percentage of the study spent homeless (R² = 0.36, p < .001), baseline days homeless and heavy drinking added significantly to the prediction.

Conclusions: Reducing heavy drinking may help homeless, alcohol-dependent adults transition out of homelessness, but those with more severe homelessness at baseline may require housing-focused interventions.

Financial Support: R01AA12154

NONMEDICAL AND ILLICIT DRUG USE: ASSOCIATIONS WITH PTSD SEVERITY & SYMPTOM CLUSTERS AMONG A SAMPLE OF U.S. ARMY RESERVE/NATIONAL GUARD SOLDIERS.

D Lynn Homish1, Sarah Cercone Heavey1, Julia Devonish1, Jack Cornelius2; 1Community Health & Health Behavior, State University of New York at Buffalo, Buffalo, NY, 2Psychiatry, University of Pittsburgh Medical Center, Pittsburgh, PA

Aims: PTSD is a long-term mental health issue facing our military. Many with PTSD struggle to deal with their symptoms and may use substances to cope. The objective of this work was to examine the association between substance use (non-medical use of prescription drugs [NMUPD] and illicit drug use) and PTSD symptoms in US Army Reserve/National Guard Soldiers and partners.

Methods: Data are from the baseline assessment of Operation SAFETY (Soldiers and Families Excelling Through the Years), an ongoing, longitudinal study of Reserve Soldiers and partners (N = 373). PTSD total symptom score and symptom severity cluster (Re-experiencing, Avoidance, Negative Thoughts & Hyperarousal) scores were assessed with the PCL-5. Current drug use (i.e., past 3 months frequency of use) was assessed with the NIDA Modified ASSIST and dichotomized to any/no current use. Logistic regression models examined the relation between drug use and PTSD symptoms while controlling for frequent heavy drinking, military status, and age.

Results: Among men, there were significantly greater odds of current NMUPD for all four PTSD clusters and overall PTSD severity score (p < .05). Men had significantly greater odds of current illicit drug use with overall PTSD score and all clusters except Hyperarousal (p’s < .05). Among women, there were significantly greater odds of current NMUPD for overall PTSD severity score as well as with Negative Thoughts and Hyperarousal clusters (p’s < .05). Greater odds of illicit drug use among women was only associated with the Hyperarousal clusters.

Conclusions: Findings indicate that men and women who are experiencing symptoms of PTSD are reporting current NMUPD and illicit drug use, which suggests that individuals may be self-medicating in an attempt to control the symptoms they are experiencing. Future work needs to examine barriers to treatment seeking.

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ASSOCIATIONS BETWEEN INTEGRATION AND DRUG USE AMONG DEPORTED MIGRANTS IN TIJUANA, MEXICO.
Danielle Horynziak1,2, Miguel Pinedo3, Jose Luis Burgos4, Victoria Ojeda1; 1Division of Global Public Health, University of California, San Diego, La Jolla, CA, 2Centre for Population Health, Burnet Institute, Melbourne, VIC, Australia, 3Alcohol Research Group, University of California, Berkeley, CA

Aims: Deported migrants face numerous challenges which may elevate their risk for drug use. We examined the relationship between post-migration integration and drug use among deported migrants in Tijuana, Mexico.

Methods: A cross-sectional survey was administered to 605 patients attending a free health clinic in January-June 2013. This study draws on data from 255 Mexican-born migrants deported from the US who had resided in Tijuana for 26 months. Integration variables relating to public participation, social connections, macro-level facilitators and citizenship were mapped to Ager and Strang’s integration framework. Two stigma variables (having a visible tattoo, incarceration history) were added to the facilitators domain as stigma is frequently faced by deportees. Multivariable logistic regression was used to identify facets of integration significantly associated with recent (past six-month) drug use.

Results: The prevalence of recent drug use among deported migrants was 46%, with heroin the most commonly used drug. After adjusting for socio-demographic and migration variables, lifetime incarceration was the only integration variable positively associated with recent drug use (Adjusted Odds Ratio [AOR]: 3.00, 95% Confidence Interval [CI]: 1.21-7.45). Having sought work in Tijuana in the past six months (AOR: 0.40, 95% CI: 0.19-0.82), greater household affluence (AOR: 0.84, 95% CI: 0.72-0.99) and having health insurance (AOR: 0.38, 95% CI: 0.17-0.84) were all negatively associated with recent drug use.

Conclusions: Illicit drug use is pervasive among deported migrants in Tijuana. Policies that support deportees’ access to employment and housing in Mexico may facilitate successful integration and reduce drug use and resultant harms. Additional health and social support for justice-involved deportees may be needed to aid their resettlement.

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CHRONIC ADMINISTRATION OF NANDROLONE INCREASES THE LIABILITY TO MORPHINE DEPENDENCE WITH NO CORRELATION WITH LVV-HEMORPHIN 7 IN RATS.
Eagle Yi-Kung Huang1, Yuan-Hao Chen1, Tzu-Ying Huang1, Lok-Hi Chow2; 1Pharmacology, National Defense Medical Center, Taiwan, Taipei, Taiwan, 2Anesthesiology Department, Taipei Veterans General Hospital, Taipei, Taiwan, Department of Neurological Surgery, Tri-Service General Hospital, Taipei, Taiwan

Aims: LVV-hemorphin 7 (LVV-H7), a hydrolysate of the β-chain of hemoglobin, was an atypical endogenous opioid peptide with an extremely high level in blood. LVV-H7 acts as a μ-agonist opioid and an inhibitor of insulin-regulated aminopeptidase. In clinics, subchronic administration of anabolic androgenic steroids (AAS) induced the synthesis of erythrocytes and increased hemoglobin concentrations. Patients with a history of AAS abuse were more susceptible to turning to opioid abuse. Thus, we hypothesized that this could be at least partially attributed to the sensitization of mesolimbic μ-opioid receptors by AAS. In the current study, we investigated the effect of chronic nandrolone administration on morphine-induced reward and its correlation with LVV-H7 in rats.

Methods: Using the conditioned place preference (CPP) test and neurochemical analysis, we investigated the possible mechanism underlying the effect of chronic nandrolone administration on morphine-induced reward and its correlation with LVV-H7 in rats.

Results: Either LVV-H7 may not sensitize the rewarding neural circuits or its inhibition on locomotor activity could mask the reward-related behaviors. Chronic nandrolone pre-treatment indeed caused a significant reward by low dose morphine, which could not cause any reward in control rats. However, co-administration of anti-LVV-H7 antiserum with nandrolone did not block this effect. This may rule out the possibility of the involvement of LVV-H7 in the action of nandrolone to intensify morphine-induced reward. Moreover, the serum level of LVV-H7 was also mildly increased in response to chronic nandrolone administration in our animal model.

Conclusions: In consistence with the clinical observations, we may conclude that chronic administration of nandrolone can increase the liability to morphine dependence, but this effect is not related to the elevated LVV-H7.
ASSESSMENT OF THE ABUSE POTENTIAL OF ABT-126, AN α7-SELECTIVE NICOTINIC AGONIST.
Thomas J Hudzik; Preclinical Safety, AbbVie, North Chicago, IL

Aims: The purpose of the present collection of studies was to determine if ABT-126 possesses any potential for abuse.

Methods: The effects of ABT-126 (0.1-30 mg/kg) was studied in rats in automated locomotor activity tests, an an assessment for physical dependence, in separate d-amphetamine and nicotine drug discriminations, as well as intravenous self-administration.

Results: ABT-126 produced a modest trend toward increasing rearing activity in the open field, without altering distance travelled. Its discriminative stimulus effects were distinct from both d-amphetamine and from nicotine. No dose of ABT-126 was self-administered at a level greater than vehicle.

Conclusions: ABT-126 does not appear to carry a high potential for abuse.

Financial Support: All studies were funded by AbbVie as part of the development of ABT-126

VARIABLE AVAILABILITY AS A DETERMINANT OF COCAINE CHOICE IN RHESUS MONKEYS.
Sally L Huskisson1, Kevin Freeman1, Nancy Perry2, James K Rowlett1,2,3, 1University of Mississippi Medical Center, Jackson, MS, 2University of Connecticut School of Medicine, Farmington, CT, 3Tulane National Primate Research Center, Covington, LA

Aims: Relative to non-drug reinforcers, illicit drugs may be more inconsistent in terms of their availability, quality, location, and price. Thus, variability may be an important aspect of reinforcement that differs for illicit drugs relative to alternatives. We hypothesized that variable schedules and magnitudes of cocaine would be chosen over fixed ones. Specifically, we predicted that variability would enhance the potency of cocaine as a reinforcer, i.e., the dose-effect curve for cocaine would be shifted leftward when the responses required and magnitude of different doses of cocaine were made variable in cocaine vs. cocaine and cocaine vs. food choice situations.

Methods: Four male rhesus monkeys chose between doses of cocaine or cocaine vs. food pellets. In control conditions, schedule and magnitude (i.e., cocaine dose) were fixed. In test conditions, schedule, magnitude, or both were made variable on one lever while all aspects on the other lever remained fixed.

Results: Subjects generally chose the variable option over the fixed one. However, parallel and leftward shifts in the dose-effect curve typically were not observed. There were individual differences in the degree to which variability in schedule, magnitude, or the combination shifted choice away from the fixed alternative.

Conclusions: These findings suggest that variable cocaine availability can be an important determinant of choice that can be overcome by increasing the dose available on the fixed alternative. In addition, initial results with food suggest that a non-drug reinforcer may more effectively compete with a drug reinforcer when its delivery is made variable. Evaluation of variability as a factor in the choice to self-administer cocaine provides a novel animal model for preclinical evaluation of behavioral (e.g., contingency management) and pharmacological interventions.

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FOOD INSECURITY AND HIV PROGRESSION AMONG RUSSIANS WITH HEAVY ALCOHOL CONSUMPTION.
Bulat Idrisov2, Karsten Lunze2, Debbie M Cheng2, Elena Blokhina1, Natalia Gnatienko3, Greg Patts3, Carly Bridden3, Christine Chaisson3, Sheri D Weiser2, Evgeny Krupitsky2, Jeffrey H Samer3, 1First St. Petersburg Pavlov State Medical University, St. Petersburg, Russian Federation, 2Boston University, Boston, MA, 3UCSF School of Medicine, San Francisco, CA

Aims: Food insecurity (FI), the limited availability or inadequate procurement of nutritionally sufficient food, has been shown to be associated with HIV progression but few studies included substance-use populations. We hypothesized that FI is associated with biomarkers of HIV disease progression among Russians with heavy alcohol use living with HIV.

Methods: We analyzed baseline data from the ZINC trial of ART-naive Russians living with HIV (n=247) to assess the association of FI with CD4 count and HIV RNA load (HVL). The Household FI Access Scale was used to assess the independent variable FI (any vs. none). We examined Zn plasma levels as a mediator. Analyses used linear regression models to evaluate the associations between FI in CD4 count and log-transformed HVL controlled for age, gender, BMI, income, social support, depression, current injection drug use (IDU) and past year arrest. Heavy alcohol use was defined as per NIAAA risky drinking amounts.

Results: In this cohort of heavy alcohol users with HIV infection, FI (46%) and current IDU (37%) were common. We found no significant differences in CD4 count and HVL between those with and without FI in unadjusted analyses or after using adjusted regression models (adjusted mean difference in CD4: -12.95%; CI: -93.9, 69.8; adjusted ratio of mean in HVL: 1.06, 95%CI: 0.53, 2.12). Adding Zn to the model did not substantially alter the associations.

Conclusions: Food insecurity is common among HIV-infected Russians with heavy alcohol use. Unexpectedly, in our cohort, FI was not significantly associated with biomarkers of HIV disease progression. Understanding the basis for the difference of these food insecurity findings on HIV disease progression in this substance-use population merits further examination.

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SLEEP-RELATED PROBLEMS IN ADULTS RECEIVING MEDICAL CANNABIS.
Mark Ilsen1,2, Kipling Bohnert1,2; 1Psychiatry, University of Michigan, Ann Arbor, MI, 2VA Center for Clinical Management Research (CCMR), Ann Arbor, MI

Aims: Cannabis use is associated with a greater likelihood of sleep difficulties, particularly in those individuals with heavy use. Yet, anecdotal evidence indicates that many individuals report using cannabis “medically” to help with sleep. Those who are seeking medical cannabis are an understudied and distinct group of individuals, and little is known about their sleep and patterns of cannabis use. The present study examines the prevalence of sleep problems in adult medical cannabis users as well as the extent to which use of cannabis to aid in sleep is associated with heavy and/or problematic use.

Methods: Research staff approached adults in the waiting rooms in five medical cannabis certification clinics in the state of Michigan to recruit for a cohort study of medical cannabis patients. Participants completed screening and baseline assessments that included questions about their sleep and cannabis use. The present analyses are limited to cross-sectional data collected during these initial assessments.

Results: Over 90% (725/802) of adults presenting to a medical cannabis clinic reported that they had used any cannabis in the past 30 days. Sleep problems were highly prevalent with over 88% (641/725) of these individuals reporting problems (i.e., Sleep Problems Questionnaire (SPQ) scores ≥ 3). The vast majority (66%; 426/641) of those with sleep problems also reported using cannabis “medically” to help with sleep. Those who are seeking medical cannabis are an understudied and distinct group of individuals, and little is known about their sleep and patterns of cannabis use. Further longitudinal data are needed to understand the associations between these domains.

Financial Support: NIDA Grant #: R01DA033397
JUVENILE KETAMINE EXPOSURE ALTERS SENSITIVITY TO REWARD-RELATED STIMULI IN ADULTHOOD.

Sergio D Iniguez 1, 2, Lace M Riggins, Arturo R Zavala; 1Psychology, University of Texas at El Paso, El Paso, TX, 2Psychology, California State University, San Bernardino, San Bernardino, CA, 3Psychology, California State University, Long Beach, Long Beach, CA

Aims: Pediatric depression was not well recognized until relatively recent. Today, however, major depressive disorder (MDD) is commonly diagnosed in children and adolescents, and when left untreated, may result in negative consequences that extend into adulthood. It is estimated that children and adolescents who suffer from MDD are likely to develop conduct and anxiety disorders, and that up to 25% eventually develop substance abuse disorder. Consequently, this has resulted in a disproportionate increase in the prevalence of antidepressants prescribed to populations below 20 years of age. Recently, the non-competitive N-methyl-D-aspartate (NMDA) receptor antagonist, ketamine, has been shown to alleviate symptoms of MDD in individuals that suffer from treatment-resistant depression. However, little is known about the potential long-term consequences of exposure to ketamine during early development. This is particularly important to examine, given ketamine’s abuse potential. To address this issue at the preclinical level, we examined whether ketamine exposure during adolescence results in long-lasting changes in sensitivity to the rewarding effects of sucrose (i.e., natural reward), as well as cocaine (i.e., drug reward).

Methods: Male c57BL/6 mice were exposed to ketamine (0 or 20 mg/kg) during adolescence (postnatal days [PD] 35-49) and were later assessed in adulthood (PD 70+) on behavioral responsivity to a sucrose solution (1%), or cocaine (0, 5, 10, or 20 mg/kg) place conditioning (CPP).

Results: Here we show that adult mice pre-treated with ketamine during adolescence displayed enhanced preference for a sucrose solution, as well as environments previously paired with moderately low doses of cocaine, when compared to saline pre-treated controls.

Conclusions: Together, our findings suggest that exposure to ketamine during adolescence increases sensitivity to both natural and drug-rewards, later in life.

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RATES AND CORRELATES OF SYPHILIS REINFECTION AMONG MEN WHO HAVE SEX WITH MEN IN SAN FRANCISCO.

Judson Kim 1, 2, Glenn-Milo Santos 3, Susan Scheer, Steve Gibson, Pierre-Cedric Crouch; Robert Kohn 1, Walter Chang, Adam Carrico; 1CHS, UCSF, San Francisco, CA, 2Community Health Systems, University of California San Francisco, San Francisco, CA, 3SFDPH, San Francisco, CA, 4SFAF, San Francisco, CA

Aims: Background: In 2013, the rate of reported primary and secondary syphilis in the United States was 5.3 cases per 100,000 persons, which is more than double the rate of 2.1 in 2000. This resurgence of syphilis infection has occurred primarily among MSM. Over 83% of all primary and secondary cases of syphilis in the United States are among MSM. However, relatively little is known about the rates and correlates of syphilis reinfection in this population.

Methods: From 2012-2013, 323 MSM received treatment for primary or secondary syphilis at a community-based clinic in San Francisco. Using clinical record data, we extracted demographic information, self-reported binge drinking in the past 30 days, and self-reported substance use in the past year. Our outcome was syphilis reinfection, defined primary or secondary syphilis infection reported to the San Francisco Department of Public Health following initial treatment. We evaluated correlates of reinfection using multivariable cox proportional hazards models.

Results: The mean time to syphilis reinfection was 24.8 (SD = 7.9) months such that one in five men (71/323; 22%) were re-infected over follow-up. The rate of syphilis reinfection was greater among HIV-positive men (adjusted Hazard Ratio [aHR] = 1.84; 95% CI = 1.08 – 3.12) and those who reported any ketamine use in the past year (aHR = 3.99; 95% CI = 1.64 – 9.71). Ketamine users (n = 15) were significantly more likely to report using multiple substances in the past year (i.e., methamphetamine, cocaine, amyl nitrites, ecstasy, and gamma-hydroxybutyric acid [GHB]) compared to those who did not report ketamine use (n = 317).

Conclusions: Syphilis reinfection rates were high among MSM in San Francisco. Syphilis prevention efforts targeting MSM should address the unique needs of those who are HIV-positive and target substance use as a potential driver of syphilis reinfection.

Financial Support: UCSF, School of Nursing.

Employment-Based Reinforcement of Naltrexone Adherence in Unemployed Heroin Users: Effects on Opiate Use.

Brantley Jarvis, August Holtyn, Anthony DeFulio, Annie Umbricht; Johns Hopkins University School of Medicine, Baltimore, MD

Aims: The aim of this study was to determine whether employment-based reinforcement of naltrexone adherence increased opiate abstinence.

Methods: In three previously-reported randomized clinical trials with unemployed heroin users, employment-based reinforcement increased adherence to oral and extended-release naltrexone. However, effects on opiate abstinence were not significant in those within-study analyses with small per-group N’s ranging from 17 to 35. Here we analyze effects on opiate use with larger N’s by combining data from all three studies. Recently detoxified, heroin-dependent patients could earn wages and receive job skills training. Participants were randomly assigned to Contingency (n=45) or Employment (n=45) group. Contingency group participants were required to adhere to naltrexone to gain access to the workplace. Prescription group participants could access the workplace independently of their naltrexone adherence. Naltrexone formulation and dosing varied across trials: 3x/week (oral), 1x/3 weeks (Depotrex injection), or 1x/4 weeks (Vivitrol injection). Adherence was measured as the percentage of doses directly observed to be accepted (injection studies) or by monthly urinalysis for naltrexone (Vivitrol injection). Employment group participants were required to adhere to naltrexone to gain access to the workplace. Prescription group participants could access the workplace independently of their naltrexone adherence. Naltrexone formulation and dosing varied across trials: 3x/week (oral), 1x/3 weeks (Depotrex injection), or 1x/4 weeks (Vivitrol injection). Adherence was measured as the percentage of doses directly observed to be accepted (injection studies) or by monthly urinalysis for naltrexone (Vivitrol injection).

Results: Analyses showed that Contingency group participants had significantly higher rates of naltrexone adherence than Prescription group participants (78.0% vs. 35.0%; p<0.001) and significantly higher rates of thrice-weekly opiate-negative urine samples (missing-missing: 87.4% vs. 75.6%; missing-positive: 68.9% vs. 55.0%).

Conclusions: Employment-based contingencies for adherence to naltrexone are effective and can increase opiate abstinence among unemployed heroin-dependent adults.

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Smoking and Trauma in Syrian Refugees.

Hussam Jefee-Bahloul 1, 2, Mohammad Jaafar; 1Psychiatry- Division of Substance Use, University of Massachusetts Medical School, Boston, MA, 2Psychiatry, Yale School of Medicine, New Haven, CT, 3Union of Syrian Medical Relief Organizations, Reyhani, Turkey

Aims: This study is aiming to characterize smoking patterns and trauma, and to identify interest for different smoking cessation interventions in a sample of Syrian refugee smokers in Turkey.

Methods: Syrian refugees recruited in this study were self-identified as smokers. A cross-sectional assessment was done using expired Carbon monoxide (eCO), Fagerstrom Nicotine Dependence (FTND), Harvard Trauma Questionnaire, in addition to questionnaires of smoking habits and openness/motivation to quit smoking. Recruitment and data collection for this study are still ongoing.

Results: Preliminary data analysis (n=53) indicates that 35.8% of the sample fall in the Post-traumatic stress disorder (PTSD) category, and 13% of the sample reported onset of smoking after the war. The current average of cigarettes smoked a day is 25.6 cigarettes/day compared to 18 cigarettes before the war (p<0.001). Half of the sample had an eCO level above 40 ppm, indicating severe tobacco use. Subjects with PTSD had higher scores on the FTND scale and eCO levels compared to those who are not (FTND score 5.2 vs 6.8, p<0.05, and eCO level 45.7 ppm vs. 36.7 ppm, p=.168). On average, subjects reported 3.9 unsuccessful past quitting attempts and 2.1 successful ones. In their past attempts to quit, the sample reported use of: E-cigarettes (11%), Nicotine gum (8%), Counselling (8%), and Nicotine patch (2%). On the “Motivation To Quit Smoking scale”, 56% of the sample fell in the (strong desire and no intention) and (moderate desire and intention) categories. Finally, 78% of the sample reported having smartphones, 51% are interested in receiving SMS “text-messages,” and 39% are interested in using a downloadable mobile application to help them quit smoking.

Conclusions: In our sample, heavy smoking Syrian refugees are showing moderate to high levels of motivation to quit smoking and identifying psychosocial interventions delivered via mobile phones as potential venues of future research.

Financial Support: Study is funded by Grant R25DA035211, Research in Addiction Medicine Program.
EFFECTS OF CHRONIC AMPHETAMINE ON ABUSE-RELATED BEHAVIORAL AND NEUROCHEMICAL EFFECTS OF COCAINE IN RATS.
Amy Johnson, S Steven Negus; Virginia Commonwealth University, Richmond, VA

Aims: Cocaine use disorder is a major public health concern with no FDA-approved pharmacotherapies. Amphetamine maintenance is effective to decrease both cocaine self-administration in preclinical studies and metrics of cocaine use in clinical trials. The mechanisms responsible for the anti-cocaine effects of amphetamine maintenance are not well understood. Toward that end, this study evaluated abuse-related effects of cocaine in intracranial self-stimulation (ICSS) and on nucleus accumbens dopamine and serotonin (NAc DA and 5HT) levels. We hypothesize that amphetamine maintenance will decrease both cocaine-induced ICSS facilitation and enhancement of NAc DA without altering cocaine-stimulated NAc DA and 5HT levels are in progress.

Methods: Male Sprague-Dawley rats were used for all studies. For ICSS, electrodes were implanted in the medial forebrain bundle, and responding on a lever produced pulses of electrical brain stimulation in frequency-rate ICSS procedure. Effects of cumulative cocaine doses (1-10 mg/kg) were determined before and after 7-day treatment with saline (n=6) or 0.32 mg/kg/hr amphetamine (n=6) delivered by a subcutaneous osmotic minipump. Two-way ANOVA was used to compare frequency-rate curves. For microdialysis, separate groups (n=18) of rats were implanted with cannulae targeting the NAc, and dialysates were analyzed for concentrations of DA and 5HT before and after administration of cocaine (1-10 mg/kg).

Results: Cocaine facilitated ICSS and increased NAc levels of both DA and 5HT. Amphetamine maintenance produced facilitation of ICSS throughout treatment, and cocaine effects on ICSS were blunted after 7 days of amphetamine treatment. Evaluation of amphetamine maintenance effects on basal and cocaine-stimulated NAc DA and 5HT levels are in progress.

Conclusions: Completed studies have identified conditions under which amphetamine maintenance decreases abuse-related behavioral effects of cocaine. Ongoing studies will correlate these behavioral results to amphetamine maintenance effects on abuse-related neurochemical effects of cocaine.

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1-YEAR POST TREATMENT OUTCOMES FROM A RCT OF A BEHAVIORAL ACTIVATION TREATMENT FOR SUBSTANCE USE AND DEPRESSION.
Kimberly A. T. A., 1 2 Christopher Seitz-Brown, Karyn Anderson, Daniella DeGeorge, Emily Blevins, Stacey B. Daughters; 1Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill, Chapel Hill, NC

Aims: High rates of comorbid depression among treatment seeking substance users is associated with poorer post treatment outcomes. The current study evaluated the 1-year outcomes of a randomized controlled trial (RCT) comparing the Life Enhancement Treatment for Substance Use (LETS ACT), a brief behavioral activation (BA) treatment for depression, to nondirective therapy (NDT).

Methods: 243 low income depressed substance users (34% female, 98% AA) assigned to LETS ACT or NDT and concurrently receiving residential substance abuse treatment completed assessment at pre and post treatment, and at 1, 3, 6, and 12-month FU's. Primary outcomes included verified abstinence, depressive symptoms, behavioral activation, and environmental reward.

Results: GLMM indicated a significant main effect of group with 68.8% of LETS ACT providing negative urine screens compared to 52.8% of NDT (OR = 0.16, SE = .07, p = .03, CI: .009, .313), and a significant time by condition interaction with LETS ACT having higher odds of a negative urine screen at 1-month (OR = 0.18, SE = 0.09, p < .04, CI:.001, .359) and 3-months (OR = 0.26, SE = 0.11, p = .02, CI: .036, .473). A serial multiple mediator model demonstrated that the effect of LETS ACT on increasing environmental reward (β = 1.75, p < .01) translated into a reduction in depressive symptoms (β = -1.24, p < .001), which in turn led to a greater likelihood of abstinence (β = .041, p = .02).

Conclusions: LETS ACT was effective in reducing post treatment relapse to substance use. Support provided for BA theoretical mechanisms of change, namely environmental reward. Improvements in environmental reward appear to be a more critical mechanism underlying the effects of LETS ACT compared to an increase in overall activation, highlighting the importance of targeting the quality of activity level in one's environment.

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DIFFERENT TRAJECTORIES OF SMOKING BEHAVIORS ACROSS RACIAL GROUPS.
Linda Johnson, Sarah Hartz, Laura Bierut; Psychiatry, Washington University St. Louis, Saint Louis, MO

Aims: We sought to identify patterns of smoking initiation and cessation among different racial groups, which is crucial to the development of effective programs and policies to reduce smoking.

Methods: Data came from the 170,469 individuals who responded to the 2010-2011 Tobacco Use Supplement to the Current Population Survey, a cross-sectional household survey administered by the US Census Bureau to civilian, non-institutionalized population aged 18 years and older. Questions regarding ever smoking, current smoking, and smoking behavior were queried. Data were analyzed using the Statistical Analysis System (SAS 9.4, Cary, NC, USA).

Results: We observed marked differences in smoking initiation and cessation by racial group. For example, Whites had higher rates of smoking initiation compared to Blacks (39.7% versus 28.2%). However, Whites also had higher rates of smoking cessation compared to Blacks (22.2% (21.9-22.5) versus 11.3% (10.8-11.8)). The overall prevalence of current smoking in Whites and Blacks was similar (17.5% (17.2-17.8) versus 15.9% (15.3-16.6)).

Conclusions: Identifying trajectories in smoking behaviors across racial groups is critical for implementing effective public health campaigns to reduce cigarette smoking. Examining only the overall prevalence of current smoking obscures important differences in smoking behaviors across racial groups. Whites have higher rates of smoking initiation and interventions targeted for smoking initiation will be important in this population. In contrast, Blacks have lower rates of smoking initiation, but lower rates of smoking cessation. Bolstering interventions targeting smoking cessation is important in the Black population. Policies aimed at reducing smoking in the general population must adapt to these smoking patterns of different groups to most effectively reduce smoking.

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COCAINE DECREASES PREFERENCE FOR CONDOM USE AS FUNCTION OF DELAYED CONDOM AVAILABILITY AND STI RISK.
Matthew W. Johnson1, Evan Sullivan Herrmann2, Patrick S Johnson1, Mary Margaret Sweeney1; 1Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, 2New York State Psychiatric Institute/Psychiatry, New York, NY, 1Psychology, California State University, Chico, Chico, CA

Aims: This study determined the effect of acute cocaine administration on delay discounting and probability discounting of money and condom-protected sex.

Methods: This within-subject, double-blind study administered 0, 125, or 250 mg/70 kg oral cocaine to nontreatment seeking cocaine users in each of 3 sessions. Tasks included traditional assessments of delay and probability discounting for money ($100). Also administered were the Sexual Delay Discounting Task and the Sexual Probability Discounting Task which determined the effect of delay until condom-availability and the effect of STI contraction probability, respectively, on hypothetical condom use likelihood in reference to self-selected photographed partners.

Results: Cocaine showed no significant effect on delay or probability discounting of money. Although cocaine did not significantly affect likelihood of condom use when there was no delay, cocaine resulted in a significant dose-related increase in delay discounting (decreasing condom use with increasing delay). Similarly, cocaine did not significantly affect condom use likelihood in a condition involving certain STI contraction, but cocaine resulted in a significant dose-related increase in probability discounting (decreasing condom use with increasing odds against STI contraction).

Conclusions: This is the first evidence indicating that cocaine causes increases in STI risk behavior by pharmacologically altering discounting. These data suggest that discounting processes are critical for understanding STI risk behavior. Given these findings, studies should not base conclusions regarding discounting processes exclusively on tasks using money outcomes, and should assess outcomes that are closely tied to the clinically meaningful behavior of interest.

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ABUSE LIABILITY OF BUPRENORPHINE VS. BUPRENORPHINE/NALOXONE: IMPORTANCE OF ABSOLUTE AMOUNT.
Jermaine D Jones1, Jeanne Marcelle Manubay2, Shanthi Mogali3, Verena Metz1, Sandra Comer1; 1Columbia University NYSPI, New York, NY, 2Family Medicine/Psychiatry, NYSPI/Columbia University, New York, NY, 3Division on Substance Abuse, New York State Psychiatric Institute/ Columbia University College of Physicians and Surgeons, New York, NY

Aims: Though buprenorphine (Bup) is an effective treatment for opioid abuse and dependence, it has abuse liability. The addition of naloxone (Nx) significantly reduces the abuse potential of Bup through direct antagonism and/or by precipitating withdrawal when administered through intranasal or intravenous routes. The current study sought to determine the relative importance of the absolute amount of Nx by assessing the subjective and reinforcing effects of various Bup and Bup/Nx combinations.

Methods: Heroin-using volunteers (n = 13) were maintained on a daily dose of oral hydromorphone (40 mg). After 5-7 days of stabilization, the participants completed laboratory sessions to assess the reinforcing and subjective effects of intravenous doses of Bup (8.64, 6.15, 2.16, and 1.51 mg) and Bup/Nx (8.64 /2.44, 6.15/1.71, 2.16/0.61, 1.51/0.44 mg). Placebo, heroin (25 mg) and naloxone (3.5 mg) were also tested as neutral, positive, and negative control conditions.

Results: Bup alone failed to produce aversive subjective effects that were significantly greater than placebo. However, all of the Bup/Nx combinations significantly increased ratings of "Bad" drug effect and opioid withdrawal. A significant dose-response relationship was observed for many measures. The two largest doses of Bup alone produced significant increases in positive subjective effects, yet these were significantly attenuated with the addition of naloxone. Only heroin was self-administered significantly more than placebo.

Conclusions: This study further demonstrates the ability of the Bup/Nx combination to deter the abuse of this medication. However, it appears that larger doses of naloxone produce a greater degree of withdrawal, and therefore may be more effective in reducing abuse potential.

Financial Support: Study supported by an investigator-initiated grant from Indivior to Dr. Sandra Comer.
Aims: To examine prevalence and related factors for alcohol withdrawal delirium or delirium tremens (DTs) of patients with alcohol problems receiving consultation-liaison service in a Thai University Hospital.

Methods: Demographics, alcohol-use, DTs, treatments, and laboratory findings were obtained from fifty three patients with alcohol-related problems that received consultation-liaison service. The Instruments were composed of the Clinical Institute Withdrawal Scale for Alcohol-revised (CIWA-Ar) Thai version and Delirium Rating Scale Revised 98 (DRS-R-98) Thai version, assessed once a day for three days after consultation request or until the patients completely recovered from DTs. Once complete recovery had been achieved, the Semi-Structured Assessment for Drug Dependence and Alcoholism (SSADDA) Thai version was used to collect demographic data, illness history, and alcohol use/dependence. Mini International Neuropsychiatric Structured Interview (M.I.N.I) Lifetime Thai version was used to interview patients for other psychiatric illness. Laboratory findings and treatment data were collected from the Department’s Consultation Forms. Data were analyzed by using descriptive statistic, chi-square, and Mann-Whitney U test.

Results: Of 53 patients, 31 (53.8%) had DTs. Abnormal levels of bicarbonate, creatinine, SGOT, having history of DTs, prolonged DTs duration, high maximum and average daily dosage of benzodiazepine were associated with DTs (p < 0.05). Patients with more severe DTs had longer DTs duration, higher maximum and average daily dosage of benzodiazepine than those with less severe DTs. Abnormal alkaline phosphatase level was associated with severity of delirium (p < 0.05), but not severity of alcohol withdrawal symptoms.

Conclusions: The history of DTs, bicarbonate creatinine, and SGOT level, the duration of DTs, maximum and average daily dosage of benzodiazepine were associated with the occurrence of DTs.

Financial Support: The US–Thai training grant (D43TW009087) co-funded by the Fogarty International Center (FIC), National Institute on Drug Abuse (NIDA) and National Human Genome Research Institute (NHGRI).
HISTORIES OF ALCOHOL DEPENDENCE, PERCEIVED STRESS, AND DEPRESSION AMONG PEOPLE LIVING WITH HIV.

Lauren Michelle Kaplan1, Gail Ironson2; 1School of Public Health, UC Berkeley, Alcohol Research Group, Emeryville, CA, 2Psychology, University of Miami, Miami, FL

Aims: To examine how histories of alcohol abuse and dependence are associated with stress and depression among people living with HIV.

Methods: Participants were a paid HIV+ (n = 177) in the midrange of illness (CD4 number between 150 and 500; no previous acquired immunodeficiency syndrome [AIDS]-defining symptom) volunteer sample recruited through physician offices, specialty clinics, service organizations, and hospitals in Miami, Florida. Histories of alcohol dependence and abuse were assessed using DSM III criteria. Depression was measured using a cumulative average over two years of scores on the Beck Depression Inventory (BDI) and perceived stress was measured with the Perceived Stress Scale (PSS). OLS regression analysis was utilized.

Results: History of alcohol dependence but not abuse was associated with more cumulative depression. When perceived stress was added to the model, history of alcohol dependence was no longer significantly associated with depression and perceived stress was significantly and positively associated with depression. History of alcohol dependence was also significantly associated with perceived stress.

Conclusions: To our knowledge, this is the first study examining how histories of alcohol problems and perceived stress are associated with depression among people living with HIV. Findings suggest that perceived stress may mediate the associations between histories of alcohol dependence with depression. With the implementation of the Affordable Care Act, additional research is needed to understand how stress and mental health are involved in health outcomes and recovery from alcohol use disorders among people living with HIV. Such research can inform integrated approaches to specialist care. Interventions aimed at reducing stress and enhancing coping may reduce the risk of depression among patients with both HIV and alcohol use disorders, potentially reducing the risk of relapse.

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DIFFERENCES IN DELAY DISCOUNTING BETWEEN HERION AND PRESCRIPTION OPIOID USERS.

Sterling L. Karakula1, Margaret L. Grifflin2, Roger Weiss3, Kathryn McHugh4; 1McLean Hospital, Belmont, MA, 2McLean Hospital/Harvard Medical School, Belmont, MA

Aims: Among those with opioid use disorder (OUD), primary heroin use has been associated with greater substance use severity and poorer treatment outcomes compared to prescription opioid (PO) users. Differentiating heroin users from PO users is necessary to inform the treatment needs of these distinct populations. Delay discounting is a facet of impulsivity that reflects the degree to which future rewards are devalued based on their distance in time from the present. The present study compared delay discounting (DD) in those with OUD based on primary opioid of use.

Methods: Adults with OUD (N=147) on an inpatient detoxification unit com- pared PO and heroin users measured with the Monetary Incentive Delay Task, a measure of DD. Participants provided self-reported opioid use in the 30 days prior to admission and were categorized into three groups based on primary opioid of use: heroin, prescription, or combined (both PO and heroin). DD scores were calculated and compared among the three groups.

Results: Results from a univariate ANOVA demonstrated a main effect of group on DD (F[2, 144]=4.92, p<.01). Specifically, the heroin group (p<.05) and the combined group (p<.05) demonstrated greater DD compared to the prescription group; however, DD did not differ between the heroin and combined groups (p=1.00). The heroin and combined groups were therefore collapsed and compared to the prescription group, controlling for sociodemographic variables. A main effect of group on DD remained (F[1,125]=7.43, p<.01).

Conclusions: In a sample of inpatients with OUD, elevated DD was observed in those using heroin, either alone or in conjunction with POs, compared to those using only POs. This difference demonstrates a preference for immediate rewards in heroin users, which may contribute to their poorer treatment outcomes. Further, PO users with greater DD may be at an increased risk of transitioning to heroin use; longitudinal research should evaluate this possibility.


FRACTIONAL ANISOTROPY INCREASE IN LONG-TERM ANABOLIC-ANDROGENIC STEROID USERS.

Marc J Kaufman1, Johanna Seitz2, Amanda E Lyall1, Gen Kanayama3, Nikos Makris1, James I Hudson2, Marek Kubicki1, Harrison G Pope, Jr.1; 1Brigham & Women’s Hospital, Boston, MA, 2McLean Hospital, Belmont, MA, 3Aims: We recently reported increased amygdala volumes and reduced amygdala resting state functional connectivity in long-term anabolic-androgenic steroid (AAS) users versus non-users. We also acquired diffusion-weighted (DW) scans from these subjects to assess white matter structural connectivity. We hypothesize that we would detect fractional anisotropy (FA) abnormalities, reflecting white matter organization changes, in tracts associated with the amygdala.

Methods: Subjects in this study included 9 AAS users and 8 age-matched non-using controls, whose 3-Tesla DW scans were analyzed using the FSL software. Images were processed with standard FSL tools, custom in-house scripts, and Tract-Based Spatial Statistics via the Enigma pipeline. We focused on 4 brain regions: the Inferior frontal-occipital fasciculus (IFOF), which connects frontal, parietal, and occipital lobes (motor and amygdala projections), and is involved in visuospatial memory, which we previously reported to be impaired in AAS users. Statistical analyses were conducted with SPM and SPSS.

Results: We found a group FA difference in IFOF (ANOVA F[3,37]=9.4, p<.001), with AAS users exhibiting higher FA than non-users. Among AAS users, there was a positive association between FA and lifetime AAS use in IFOF (r=0.82, p<.001). Post-hoc FA laterality analysis revealed a significant group difference in left IFOF (t=3.97, p<.001) and a trend-level right IFOF group difference (t=1.85, p=.07).

Conclusions: AAS users exhibited FA increases in IFOF, the degree of which was associated with lifetime AAS use. This finding is consistent with our prior report of amygdala and visuospatial memory abnormalities in AAS subjects. Future studies are needed to determine the functional significance of the FA increase in the context of network connectivity and visuospatial memory in AAS users.

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ACROSS TIME AND SPACE: INDEPENDENT COMPONENT ANALYSIS REVEALS SPATIAL AND TEMPORAL DIFFERENCES IN FUNCTIONAL BRAIN NETWORKS BETWEEN COCAINE AND ALCOHOL USERS.

Tonisha Kearney-Ramos, Logan Thorne Dowdle, Oliver Mitrohoefer, Chris Mullins, William DeVries, Mark George, Colleen A Hanlon; Medical University of South Carolina, Charleston, SC

Aims: While altered functional connectivity (FC) has been linked to craving and cognitive function in substance use disorders (SUDs), it is unclear which patterns of neural disruption are common across SUDs and which are unique to the abused substance (e.g. cocaine vs alcohol). To determine patterns of FC common to or differentiating cocaine and alcohol users, independent component analysis (ICA) was applied to fMRI data from 38 users (19 cocaine, 19 alcohol) during a cue-induced craving task.

Methods: ICA identified 75 functional networks based on temporal coherence of activity across brain regions. Spatial maps of several networks were contrasted between groups (thresholded at |z|>3, cluster size|z|>32 voxels for FWE p<.05), and temporal profiles of networks were compared via power spectral analysis.

Results: There was no significant difference in spatial or temporal profile of default mode or cognitive control networks, but there were significant differences in several salience/attentional bias networks. Spatially, cocaine users had higher striatal network recruitment of visual cortex (β=31) than alcohol users (β=52; t(37)=5.86, p<.05); and alcohol users had higher right anterior insula recruitment into ventral visual network (β=68) than cocaine users (β=12; t(37)=5.22, p<.05). Temporally, there was no difference for the striatal component. While there were significant differences for multiple components loading on medial and lateral PFC – with cocaine users favoring higher frequencies (e.g. 0.5Hz vs 0.1Hz) – during cue-induced craving task.

Conclusions: These data suggest that patterns of network composition and temporal dynamics provide distinct sources of variability that may differentially relate to cognitive and behavioral dysfunction in SUDs. Future work should use these functional markers to enhance treatment selection and outcome prediction.
WHO GOES YES?: SAMPLE REPRESENTATIVENESS IN A CLINICAL TRIAL OF SBIRT.
Sydney Shane Kelpin1, Steven J Ondersma2, Dace Svikis3; 1Virginia Commonwealth Univ., Richmond, VA, 2Psychology, Virginia Commonwealth University, Richmond, VA, 3Wayne State University, Detroit, MI

Aims: The National Institutes of Health (NIH) has made translational research a top priority, beginning with the signing of the NIH Revitalization Act mandating the inclusion of women and minorities in randomized clinical trials (RCT) (Freeman et al., 1995). Despite these efforts, there still may be fundamental differences between consenters and nonconsenters in clinical research, thereby influencing sample representativeness and generalizability of outcomes. The present study examined this issue using data from a large RCT of Screening, Brief Intervention, and Referral to Treatment (SBIRT).

Methods: From a data base of N = 4,552 primary care patients who completed an anonymous, computer-delivered health survey, the present study selected the N=1,338 individuals who met heavy/problem substance use criteria for a 4-arm clinical trial of SBIRT. This sample was further divided into those consenting to the RCT (N=713; consenters) and those choosing not to participate (N=625; non-consenters). Consenters and non-consenters were compared on demographics, drug and alcohol use, family history and other psychosocial measures using chi-square for categorical and t-tests for continuous variables.

Results: Demographically, consenters and non-consenters did not differ on age, gender, race or education. Consenters, however, were more likely to be unemployed (p<0.01) and uninsured (p<0.01) than non-consenters. Consenters were also more likely to live with someone who had a drug problem (p<0.01); report a family history of drug use (p<0.01); and experience an episode of physical violence (past year) (p<0.02) than non-consenters. Subsequent multivariate analyses will examine these and other correlates of research participation.

Conclusions: The computer-based primary care survey afforded a unique opportunity to compare RCT participants and non-participants across a wide array of variables. Group differences were found and affirm the need for caution and consideration of sample representativeness.

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INTERNALIZING SYMPTOMS AND CONDUCT PROBLEMS: REDUNDANT, INCREMENIAL, OR INTERACTIVE RISK FACTORS FOR SUBSTANCE USE DURING THE FIRST YEAR OF HIGH SCHOOL
Rubin Khoddam1, Nicholas Jackson1, Adam Leventhal2; 1Psychology, University of Southern California, Los Angeles, CA; 2Preventive Medicine, University of Southern California, Los Angeles, CA

Aims: The goal of the present study is to test whether the relationship between conduct problems and several internalizing disorders (i.e. Major Depressive Disorder, Generalized Anxiety Disorder, Panic Disorder, Social Phobia, and Obsessive-Compulsive Disorder) on substance use is redundant, incremental, or interactive.

Methods: The current study utilized two waves of data from the Happiness and Health Study of 3,383 adolescents (M age = 14.1 years old; 53% females) beginning high school at the time of study entry. This study examined the likelihood of reporting any substance use in the past six-months at follow-up based on the number of conduct problems and respective internalizing symptoms endorsed at baseline. Substance specific analyses were also run to test for alcohol, tobacco, and marijuana separately.

Results: Results indicated that Major Depressive Disorder symptoms (adjusted ORs range from 1.14 to 1.18; p < .01) were the only internalizing symptoms whose risk for alcohol, tobacco, and any substance use went above and beyond the risk associated with conduct problems. A significant interactive relationship was found between each internalizing disorder (except Social Phobia) and conduct problems on past six-month any substance use, whereby, adolescents low in conduct problems reported higher rates of substance use at follow-up as the number of internalizing symptoms increased (adjusted ORs range from .88 to .91; .001 < p < .05). No substance specific interactions were found.

Conclusions: These results point to the clinical importance of assessing multiple internalizing measures, particularly Major Depressive Disorder symptoms, in relation to conduct problems given each disorder’s unique association with adolescent substance use.

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June H Kim, Julian Santaella, Pia M Mauro, Jodi A Cisewski, Christine Mauro, Melanie M Wall, Silvia S Martins; Columbia University, New York, NY

Aims: U.S. state medical marijuana laws (MMLs) could be associated with reductions in annual rates of prescription opioid overdose by providing a viable substitute for opioids in chronic pain treatment. It is unclear whether these laws also impact nonmedical use of prescription opioids (NMUPO) in the context of surging NMUPO since the mid-1990’s. This study determined whether state MMLs are associated with NMUPO at the state level.

Methods: Data were obtained from the National Survey on Drug Use and Health restricted use data portal 2004-2013. The primary exposure was a time-varying indicator of operational MML, defined as having an effective MML with allowances for home cultivation or the presence of active dispensaries. The outcome was the proportion (natural-log) of respondents who endorsed past-month NMUPO for those 12-17 and 18-25. Although there was a 23% reduction in the prevalence of past-month NMUPO (β=−0.24, p-value=0.234) in adults ages 26+, this reduction was not significant.

Conclusions: Experimental OMLs at the state level were not associated with changes in the prevalence of NMUPO in the US between 2004 and 2013. Future studies should continue to assess unintended consequences of MML implementation, including changes in medical and NMUPO.

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CXCR4 ANTAGONIST PLERIXAFOR ATTENUATES CUE AND CUE/DRUG INDUCED RELAPSE TO COCAINE SEEKING AND EXPRESSION AND DEVELOPMENT OF COCAINE-INDUCED CONDITIONED PLACE PREFERENCE
Jae K Kim, Scott Rawlik; 1Pharmacy, Lewis Katz School of Medicine at Temple University, Philadelphia, PA; 2Center for Substance Abuse Research, Lewis Katz School of Medicine at Temple University, Philadelphia, PA

Aims: The chemokine receptor CXCR4 is a plasma membrane GPCR expressed on astroglia and dopaminergic neurons. CXCR4 activation by the endogenous ligand CXCL12 increases astroglial glutamate release and intranigral injection of CXCL12 increases extracellular dopamine, an effect that is blocked by administration of a selective CXCR4 antagonist. In this study, we assessed the effect of Plerixafor, a selective CXCR4 antagonist, on cue- and cue/drug-induced reinstatement to cocaine, on cocaine induced conditioned place preference and identify a role for the CXCR4 system in cocaine reinforcement.

Methods: Rats were trained under FR-1 schedule of reinforcement until acquisition criteria were met before being subjected to daily 2-hour extinction sessions. Once extinction criteria were reached, rats underwent one-time cue-induced or cue and drug-induced reinstatement session. Biased paradigm of conditioned place preference was used to assess change in preference between the pretest and posttest. Rats were conditioned 4 times. All conditioning and test sessions lasted for 30 minutes.

Results: AMD3100 significantly, attenuated cue-induced and cue and drug-induced reinstatement to cocaine seeking. AMD3100 pretreatment also decreases time spent in the cocaine-paired (nonpreferred) side in both expression and development of model of CPP.

Conclusions: We have previously shown that Plerixafor attenuates cocaine induced locomotor activity and decreases cocaine taking behavior. In the current study, we have shown that Plerixafor effectively reduces relapse to cocaine seeking and cocaine induced place preference. Modulation of the CXCR4 receptor seems to have potential to disrupt multiple stages of cocaine addiction including cocaine taking that is driven by enhanced dopamine transmission and cocaine craving and relapse that is highly dependent on deficits in glutamate function.

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SOCIAL NETWORKS, SUPPORT, AND ALCOHOL USE AMONG LATE MIDDLE-AGED AND OLDER ADULTS.
Seungyoun Kim1, Samantha Spilman2, Diana Liao2, Paul Sacco2, Alison Moore2; 1UCLA Integrated Substance Abuse Programs, Los Angeles, CA; 2University of California, Los Angeles, Los Angeles, CA; 3University of Maryland, Baltimore, MD

Aims: To examine the association between social networks, support, and alcohol use among late middle-aged and older adults. Social networks and support were compared among late middle-aged and older adults with different drinking levels.

Methods: A secondary analysis of the 2004 and 2005 National Epidemiologic Survey on Alcohol Related Conditions (NESARC) was conducted for 15,304 respondents aged 50 years and older. Among respondents, 8,780 were 50 to 64 years of age (late middle-aged adults), and 6,524 were 65 years and older (older adults). Social and demographic variables, mental health disorders, self-rated health, social network size and diversity, social support, and alcohol use were assessed. Based on alcohol consumption, three drinking groups (light, moderate, and heavy) were categorized in each age group. Multinomial logistic regression was used to examine the association between drinking groups, social networks, and support.

Results: Controlling for factors related to alcohol use, heavy drinkers had a significantly smaller size of social networks compared to light drinkers in the 50–64 group (ORs = 0.88; 95% CI : 0.79 – 0.98). These results point to the clinical importance of assessing multiple internalizing measures, particularly Major Depressive Disorder symptoms, in relation to conduct problems given each disorder’s unique association with adolescent substance use.

Conclusions: These results point to the clinical importance of assessing multiple internalizing measures, particularly Major Depressive Disorder symptoms, in relation to conduct problems given each disorder’s unique association with adolescent substance use.

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FEAR-ELICITING ANTISMOKING ADS UNINTENTIONALLY MOTIVATE SMOKERS TO CONSIDER AN E-CIGARETTE: THE BOOMERANG EFFECT.
Sunmi Jung Kim, Lisa A McNich; Dartmouth College, Lebanon, NH

Aims: The boomerang effect posits that health ads that elicit negative emotional states such as fear and discomfort can lead people to ignore the messages, continuously perform the behavior suppressed in the ads, or adapt an adjacent risky behavior. We examined if fear-eliciting antismoking ads cause a different type of boomerang effect, leading people to consider vaping an e-cigarette instead of smoking, despite the uncertain health effects and controversy over e-cigarettes.

Methods: Amazon’s Mechanical Turk was used to recruit US-based regular smokers (n=1,542). After pre-test data, such as smoking status and prior knowledge about e-cigarettes were collected, smokers were randomly assigned to the antismoking group (64 antismoking ads), the anti-vaping group (16 materials), or the control group (16 Super Bowl commercials). After viewing one randomly assigned material, participants completed post-test measures, assessing attitudes toward e-cigarettes, desire for vaping and smoking, and intention to quit smoking.

Results: Participants were White (85%), non-Hispanic (93%), female (52%), never married/not living with a partner (36%), had some college with no degree (37%) and an average age of 35.7 years (SD = 10.71). Participants in the anti-smoking group reported that vaping e-cigarettes is more wise, beneficial, pleasant, and useful compared to those in the anti-vaping group, t = 6.77, Cohen’s d = .44. The antismoking group reported an increased desire to vape e-cigarettes compared to the anti-vaping and control group, F(2,1472) = 27.71, p < .01, an effect that was more pronounced among current/former e-cigarette vapers. Structural equation models showed that antismoking ads indirectly increased intention to vape an e-cigarette due to an increased intention to quit smoking (β = .17, p < .05), whereas the anti-vaping materials did not have such effects (β = .08, p = .30). Structural equation models showed that antismoking ads indirectly increased intention to vape an e-cigarette due to an increased intention to quit smoking (β = .17, p < .05), whereas the anti-vaping materials did not have such effects (β = .08, p = .30). Structural equation models showed that antismoking ads indirectly increased intention to vape an e-cigarette due to an increased intention to quit smoking (β = .17, p < .05), whereas the anti-vaping materials did not have such effects (β = .08, p = .30). Structural equation models showed that antismoking ads indirectly increased intention to vape an e-cigarette due to an increased intention to quit smoking (β = .17, p < .05), whereas the anti-vaping materials did not have such effects (β = .08, p = .30). Structural equation models showed that antismoking ads indirectly increased intention to vape an e-cigarette due to an increased intention to quit smoking (β = .17, p < .05), whereas the anti-vaping materials did not have such effects (β = .08, p = .30).

Conclusions: Fear-eliciting antismoking ads increased intention to vape an e-cigarette. Findings imply that public health promoters should consider these unintended effects of antismoking ads.

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POLYPHARMACY AND NON-FATAL OVERDOSE IN PATIENTS WITH HIV INFECTION AND SUBSTANCE DEPENDENCE.
Theresa W Kim, Alexander Yale Walley, Alicia S Ventura, Gabriel Lerner, Greg Pattis, Timothy Heeren, Richard Szajz; Boston University Schools of Medicine and Public Health, Boston, MA

Aims: To determine if number and type of medication (i.e. sedating) are associated with non-fatal overdose (OD) among patients with HIV infection and substance dependence.

Methods: For each Boston ARCH participant, the overall number of medications and number of sedating medications were identified through electronic medical review. Outcomes were i) lifetime and ii) past-year non-fatal OD requiring medical attention. We used logistic regression to examine the association between the total number of medications i) overall and ii) sedating and each outcome; receiver operating curve analyses determined the optimal discriminant number of medications to identify outcomes (Youden index). Results: Among 250 participants, 80% were prescribed ≥1 sedating medications; 51% exceeded NIAAA drinking limits; 23% and 9% had past-month illicit opioid and sedative use, respectively; 64% reported lifetime non-fatal OD and 7% past-year non-fatal OD. The median number (interquartile range) of medications was 10 (7,14) overall and 2 (1,3) sedating. The odds of lifetime non-fatal OD were significantly higher with each medication overall (odds ratio [OR] 1.06, 95% Confidence Interval [CI] 1.01,1.11) and each sedating medication (OR 1.33, 95%CI 1.15,1.54, p<0.001). Optimal cutoffs for predicting lifetime non-fatal OD were ≥8 overall and ≥3 sedating medications. Although not statistically significant, the odds of past-year non-fatal OD were higher with each medication overall and each sedating medication.

Conclusions: Number of current medications, especially sedating medications, was associated with lifetime non-fatal OD. Association with past-year non-fatal OD was not detected possibly due to a low number of past-year non-fatal ODS. Sedating medications were prescribed to the majority of patients. Polypharmacy among HIV patients with substance dependence warrants further research to determine whether reducing sedating medications lowers overdose risk.

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MEDICAL MARIJUANA DISPENSARIES IN LOS ANGELES: ACCESS AND SERVICE AMONG YOUNG ADULTS.
Avat Kioumarsi, Megan Reed, Stephan Lankenau; Drexel University, Philadelphia, PA

Aims: Since the legalization of medical marijuana in California in 1996, medical marijuana dispensaries have become the main source of marijuana to patients. Over the past 20 years, studies have primarily focused on the medicinal benefits of marijuana and/or patient characteristics. Limited data exist on dispensaries, including support and services offered, their role in shaping patients’ patterns of marijuana use, or why particular dispensaries are patronized.

Methods: 40 medical marijuana patients aged 18 to 26 were recruited in Los Angeles for semi-structured qualitative interviews in 2014-15. Study participants were asked about their primary dispensary, location, and reasons they choose a particular dispensary. Qualitative thematic analysis using both inductive and deductive approaches were utilized. Geo-mapping methods were used to estimate distances traveled by the participants to reach their primary dispensary.

Results: Participants reported two primary types of medical marijuana dispensaries: professional and transactional. Professional dispensaries offered quality customer service including friendly/knowledgeable staff, a wide variety of marijuana products at reasonable prices, and discounts for first-time patients and referrals. Informed staff who provided consultation about medicinal benefits/effects of different marijuana strains and forms played an important role in shaping participating patients’ patterns of marijuana use. Only a few dispensaries offered extra services, such as support groups and social gathering events. Transactional dispensaries were characterized by lower cost marijuana, less variety, and less knowledgeable staff. Both qualitative and geo-mapping results indicated that for a large proportion of participants, hospitality/knowledgeable staff, price, and quality products were more important for choosing a dispensary than close geographic proximity.

Conclusions: Results suggest the importance of professional types of medical marijuana dispensaries in educating patients, which may influence patterns of marijuana use and health among young adults.

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AN ANALYSIS OF THE REWARDING AND AVERSIVE ASSOCIATIVE EFFECTS OF NICOTINE IN THE NEONATAL QUINPIROLE MODEL OF SCHIZOPHRENIA: UNDERLYING MECHANISMS AND THE EFFECTS OF ANTIPSYCOTICS.
Seth Kirby, Adam R Denton, Daniel J Peterson, Elizabeth D Cummins, John M Dose, Russell W Brown; Psychology, East Tennessee State University, Johnstown City, TN, ‘Biomedical Sciences, East Tennessee State University, Johnson City, TN, ‘Psychology, St. Norbert College, De Pere, WI

Aims: Aim 1: Behaviorally test a rewarding versus aversive dose of nicotine in adolescent rats neonatally treated with quinpirole tested in a conditioned place preference (CPP) paradigm as well as the effects of antipsycotics on this effect; Aim 2: Brain tissue was analyzed for mammalian target of rapamycin (mTOR) and ribosomal protein S6, involved in synaptic growth and strength.

Methods: Rats were neonatally treated with quinpirole from postnatal days (P) 1-21 and raised to P40. After drug free preference tests were administered in a three-chambered shuttle box at P41-62, animals were conditioned with saline, 0.6 or a 1.8 mg/kg free base dose of nicotine for eight consecutive days from P43-50. A drug free post-conditioning test was given on P51. In a second experiment, rats were neonatally treated with quinpirole or saline, pre-treated with either clozapine (2.5 mg/kg) or haloperidol (0.25 mg/kg) and conditioned with saline or a 0.6 mg/kg free base dose of nicotine identical to the first experiment. Brain tissue was taken on P52 and analyzed for mTOR and S6 protein.

Results: Results revealed that 1) neonatal quinpirole enhanced the rewarding associative effects of the 0.6 mg/kg dose of nicotine compared to animals neonatally treated with saline and conditioned with the same dose; 2) Neonatal quinpirole treated animals demonstrated no aversion to the 1.8 mg/kg dose of nicotine, whereas controls demonstrated a place aversion (p<0.05), and 3) neonatal quinpirole significantly decreased accumbal mTOR, and nicotine increased S6 protein.

Conclusions: These data show that neonatal quinpirole, which results in increased D2 sensitivity as is observed in schizophrenia, results in a blunting of the aversive effects of nicotine and results in changes in proteins that play critical roles in synaptic growth and strength.

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ADDITION-LIKE AND COGNITIVE EFFECTS OF ADOLESCENT CANNABINOID SELF-ADMINISTRATION IN RATS.
Erin Kirschmann, Mike Pollock, Vidhya Nagarajan, Mary M Torregrossa; Psychiatry, University of Pittsburgh, Pittsburgh, PA

Aims: Adolescence is characterized by prefrontal cortical development. Importantly, cannabis use is widespread in adolescence, potentially causing long-term effects on cognitive function. Though some preclinical work has found cognitive deficits after experimenter-administered cannabinoids during adolescence, it remains unknown whether similar deficits occur in a model of drug addiction – cannabinoid self-administration.

Methods: Adolescent male rats self-administered the synthetic cannabinoid receptor agonist WIN55,212-2 (WIN; 0.0125mg/kg/infusion; n=24) or sucrose pellets (n=24) for 2 or 6hr from postnatal day (p)38-52. Reinforcers were delivered with a light+tone cue. In 6hr rats (n=12/group), short-term spatial recognition memory was tested on p53; and reinstatement to response-contingent cue presentations was tested on days 8 and 29 of abstinence. Separate groups of rats received intra-peritoneal (IP) injections of vehicle (n=17), low (0.06mg/kg; n=17) or high (1.2mg/kg; n=16) WIN from p34-53. Short-term spatial memory was tested in IP rats (n=8-9/group) on p53. All rats were trained/tested in a delayed-match-to-sample working memory (WM) task in adulthood (p≥70).

Results: Self-administered (SA), but not IP, WIN during adolescence improved working memory performance in adulthood: adults with a history of WIN SA performed significantly better than adults with a history of sucrose SA across many delays. On days 8 and 29 of abstinence, rats increased responding for previously-WIN-paired cues. Adults with a history of low- or high-WIN IP during adolescence showed no difference in WM performance compared to IP vehicle. Short-term spatial memory was acutely impaired after high-WIN IP, but not after WIN SA.

Conclusions: Our findings suggest that adolescent WIN self-administration does not cause substantial impairments in cognitive function. Additionally, route and dose of administration are critical in understanding consequences of cannabinoid exposure. Ongoing studies are assessing changes in prefrontal GABAergic/glutamatergic adolescent WIN.

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SOCIAL FACILITATION OF ALCOHOL EFFECTS PREDICTS SELF-REPORTED PROGRESSION OF USE IN ADOLESCENTS.
Matthew Kirkpatrick, Raina Pang, Matthew Stone, Adam Leventhal; Preventive Medicine, University of Southern California, Los Angeles, CA

Aims: Previous research indicates that social settings enhance acute subjective responses to drugs, including alcohol. This "social facilitation" of drug effects may be particularly prominent in adolescents, and may partially explain why some individuals escalate to problematic use. Here we examine the relationship between the social context, subjective effects of alcohol, and progression of alcohol use among adolescents.

Methods: High school students in Los Angeles (N=126; 52% Female) completed two surveys measuring alcohol use and its subjective effects. The first survey was completed at two time points (baseline and a one-year follow-up) and measured current alcohol use. The second survey was completed at the one-year follow-up and measured "alcohol-related "positive" and "negative" subjective effects in two social contexts: SOCIAL (alcohol consumed friends) and ALONE (alcohol consumed alone). For each subjective effect, we calculated "social facilitation" scores (i.e., difference between SOCIAL and ALONE: range=-10 to 10). Using regression analyses, we evaluated the association between social facilitation scores and progression of alcohol use.

Results: There was a wide range of social facilitation scores (–7 to 9), indicating that the SOCIAL context did not enhance alcohol-related subjective effects for all participants. Further, "positive" social facilitation scores were positively associated with progression of alcohol use ($p<0.05$). There was no significant association between "negative" social facilitation scores and progression of alcohol use.

Conclusions: These data demonstrate individual differences in social facilitation of alcohol-related subjective effects in adolescents. The degree to which the social context facilitated the enhancement of positive subjective effects predicted progression of use, suggesting that for some adolescents, social facilitation of acute alcohol effects may be a risk factor for future problematic use.

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PARTICIPATION OF CC-CHEMOKINE LIGANDS IN REWARD SYSTEM ON METHAMPHETAMINE-INDUCED PSYCHOLOGICAL DEPENDENCE IN MICE.
Shiroh Kishioka1, Fumihiro Saika1, Shinuske Matsuzaki2, Mei-Chuan Ko2, Norikazu Kiguchi1;2,3; Pharmacology, Wakayama Medical University, Wakayama, Japan, 1Physiology and Pharmacology, Wake Forest University School of Medicine, Winston-Salem, NC

Aims: Methamphetamine (METH) elicits psychological dependence, which is considered as a chronic neurological disorder associated with plasticity due to neuroinflammation in the mesolimbic dopaminergic system. Recent findings indicate that CC Chemokine ligands (CCL) play an important role in the neuron-inflammation. In this study, we examined the possibility of CCL involvement in METH-induced psychological dependence.

Methods: Male C57BL/6 mice were used. METH-induced gene expression was measured by microarray analysis. Immunohistochemistry (IHC) and RT-PCR were analyzed by conventional methods. Psychological dependence was assessed by conditioned place preference (CPP) test.

Results: By microarray analysis, gene expression of CCL2 and CCL7 were up-regulated in prefrontal cortex (PFC) after METH treatment. And the up-regulation of CCL2 and CCL7 mRNA were also observed in both nucleus accumbens (NAc) and PFC after METH (3 mg/kg) by RT-PCR. By IHC, CCL2 and CCL7 were localized on NeuN-positive neurons in NAc and/or PFC after METH. CC-Chemokine receptor 2 (CCR2), which is a common receptor of CCL2 and CCL7, was observed in NAc and PFC. On the other hand, METH increased phosphorylated tyrosine hydroxylase (p-TH) levels in the ventral tegmental area (VTA) evaluated by IHC, and the increments of p-TH in VTA were also observed by recombinant CCL2 and CCL7 (i.c.v.). The METH-induced increase in p-TH was attenuated by CCR2 antagonist (RS504393). In CPP test, METH (0.3 – 3 mg/kg) elicited place preference in a dose-dependent manner, indicating the development psychological dependence, and METH-induced place preference was attenuated not only by concomitant treatment with dopamine D3 receptor antagonist (SCH23390), but also by that with RS504393.

Conclusions: CCL2 and CCL7 play an important role in the development of METH-induced psychological dependence through the activation of dopaminergic system in the mesolimbic reward system.

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KAPPA OPIOID RECEPTOR AGONIST 16-ETHYNYL SALVINORIN A ATTENUATES THE REWARDING EFFECTS OF COCAINE IN THE PROGRESSIVE RATIO MODEL IN RATS WITH FEWER SIDE-EFFECTS.

Brendan-Maree Kilville, David Young*, Aimee Culverhouse†, Thomas Prisinzano†
†School of Biological Sciences, Victoria University of Wellington, Wellington, New Zealand, ‡Department of Medicinal Chemistry, University of Kansas, Lawrence, KS

Aims: Acute activation of kappa opioid receptors (KOPr) is known to suppress the effects of cocaine and other drugs of abuse. However, side-effects such as aversion, sedation, and treatment limitation limit their clinical use. 16-ethynyl salvinorin A (Ethy-SalA), is a more potent analogue of salvinorin A (SalA) that has been shown to attenuate cocaine-prime induced drug seeking in rats without causing sedation. Here, we aim to investigate the ability of Ethy-SalA to modulate the rewarding effects of cocaine and screen for side-effects including anxiety, aversion and depression.

Methods: The anti-cocaine effects of Ethy-SalA were evaluated preclinically in male Sprague Dawley rats using the progressive ratio model whereby increasing responses are required to receive each infusion of cocaine. The elevated plus maze, conditioned place aversion (CPA) and the forced swim test (FST) were used to evaluate anxiety, aversion and depression respectively (n=6-14 per group).

Results: Ethy-SalA (2 mg/kg/i.p.) pretreated rats show significant attenuation of cocaine self-administration on progressive ratio schedule compared to vehicle treated rats and SalA administered at the same dose (p<0.05). SalA (0.3 mg/kg) caused significant anxiogenic effects with an increase in time spent in the open arm in the elevated plus maze; whereas, Ethy-SalA (0.3 mg/kg) displayed no anxiogenic effects. Ethy-SalA (0.3 mg/kg/i.p) also showed no significant aversive effects unlike SalA (0.3 mg/kg/i.p). SalA displays pro-depressive effects in the FST, however, Ethy-SalA (0.3 mg/kg) showed no change in immobility in the FST.

Conclusions: Ethy-SalA is potent analogue of SalA showing significant improvements over SalA. Ethy-SalA significantly attenuates self-administration of cocaine in rats in progressive ratio experiments without causing anxiogenic, aversive or pro-depressive side effects.

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REDUCTION IN CIGARETTES PER DAY PROSPECTIVELY PREDICTS QUIT ATTEMPTS AND CESSATION IN SMOKERS WHO ARE NOT READY TO QUIT.

Elias M Klemperer, John Hughes; Psychiatry and Psychological Sciences, University of Vermont, Burlington, VT

Aims: Reducing cigarettes per day (CPD) using nicotine replacement therapy (NRT) increases quitting. Whether this is due to use of NRT or reduction per se is unclear. Our prior review of such studies concluded that a greater magnitude of reduction in CPD is associated with greater odds of cessation. To provide a more valid test, we report on reduction in CPD without medication as a predictor of quitting.

Methods: A sample of 560 adults who smoked ≥ 10 CPD and were not ready to quit in the next month were randomized to receive a brief telephone intervention (BFI) to either reduce CPD, increase motivation, or provide brief advice to prompt a quit attempt (QA). Self-reported CPD was measured at baseline and 1-month follow up. Participants reported 24 hour QAs via monthly surveys and 7-day point prevalence abstinence at 12 month follow up. Treatment condition and baseline CPD were included as covariates in a series of logistic regressions to test change in CPD from baseline to one month as a predictor of a QA between month 2 and 12 or abstinence at month 12.

Results: Treatment conditions did not influence QAs. However, across all participants a greater reduction in CPD prospectively predicted whether participants made a QA (OR=1.16, 95% CI=1.11 to 1.20) in the next 11 months and abstinence (OR=1.14, 95% CI=1.05 to 1.27) at 12 months. For every cigarette decreased in the first month, there was a 16% increase in the odds of making a QA and an 11% increase in the odds of abstinence at month 12. Of the 258 participants who reduced any CPD, 51% made a QA and 9% were abstinent at 12 months. Of the 302 participants who did not reduce or increased CPD, 25% made a QA and 6% were abstinent at 12 months.

Conclusions: These findings suggest that reduction in CPD per se could be an effective method to increase quitting in smokers who are not ready to quit.

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HCV INCIDENCE AND TREATMENT IN AGING LATINO INJECTORS.

Michelle R Klawans, Yolanda Villarreal, T Northrup, Angela Stotts; McGovern Medical School, University of Texas Health Science Center at Houston, Houston, TX

Aims: HCV incidence is about 2% in the general US population; however, it is much higher among aging (45 and older), Latino, heroin injectors. High HCV incidence is concerning as this generally hidden population rarely presents for treatment and has unique treatment barriers. This study aimed to investigate risk factors for HCV infection and factors related to receipt of treatment among an aging Latino injecting cohort.

Methods: The sample of male Latino heroin injectors (n=227) had a mean age of 55, most (82%) did not complete high school, half (50%) were married, and all had a history of incarcerated. Field intensive outreach methodology was used for data collection. Chi-square and logistic regression investigated relations among sociodemographic, drug use, incarceration, and co-occurring diseases on HCV infection and treatment.

Results: Fifty-seven percent of aging injectors reported ever testing positive for HCV; of which only 31% received treatment. Duration of heroin use (OR=1.03, p<0.05), years incarcerated (OR=1.04, p<0.05), use of shooting galleries (OR=2.5, p<0.01), and poverty (OR=2.13, p<0.05) were risks for HCV. Receiving HCV treatment was positively associated with duration of heroin use (OR=1.05, p<0.05) and seeking treatment for sexually transmitted infections (STIs); OR=2.6, p<0.05.

Conclusions: Findings revealed using drugs longer and in shooting galleries were risks for HCV, providing opportunities to use and share drugs and equipment known to heighten HCV transmission. Interestingly, incarceration was a risk for HCV infection but was not associated with increased rates of treatment. The men who sought treatment for STIs, however, were more likely to receive HCV treatment. Results highlight the need for interventions with aging Latino injectors to enhance identification and access to efficacious HCV treatment.

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A SUMMARY OF ADDICTION SERVICES IN A CANADIAN CITY: PRELIMINARY RESULTS FROM AN INTERNET-BASED SCOPING STUDY.
Erin Knight1, 2, Paula St. Paul’s Hospital Goldcorp Addiction Medicine Fellowship, BC Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada

Aims: The aim of this study is to identify and quantify current addiction services in Winnipeg, Manitoba. A challenge in accessing addiction treatment can be the isolation of addiction services from health and social services. A Canadian national treatment strategy for substance use suggests a 5-tiered model of care, which differs somewhat from the ASAM criteria, and groups health and social programs that address similar levels of need, with similar levels of accessibility. This model provides a continuum of services with multiple entry points and pathways.

Methods: A web-based search was conducted using 3 search engines with the largest number of indexed pages. Links and resources from relevant webpages were then used in a snowball approach. Addiction services were organized into the 5-tiered model.

Results: Tier 1: Alcoholics Anonymous groups meet every day. Al-anon groups meet 6 days/week with fewer options. Other groups (Cocaine, Narcotics, Gamblers, Families, Al-ateen) are less frequent. There is no SMART Recovery. Tier 2: There are 5 24-hour information and referral hotlines and 2 for mental health counseling. A variety of social services exist, including 6 support recovery homes. Tier 3: 4 agencies provide harm reduction but no safe injection or safe smoking sites. There are 6 methadone clinics, 1 clinic with drop-in counseling, 1 smoking cessation program and 4 agencies for outpatient addiction treatment. Tier 4: There is a non-medical detox, Community Mental Health Programs, Intensive Case Management, ACT and Forensic ACT teams. Tier 5: There is a concurrent disorders outreach program, an 11-bed medical detox, a 5-bed medically supervised youth detox and 5 residential treatment centres.

Conclusions: This study lays the foundation for an assessment of the gaps and duplications in care and the pathways where continuity of care can be improved. It will allow for stakeholders in addiction medicine, mental health, criminal justice and social services to engage in quality improvement around addiction services to ultimately improve access, quality of care and outcomes.

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CIGARILLO USE PATTERNS AMONG ADOLESCENTS.
Grace Kong1, Dana Anne Cavallo1, Deepa R Camenga1, Meghan E Morean1, Patricia Simon1, Kevin Michael Gutierrez2, Suchitra Krishnan-Sarin3; 1Yale School of Medicine, New Haven, CT, 2Department of Psychiatry, Division of Prevention and Community Research, Yale School of Medicine, New Haven, CT, 3Department of Psychiatry, Yale University, School of Medicine, New Haven, CT

Aims: Identifying reasons for initiation of cigarillos among youth will help inform prevention and regulation efforts designed to reduce the appeal of cigarillos for youth.

Methods: We examined cigarillo use rates and reasons for initiation using school-wide surveys in two CT schools in Spring 2015 (N=2099; 52.3% female, Mage=16.2 [SD=2.99]; 48.5% White, 26.4% Black, and 28.4% Hispanic). We conducted chi-square tests to assess the associations between ever and never cigarillo smokers on study variables, and adjusted logistic regression analyses to identify which reasons for use were associated with more frequent cigarillo smokers. It will allow for stakeholders in addiction medicine, mental health, criminal justice and social services to engage in quality improvement around addiction services to ultimately improve access, quality of care and outcomes.

Results: Of 112 prescreened, 98% of people interested in reducing opioid use (n=60) and 99% of those interested in reducing alcohol use (n=82) were willing to consider XR-NTX. 51 participants (OUD = 22, AUD=29) were randomized to XR-NTX at 16 weeks. Among those with OUD, HIV viral suppression improved from 67% to 80% for XR-NTX and 58% to 75% for TAU. Among those with OUD, HIV viral suppression improved from 67% to 80% for XR-NTX and 58% to 75% for TAU.

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EXTENDED-RELEASE NALTREXONE FEASIBILITY IN HIV CLINICS: A PILOT STUDY.
Todd Korthuis1, Paula J Lum1, P Vergara-Rodriguez2, Keith Ahamad3, Evan Wood4, R Lindblad5, Raul Mandler2, James Sorensen6, Doan Ha7, Neal Oden8, Lynn Kunkel9, Dennis McCarthy10; 1EMMES, Rockville, MD, 2NIDA, Bethesda, MD, 3OHSU, Portland, OR, 4UBC, Vancouver, BC, Canada, 5UCSF, San Francisco, CA, 6CORE Center, Chicago, IL

Aims: To assess the feasibility of extended-release naltrexone (XR-NTX) for treating opioid use disorder (OUD) or alcohol use disorder (AUD) in HIV clinics. We assessed randomization rates, XR-NTX initiation and retention. Secondary aims generated point estimates for change in substance use and HIV viral suppression (HIV RNA <200 copies/mL).

Methods: HIV clinics in Vancouver, BC and Chicago, IL were pilot sites for a Clinical Trials Network randomized trial of XR-NTX (n=26) versus treatment as usual (TAU, n=25) for treatment of OUD or AUD. Participants randomized to XR-NTX were injected every 4 weeks for 4 months. Initiation was defined as receipt of first injection within 4 weeks of randomization. Retention was defined as receipt of all 4 doses of XR-NTX. TAU consisted of medication-assisted treatments other than XR-NTX.

Results: Of 107 excluded, 98% of people interested in reducing opioid use (n=60) and 99% of those interested in reducing alcohol use (n=82) were willing to consider XR-NTX. 51 participants (OUD = 22, AUD=29) were randomized to XR-NTX at 16 weeks. Among those with OUD, mean days of opioids use in past 30 days decreased from 19 to 10 for TAU (n=12) and from 18 to 13 for XR-NTX (n=10). Among those with AUD, mean days of drinking to intoxication in the past 30 days decreased from 18 to 7 for TAU (n=13) and from 10 to 6 for XR-NTX (n=12). Among those with OUD, HIV viral suppression improved from 67% to 80% for XR-NTX and 58% to 75% for TAU.

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CHRONIC FRUCTOSE CONSUMPTION ENHANCES CUE-TRIGGERED COCAINE- AND FOOD-SEEKING.
Alisa Kosheleff1, Linda Tsan1, Yumee Zhuong1, Fernando Gomez-Pinilla1, Sean Ostdlund1, Niall Murphy2, Nigel Maidment3; 1University of California Los Angeles, Encino, CA, 2University of California Irvine, Irvine, CA

Aims: Rewards such as food or drugs increase dopamine (DA) signaling in mesolimbic regions of the brain. With repetition, such increases in DA transmission become associated with proximate cues (e.g., jingles, slogans, paraphernalia), cues that can then trigger further reward-seeking, such as that seen in overeating and drug relapse. Dopamine transporter (DAT) is positively regulated by insulin, such that increasing insulin signaling facilitates DAT activity, thereby promoting DA reuptake and decreasing DA transmission. Conversely, decreasing insulin signaling (e.g., during fasting or due to insulin resistance), downregulates DAT activity. Diets high in sugars and refined carbohydrates impair insulin signaling in the periphery (e.g., Type II diabetes), and recent evidence suggests insulin resistance can also occur in neuronal tissue. We hypothesize that neuronal insulin resistance due to chronic fructose exposure persistently downregulates DAT activity, leading to reduced extracellular DA clearance, resulting in increased DA signaling that manifests as hypersensitivity to reward-paired cues. Because psychostimulants act to block the DAT, these diets may synergize with the effects of psychostimulants to further compromise DAT function.

Methods: Here, we compared fructose-exposed (Exp. 1: 20% fructose solution; Exp. 2: 66% fructose pellet chow) with fructose-naïve rats in a Pavlovian-to-instrumental transfer paradigm, a behavioral model of cue-induced motivation for reward, using cocaine (Exp. 1) or food (Exp. 2) as the reward.

Results: We found increased incentive motivation for cocaine and food reward as a result of fructose exposure. In Exp. 3, we found that, within 3 weeks, a 66% fructose pellet diet significantly impaired insulin signaling in the ventral midbrain.

Conclusions: These data highlight a potential role for diet in potentiating hypersensitivity to reward-paired cues, an action that may be due to aberrant DAT function.

Financial Support: NIH DA037689

PREDICTING CRAVING AND MOOD 90 MINUTE INTO THE FUTURE USING GPS DATA.
William J Kowalczyk1, Matthew Tyburski2, Massoud Vahabzadeh1, Jia-Ling Lin1, Karran A Phillips1, Adam J Milam2, Debra M Furr-Holden2, Mustapha Mezghanni1, David H Epstein1, Kenzie L Preston1; 1NIDA, IRP, Baltimore, MD, 2Johns Hopkins, Baltimore, MD

Aims: Predicting lapses has proven difficult for researchers. Prior attempts to predict imminent lapse have usually focused on time scales of weeks or months, which is problematic when attempting to predict a behavior that occurs in a moment-to-moment fashion. In real time would open up a world of live, just-in-time, mHealth interventions for lapses to drug use and other behaviors. The present study attempts a step towards the goal of predicting lapses by making ambulatory predictions of craving and mood 90 minutes into the future.

Methods: In two separate pools of methadone-maintained outpatients (pilot, n = 27; main, n = 81), we collected ratings of drug craving, mood and stress over 28 weeks at randomly prompted times via ecological momentary assessment (EMA). We mapped participants’ GPS tracks for the 6.5 hours before each EMA entry. We trained randomForest machine-learning models to predict heroin and cocaine craving, stress, and mood, 90 minutes into the future. The main predictor was an independently obtained observer rating of viable neighborhood disorder (NIHET)1 along the GPS tracks. We randomly reserved part of the data to validate the prediction model.

Results: The models predicted mood, drug craving, and stress into the future in the pilot and main study. In the main study, using only GPS data, agreement was generally at a moderate level (kappa: Heroin Craving .59-.62, Cocaine Craving .40-.45, Stress .43-.52; r: Positive Mood .80-.83, negative mood .59 -.68). Adding person-level predictors increased the accuracy of the predictions to generally substantial levels (kappa: Heroin Craving .61-.69, Cocaine Craving .40-.62, Stress .43 .52; r: Positive Mood .80-.83, negative mood .59 -.68).

Conclusions: We succeeded in automated prediction of the immediate future using a model that could ultimately run on a smartphone. Our models perform well on group-level data—a valuable achievement, but to achieve the goal of a just-in-time mHealth intervention these predictions will need to be extended to the individual level.

Financial Support: NIDA, IRP

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IMPACT OF A STRENGTHS-BASED CASE MANAGEMENT INTERVENTION ON HIV VIRAL LOAD AMONG PEOPLE WHO USE DRUGS IN OAKLAND, CALIFORNIA.
Alex Kral, Megan L Comfort, Christina Powers, Helen Cheng, Andrea Lopez, Barrot Lambdin, Jennifer Lorvic; RTI International, San Francisco, CA

Aims: As part of NIDA’s Seek, Test, Treat, and Retain multi-site initiative, we sought to evaluate whether a strengths-based case management intervention called Project Bridge Oakland (PBO) would help reduce HIV viral load for people who inject drugs (PWID) or smoke crack (PWSC) over a 2.5 year period.

Methods: PWID and PWSC (N=2,424) were recruited in Oakland using targeted sampling methods from 2011 to 2013. HIV antibody positive participants who were not engaged in HIV care were enrolled in PBO intervention (n=19) and comparison participants who were already engaged in HIV care (n=29). All participants underwent blood draw for HIV viral load testing and a brief survey quarterly for 2.5 years. PBO involved a social worker and medical doctor using strengths-based care management principles to help link participants to continual HIV care, including advocating for HIV care as participants went in and out of jail. We used GEE repeated measures analysis of log-transformed HIV viral load to evaluate the relationship between viral load during follow-up and study arm. Because of the small sample size, we set the p-value cut-off at 0.10 for statistical significance a priori.

Results: 63% of participants were male, 27% were female, and 10% were transgendered. 6% were 18-30 years old and 35% were 50 years old or older. 21% had injected drugs in the past 6 months. 67% were homeless. There was more reduction in log-transformed HIV viral load value since enrollment in the study for PBO participants than comparison participants (p=0.0575).

Conclusions: In this small quasi-experimental trial of HIV positive people who use drugs, enrollment in a strengths-based case management intervention appears to lower HIV viral load as compared to people in usual HIV care. PBO should be tested in a larger, multi-siteRCT and may be useful for management of other infectious diseases like viral hepatitis.

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THE QUEST TO EXTEND HEALTH SERVICES TO VULNERABLE SUBSTANCE USERS IN RIO DE JANEIRO, BRAZIL IN THE CONTEXT OF AN UNFOLDING ECONOMIC CRISIS.
Noa Krawczyk1, Deanna Kerrigan2, Francisco Inacio Bastos1; 1ICICT, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil, 2Health Behavior and Society, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 3Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Aims: Calls to address rising crack-cocaine use in Brazil among homeless and street-frequenting populations who are in urgent need of health services have questioned the capacity of the Brazilian Unified Health System to attend to the nation’s most marginalized citizens. In recent years, Brazil’s federal government has launched several actions to increase public health services for drug users yet many obstacles hindering accessibility and effectiveness of such services remain. Somewhat paradoxically, these new policies have been implemented in the context of shrinking budgets and a growing economic crisis: The combination of expanding services for a population of poor and largely stigmatized drug users while cutting other essential government programs tends to elicit harsh political controversies and criticism from citizens. Precisely in consequence of such prospects, this paper aims to document the current deficiencies marginalizing drug users face in accessing health services and their risk of worsening as the economic crisis leads to further cutbacks. Using Rio de Janeiro as a case study, we focus on two primary issues. First, the bureaucratic complexity of Brazil’s network of public health services, and secondly, the prevailing stigma that perpetuates mistrust, marginality and bars vulnerable citizens from official structures and services.

Conclusions: Abandoning the initial efforts that have been implemented would be risking a return to the exclusionary discourse that has maintained vulnerable citizens at the margins of public structures, destroying the chance to offer such populations humane and urgently needed treatment and care.

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COMPOSITION OF THE N-METHYL-D-ASPARTATE RECEPTOR PROTEIN COMPLEX IN THE MEDIAL PREFRONTAL CORTEX ASSOCIATES WITH INDIVIDUAL DIFFERENCES IN MOTOR IMPULSIVITY.

Christoph 36, Koehn 36, Noel C Anastasia; UTMB Galveston, Galveston, TX

Aims: Impulsivity is a complex, multifaceted trait broadly defined as action without sufficient foresight; high inherent motor impulsivity may increase the likelihood that drug use escalates into dependence and relapse. Glutamate neurotransmission within the mPFC critically regulates the cognitive and/or behavioral dimensions underlying motor impulsivity. The NMDAR is a major component of the glutamatergic receptor family and composed of multiple subunits including GluN1 and GluN2A-D. Here, we tested the hypothesis that individual differences in motor impulsivity are driven by the composition of the NMDAR complex within the mPFC.

Methods: Outbred male Sprague Dawley rats were identified as high (HI) or low (LI) impulsive using the one-choice serial reaction time (1-CSRT) task in which nose-pokes after presentation of a visual stimulus resulted in food pellet delivery. Following the initial behavioral assessment, mPFC synaptosomal protein was extracted from HI and LI rats to assess the composition of the NMDAR complex via immunoprecipitation (IP) and immunoblot (IB) techniques.

Results: Performance on the 1-CSRT task was rapidly acquired and the HI/LI phenotype was stable across >70 days of training (p<0.001). HI rats had lower mPFC GluN1 and GluN2A synaptosomal protein expression (p<0.05) and also a diminished GluN2A/GluN1 synaptosomal protein complex compared to LI rats. The mPFC GluN2B subunit synaptosomal protein expression was higher in HI vs LI rats (p<0.05).

Conclusions: Disruption of the NMDAR protein complex composition within the mPFC may drive high inherent motor impulsivity. Increased understanding of the complex regulation of glutamatergic balance within the mPFC as it relates to individual differences in motor impulsivity may lead to a better understanding of risk factors and treatments for drug dependence and relapse.

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THE EFFECT OF TREATMENT FOR OPIOID USE DISORDERS ON THE COSTS OF CRIME.

Emmanuel Krebs1, David Y C Huang2, Elizabeth Evans2, Darren Urada2, Yih-Ing Hseih2, Bohdan Nosyk1; 1BC Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada, 2UCLA, Los Angeles, CA, 3Department of Psychiatry & Behavioral Sciences, UCLA, Los Angeles, CA, 4Integrated Substance Abuse Programs, UCLA, Los Angeles, Los Angeles, CA

Aims: Treatment for opioid use disorder (OUD) has the potential to generate important benefits to society, particularly through the reduction of drug-related mortality, but also as a means of reducing crime. Using linked administrative data, we aimed to determine the association of treatment engagement and the costs of crime among individuals with OUD in California (2006-2010).

Methods: We considered all individuals initiating treatment for OUD in publicly-funded facilities, including opioid agonist treatment (OAT) and detoxification. Daily costs of crime were composed of the costs of policing/court, corrections, and criminal victimization. We estimated a two-part multiple regression model using generalized linear modeling; the first part estimated the probability of non-zero costs, while the second estimated the level of costs of crime, expressed in 2014 US$. Average marginal effects for OAT and detoxification were estimated adjusting for fixed and time-varying confounders.

Results: Among 31,659 individuals included in our study the median age at treatment initiation was 32 and 43.2% had criminal justice involvement during a median 2.3 years (IQR:1.2,3.6) of follow-up. Both OAT (~$1280(95%CI:$138,$118)) and detoxification (~$1477($137,$137)) were associated with lower daily costs of crime compared to out-of-treatment periods. Given median treatment and out-of-treatment durations, accessing OAT and detoxification only were associated with mean savings of $20,650(95%CI:$19,016,$22,284) and $2,784($2,594,$2,975), respectively over a 6-month period, compared to a hypothetical out-of-treatment comparator.

Conclusions: Our results suggest that the reductions in crime associated with treatment can substantially alleviate the economic burden of OUD. These findings serve to further underline the need for widespread, and unencumbered access to treatment for individuals with OUD.

Financial Support: NIDA R01DA031727;R01 DA02551;P30DA016383

EXTENDED VS. BRIEF INTERMITTENT ACCESS TO PALATABLE FOOD DIFFERENTLY PROMOTE BINGE-LIKE INTAKE AND REJECTION OF LESS PREFERRED FOOD IN FEMALE RATS.

Alison Kreisler, Eric Zorrilla; Committee on the Neurobiology of Addictive Disorders, The Scripps Research Institute, San Diego, CA

Aims: Drug dependence is marked by escalated drug intake and a loss of pleasure from previously rewarding stimuli. The duration and frequency of drug-taking play key roles in both of these maladaptive changes in motivated behavior; data implicate intermittent, extended drug access as driving the transition to addiction. The present study tested the hypothesis that the duration and/or intermittency of access to palatable food analogously influence the development of binge-like intake of palatable food and of the underconsumption of alternative, less preferred food.

Methods: Female rats (n = 32) were given intermittent (MWF, from dark onset) or continuous (ADLIB-chow) access to a sucrose-rich, palatable, chocolate-flavored diet for 6-7 weeks. Intermittent rats were subdivided into extended (24h/day, MWF-24h) or brief access groups (30min/day, MWF-30m). Outside of palatable diet access, regular chow was available ad lib. A fourth group was fed regular chow (ADLIB-chow).

Results: Within one week, MWF-24h rats significantly overate on palatable days (~80-90 kcal/day) and underate on chow days (~20-30 kcal/day) vs. ADLIB rats (~60 kcal/day). In contrast, ADLIB-chow and ADLIB-chow groups did not differ in total daily intake. In MWF-30m rats, 30-min intake (23-24 kcal, ~40% daily intake) exceeded that of MWF-24h (15-20 kcal, ~19% daily intake), ADLIB-chow (2-5 kcal, ~6% daily intake) and ADLIB-chow (1-3 kcal, ~3% daily intake) groups. However, unlike MWF-24h rats, the MWF-30m group did not develop cyclic daily caloric intake, showed 24h-intake comparable to that of ADLIB rats, and did not underate over extended access days.

Conclusions: The present results suggest that, unlike models of other drugs of abuse, brief periods of access promote greater, binge-like rates of palatable food intake. But, extended access is required to produce “rejection” of less preferred food that may reflect the deficient reward signaling (hypohedonia) implicated in drug dependence.

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NALOXONE-PRECIPITATED WITHDRAWAL FOLLOWING SUCCROSE SELF-ADMINISTRATION IN C57BL/6 MICE.

Cindy Kroll, Bradford D Fischer; Cooper Medical School of Rowan University, Camden, NJ

Aims: Studies in animal models have shown that sugar deprivation following excessive intake elicits opioid-like withdrawal, although the translation of these preclinical findings has been recently challenged. The present study used an operant procedure to assess further the development of opioid receptor-mediated physical dependence following excessive sucrose intake. A withdrawal jumping procedure was also used for comparison. These two endpoints were chosen to assess behaviors that are either decreased (operant behavior) or increased (withdrawal jumping) during naloxone-precipitated withdrawal.

Methods: Male C57BL/6J mice were trained on a fixed-ratio schedule of Ensure presentation. Initially the effects of the opioid antagonist naloxone on operant behavior and withdrawal jumping were assessed. Following four weeks of sucrose consumption, the behavioral effects of naloxone were reassessed on both operant behavior and withdrawal jumping.

Results: Naloxone produced time- and dose-dependent decreases in response rates following sucrose consumption after four weeks. In contrast, naloxone did not increase withdrawal jumping behavior.

Conclusions: These results demonstrate that naloxone decreases operant response rates following binge sugar intake in a time- and dose-dependent manner. Together, these findings raise the possibility that sugar withdrawal is associated with clinically relevant depression of behavior. Comparing these results to those of withdrawal jumping, these results also suggest that preclinical assays of withdrawal-depressed behaviors may be useful as improved translational models in the study of sugar dependence.

Financial Support: Support provided by Cooper Medical School of Rowan University
PREBAGALIN FOR OPIOID DETOXIFICATION: INTERIM RESULTS.

Evgeny Krupitsky1, RD Ilyuk1, AD Mikhailov1, KA Kazankov1, KV Rybakova2, OG Grishina1, IA Zaplatkin2, Daniel Langelen3, George E Woody3, 'St Petersburg VM Bekhterev Research Psychoneurological Institute, St Petersburg, Russian Federation, 1Psychiatry, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, 2Murmansk Regional Addiction Hospital, Murmansk, Russian Federation

Aims: Successful “detoxification” is a critical step in antagonist maintenance of opioid dependence. Withdrawal symptoms, such as hyperalgesia, insomnia and anxiety are not well controlled by clonidine-based detoxification protocols leading to high failure rates. Pregabalin (Lyrica ™) is an analgesic, anxiolytic and hypnotic that modulates GABAergic and glutamatergic neurotransmission. This double-blind randomized study compared pregabalin and clonidine for opioid detoxification

Methods: Thirty-four opioid-dependent in-patients at the Murmansk Narcology Hospital were randomly assigned to the pregabalin (P) or clonidine (C) groups. The P group (N=19) received up to 600 mg of pregabalin while the C group (N=15) received up to 0.6 mg of clonidine a day. Both groups received routine doxylamine and symptomatic ketorolac, metoclopramide, naphazoline and phenergan. Subjective Opioid Withdrawal Scale (SOWS), General Clinical Impression (CGI), craving, sleep, anxiety, mood and adverse effects (AE) were assessed daily by physicians blind to randomization

Results: Groups did not differ on baseline characteristics. Fifteen (79%) P patients and 7 (47%) C patients completed the 6-day treatment protocol (p = 0.05; Fisher exact test). Kaplan-Meier survival analysis confirmed better retention in the P group (p = 0.001; Log Rank Mantel-Cox criterion). CGI score was significantly better in the P group. Requirement for analgesic ketorolac was higher in the C group. SOWS score reduction did not differ between groups, perhaps because of the symptom-triggered design. There was a trend for less craving in the P group (p = 0.07). Groups did not differ on AEs, however the P group had significantly less fatigue

Conclusions: These results suggest that pregabalin is more effective than clonidine in non-opioid management of opioid detoxification

Financial Support: RO1DA026336-02

SOME CONTEXT FOR UNDERSTANDING THE PLACE OF THE GED IN THE RELATIONSHIP BETWEEN EDUCATIONAL ATTAINMENT AND SMOKING PREVALENCE.

Allison Nicole Kurtt1,2,3,4,5, Ryan Redner1, Jeff Priest1,2,3, Stephen Higgins1,2,3,5, Vermont Center on Behavior and Health, Burlington, VT, 4Psychiatry, University of Vermont, South Burlington, VT, 5Psychological Science, University of Vermont, Burlington, VT, ‘Biostatistics, University of Vermont, Burlington, VT

Aims: Individuals with a General Educational Development (GED) degree have the highest smoking prevalence of any education level, including high school dropouts without a GED. Yet little research has been reported providing a context for understanding the exception that the GED represents in the otherwise graded inverse relationship between educational attainment and smoking prevalence. We investigated whether the GED may be associated with a general riskier profile that includes but is not limited to increased smoking prevalence.

Methods: Data were obtained from three years (2011-2013) of the National Survey on Drug Use and Health (NSDUH [N = 29,379]). Prevalence of risky repertoire indicators (e.g., ever arrested, seldom/never wears a seatbelt), indicators of social instability (e.g., frequent moves), and risky demographic characteristics (e.g., male) were compared among high school dropouts, GED holders, and high school graduates using Rao-Scott chi square goodness-of-fit tests and multiple logistic regression

Results: Twenty-three of 27 (85%) risk indicators deviated from a graded relationship between education and the outcome of interest in a manner that supported the presence of a general riskier profile among GED holders. Controlling for this profile accounted for a significant but limited (25-30%) proportion of the variance in smoking prevalence across these three education levels

Conclusions: GED holders exhibit a broad high-risk profile of which smoking is just one component. Future research evaluating additional risk indicators and perhaps general markers of impairments in self-regulation are likely needed for a more complete understanding of GED’s place in the important relationship between educational attainment and smoking prevalence.

Financial Support: P50DA036114, T33DA07242m, P20GM103644

BENZODIAZEPINE DEPENDENCE AMONG YOUNG ADULTS IN THE CLUB SCENE: DATA FROM A SECOND COHORT.

Steven P Kurtz1, Mance E Buttram1, Maria Pagano1, ARSH: Center for Research on Substance Use and Health Disparities, Nova Southeastern University, Miami, FL, 1Department of Psychiatry, Division of Child Psychiatry, Case Western Reserve University, Cleveland, OH

Aims: Benzodiazepines (BZs) are frequently prescribed and have the potential for abuse. Young adults report the highest rates of BZ misuse in the US. Here, we update findings on BZ dependence among young adults from an earlier study (2006-2008; N=600) with data from a new cohort recruited in 2011-2014. Eligibility requirements and sampling methods were the same for both studies

Methods: Eligible respondents (N=498) were ages 18 to 39 and reported past 90 day use of club drugs and the misuse of prescription (Rx) opioids and/or sedatives. Standardized assessments included detailed drug use histories and substance dependence symptoms by drug. Participants who reported ≥ 3 or more of 7 DSM-IV-TR dependence symptoms attributed to their use of BZs were classified as BZ-dependent. Bivariate logistic regression models examined demographic and health risk characteristics associated with BZ dependence

Results: Participants were Hispanic (64%), Black (21%), White (12%), and other race/ethnicity (3%). Mean age was 25; 45% were female. BZ dependence was associated with younger age; younger age at BZ initiation; poorer physical and mental health; greater use of marijuana, cocaine and Rx opioids; higher frequencies of drug overdose and drug abuse treatment admissions; and more frequent unprotected vaginal sex (all p<0.05). Compared to the earlier study, the rate of BZ dependence was higher (10.8% vs. 7.9%), and drug overdose and treatment consequences were greater among the new cohort

Conclusions: These data support recent reports of increasing BZ misuse and consequences among young adults. Rx drug abuse prevention and treatment interventions are critically needed for this population, and the high levels of severe health consequences from BZ misuse indicate that the upscheduling of BZ should be strongly considered

Financial Support: This research was supported by NIH Grant # DA019048

IMPACT OF LIFETIME DEPRESSION AND ANXIETY ON EFFECTIVENESS OF MASS DISTRIBUTION OF NICOTINE PATCHES: SECONDARY ANALYSIS OF A RANDOMIZED CONTROLLED TRIAL.

Vlad Kushnir1, Beth Sprotle1, Laurie Zawertailo1, Peter Selby1, Rachel Tyndale1, Scott Leatherdale1, John Cunningham1; 1Centre for Addiction and Mental Health, Toronto, ON, Canada, ‘University of Waterloo, Waterloo, ON, Canada

Aims: Large-scale public health initiatives providing free nicotine replacement therapy (NRT) have been shown to increase smoking cessation rates, however their effectiveness among the highly prevalent population of smokers with mood disorders has not been explored. The aim of this study was to investigate the influence of lifetime history of depression or anxiety on smoking cessation success following the free distribution of nicotine patches

Methods: In the context of a randomized controlled trial examining the efficacy of distributing free NRT, a secondary analysis of data was conducted of 1000 adult regular smokers randomized to be mailed a 5-week supply of nicotine patches or to a no intervention control group. Participants were divided into subgroups based on presence of self-reported lifetime diagnosis of depression and anxiety

Results: Irrespective of lifetime history of depression or anxiety, odds of self-reported cessation at 6 months (primary outcome measure 30-day point prevalence) were significantly greater among groups receiving nicotine patches compared to no intervention control (no history of depression or anxiety: OR of 2.20; 95%CI 1.05 - 4.63; history of depression or anxiety present: OR of 3.90; 95%CI 1.28 - 11.88). Among nicotine patch recipients only, quit outcomes did not differ between those with and without lifetime depression or anxiety in models adjusted and unadjusted for differences in demographic and smoking characteristics

Conclusions: This trial provides evidence on the effectiveness of mass distribution of free nicotine patches (without behavioral support) among smokers with current or past history of depression or anxiety. The findings of improved cessation among smokers with or without lifetime history of mental illness provide further support for the adoption of mass distribution initiatives as a means of promoting tobacco cessation on a population level

Financial Support: Canadian Institutes of Health Research
PERCEIVED RACIAL DISCRIMINATION AND MOTIVATIONS FOR ILLICIT SUBSTANCE USE AMONG BLACK COLLEGE STUDENT DRUG USERS.
Danni Lanaway1; Psychology, University of Cincinnati, Cincinnati, OH
Aims: Cannabis use among Black college students has been increasing over the past decade. However, the literature has yet to examine factors that may be driving these students to engage in cannabis use. Specifically, perceived racial discrimination (PRD) within the academic setting, which is shown to cause significant stress to students, is one factor that may be motivating Black students to use cannabis. This study explored Black college students’ motivations for illicit cannabis use. It was hypothesized that coping motivations would be most commonly reported for illicit cannabis use. It was further hypothesized that coping motivations would be associated with higher frequencies of cannabis use. Lastly, it was predicted that coping motivations would mediate the relationship between the level of perceived racial discrimination (PRD) and frequency of illicit cannabis use.
Methods: The sample consisted of 131 participants who completed an online survey capturing demographic information, frequency of cannabis use, motivations for use and experiences of PRD.
Results: Descriptive analyses found that enjoyment (87.8%), celebration (66.4%) and perceived relatively low risk (60.3%) were endorsed most frequently for illicit cannabis use while coping (45.0%) was the ninth most reported motivation, showing no support for the first hypothesis. T-tests and Chi-Square analyses found that those reporting coping motives for cannabis use self-reported more use (n=59, M=32.93 SD=25.90) than those not reporting coping motives (n=72, M=16.08, SD=20.18), t(113.83)=-4.30, p<.001. Further, over half (63.0%) of the students who endorsed coping motivations were in the high cannabis frequency group, c²(1, N=131)=16.96, p<.001. Mediation analyses found that level of PRD was associated with cannabis coping motivations β=-0.48, p<.001, but the remaining paths of the model were non-significant.
Conclusions: These findings suggest that, for Black college students, cannabis use interventions should address these students’ experiences of PRD in the academic setting which could then reduce cannabis use for coping purposes.
Financial Support: Greater Cincinnati Foundation

CHANGES IN BRAIN WHITE MATTER INTEGRITY AFTER PPAR-GAMMA AGONIST TREATMENT FOR COCAINE USE DISORDER.
Stephen E Lankenau, Avat Kioumarsi, Megan Reed; Drexel University, Philadelphia, PA
Aims: The process of becoming a recreational marijuana user – a “sequence of changes in individual attitudes and experiences” towards marijuana – was first described in a classic article by sociologist Howard Becker in 1953. Since marijuana became legal for medical purposes in 1996, no studies have described the process of becoming a medicinal marijuana user among young adults.
Methods: 40 young adult (18 to 26) medical marijuana patients (MMP) – persons with a current physician recommendation for marijuana – were recruited in Los Angeles for a qualitative interview in 2014-15. Semi-structured interviews focused on the natural history of marijuana use before and after becoming MMP. Qualitative analysis utilized both an inductive and deductive coding process in Atlas.ti.
Results: MMP, who all used marijuana recreational prior to becoming MMP, identified as either primarily medical users or recreational users. Apart from the fundamental recreational processes identified by Becker - learning to use it, recognizing its effects, and enjoying the effects - discovering marijuana’s medicinal effects was a key aspect of becoming MMP for many. In contrast to the social process described by Becker, medicinal benefits were often learned alone through self-exploration and/or from informal knowledge gained from medical marijuana dispensary staff. For most, the discovery of medicinal effects occurred either prior to becoming MMP, after becoming MMP, or both before/after becoming MMP. For some, MMP reverted to primarily recreational use after a period of medicinal use or MMP used primarily recreationally throughout their marijuana career. For many, becoming a medicinal marijuana user also involved developing a new identity that emphasized medicinal use.
Conclusions: Discovering the medicinal effects of marijuana may occur before and/or after becoming an MMP among young adults. This discovery process is an augmentation to the steps described by Becker (1953) and constitutes a new trajectory in the natural history of marijuana use among young adults.
Financial Support: NIDA R01 DA034067

ASSESSMENT OF THE ABUSE POTENTIAL AND BENEFITS OF KRATOM AND ITS MITRAGYLINE ALKALOIDS: IMPLICATIONS FOR REGULATION.
Ryan K Lanier1, Reginald Vane Funt1, Edward Cone1, Jack Henningfield1; ’US Naturals, Washington, DC, ’Pinney Associates, Bethesda, MD
Aims: The purpose of this study is to review the data related to the abuse potential, benefits, and toxicity of kratom and its primary alkaloids.
Conclusions: Kratom (Mitragyna speciosa) is a tropical tree in the coffee family native to Southeast Asia (SEA) consumed for centuries, commonly in the form of a tea like beverage made by steeping leaves in water. Beneficial effects reportedly include mild stimulation, analgesia, and relief of nausea, diarrhea, coughing, and opioid withdrawal symptoms. The primary active alkaloids are mitragynine (MG) and 7-hydroxymitragynine (7-OH-MG). MG has a molecular structure dissimilar to opioid alkaloids and cannot be converted to an opiate derivative. MG and 7-OH-MG are mu agonists, but with a low maximal effect ceiling for euphoria and respiratory depression. This may explain the apparently low potential for abuse and low risk of serious adverse effects or overdose. Low alkaloid concentrations in extracts and low reinforcing efficacy may explain why nasal insufflation, injection, and smoking of kratom are virtually unknown in the US. Public health risks appear very low in SEA and surveys of users and nonusers report that use is more often associated with improved work performance than impairment, more similar to coffee and tea consumption than to opioid or alcohol use. There is little evidence of abuse, treatment seeking, or ER visits associated with kratom products in major US federal surveys including Monitoring the Future, the National Survey on Drug Use and Health, the Treatment Episode Data Set, or a survey of dietary supplement associated ER visits performed in 2015. These findings suggest that kratom has a low potential for abuse or toxicity, consistent with many unscheduled prescriptions and over-the-counter drugs, as well as coffee and tea.
Financial Support: RL is an employee of US Naturals, which markets products containing kratom, and provided funding for this study. RF, EC, and JH have provided paid consulting services to US Naturals.

PERCEIVED RACIAL DISCRIMINATION AND MOTIVATIONS FOR ILLICIT SUBSTANCE USE AMONG BLACK COLLEGE STUDENT DRUG USERS.
Danni Lanaway1; Psychology, University of Cincinnati, Cincinnati, OH
Aims: Cannabis use among Black college students has been increasing over the past decade. However, the literature has yet to examine factors that may be driving these students to engage in cannabis use. Specifically, perceived racial discrimination (PRD) within the academic setting, which is shown to cause significant stress to students, is one factor that may be motivating Black students to use cannabis. This study explored Black college students’ motivations for illicit cannabis use. It was hypothesized that coping motivations would be most commonly reported for illicit cannabis use. It was further hypothesized that coping motivations would be associated with higher frequencies of cannabis use. Lastly, it was predicted that coping motivations would mediate the relationship between the level of perceived racial discrimination (PRD) and frequency of illicit cannabis use.
Methods: The sample consisted of 131 participants who completed an online survey capturing demographic information, frequency of cannabis use, motivations for use and experiences of PRD.
Results: Descriptive analyses found that enjoyment (87.8%), celebration (66.4%) and perceived relatively low risk (60.3%) were endorsed most frequently for illicit cannabis use while coping (45.0%) was the ninth most reported motivation, showing no support for the first hypothesis. T-tests and Chi-Square analyses found that those reporting coping motives for cannabis use self-reported more use (n=59, M=32.93 SD=25.90) than those not reporting coping motives (n=72, M=16.08, SD=20.18), t(113.83)=-4.30, p<.001. Further, over half (63.0%) of the students who endorsed coping motivations were in the high cannabis frequency group, c²(1, N=131)=16.96, p<.001. Mediation analyses found that level of PRD was associated with cannabis coping motivations β=-0.48, p<.001, but the remaining paths of the model were non-significant.
Conclusions: These findings suggest that, for Black college students, cannabis use interventions should address these students’ experiences of PRD in the academic setting which could then reduce cannabis use for coping purposes.
Financial Support: Greater Cincinnati Foundation

AKNOWLEDGMENTS TO REGULAR AND BICULTURAL SPECIES OF MIRTALE: IMPLICATIONS FOR REGULATION.
Ryan K Lanier1, Reginald Vane Funt1, Edward Cone1, Jack Henningfield1; ’US Naturals, Washington, DC, ’Pinney Associates, Bethesda, MD
Aims: The purpose of this study is to review the data related to the abuse potential, benefits, and toxicity of kratom and its primary alkaloids.
Conclusions: Kratom (Mitragyna speciosa) is a tropical tree in the coffee family native to Southeast Asia (SEA) consumed for centuries, commonly in the form of a tea like beverage made by steeping leaves in water. Beneficial effects reportedly include mild stimulation, analgesia, and relief of nausea, diarrhea, coughing, and opioid withdrawal symptoms. The primary active alkaloids are mitragynine (MG) and 7-hydroxymitragynine (7-OH-MG). MG has a molecular structure dissimilar to opioid alkaloids and cannot be converted to an opiate derivative. MG and 7-OH-MG are mu agonists, but with a low maximal effect ceiling for euphoria and respiratory depression. This may explain the apparently low potential for abuse and low risk of serious adverse effects or overdose. Low alkaloid concentrations in extracts and low reinforcing efficacy may explain why nasal insufflation, injection, and smoking of kratom are virtually unknown in the US. Public health risks appear very low in SEA and surveys of users and nonusers report that use is more often associated with improved work performance than impairment, more similar to coffee and tea consumption than to opioid or alcohol use. There is little evidence of abuse, treatment seeking, or ER visits associated with kratom products in major US federal surveys including Monitoring the Future, the National Survey on Drug Use and Health, the Treatment Episode Data Set, or a survey of dietary supplement associated ER visits performed in 2015. These findings suggest that kratom has a low potential for abuse or toxicity, consistent with many unscheduled prescriptions and over-the-counter drugs, as well as coffee and tea.
Financial Support: RL is an employee of US Naturals, which markets products containing kratom, and provided funding for this study. RF, EC, and JH have provided paid consulting services to US Naturals.
MARIJUANA USE IN YOUNG ADULT WOMEN & MEN ATTENDING PRIMARY CARE: RESULTS FROM A PILOT STUDY INTEGRATING BEHAVIORAL HEALTH CARE INTO PRIMARY CARE.

Gwendolyn Lapham, Megan Addis, Amy Kit-Zing Lee, Carol Achtmeyer, Julie Richards, Evette Ludman, Tony Gildred, Ryan Caldeiro, Larry Marx, Paula Lozano, Katharine Anthony Bradley; Group Health Research Institute, Seattle, WA

**Aims:** Marijuana is the most widely used illicit drug in the U.S., & young adults, with the highest prevalence of past-year use (21%), are particularly vulnerable to the impacts of related harm. However, very little is known about marijuana use by young adults presenting to primary care. Leaders of a healthcare system, in a state where marijuana is legal, recently implemented additional screening for marijuana, along with depression, alcohol & other drug use, as part of behavioral health integration in primary care.

**Methods:** This study included young adults aged 18-30 who visited the pilot clinic in the first 7 months of implementation. A paper-based 7-item behavioral health screen included items for depression, alcohol misuse & past-year marijuana & other drug use. Young adults reporting daily marijuana use were further assessed for a drug use disorder (DUD) with a DSM-5 symptom checklist for DUD. We describe the prevalence of marijuana use in young adult women & men, and among those reporting use, the prevalence of depression, alcohol misuse, any other drug use & further assessment for a DUD.

**Results:** Of the 1,211 young adults screened for marijuana use, 64% (780) were women & 36% (431) were men, with 29% & 6% of women and 41% & 12% of men reporting any marijuana use & daily use, respectively. For those reporting any marijuana use, 30%, 51% & 11% of women and 31%, 41% & 18% of men were positive for depression, alcohol misuse, and any other drug use, respectively. Rates of further assessment for a DUD for report of daily marijuana use was 21% and 16% for women and men, respectively.

**Conclusions:** Among young adults attending primary care in Washington State, the prevalence of past-year marijuana use was higher than national rates for both women & men and was consistently higher for men than women. Yet further assessment for a DUD was higher for women. Research is needed to understand the gender differences in care for marijuana use.

**Financial Support:** NIDA CTN (JUG1DA040314-01) & AHRQ (R18 HS023173)

LIFE CHAOS AMONG DRUG USERS AND NON-DRUG USERS.

Sonam Ongmu Lasopa, Krishna Vaddiparti, Catherine Woodstock Striley, Linda Corttler; Epidemiology, University of Florida, Gainesville, FL

**Aims:** Chaos, described as disorganization and unpredictability in a persons life is linked to deleterious effects on health behaviors. However, life chaos in the home or external environment has not yet been assessed among adults because of the lack of a measure. We had the opportunity to assess life chaos among those of the lack of a measure. We had the opportunity to assess life chaos among those who endorsed illicit drug use (DU; n=313) and those who did not (NDU; n=301). We compared responses between the groups.

**Methods:** Data came from the NIDA funded “Transformative Approach to Reduce Research Disparities Towards Drug Users Study” which applied an ambassador intervention to increase participation in research and access to medical and social services in Gainesville, Florida. Community Health Workers recruited individuals between 18 and 80 years old; those who endorsed illicit drug use in the past year were categorized as users of drugs. Among other assessments, the Recent Life Chaos questionnaire was administered. We categorized chaos into domains (perceived life chaos, home, monetary, legal, unpredictability, interpersonal, violence, illness, control, chaos). Square tests and multivariable logistic regression models were used.

**Results:** Overall, one third of DU reported higher levels of perceived life chaos compared to NDU (20.6%). Significantly increased rates of life chaos domains were reported by DU relative to the NDU group which included: home (39.6 vs. 25.6%), monetary (63.3 vs. 49.2%), violence (12.5 vs. 6.3%) and unpredictability (27.2 vs. 21.2%). Lower rates of illness were seen among those with DU compared to NDU (48.9 vs. 58.5%). No differences were found for life chaos domains of interpersonal, legal or control. However, in adjusted multivariable analyses no life chaos domains were significantly associated with DU except for one item which was perception of chaos. DU were less likely to perceive high life chaos compared to NDU (AOR 0.44; 95% CI 0.23-0.83).

**Conclusions:** Although life chaos was not associated with increased risk of drug use, we found drug users perceived a less chaotic life compared to non-drug users.

**Financial Support:** R01 DA027951, U1L RR029890, D 43-TW009120

SYSTEMATIC REVIEW AND META-ANALYSIS OF INJECTING RELATED INJURY AND DISEASE IN PEOPLE WHO INJECT DRUGS.

Sarah Larney1, Amy Peacock1, Bradley M Mathers1, Louisa Degenhardt1; School of Medicine, University of Tasmania, Hobart, TAS, Australia, 1NDARC, UNSW Australia, Sydney, NSW, Australia, 1Kirby Institute, UNSW Australia, Sydney, NSW, Australia

**Aims:** People who inject drugs (PWID) may experience bacterial infections and other sequelae as a result of poor injecting technique, use of non-sterile needles and syringes, and contaminants in drugs injected. Injecting related injuries and diseases (IRID) include bacterial infections (e.g. abscesses; endocarditis) and vascular and circulatory dysfunction (e.g. thrombosis). This study aimed to assess the prevalence of IRID in PWID.

**Methods:** Systematic review and meta-analysis. We searched Medline, EMBASE and CINAHL for literature relating to IRID published since 2000. Summary prevalence estimates were calculated using random effects models.

**Results:** There were 36 studies presenting data on the prevalence of IRID. Summary lifetime prevalence of abscess/cellulitis among PWID was 34% (95% CI: 25%, 44%; k=12; F=99.3); 1-month summary-prevalence was 15% (95% CI: 10%, 20%; k=7; F=94.4). Summary lifetime prevalence of endocarditis was 4% (95% CI: 2%, 6%; k=7; F=96.1%). Summary lifetime prevalence of thrombosis was 10% (95% CI 5%, 17%; k=6; F=98.2%). Infrequently reported IRID included botulism and necrotizing fasciitis.

**Conclusions:** IRID, particularly abscesses/cellulitis, are common among PWID. Bacterial infections and other IRID can result in serious complications, and can be extremely costly in terms of hospital admissions. Access to sterile needles and syringes for PWID is critical not only for the prevention of HIV and hepatitis C transmission, but also to prevent soft-tissue damage and bacterial infections. Information on drug preparation and injecting techniques to reduce contaminants and tissue damage is also important. Wound clinics in specialist services for PWID may be useful in treating IRID.

**Financial Support:** SL, BMM and LD are supported by the National Health and Medical Research Council.

INJECTION HEROIN USE AND METHADONE MAINTENANCE TREATMENT OUTCOMES.

David M Ledgerwood1, Jamey J Lister2, Benjamin V LaLiberte3, Mark Greenwald1; 1Psychiatry, Wayne State School of Medicine, Detroit, MI, 2Wayne State University, Detroit, MI

**Aims:** Despite clear public health consequences from injection opioid use, surprisingly few studies have examined whether this route of administration (relative to non-injection) leads to poorer methadone maintenance treatment (MMT) outcomes. The present study compared heroin-injecting and non-injecting MMT patients to determine whether injection use predicts higher rates of positive opioid, cocaine and benzodiazepine urine screens, and earlier treatment dropout.

**Methods:** Data from N=299 (39.5% injectors) MMT patients were extracted via chart review and de-identified. Initial analyses compared injectors and non-injectors on baseline demographic and clinical characteristics. Primary analyses compared injectors and non-injectors on proportion of opioid, cocaine and benzodiazepine positive UDS in the first three months of treatment; and days retained in treatment.

**Results:** Injectors were younger, less likely to be African American, had higher methadone doses after 3 months and reported earlier age of opioid use onset (p=0.05). Injector groups did not differ in days retained or proportion of opioid positive UDS over the initial 3 months of treatment (p=0.05). Injectors provided a higher proportion of cocaine (p=0.02) and a lower proportion of benzodiazepine positive UDS (p=0.06), but cocaine was no longer significant after controlling for baseline cocaine dependence, and benzodiazepines were non-significant after controlling for race. Results were unchanged after controlling for methadone dose.

**Conclusions:** Injection opioid use is associated with greater cocaine use, but this relationship was accounted for by baseline dependence. Injection was not associated with other measured negative outcomes. These data provide a better understanding of the specific drug use factors requiring attention among MMT patients who inject heroin.

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UNOBSERVED HOME INDUCTION ONTO BUPRENORPHINE: OUTCOMES AT YEAR 7.
Joshua D Lee1, Elemore Patterson Bhatraju1, Babak Tofighi2, Mara Flannery3, Andrea Kermack3, Marc Goursevitch1, Annie Garment1, Keith Goldfeld1, Jennifer McNeely1, Ellie Grossman1; 1Population Health, NYU School of Medicine, New York, NY, 2Population Health, New York University, New York, NY, 3Medicine, New York University, New York.

Aims: Long-term treatment outcomes among unobserved induction patients in public sector primary care settings are unreported; this study aims to estimate unobserved rates of safety and treatment outcomes over a 7-year follow-up period.

Methods: This prospective clinical registry cohort estimated rates of adverse events (AE), treatment retention, and urine results for opioid dependent adults (≥18 years old) presenting to a New York City public hospital primary care office (≥12 months) for BUP maintenance treatment from 2006-2013. Unobserved induction consisted of a 1-week buprenorphine written prescription, pamphlet, and telephone support following an in-person screening and diagnostic visit. Primary outcomes were rates of induction-related AE, week 1 drop-out, and long-term treatment retention. Induction patients (‘inductions’) were compared to new patients transferring care and previously inducted elsewhere (‘transfers’).

Results: Of the 485 patients (306 inductions, 179 transfers), week 1 drop-out was 17%. Induction-related AE were 12%: serious adverse events, 0%; precipitated withdrawal, 3%; prolonged withdrawal, 4%. Overall treatment retention was a median 57 weeks (range, 0-354); 38 weeks (0-320) for inductions, 110 weeks (0-354) for transfers. Older age, later years of first clinic visit, and baseline heroin abstinence correlated with increased treatment retention.

Conclusions: Unobserved ‘home’ BUP induction in a public sector primary care setting appears feasible, safe, logistically simple, and is associated with robust long-term retention.

Financial Support: Grants from the New York City Department of Health and Mental Hygiene (NYC DOHMH) and New York City Health and Hospitals Corporation (NYC HHC).

ENANTIOMERS OF (±)-GZ-888 POTENTLY AND SELECTIVELY INHIBIT VESICULAR MONOAMINE TRANSPORTER-2 FUNCTION AND METHAMPHETAMINE-STIMULATED LOCOMOTOR ACTIVITY.
Na-Ba Lee1, Guangrong Zheng1, Seth M Mayfield2, Emily D Denehy2, Justin R Nickell1, Zheng Cao1, Peter A Crooks1, M T Bardo2, L P Dwoskin1; 1Pharmaceutical Sciences, University of Kentucky, Lexington, KY, 2Psychology, University of Kentucky, Lexington, KY, 3Pharmaceutical Sciences, University of Arkansas for Medical Sciences, Fayetteville, AR

Aims: Despite that methamphetamine (METH) abuse remains a serious problem, there are no pharmacological treatments for METH abuse that are approved by the Food and Drug Administration. A natural product, lobeline, inhibits vesicular monoamine transporter-2 (VMAT2) function and attenuates responding for METH in rat self-administration studies. Lobeline completed Phase 1b clinical trials and was safe in METH addicts. We hypothesize that lobeline enantiomers that are potent and selective VMAT2 inhibitors will decrease METH-stimulated locomotor activity, METH self-administration and will be treatments for METH addiction.

Methods: We modified the chemical structure of lobeline by removing the functional groups and opening the central piperidine ring to afford a selective VMAT2 inhibitor, (±)-GZ-888, which attenuated METH-stimulated locomotor activity in rats. We synthesized the enantiomers of (±)-GZ-888 and evaluated their activity at VMAT2, dopamine transporters (DAT) and serotonin transporters (SERT) using rat striatum, and at hERG channels expressed by HEK-293 cells. Also, the effect of enantiomers on METH-stimulated locomotor activity was evaluated in rats.

Results: GZ-11610 (R-isomer) and GZ-11608 (S-isomer) exhibited high affinity at VMAT2 (Kᵢ = 8.71 ± 3.65 and 25.5 ± 3.57 nM, respectively) and > 30-fold selectivity at VMAT2 over hERG, DAT, and SERT. A significant reduction of METH-stimulated locomotor activity was observed after GZ-11610 (3 mg/kg, s.c.) or GZ-11608 (17 mg/kg, s.c.).

Conclusions: GZ-888 enantiomers potent and selectively inhibited VMAT2 and attenuated METH-stimulated locomotor activity. Financial Support: Supported by NIH U01 DA013519

OXYTOCIN REDUCED MOTIVATION TO TAKE COCAINE IN FEMALE RATS AND REDUCED REINSTATED DRUG SEEKING IN MALE AND FEMALES.
Kah-Chung Leong, Anne Hand, Shannon M Ghee, Carmela M Reichel; Neuroscience, Medical University of South Carolina, Charleston, SC

Aims: Multiple neuropsychiatric disorders, including addiction, may benefit from oxytocin treatment. The oxytocin system is sexually dimorphic with differences in oxytocin cell bodies/receptors expression within the addiction circuit. Given sex differences in the etiology and outcomes of cocaine addiction, we tested effects of oxytocin on cocaine-taking on a progressive ratio (PR) and fixed ratio (FR5) schedule of reinforcement in both male and female rats and during cocaine seeking.

Methods: Rats (n = 32) were trained on an escalating FR schedule (FR1, 3, and 5). Upon stabilization of responding, rats received oxytocin injections (0, 0.1, 0.3, or 1.0 mg/kg) followed by a PR test in which an increasing number of lever presses were required to receive an infusion. Rats also tested on an FR5 with oxytocin (0 or 1.0 mg/kg). Rats then underwent cue and cocaine-primed reinstatement testing to determine whether oxytocin impacts cocaine-seeking through an mGluR2/3 mechanism. Rats received the mGluR2/3 antagonist LY379268 (1 mg/kg, ip) 35 min before and oxytocin (1 mg/kg, ip) 30 min before chamber placement.

Results: In general, females reached higher break points than males and oxytocin attenuated break point only in females on a FR test [main effect of sex F(1,20)=5.83, p=0.05], but attenuated responding in both sexes on an FR5 test [main effect of drug F(1,60)=48.83, p<0.05]. Oxytocin attenuated reinstated cocaine seeking to cues and a cocaine prime in both sexes. Concurrent administration of LY379268 and oxytocin blocked oxytocin’s attenuation of reinstated cocaine seeking in response to cues (F(3,55)=5.40, p<0.01) and showed a trend toward attenuating cocaine-primed reinstatement [F(3,40)=2.47, p=0.07], while LY379268 alone had no effect.

Conclusions: Taken together, females are more motivated to take cocaine and oxytocin reduced this motivation. Males and females reinstates cocaine seeking to cues and drug prime, and this reinstated responding was reduced by oxytocin potentially through mGluR2/3 mechanism.

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WITHDRAWN
ILEGAL DRUG USE AND CRIMINAL BEHAVIOR AMONG KENTUCKY JUVENILE OFFENDERS.

Carl Liukkonen1,2, Megan F Dickson1, Michele Stuton-Tindall2, Matthew Webster1,2, Carrie B Oser1,3, Hannah K Knudsen1,2, Katherine R Marks2, Jennifer R Havens2,2, 1Center on Drug and Alcohol Research, University of Kentucky, Lexington, KY, 2Behavioral Science, University of Kentucky, Lexington, KY, 3Sociology, University of Kentucky, Lexington, KY

Aims: Although studies highlight the high rates of illegal drug use among juvenile offenders, limited research has examined how juvenile illegal drug use is associated with criminal behavior. The current study 1) profiles criminal behavior among Kentucky juvenile offenders by self-reported illegal drug use and 2) identifies independent correlates of illegal drug use.

Methods: This study presents data from the Kentucky Department of Juvenile Justice (DJJ) as part of the NIDA JJ-TRIALS cooperative agreement. The data-set contains 369 juvenile offenders referred to the DJJ between October 1, 2014 and October 15, 2015. Bivariate analyses examine differences in demographics and criminality by self-reported illegal drug use and a logistic regression model identified correlates of illegal drug use.

Results: Two-thirds (66.1%) of youth reported having any illegal drug use. Drug users were older (16.1 vs. 15.1) and more likely to live in a metro area (57.9% vs. 45.9%), while those living in suburban areas were less likely to report illegal drug use (14.0% vs. 25.7%). Youth who used illegal drugs also had significantly more criminal charges in their DJJ record (3.4 vs. 2.4) and were more likely to have property (34.8% vs. 15.6%) and substance-related charges (23.8% vs.7.2%) as well as a probation/parole violation (10.2% vs. 3.2%). Youth who reported using both alcohol and illegal drugs were more likely to be white (81.9% vs. 72.2%) and have a weapons charge (6.4% vs. 3.2%). Logistic regression found that age (p=.000), having a property charge likely to be white (81.9% vs. 72.2%) and have a weapons charge (6.4% vs. 3.2%). Youth who reported using both alcohol and illegal drugs were more likely to be white (81.9% vs. 72.2%) and have a weapons charge (6.4% vs. 3.2%). Logistic regression found that age (p=.000), having a property charge (p=.002) and having a drug-related charge (p=.005) were positively related to illegal drug use.

Conclusions: JJ-TRIALS is funded by NIDA in collaboration with SAMSHA and DOJ.

Financial Support: JJ-TRIALS is funded by NIDA in collaboration with SAMSHA and DOJ.

ANXIETY DISORDERS AS A RISK FACTOR FOR NEEDLE SHARING AMONG COCAINE USERS: RESULTS FROM THE COSMO STUDY.

Mackenzie L Muncy1,2,3, Elise Roy1, Didier Jutras-Aswad1, Geng zang1, Andrea Adelina Artenic1,2, Julie Brunear4, 1Community Health Sciences, Université de Sherbrooke, Longueuil, QC, Canada, 2Research Center, Centre Hospitalier de l’Université de Montréal, Montréal, QC, Canada, 3Family Medicine, McGill University, Montreal, QC, Canada, 4Psychiatry, Université de Montréal, Montréal, QC, Canada

Aims: Psychiatric problems and cocaine use are associated with heightened vulnerability for HIV and Hepatitis C infections. Little is known about the relationship between psychiatric symptoms, psychiatric diagnoses and injection risk behaviors in cocaine users. We examined the association between psychological distress and injection material sharing among cocaine users, while accounting for comorbid anxiety and mood disorders.

Methods: Participants were cocaine users who inject drugs recruited to a prospective cohort study in Montreal, Canada. The Composite International Diagnostic Interview (CIDI) was used to diagnose mood and anxiety disorders in the year prior to baseline. Psychological distress based on the Kessler scale and recent injection material sharing were assessed at baseline and at each of the 5 follow-up visits. Statistical analyses were conducted using generalized estimation equation.

Results: Of the 387 participants (84.5% male; 80.1% ≥ 20y.o.), 35% reported severe psychological distress, 43% qualified for an anxiety disorder diagnosis and 29% for a mood disorder diagnosis at baseline. Psychological distress was not associated with any injection risk behaviors when adjusting for socio-demographic and psychiatric disorders. Participants with anxiety disorders were more likely to share needles (AOR: 1.89, 95% CI: 1.17-3.03).

Conclusions: Anxiety disorders is associated with needle sharing among cocaine users. Our results suggest a potential role for screening for anxiety disorders as part of preventive interventions to decrease blood-borne viruses’ transmission.

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HEALTH CHARACTERISTICS AND SEXUAL RISK BEHAVIORS AMONG YOUNG ADULT PRESCRIPTION OPIOID MISUSERS IN THE CLUB SCENE: EXAMINING THE ROLE OF GENDER.

Maria A Levi Minzi1, Mance E Buttram1, Steven P Kurtz2, ARSH: Center for Research on Substance Use and Health Disparities, Nova Southeastern University, Miami, FL

Aims: Prescription opioids (PO) are the second most popular drug among young adult substance use initiatives in the U.S. Few studies have examined the potential negative health consequences of PO misuse among this group. This study sought to document the physical and mental health, and sexual risk behaviors of a sample of PO misusing club drug users; we also aimed to determine the potential association of gender on these health characteristics.

Methods: Data were drawn from a behavioral substance use and sexual risk reduction intervention trial with club drug users (n=498): participants completed baseline comprehensive health and social risk assessments. For this analysis, PO misusers (n=446) were selected.

Results: Mean age of the sample was 25. The majority reported recent good, very good, or excellent physical health (81%). In terms of recent mental health and sex risk, 57% endorsed psychological problems, and 90% reported at least one unprotected vaginal sex act. In bivariate regression models, compared to men, women were more likely to endorse recent: physical pain (p=.015), health problems that kept them from meeting their responsibilities (p=.001), and exhaustion (p=.001). Women had more significant mental health problems: severe mental distress (p=.000), and high levels of trauma (p=.035); women were also more likely to endorse at least one recent unprotected anal sex act (p=.054).

Conclusions: Young adult PO misusers in the club scene have mental health problems and engage in risky sex, creating increased susceptibility for STIs. Findings also indicate that female PO misusers were found to be more vulnerable to physical and mental health problems. Further examination of these gender differences is warranted in order to develop interventions to improve the health outcomes among this unique population.

Financial Support: This research was supported by grant number DA0196048 from the National Institute on Drug Abuse.

NO EVIDENCE OF INCREASED ABUSE POTENTIAL OF CL-108, A BILAYERED TABLET CONTAINING HYDROCODONE/ACETAMINOPHEN/PROMETHAZINE, IN RECREATIONAL OPIOID USERS.

Naama Levy-Cooperman1, Megan Shram1, Lynn Roy Webster2, Alteros Research Partners, Toronto, ON, Canada, 1PRA, Salt Lake City, UT

Aims: CL108 is a novel immediate release (IR) tablet containing 7.5mg hydrocodone (HYD), 325mg acetaminophen (APAP) and 12.5mg rapid-release promethazine (PMZ) under development for treating patients who suffer from moderate to severe pain while preventing opioid induced nausea and vomiting (OINV). The abuse potential of HYD/APAP products is well described, but the potential impact of adding PMZ is unknown. This study evaluated the abuse potential of CL108 tablets in nondependent recreational opioid users compared to equivalent doses of HYD/APAP and placebo (PBO).

Methods: Following a dose-selection phase, the study utilized a randomized, double-blind, PBO and active-controlled 5-way crossover design. Subjects were recreational opioid users who passed a qualification session to ensure they could distinguish HYD/APAP 30mg/1300mg from PBO. Eligible subjects (N=40) received single doses of CL108 (22.5mg/975mg/37.5mg [low-dose] and 37.5mg/1625mg/62.5mg [high-dose]), HYD/APAP (22.5mg/975mg and 37.5mg/1625mg) and PBO. Subjective measures (e.g., visual analog scales [VAS]) and pupillometry were evaluated for 24h postdose.

Results: Mean peak (Emax) Drug Liking VAS (primary endpoint) was significantly higher for both doses of HYD/APAP compared to PBO (p≤0.001), confirming study validity. CL108 also showed significantly higher scores on subjective measures and pupillometry compared to PBO. On the majority of subjective measures and pupillometry, comparisons between dose-matched CL108 and HYD/APAP treatments were not statistically different. For both CL108 and HYD/APAP, scores on subjective and objective measures for the high-dose treatments were higher than scores observed for low-dose treatments. All treatments were well tolerated, with most adverse events being mild in severity and consistent with expected side effects.

Conclusions: These findings indicate that the addition of PMZ results in no greater abuse potential than the standard HYD/APAP product in the same dosages.

Financial Support: This study was funded by Charleston Laboratories, Inc. and Daiichi Sankyo, Inc.
ASSOCIATION BETWEEN WORKING MEMORY, IMPULSIVITY AND PROBLEMATIC TECHNOLOGY USE.

Chris Lewis, Elizabeth C. Katz; Psychology, Towson University, Towson, MD

Aims: This study examined whether trait impulsivity and working memory, known predictors of problematic technology use (i.e., ‘smart’ phone and video game use), also influence problematic technology use. It was hypothesized that higher levels of trait impulsivity, combined with working memory deficits, would predict problematic ‘smart’ phone and video game use.

Methods: Participants (N = 652) accessed the surveys online through research websites and the research pool at a large mid-Atlantic university. The survey consisted of the UPPS-P Impulsivity Scale, the Working Memory Questionnaire, The Problematic Use of Mobile Phones scale, and the Problematic Video Game Playing scale. Participants were mostly female (75.8%) college students (85%) who averaged 22 (SD = 7.6) years of age.

Results: Trait impulsivity and working memory were significant predictors of problematic smart phone use (R² = 0.2), F(3,647) = 54, p < .0001. Trait impulsivity accounted for 15.4% of the variance in problematic smart phone use (p < .05), while working memory accounted for 4.3% of the variance (p < .05). Trait impulsivity and working memory were also significant predictors of problematic video game use (R² = 0.06), F(3,636) = 12.9, p < .0001. Trait impulsivity accounted for 2.5% of the variance (p < .05), while working memory accounted for 3.5% of the variance (p < .05) in problematic video game use.

Conclusions: The results showed that trait impulsivity and working memory were associated with problematic technology use. Problematic smart phone and video game use may share common etiological factors, in addition to impulsivity and working memory, with substance use disorders. Further research should explore other potential predictors that may help identify at-risk individuals and could inform development of prevention/interventions aimed at reducing problematic technology use.

Financial Support: This study was conducted without funding.

PSYCHOPATHOLOGICAL SYMPTOMS, IMPULSIVITY AND DECISION MAKING IN HIV PATIENTS WITH AND WITHOUT TOBACCO SMOKING.

Ahnata Lim, Eric Lau, Linda Chang; Department of Medicine, University of Hawaii, John A. Burns School of Medicine, Honolulu, HI

Aims: The current study aims to evaluate the independent and combined influences of HIV infection and tobacco-smoking on impulsivity, psychopathological symptoms and cognitive functions.

Methods: 104 participants, including 27 seronegative (SN) non-smokers, 26 SN smokers, 29 HIV+ non-smokers, and 22 HIV+ smokers, were assessed for psychopathological symptoms (Symptom Checklist-90, SCL-90), depressive symptoms (Center for Epidemiologic Studies-Depression Scale, CES-D), impulsivity (Barratt Impulsiveness Scale, BIS), decision-making (The Iowa Gambling Task, GAT), and Wisconsin Card Sorting Test, WCST), and 7 neurocognitive domains.

Results: SCL-90: HIV+ and tobacco-smokers both had higher symptom scores (all p<.05), with additive effects in HIV+ Smokers on all subscales. CES-D: Both HIV subjects and smokers (both p<.001) had higher scores. BIS: Both HIV and smoking participants had higher Total Impulsiveness scores (both p<.05), and Attention Impulsiveness scores (both p<.05). HIV subjects scored higher on Non-Planning Impulsiveness (p<.04). GAT: Although HIV and smokers did not differ, HIV+ smokers lost more money (p<.009) and made more disadvantageous choices (p<.02) than SN. WCST: HIV+ and smokers (both p<.05) both made more errors on WCST. Neocognitive z-scores: HIV+ subjects scored lower on both global (p<.007) and memory (p<.02) z-scores.

Conclusions: Greater psychopathology, impulsivity, and cognitive impairment were observed for HIV+ and tobacco smokers, with HIV+ smokers often having the worst scores among the four groups. This is the first study to examine the combined effects of HIV infection and tobacco-use on these measures. We speculate that greater impulsivity may be premorbid. However, the lack of benefits of nicotine on attention and psychopathology in HIV+ subjects may be due to dopaminergic dysfunction. Future studies evaluating direct dopaminergic modulation may provide additional insights.

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GENDER AND RACIAL/ETHNIC DIFFERENCES IN REFERRAL SOURCES FOR SUD TREATMENT AMONG ADOLESCENTS AND YOUNG ADULTS IN CALIFORNIA (2009-2014).

Lewei Allison Lin1, Amy S.B Bohnert 1,2, Mark Ilgen 1,2; 1Department of PRESCRIBING PRACTICES IN THE VETERANS HEALTHCARE NIDA: 5T32DA007272-23 (Lim)

Methods: Using the California Outcomes Measurement Systems Treatment (CalOMS Tx) data (2009-2014), gender-stratified chi-square analyses were conducted to test for differences in treatment referral sources by race/ethnicity among adolescent males, adolescent females, YA males, and YA females.

Results: The top referral sources into treatment for adolescent males were: criminal justice (CJ) system (30%), schools (30%), and self (20%). The top sources for adolescent females were: schools (35%), self (23%), and CJ (15%). Referral patterns based on race/ethnicity were similar for adolescent males and females. Hispanic/Latino and Black/African American adolescents were more likely to be referred through the CJ system. Hispanic adolescents were more likely to be referred by schools, whereas Black and White adolescents were less likely. The primary referral sources for YA males were CJ system (40%) and self (38%). The referral sources for YA females were more diverse: self (40%), CJ (20%), and the child dependency system (15%). Racial/ethnic minority YA males were more likely to be referred through the CJ system, whereas White males were more likely to self-refer. Black females were less likely to be referred through the CJ system. Hispanic females were more likely to be referred into treatment through the child dependency system, whereas White and Black females were less likely.

Conclusions: Results show there are gender and racial/ethnic disparities in the ways in which young people are admitted into SUD treatment in California. Findings indicate that further research needs to be conducted to better understand the mechanisms by which people differentially come into contact with these referral sources that yield differential referral into treatment.

Financial Support: NIDA: 5T32DA007272-23 (Lim)

IMPACT OF THE OPIOID SAFETY INITIATIVE ON OPIOID PRESCRIBING PRACTICES IN THE VETERANS HEALTHCARE ADMINISTRATION.

Lewei Allison Lin1, Amy S.B Bohmert1,2, Mark Ilgen1,2; 1Department of Psychiatry, University of Michigan, Ann Arbor, MI, 2Department of Veterans Affairs Healthcare System, Serious Mental Illness Treatment Resource and Evaluation Center, Ann Arbor, MI

Aims: Prescription opioids are commonly prescribed, but there are many potential negative consequences associated with their use. The VHA designed the Opioid Safety Initiative (OSI) to help decrease opioid prescribing practices that might be associated with adverse outcomes. The purpose of this study was to examine changes in prescribing following the OSI.

Methods: This study examined adult patients in each facility across the VHA who filled opioid prescriptions between Oct. 2012 and Sept. 2014. Interrupted time series analyses determined the extent of change in prescribing of high dose opioids and concurrent prescribing of benzodiazepines with opioids before and after OSI. Further analyses examined heterogeneity of changes across VHA facilities.

Results: In Oct. 2012, an average of 9.75% of patients among those receiving opioids in a facility, received doses of opioids > 100 morphine equivalents (MEQ). This percentage decreased to 9.09% in Sept 2014. Initially 3.49% of patients on average in a facility were prescribed doses > 200 MEQ, which decreased to 2.94% over the same period. The implementation of OSI in October 2013 was associated with a small but significant decrease in the trend of high dose opioid prescriptions (both > 100 MEQ and > 200 MEQ). There was also a downward trend in concurrent prescribing of benzodiazepines with opioids. However, OSI was actually associated with a significant flattening (compared to pre-OSI) in the downward trend of concurrent benzodiazepine prescriptions. Finally, there was wide variability in change in prescribing across facilities.

Conclusions: These findings provide key data about the potential utility of system-wide policies, such as the OSI, that target prescribing practices. These findings could help inform future efforts to further improve opioid prescribing practices across healthcare systems.

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EXECUTIVE FUNCTIONING AND DSM-5 CRITERIA FOR SUBSTANCE USE DISORDER AMONG ADDICTED INPATIENTS.

Danielle Ruiz de Lima, Priscila Dib Goncalves, Mariella Omnetto, Andre Malbergier, Ricardo Amaral, Sergio Nicastri, Arthur Andrade, Paulo Jannuzzi Cunha; Interdisciplinary Group of Studies on Alcohol and Drugs, Institute of Psychiatry, Sao Paulo, Brazil

Aims: (Background and Aim) Current DSM-5 criteria for Substance Use Disorders (SUD) define levels of severity based on the number of endorsed criteria. Addiction is considered a brain disease and, accordingly, SUD should be associated with brain-related impairments and intensity-related behavioral alterations. Our aim was to investigate the association between SUD’s severity and executive functioning (EF).

Methods: Data from 72 subjects with SUD (cocaïne and polysubstance users) enrolled in a four-week standard inpatient treatment program were analyzed. DSM-5 criteria were investigated using the Structured Clinical Interview (SCID-I), the Addiction Severity Index (ASI-6), and additional clinical data collected during hospitalization. After two weeks of supervised detoxification, patients were submitted to a battery of EF tests including the Trail Making Test, the Stroop Color-Word Test, the Digit Span Forward and Backward Tasks, the Wisconsin Card Sorting Test, the Iowa Gambling Task, the Rey-Osterrieth Complex Figure Test, the Controlled Oral Word Association Test and the Corsi Blocks Task. Pearson correlation test was used for identifying associations between sum of DSM-5 criteria and performance in EF tasks.

Results: Only two significant but contradictory associations between SUD severity and executive functioning were identified. More specifically, better performance in attention (Stroop A errors, r=-.275; p=.021) and non-verbal working memory (Corsi Blocks backwards, r=-.258; p=.030) were tasks related to DSM-5 higher severity scores.

Conclusions: Contrary to our expectations, in this study worst cognitive performance was not associated with more severely addicted individuals, as defined by the current DSM. These data suggest the urgency for further investigations and perhaps indicate the need of more reliable markers to define SUD’s severity.

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SAFETY OF COMBINATION BUPRENORPHINE/NALOXONE AND EXTENDED RELEASE NALTREXONE.

R Lindblad1, A Saxøn1, Paul VanVeldhuizen1, L Lu1, I Hu1, A Hasson2, C Thomas3, Steven Sparenborg2, Larissa Mooney4, W Ling5, E Emmes, Rockville, MD, 1UCLA, Los Angeles, CA, 2VA, Seattle, WA, 3NIDA, Rockville, MD

Aims: The National Institute on Drug Abuse (NIDA)-sponsored National Drug Abuse Treatment Clinical Trials Network (CTN) collected structured safety data in cocaine-dependent participants exposed to extended release naltrexone (XR-NTX) and buprenorphine/naloxone (BUP), or placebo (PLB).

Methods: A total of 302 cocaine-dependent individuals, aged 18-65, who met eligibility criteria, including either past-year opioid dependence or abuse, or past-year opioid use with a lifetime history of opioid dependence, were randomized to one of 3 treatment conditions: 1.6 mg BUP + XR-NTX (n=100), 4 mg BUP + XR-NTX (n=100), and PLB + XR-NTX (n=102). Induction complications, injection site reactions, liver function tests (LFTs), ECG, adverse events, serious adverse events and suicide risk were assessed.

Results: All participants were inducted onto XR-NTX, and 3 participants experienced withdrawal symptoms within the first 5 days of induction. A second XR-NTX dose was provided to 263 participants 4 weeks later. Eighty-eight participants experienced mild injection site reactions, of which 18 were moderate and none severe. Liver function tests remained within normal limits for the majority of participants; 10.3% and 7.0% had elevations of ALT and AST at baseline, and 8.7% and 7.3% at 4 weeks, respectively. ECG QTc prolongation was not observed. Of 37 SAEs reported only 2 were considered related to the intervention. Suicidal ideation was balanced across the arms of the trial.

Conclusions: This combination therapy of buprenorphine/naloxone and extended release naltrexone was well tolerated without evidence of significant safety issues surrounding injection site reactions, perturbations of liver functions or ECG findings or unsolicited safety signals.

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COCAINE SELF-ADMINISTRATION AND SINGLE PROLONGED STRESS PRODUCE HYPERAROUSAL-LIKE, BUT NOT ANXIETY-LIKE, BEHAVIOR IN RATS.

Michael J Lister1, State-Atypical; Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI

Aims: Individuals with cocaine use disorder are at heightened risk for posttraumatic stress disorder (PTSD). Understanding this association is a critically important goal of substance abuse research. One relevant hypothesis is that brain stress-response systems are sensitized by exposure to cocaine, increasing vulnerability to PTSD when traumatized. Therefore, we hypothesized that cocaine self-administration would interact with a later traumatic stressor to increase anxiety-like behaviors, hyperactivity, and deficits in extinction of conditioned fear in rats.

Methods: We combined a chronic cocaine self-administration paradigm with a model of psychological trauma (single prolonged stress, SPS). Adult male Sprague Dawley rats were implanted with venous catheters and either self-administered cocaine or received yoked saline for 14 days (cocaine-taking rats got 0.5 mg/kg infusion, FR1, 2 hour daily sessions). Seven days after the last session they were exposed to SPS (2h restraint, 20m group swim, and exposure to ether vapor) or a control procedure (handling) to create a crossed design. Seven days after SPS or control exposure, anxiety-like and hyperarousal behaviors as well as extension of conditioned fear were measured.

Results: Both cocaine self-administration and SPS (given either individually or sequentially) increased maximum locomotor velocity in the open field, indicative of hyperarousal. Neither cocaine self-administration nor SPS affected anxiety-like behavior or activity in the elevated plus maze. All groups acquired and extinguished conditioned fear with no intergroup differences.

Conclusions: Our results suggest that the common behavioral phenotype generated following cocaine self-administration and SPS exposure is one of hyperarousal rather than anxiety-like behavior. This preliminary study did not confirm our hypothesis of an interaction between cocaine and traumatic stress; however, these results need to be verified with a more powerful study, which is currently underway.

Financial Support: Support provided by the Wayne State University School of Medicine.

INTERPERSONAL PREDICTORS OF SHORT-TERM TREATMENT OUTCOMES AMONG AFRICAN-AMERICAN WOMEN IN MMT.

Jowery J Lister1, Stephanie Yan Xuan1, Mark Greenwald2, David M Ledgerwood2, Social Work, Wayne State University, Detroit, MI, 1Psychiatry, Wayne State University, Detroit, MI

Aims: Continued drug use during induction/stabilization on methadone is a robust predictor of poorer long-term methadone-maintenance treatment (MMT) outcomes. Few studies have investigated baseline predictors of continued drug use during induction/stabilization, particularly among underserved cohorts (women, minorities). Therefore, we examined the predictive role of baseline interpersonal characteristics to continued drug use (opioids, cocaine) among a sample of African-American women in MMT.

Methods: Intake assessment and urine drug screen (UDS) data were obtained from clinical records of opioid-dependent African-American women (N=101; M=49.5 yrs old) at an urban, university-affiliated MMT program. Patients completed clinical interviews on three interpersonal characteristics (interpersonal abuse, support, family drug abuse). We examined predictors to four outcomes: proportion of opioid and cocaine UDS at two time points (at 1 and 3 months of MMT).

Results: Patients had been using opioids regularly for more than 25 years (M=25.5) and most (78.2%) were using daily before treatment. A history of physical or emotional abuse, a current primary support group problem, and a significant other drug abuse history were all significant predictors of a higher proportion of cocaine UDS at 1 and 3 months. Interpersonal characteristics were less predictive of opioid UDS; only support group problem predicted a higher proportion at 1 or 3 months. Methadone dose was not related to the proportion of UDS' samples at 3 months.

Conclusions: These findings highlight that African-American women with interpersonal risk factors are at greater vulnerability for continued drug use, particularly cocaine, during MMT induction/stabilization. These data also help provide a better understanding regarding antecedents of continued drug use, one of the most robust predictors of poorer long-term MMT outcomes.

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EVALUATION OF TAILORED THERAPEUTIC RECOMMENDATIONS TO IMPROVE USE OF AN AUTOMATED TELEPHONE-BASED TREATMENT FOR METHADONE.

Daniel P Lloyd1, Destiny M Printz2, Frank Daniel Buono3, Sydney Reichlin3, Brent A Moore2; 1APT Foundation, New Haven, CT, 2Psychiatry, Yale University School of Medicine, New Haven, CT, 3Psychiatry, Yale University, New Haven, CT

Aims: Relapse, treatment dropout, and drug use are common challenges facing opioid agonist maintained/methadone patients. Tailoring automated systems to patient needs, by offering appropriate therapeutic content, may improve user engagement, utilization, and efficacy. The current study was a two-week randomized, blinded clinical trial to evaluate tailoring on participant system utilization, feasibility and acceptability. Additionally, we evaluated gender effects because women face significant medical, economic, social, and societal barriers when seeking care.

Methods: The Recovery Line, an automated Interactive Voice Response (IVR) system based on Cognitive Behavioral Therapy (CBT), is an adjunctive treatment that provides low cost, consistent delivery and immediate therapeutic availability. Male and female methadone maintained patients (N = 60) were randomly assigned to receive either customized, therapeutic recommendations (tailoring condition) or no recommendation. Participants assigned to tailoring (n = 29) received a recommendation to a component with high coping need. Participants could choose the component option or go the main menu, all other participants (n = 31) were directed to the main menu. Primary outcomes were total number of calls and total minutes of call time.

Results: There were no significant effects of assigned condition, gender, or condition by gender, on total call time, call length, and days of system use. Secondary outcomes indicated that participants in the tailored condition rated the system easier to use than those in the non-tailored condition.

Conclusions: Tailoring did not improve patient system utilization, although participants did rate the system easier to use. The short length of the study may have contributed to this finding. With longer access to the system, customized recommendations may improve user engagement.

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CRIMINAL JUSTICE INVOLVEMENT AND VIOLENCE IN CIVILIANS WITH SUBSTANCE USE DISORDERS AND POSTTRAUMATIC STRESS DISORDER.

Teresa Lopez-Castro1, Denise Hien2, Santiago Papin2; 1Psychology, Adelphi University, NY, NY, 2Dept. of Psychology, The City College of New York, New York, NY, "Psychology, University of Texas, Austin, TX

Aims: Research has supported independent associations between substance use disorder (SUD), posttraumatic stress disorder (PTSD), criminality, and violence. This study aims to examine the prevalence of criminal justice involvement and variables related to history of violent offenses in treatment-seeking civilians with comorbid SUD and PTSD.

Methods: An ethnically diverse sample (n = 106) was recruited from an urban, low-income area and enrolled in a randomized clinical trial for the treatment of comorbid SUD and PTSD. Study analyzed baseline psychiatric, legal, and demographic data collected from Structured Clinical Interview for DSM-IV for Axis I Disorders, Clinician-Administered PTSD Scale, and Addiction Severity Index-Lite.

Results: Over two-thirds of sample endorsed a prior arrest history with 25% of individuals reporting an arrest for a violent crime. Multinomial logistic regression of demographic, trauma- and substance-related variables revealed childhood exposure to potentially traumatic events to be an independent predictor of violent crime offenses. Gender was also associated with criminality with men more likely than women to report a lifetime history of arrest for both violent and non-violent offenses.

Conclusions: Study underscores the criminal justice involvement among individuals with SUD and civilian PTSD. Findings illustrate the negative impact of early childhood traumatic stress exposure and its association to criminality and further violence.

Financial Support: This study was supported by a grant from the National Institute on Drug Abuse (NIDA; R01DA10843; PI: Denise A. Hien, Ph.D.)
MALE-FEMALE DIFFERENCES IN CANNABIS USE ONSET AMONG U.S. ADOLESCENTS AND YOUNG ADULTS IN THE 21ST CENTURY.
Catalina Lopez-Quintero1, James C Anthony3; 2Epidemiology and Biostatistics, Michigan State University, East Lansing, MI; 3Michigan State University, East Lansing, MI

Aims: Males have been more likely to assert an intention to use cannabis and to engage in cannabis use, when compared to females, but in recent years a clear reduction in this male-female gap has been seen. It may be useful to identify specific ages values when a narrowing of the male-female gap in cannabis incidence is occurring, with potentially important implications for prevention and intervention design and implementation. With this background in mind, we estimated fine-grained age-specific incidence rates for cannabis use onsets among 12-21 year olds in the United States (US).

Methods: US National Surveys on Drug Use and Health (NSDUH) have nationally representative samples drawn each year, 2002-2013 (aggregate n > 250,000 12-to-21-year olds). NSDUH assessment is via computer-assisted self-interviews. Analysis-weighted estimates and delta method variances are from NSDUH cross-tabulations, followed by meta-analysis summary estimates.

Results: Meta-analytic summaries show age 17 to be the peak age for cannabis use onsets for both males (10.5%, 95% CI= 9.8, 11.24) and females (10.4%, 95% CI=9.7, 11.11). No male excess is seen. At age 15-16 years, there is a clear female excess cannabis incidence. No other male-female differences in cannabis use onset can be seen after age 16.

Conclusions: In the US, a previously documented gender gap in cannabis involvement has narrowed to the point of there being no apparent residual gap. A female excess risk for cannabis use onsets can be seen in middle adolescence. The potential utility of gender-differentiated public health interventions in early-to-late adolescence merits attention.

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PARALLEL CHANGES IN BRAIN GABA LEVELS, SLEEP AND MOOD STATE DURING ACUTE COCAINE WITHDRAWAL: PREDICTORS OF “READINESS FOR TREATMENT”?
Scott E Lukas1, Chun Zuo2, Nadeeka Dias3, Amy Janes3, Jennifer Betts1, Wendy Tartarini1, Marc Louis Copersino4, David Penetar5; 1McLean Hospital/ Harvard Medical School, Belmont, MA; 2Psychiatry, McLean Hospital/Harvard Medical School, Boston, MA; 3Psychiatry, Schizophrenia Research, Wake Forest University, Winston-Salem, NC

Aims: There are no FDA approved medications for cocaine dependence and treatment is often thwarted by early relapse. Preclinical and clinical evidence implicating altered GABAergic function in the etiology of cocaine dependence has led to the study of medications that restore GABA. But, the exact nature of these changes in the human brain is unknown and clinical studies indicate that this approach needs refinement with respect to implementation. The aim of defining a window of time during which a patient’s brain function may be more “ready” to benefit from treatment.

Methods: Using proton MRS in a 3T scanner, we measured GABA in the anterior cingulate at baseline and at 3, 7 and 21 days post abrupt withdrawal in cocaine-dependent patients (n=36). Urine EMG was collected at baseline, days 7 and 21. No gender difference was observed. Significant changes for GABA were observed in the anterior cingulate cortex (ACC) using repeated measures ANOVA performed post-hoc with Bonferroni correction.

Results: We observed a significant decrease in GABA levels on day 7 post-abrupt withdrawal in the ACC (F=6.9, p<.05). This decrease in GABA levels was associated with a significant increase in anxiety (t=3.1, p<.05) and a decrease in positive affect (t=2.4, p<.05). These changes in GABA and mood were associated with a decrease in cocaine use on day 21 post-abrupt withdrawal (t=2.2, p<.05). The decrease in cocaine use on day 21 was associated with an increase in positive affect (t=2.2, p<.05) and a decrease in anxiety (t=2.2, p<.05).

Conclusions: Our results suggest that GABA levels in the ACC may be a useful marker for predicting medication responsiveness as well as in the design of not only a more appropriate medication strategy, but also to define the timetable upon which to implement treatment.

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PAY FOR PERFORMANCE AND TREATMENT OUTCOME IN MEDICATION ASSISTED TREATMENT.
Emily Loscalzo, Alexander Levit, Robert Sterling, Stephen Weinstein; Psychiatry and Human Behavior, Thomas Jefferson University, Philadelphia, PA

Aims: Pay for Performance (P4P) models, which offer fiscal incentives to health-care providers for meeting specific expectations, have gained popularity as a means of improving outcomes (Bremer et al., 2008). Studies of retention rates following implementation of P4P have yielded mixed results (Bruckner & Stewart, 2011; Vandrey et al., 2011). While retention remains essential, little research has examined the relationship between P4P and more distal treatment outcomes. To address this, the present study was designed to assess whether individuals who met early engagement P4P criteria proposed by a Medicaid behavioral health HMO achieved better outcomes as measured by urinalysis obtained at six and 12 months post-intensive outpatient (IOP) initiation than those who did not.

Methods: Participants were 76 consecutive admissions to medication assisted treatment (MAT) -based IOP. Attendance information was extracted from the clinical record and revealed that a sizeable proportion of the cases met the insurer established P4P attendance criteria at 14 and 30 days post treatment initiation. A series of analyses crossing P4P 14 and 30 day attendance criteria status and urine results for opiate, cocaine, and benzodiazepine use at 6 and 12 months were conducted.

Results: Results indicated that those who met the 14 day P4P criteria (i.e., minimally 4 days of attendance, n = 54) were no less likely to be using opiates (46.3%, x^2 = .64, p > .05), cocaine (61.1%, x^2 = .03, p > .05), or benzodiazepines (57.4%, x^2 = .01, p > .05) at six month follow-up than those who did not. Similar urinalysis results were obtained at 12 months post admission. Parallel analyses revealed that those patients who met the 30 day P4P attendance criteria were less likely to be using cocaine (x^2 = 6.11, p < .05) and benzodiazepines (x^2 = 4.86, p < .05) at six month follow-up than those who did not.

Conclusions: We conclude that there is conflicting evidence regarding the role of insurer-established P4P criteria in influencing 6 and 12 month substance use outcomes in a MAT population.

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EXERCISE DURING EARLY, BUT NOT LATE ABSTINENCE, ATTENUATES SUBSEQUENT RELAPSE VULNERABILITY IN A RAT MODEL. Wendy J Lynch, Rebecca M Beiter, Alexis Brina Peterson, Jean Abol; Psychiatry and Neurobehavioral Sciences, University of Virginia, Charlottesville, VA

Aims: Exercise has shown promise as a non-pharmacological intervention for addiction, with evidence suggesting a potential utility for relapse prevention. In humans, exercise as an intervention is typically introduced well after the initiation of abstinence, yet neurobiological data from preclinical studies suggest that it may be more effective if initiated during early abstinence. Here, using rat models, we determined whether the beneficial effects of exercise on relapse vulnerability depends on when exercise is first initiated, during early versus late abstinence.

Methods: Once male rats (n=47) acquired cocaine self-administration, they were given 24-hr access to cocaine (1.5-mg/kg/infusion) under a discrete trial procedure (4 infusions/hr) for 10 days. Rats then began a 14-day abstinence period in which they had access (2-hr/day) to a locked wheel throughout abstinence (sedentary) or an unlocked wheel during early (days 1-7), late (days 8-14), or throughout (days 1-14) abstinence (n=10-14/group). Cocaine-seeking, as assessed under an extinction/cued-induced reinstatement procedure, was examined on day 15 of abstinence.

Results: Exercise beginning during early abstinence robustly attenuated subsequent cocaine-seeking, and this effect persisted even when exercise ended on the 7th day of abstinence. In contrast, exercise during late abstinence was not effective and these animals displayed high levels of cocaine-seeking similar to those observed in sedentary animals.

Conclusions: These results indicate that the timing of exercise availability differentially impacts cocaine-seeking with results suggesting that exercise during early, but not late, abstinence may provide long-term protection against cocaine relapse.

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TRENDS IN RECEIPT OF MEDICATION-ASSISTED TREATMENT FOR PREGNANT WOMEN WITH OPIOID USE DISORDER IN THE UNITED STATES. Lauren MacAfee¹, Anne Sawyer², Mishka Terplan³-⁴; ¹Behavioral Health System Baltimore, Baltimore, MD, ²Baltimore City Health Department, Baltimore, MD, ³Department of Obstetrics and Gynecology, University of Michigan, Ann Arbor, MI

Aims: Medication-assisted treatment (MAT) with either methadone or buprenorphine is standard of care for pregnant women with opioid use disorder. We describe the trends and regional differences of MAT receipt among pregnant women admitted into treatment from 1992 to 2012.

Methods: The Treatment Episode Data Set (TEDS) was used to assess all treatment admissions from 1992 to 2012. Only pregnant women at the time of admission whose primary substance was an opioid were included in the analysis. The proportion of MAT receipt among pregnant women with opioid use disorder was calculated by year and region and evaluated with test of trend. Similarly demographic characteristics associated with MAT receipt were analyzed.

Results: Treatment admissions for primary opioid use disorder increased from 2,748 in 1992 to 8,403. Heroin accounted for 95% of admissions in 1992 and only 49% in 2012. The proportion who received MAT decreased over the time period from 65% to 46% (p<0.01). The South had the lowest proportion of MAT throughout all time periods (35% in 1992 and 32% in 2012) although they were the region with the most treatment admissions. Whereas white women were more likely than black women to receive MAT in 1992 (62 vs 58%, p<0.01), they were less likely in 2012 (45 vs 56%, p<0.01).

Conclusions: Although there are great regional variations, the proportion of pregnant women who receive MAT in treatment for opioid use disorder has declined in the US and now accounts for less than half of all admissions. Strong public health measures need to be implemented to ensure equity in access to evidence-based treatment during pregnancy.

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A DYNAMIC CAUSAL MODELING STUDY OF THE REWARD SYSTEM IN MARIJUANA USERS. Liangxu Ma¹,², Joel Steinberg¹, James Bjork³, Łori Keyser-Marcus³, Jasmin Vasiljeva¹,², Serhi Ferre³, Gerar Modeller³; ¹Institute for Drug and Alcohol Studies, Virginia Commonwealth University, Richmond, VA, ²Department of Radiology, Virginia Commonwealth University, Richmond, VA, ³Department of Psychiatry, Virginia Commonwealth University, Richmond, VA, ⁴Integrative Neurobiology Section, National Institute on Drug Abuse, Intramural Research Program, National Institutes of Health, Baltimore, MD

Aims: Understanding how marijuana regulates brain reward circuits may have important implications in the treatment of cannabis use disorder (CUD). Findings in previous studies suggest that CUD is associated with altered cortical-striatal reward-related circuits. In the present study, we directly tested this hypothesis using dynamic causal modeling (DCM), which measures effective (directional) connectivity among brain regions.

Methods: The DCM analysis was conducted based on the functional magnetic resonance imaging (fMRI) data acquired from 11 CUD subjects and 12 matched controls while performing a gambling decision making task with interleaving Win and Loss periods. The fMRI data were downloaded from the Human Connectome Project.

Results: Significant between-group differences in effective connectivity were found in both Loss and Win periods. In the CUD subjects (but not controls), right dorsolateral prefrontal cortex to left ventral striatum effective connectivity increased during the Win period and decreased during the Loss condition. In the controls (but not CUD subjects), bilateral anterior cingulate cortex to right caudate and ventromedial prefrontal cortex to right caudate effective connectivities increased during the Loss condition but did not change during the Win condition. All changes were relative to the endogenous connectivity, which is independent of Loss or Win periods.

Conclusions: These DCM findings confirmed altered cortical-striatal reward-related circuits in CUD, which could be potential therapeutic targets for CUD. Altered effective connectivities could be related to altered sensitivity to incentive outcomes in CUD due to dysfunction of endocannabinoid neurotransmission.

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ASSESSING NATURALISTIC RISK-TAKING IN NONDAILY SMOKERS USING A NOVEL MOMENTARY BALLOON ANALOGUE RISK TASK. R Ross MacLean¹,², Joshua M Smyth¹, Charles F Geier¹, Stephen J Wilson³; ¹VA Connecticut Healthcare System, West Haven, CT, ²Yale University, New Haven, CT, ³Pennsylvania State University, University Park, PA

Aims: Nondaily, or intermittent, smokers (ITS) are a rising population with demonstrated links between smoking, sensitivity to incentives, and risk-taking behavior. It is unknown whether the act of nondaily smoking marks situational risk-taking or whether certain ITS are more sensitive to incentives, and associated general risky behavior, independent of cigarette use. This investigation introduces a novel momentary Balloon Analogue Risk Task (mBART) to measure naturalistic risk-taking in young adult ITS.

Methods: Fifty-one young adult ITS completed a laboratory visit that included an incentivized antisaccade task. Participants then completed a 7-day ecological momentary assessment protocol including the mBART after prompted and smoking surveys. Data were analyzed using multi-level models.

Results: Incentive sensitivity (i.e., high accuracy on antisaccade reward and loss trials) was positively related to adjusted pumps and coefficient of variability (CV) on the mBART. Overall, CV was also negatively related to time to first cigarette (TTF). No mBART differences were detected between prompted and smoking surveys. Additionally, when with friends (compared to being alone), ITS reported increased craving and greater likelihood of smoking a cigarette but decreased adjusted pumps.

Conclusions: Risk-taking on the mBART was positively associated with incentive sensitivity in ITS; however, within-person analysis suggests that ITS do not take greater risks on the mBART immediately after smoking. Additionally, the negative relationship between CV and TTF suggests naturalistic risk-taking may influence dependence in ITS. Results related to environment suggest that ITS may react differently to competing rewards that are potentially contingent on transient situations or contexts.

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CRACK/COCAINE CONSUMPTION AND URBAN VIOLENCE IN BRAZIL: DATA FROM THE BRAZILIAN NATIONAL ALCOHOL AND DRUGS SURVEY.
Clarice Sandi Mestruga1, André Q.C. Miguel2, Sterling McPherson1, Michael G McDonell1, Ronaldo Laranjeira1; 1Psychiatry, Federal University of São Paulo, São Paulo, Brazil, 2College of Medical Sciences, Elson S. Floyd College of Medicine, Washington, WA, 3Program of Excellence in Addictions Research, Washington State University, Washington, WA

Aims: To estimate prevalence rates of crack/cocaine use and binge drinking in Brazil, along with their association with urban violence.

Methods: This is a cross-sectional study using a probabilistic multistage cluster sample design to select 4607 Brazilian participants, 14 years of age and older from a representative sample of the household population (RR: 77%). Stata13 and Process for SPSS22 were used to estimate weighted prevalence rates and build the conditional model, which controlled for all demographic characteristics.

Results: Lifetime and previous year smoked cocaine use was 1.3% and 0.7% respectively (men:1.0%, women:0.3%). Being a victim of at least one event of urban violence was reported by 2.6%, while being a perpetrator was reported by 6.1% of the population. Crack cocaine users were 4.2 (CI:0.12-17.2) times more likely to perpetuate urban violence. They also were also 11.5 times more likely to have alcohol dependence disorder (CI:4.06-32.64). The estimated conditional model suggests that crack cocaine use has a direct effect on urban violence (perpetration) (p<0.001 coefficient=0.22), which is mediated by depressive symptoms (index0.01, 0.003-0.005). Binge drinking significantly moderates this mediation (effect0.02, 0.004-0.005).

Conclusions: Brazil has one of the highest rates of smoked crack cocaine in the world, with over 1 million crack cocaine users. The elevated rates of crack cocaine use combined with harmful alcohol consumption patterns are directly associated with the equally high rates of urban violence. Our conditional model sheds light on associated factors that must guide prevention strategies and mental healthcare.

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ALCOHOL AND COCAINE USE AND DRUG DISTRIBUTION AMONG FORMERLY INCARCERATED BLACK MEN.
Carlos C Mahaffey2, Danielle Stevens-Watkins1, Carl Leukefeld1; 1Spalding University, Louisville, KY, 2University of Kentucky, Lexington, KY, 3Behavioral Science, University of Kentucky, Lexington, KY

Aims: More than 75% of persons released from prison are rearrested in five years (Durose et al., 2014). Those rearrested are overrepresented by Black men charged with drug offenses. The purpose of this study is to examine alcohol and cocaine use and other factors as correlates of illegal drug distribution among Black men. N = 250.

Methods: Data from drug-using Black men, one year after their release from prison, was used to conduct bivariate correlations and ordinal logistic regression. The dependent variable of interest was “How many times did you sell drugs in the past year?” with responses coded as 0-never, 1-once, 2-a few (2-5 times), and 3-a lot (>5 times). Independent variables included age, 30 day alcohol use, one year cocaine use, drug use in their neighborhood, and their feelings that drug use causes problems with the law, family, and friends. It is hypothesized that men who used alcohol and cocaine observed drug use in their neighborhood; and had problems with the law, family, and friends would be more likely to sell drugs.

Results: For every one year increase in age, men were 5% less likely (Exp. B=.95, p=.02) to sell drugs. Men who used alcohol in the last 30 days were 4.2 (Exp_, B=4.23, p=.03) times more likely to sell drugs than men who didn’t drink. Men who used cocaine in the past year were 2.9 (Exp. B=2.36, p=.03) times more likely to sell drugs than men who did not use cocaine. Men who reported drug use never causes problems with the law were 87% less likely (Exp. B=.13, p<.01) to sell drugs than men who felt drug use always causes legal problems. Visible drug use and reporting that drug use caused family/friend problems were not significant.

Conclusions: The current study adds to the literature that Black men who use alcohol and cocaine are at greater risk for engaging in illegal drug activity after release from prison and are likely to be rearrested. Future studies are needed to examine factors associated with reducing drug use and related behaviors among Black men.


PREGNANCY INCIDENCE AND CONTRACEPTIVE USE AMONG YOUNG WOMEN WHO INJECT DRUGS IN SYDNEY, AUSTRALIA.
Lisa Maher1,2, Bethany White1, Carolyn Day1, Kirsten Black2; 1Centre for Immunology, Kirby Institute, Sydney, NSW, Australia, 2UNSW Australia, Faculty of Medicine, Sydney, NSW, Australia, 3Sydney University, Discipline of Addiction Medicine, Sydney, NSW, Australia, 4Central Clinical School, Sydney University, Sydney, NSW, Australia

Aims: Women who inject drugs (WWID) have elevated rates of unplanned pregnancies compared to the general population. However, little is known about pregnancy incidence or use of long-acting reversible contraceptives (LARC) by WWID in community settings. This study aimed to estimate pregnancy incidence as well as pregnancy history and intention and contraception use.

Methods: Women were enrolled in HITS-c, a prospective cohort of anti-HCV antibody negative PWID (n=188). Participants completed quarterly follow-up visits with pregnancy intention and contraception use documented biannually and pregnancy incidence estimated using the person-time method.

Results: The median age of women who completed ≥1 pregnancy-related follow-up (n=38) was 25 years. Sixteen women (48%) reported at least one pregnancy during follow-up, a rate of 17.8/100 women years (95% CI 10.9-29.0) and one in three gave birth. Eighteen women (47%) indicated future pregnancy intention and of the 17 (44%) not any using contraception, only 9 (52%) expressed pregnancy intention. Use of LARC was rare with only 4 women (12%) reporting use. Six of the 11 women who acquired incident HCV infection during follow-up also reported pregnancy.

Conclusions: Pregnancy incidence in the current study (17.8/100 py) was more than twice that reported among WWID enrolled in a similar cohort in Vancouver (6.46/100py). The high prevalence of previous pregnancy (84%) and low prevalence of LARC suggest that this group require support to achieve consistent use. Results are relevant to new HCV treatments given most therapies require contraception use throughout treatment with regimens containing ribavirin also requiring contraception 6 months post-treatment.

Financial Support: This study was funded by Australian NHMRC Project Grant # 630483.

META-ANALYSIS AS A FORM OF EVIDENCE: AN EXAMINATION OF THE COCHRANE REVIEWS FOR BEHAVIORAL HEALTH.
Stephen Magura1,2, Mirza J Lee, Stephanie Means; Western Michigan University, Kalamazoo, MI

Aims: Program funders are increasingly requiring providers to implement “evidence-based programs.” Meta-analysis is viewed as the highest form of evidence for interventions in traditional evidence hierarchies. The study examined how meta-analysis is used by one of the best known registers of evidence-based programs, the Cochrane Reviews database. The study focused on reviews of behavioral health interventions.

Methods: The seven and three most populated topic areas from mental health and substance abuse, respectively, were chosen for study. Three Cochrane reviews were randomly selected from each topic area (total n= 30 reviews). Two expert raters each rated each review on the analytic dimensions.

Results: 23 of the reviews were formal meta-analyses; seven were reduced to systematic reviews due to lack of comparable data. Mean percent of identified studies in final analysis = 4% (range = <1% - 17%; mean no. = 16). Minimum design requirements for study inclusion were: Randomized controlled trial (RCT) (47%); Cluster RCT (14%); "controlled” clinical trials (20%); other (19%). Heterogeneity (variation in intervention effects not due to chance): F = 43% (range = 0% - 91%, sd = 36%); but F was not identifiable in 40% of the reviews. Formal framework for judging study quality (50%). Clinical significance of effects addressed (1 review). Forest plots of outcomes (80%). Publication bias formally addressed (17%). Conclusions about intervention effectiveness: positive (40%); mixed (57%); no effect (23%).

Conclusions: The small percent of identified studies included in final analyses may bias results. Despite the potential strength of meta-analysis, many reviews still had indefinite results. Heterogeneity of effects for interventions was substantial and the reviews gave no guidance for selecting one specific program over another. Key dimensions of concern to researchers and clinicians, such as quality of evidence, clinical significance and publication bias, were infrequently addressed.


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KETAMINE-INDUCED CHANGES IN RESTING STATE FUNCTIONAL CONNECTIVITY IN CONSCIOUS NONHUMAN PRIMATES: IMPLICATIONS FOR DRUG ABUSE.

Erika A. Malhle1, Kaundinya Gopinath2, Leonard Howell2; 1Yerkes National Primate Research Center, Emory University, Atlanta, GA, 2Department of Radiology and Imaging Sciences, Emory University, Atlanta, GA

Aims: Previous studies have used resting-state functional connectivity (FC) in conscious nonhuman primates to show that acute cocaine challenge reduces FC globally in the brain and that reduced baseline FC in fronto-striatal networks predicts higher drug intake during cocaine self-administration. Sub-anesthetic doses of ketamine have shown efficacy as an antidepressant in clinical trials. Investigation of the mechanisms underlying the antidepressant actions of ketamine has revealed increases in neuroplasticity within cortico-limbic and fronto-striatal circuitry following treatment. In the current study we hypothesized that ketamine would increase functional connectivity in cortico-limbic and fronto-striatal networks.

Methods: FC was assessed in four conscious female rhesus macaques under baseline conditions, and during constant sub-anesthetic ketamine infusion (0.345 mg/kg bolus, followed by 0.256 mg/kg/hr, i.v.). All four subjects were drug-naïve and extensively trained in a custom-built restraint cradle optimized for acquiring MRI data from conscious monkeys. Statistical parametric maps were obtained with appropriate GLM models incorporating motion and hemodynamics of ketamine infusion. Monte Carlo simulation was used to correct for multiple comparisons. Group-level FC was assessed by seed-based cross correlation analysis.

Results: Ketamine induced robust FC increases in both cortico-limbic and fronto-striatal networks. Increased FC was observed specifically between the dorso-lateral prefrontal cortex and nucleus accumbens, the connection where FC was shown to be predictive of cocaine intake in our previous study.

Conclusions: These results indicate that ketamine is impacting brain circuitry that underlies drug taking. Subsequent experiments will evaluate the effects of sub-anesthetic ketamine infusion on cocaine self-administration.

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PARALLEL GROWTH MODELING TO BETTER UNDERSTAND CO-ADDICTION: A RANDOMIZED CLINICAL TRIAL OF TOBACCO SMOKING AND STIMULANT USE.

Mary Rose Mamey1, Leonard Burns1, Celestina Pessa-Leiker1, Craig Parks2, Sterling McPherson3; 1Psychology, Washington State University, Pullman, WA, 2College of Nursing, Washington State University, Spokane, WA

Aims: To demonstrate the usefulness of a parallel latent growth curve model in co-addiction treatment research. Using data from a combined treatment study, cigarette smoking (target) and stimulant use (SU; secondary target) were modeled to determine whether 1) initial levels of smoking and SU were related to each other and/or change over time; 2) change in smoking and SU were related to each other and/or initial levels; and 3) treatment was related to change over time.

Methods: Secondary data analyses were performed on participants (n=528) who took part in a 10-week RCT. The placebo group received one 10-minute counseling session 1x/week (treatment as usual; TAU) to address SU. The treatment group received TAU and smoking cessation treatment (SCT), which included bupropion, smoking cessation counseling, nicotine inhaler, and contingency management. Smoking was measured using carbon monoxide (CO; ≥8ppm indicated CO2), and SU was measured using biochemical urinalysis (UA).

Results: The parallel LGC shown there was a significant relationship (r=.130; p<0.05) between the initial statuses of the disorders: those with CO+ at baseline were also more likely to test UA+ at baseline. There were no other significant relationships. There was a significant treatment effect on change (p=.023; p<0.05) in CO levels, but no significant effect on change SU, where those in the treatment group had a more of a decrease in CO levels than those in the placebo group.

Conclusions: The relationship between cigarette smoking and SU remains high, though the two are rarely treated simultaneously. While these findings are in line with the original findings reported, it is important for treatment researchers to understand and better optimize how treatment of one disorder can have an impact on secondary targeted disorders.


IMPACT OF Lisdexamfetamine on Retention of Methamphetamine-Dependent Patients in a Residential Facility.

Michael J Mancino1, Jeff D Thostenson1, J Benjamin Guise1, Janette McLaugh1, Alison Oliveto2; 1Psychiatry, University of Arkansas for Medical Sciences, Little Rock, AR, 2Biostatistics, University of Arkansas for Medical Sciences, Little Rock, AR

Aims: Determine whether baseline characteristics predict retention and whether retention differed between placebo (PLA) vs. lisdexamfetamine (LDX) (140mg/day) during the 8-day residential stay in a 9-wk, double blind, placebo-controlled clinical trial.

Methods: Methamphetamine (MA) dependent participants were placed in research beds at a residential treatment facility and randomized by sex, nicotine use, severity of dependence and childhood diagnosis of ADHD to receive either LDX (N=5) or placebo (N=5). Participants participated in the Substance Abuse Day Treatment Program during their stay. Baseline characteristics and assessments (ADHD Rating scale, Barratt Impulsivity Score, VAS craving, and HAM-A/D) were examined to determine whether these predicted successful completion of the 8-day residential trial.

Results: Thus far, 13 subjects have been enrolled in the study protocol, of which 10 received study medication and 5 completed the first week of treatment. Reasons for dropout prior to the end of the residential stay include: split treatment (N=7), noncompliance with facility rules (N=1) and viable outside of dosing parameters (N=1). Med groups did not differ on any of the baseline characteristics. No baseline measures predict successful completion of the first week of treatment at this point in time. However, there was a trend toward patients in the PLA group completing a longer period in the study than the LDX group (4.83 vs. 3.92 vs. 0.74 vs. 0.75 weeks;p=0.08).

Conclusions: These preliminary results suggest that LDX may not be efficacious for treating methamphetamine dependence. Although these findings are limited by the high dropout rate, this poor retention rate reflects a significant issue with this patient population, highlighting the importance of identifying pharmacotherapies that enhance retention.

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“THE DEVIL I KNOW IS BETTER THAN THE DEVIL I DON’T KNOW”: ENROLLMENT IN A PILOT TRIAL OF OPIOID DOSE ESCALATION VS. BUPRENOPHINE/NALOXONE FOR PAIN.

Ajay Manhapra, David A Fiellin, William Becker; Yale University, New Haven, CT

Aims: Harms related to opioid therapy prescribed for chronic pain are increasing and appear to be dose related. Although Buprenorphine/naloxone (BUP/NX) may be a safer alternative to opioid dose escalation among patients having uncontrolled pain while on moderate dose of opioids (30-100 oral morphine equivalents [OME] per day) for chronic pain, its acceptability is not known. Our aim was to determine the acceptability of enrolling in a trial of BUP/NX vs. opioid dose escalation among patients receiving opioids for chronic pain whose pain is not well controlled.

Methods: We tried recruiting patients who were ≥21 years of age, prescribed 50-100 MEQ/day of opioids for pain ≥3 months, and had pain score ≥8/10 on numeric scale or ≥228/70 on Brief Pain Inventory. A physician with expertise in pain and addiction discussed the trials with eligible patients by telephone. If they did not agree to participate, they were asked why not.

Results: We approached 114 eligible patients (mean age of 63.3 years [SD 10.1], 95.6% male, 85.1% whites, and mean opioid dose of 64.6 OME/day [SD 18.6]). Only 8 patients (7%) who were dissatisfied with their pain control agreed to enroll in the study. Among the 106 patients who did not enroll, 12% were open to the idea of an alternate medication, but unwilling to make a change, and 38% were not interested in new medication despite dissatisfaction with pain control on their current opioid regimen, with one patient offering the representative quote “The devil I know is better than the devil I don’t know”. Four (3.7%) deferred recruitment to get second opinion from their primary care providers, and 52% opted out, did not return call or did not provide a reason.

Conclusions: Lack of familiarity with the medication may hinder attempts to transfer patients prescribed full agonists for pain to BUP/NX.

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PHYSICAL HEALTH OF WOMEN RECOVERING FROM PRESCRIPTION OPIOID ABUSE.

Katherine R Marks, Melissa Delaney, Carl Leukefeld; Behavioral Science, University of Kentucky, Lexington, KY

Aims: The existing literature has primarily described the negative consequences of prescription opioid abuse on physical health and chronic pain management in women. Recovery-oriented research represents a paradigm shift by focusing on wellness and constructive, strength-based assets. The aim of this study was to understand how women’s physical health is associated with engaging in behavioral change to reduce their prescription opioid abuse.

Methods: This study used self-reported interview data from Kentucky’s Targeted Assessment Program (TAP). TAP provides assessments, pre-treatment, and referral to community treatment for problems that impede transitioning from welfare to work and/or interfere with parental responsibilities. Data included 1,204 women over the age of 18 who reported their prescription opioid abuse as a problem between July 25, 2011 and June 30, 2015. Physical health and healthcare access were assessed during the initial assessment. Following completion of TAP services, assessment specialists rated whether women participants were engaged in behavioral change to reduce their prescription opioid abuse.

Results: Women engaged in behavioral change reported better general health and fewer days of poor physical health and pain impeding their daily routine prior to TAP services than women not engaged in behavior change (p < .05). However, self-reported access to physicians and having health insurance did not differ between groups (p > .05).

Conclusions: For women, physical health is a relevant and dynamic component of the recovery process from prescription opioid abuse. Physical health at the outset of intervention is associated with engagement in behavioral change. Treatment providers should assess women’s physical health and take it into consideration as a strength for women recovering from prescription opioid abuse.

Financial Support: T32 DA035200; Kentucky Department of Community-Based Services

355 WORKING MEMORY IS IMPAIRED FOR BOTH MALE AND FEMALE HIV+ SUBSTANCE USERS.

Eileen Martin1, Raul Gonzalez1, Jasmin Vassileva4, Pauline Maki3, Leah Rubin3, Suky Martinez1,2,3, Jermaine D Jones 1, Adam Bisaga1, Sandra D Comer 1; 1Psychology, Florida International University, Miami, FL, 2Psychiatry, Rush University Medical Center, Chicago, IL, 3Psychiatry, University of Illinois, Chicago, IL, 4Psychiatry, Virginia Commonwealth University, Richmond, VA, 3Psychology, Loyola Marymount University, Los Angeles, CA

Aims: Working memory (WM) is a key target for neurocognitive training with substance dependent individuals (SDIs) and is critically dependent on integrity of prefrontal cortical-striatal networks. WM impairment is a signature deficit among HIV+ male SDIs but has not been well studied among HIV+ women. We compared WM performance among 339 HIV+ and HIV- male and female SDIs to investigate potential sex-specific effects or interactions with HIV serostatus on this critical executive function.

Methods: The study sample consisted of 110 HIV+ and 229 EIA-verified HIV- adults, including 127 men and 212 women. All subjects met DSM-IV criteria for at least one substance use disorder (SUD), primarily cocaine (83%) and alcohol (77%) dependence, but were verified abstinent at testing. Subjects performed computerized spatial and verbal versions of the well-studied nback task. Subjects were required to monitor a continuous series of letters and update mentally the stimulus identity (verbal) or location (spatial), with a maximum load of 2 back. Subjects also completed measures of addiction severity, and psychiatric comorbidity.

Results: The four groups were comparable in racial composition; alcohol, cocaine and cannabis history; and comorbid psychiatric disorders. Nback total correct responses were analyzed using a mixed model analysis of variance, with Sex, HIV Serostatus, and Memory Load as primary factors of interest. HIV+ SDIs performed both the spatial (p = .008) and verbal (p = .02) WM tasks significantly more poorly compared with HIV- SDIs. Male SDIs outperformed female SDIs on spatial WM (p = .01). There were no interactions between sex and HIV serostatus

Conclusions: Both male and female HIV+ SDIs showed WM impairment compared with HIV- SDIs, regardless of type of information to be processed. HIV+ SDUs may benefit from multimodal cognitive training.

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356 THE SILK ROAD HEALTH PROJECT: THE INTERSECTION BETWEEN CRIMINAL JUSTICE INVOLVEMENT, SUBSTANCE USE AND HIV RISKS AMONG MIGRANT AND NON-MIGRANT WORKERS IN ALMATY, KAZAKHSTAN.

Bethany Calabro, Nabila Elbasyouni, Jessica Pizzara, Columbia University, New York, NY

Aims: This paper examines the relationship between HIV risk behaviors, substance use sexually transmitted infections, and criminal justice involvement among migrant and non-migrant market vendors recruited from the largest marketplace in Central Asia

Methods: Methods: We used Respondent Driven Sampling (RDS) to recruit 1342 male participants. Multivariate logistic and negative binomial regressions examined the effects of drug use, HIV risk behaviors and STI on criminal justice involvement (questioning by market officials and arrest, and incarceration in the past 90 days). We hypothesized that sex while under the influence of drugs, unprotected sex, drug use and recent STI would be associated with greater prevalence of policing, arrest and incarceration.

Results: Results: The findings provided support for the hypotheses put forth in this paper. In the adjusted models, lifetime illicit drug use was associated with greater rates of contact with market officials (IRR, 1.90) as well as greater odds of arrest (AOR, 2.83) and incarceration (AOR, 8.00). Hazardous drinking predicted greater rates of questioning by market officials (IRR, 4.12), and the police (IRR, 4.47). Sex under the influence of drugs was associated with greater rates of questioning by market officials (IRR, 2.19). Unprotected sex with any female partner was associated with an increase in the odds of questioning by market officials (AOR, 1.67) and arrest by migration police (AOR, 2.07). Finally, having an STI in the past 90 days was associated with increased prevalence of questioning by market officials (IRR, 4.85) and the police (IRR, 4.85) as well as odds of incarceration (AOR, 12.41).

Conclusions: Conclusion: Involvement in the criminal justice system may function as a nexus of multiple intersecting HIV risks including drug use and sexual behaviors. Criminal justice settings may be opportune venues to deliver HIV prevention interventions for male market vendors specifically migrants in Kazakhstan.

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357 THE EFFECTS OF NICOTINE ADMINISTRATION AND DRUG CUE ON IMPULSIVITY.

Suky Martinez1,2,3, Jermaine D Jones 1, Adam Bisaga1, Sandra D Comer 1; 1Division on Substance Abuse, New York State Psychiatric Institute and Department of Psychiatry, College of Physicians and Surgeons, Columbia University, New York, NY, 2Derner Institute of Advanced Psychological Studies, Adelphi University, Garden City, NY, 3Translational Research Training Program in Addiction, City College of New York, New York, NY

Aims: Nicotine abuse is the number one cause of preventable deaths in the country. Preclinical models have shown that acute nicotine administration affects brain areas involved in compulsive and reward seeking behaviors. This secondary data analysis attempts to investigate the effects of acute nicotine administration and drug cues on behavioral impulsivity within a clinical sample.

Methods: Nicotine-dependent participants (n=27), who were not seeking treatment and smoked at least 15 cigarettes per day were recruited. Participants completed the Immediate and Delayed Memory Task (IMT/DMT) and the GoStop tasks following repeated nicotine administration, acute nicotine administration and exposure to provocative drug cues.

Results: The final sample consisted of 25 males and 2 females; 13 Blacks, 5 Latinos, and 9 Whites, with a mean age of 42.7 years. On average, participants smoked 18.9 cigarettes per day, and had been smoking for 25.3 years. The preceding week of nicotine use increased the IMT and DMT scores by a degree that approached significance (p<0.10) vs. placebo administration the previous week. Acute administration increased impulsivity on all three tasks (p<0.05). Exposure to drug cues increased impulsivity as measured by the DMT to a degree that approached significance (p<0.10).

Conclusions: This study demonstrates that both acute and repeated nicotine use can contribute to behavioral impulsivity. Impulsivity may not only be a risk factor for initiation of nicotine use, but it may be involved in the maintenance of drug taking behavior. Further studies on the relationship between impulsivity and nicotine use may lead to improvements in behavioral and pharmacological smoking interventions.

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PHARMACOLOGICAL EFFECTS OF INJECTED OR VAPORIZED METHAMPHETAMINE AND ALPHA-PVP IN MICE.

Julie A Marusich, Timothy Lelevere, Bruce Brough, B F Thomas, Jenny Wiley; RTI International, Research Triangle Park, NC

Aims: Vaporizing drugs in e-cigarettes is an increasingly common method of administration for many drug classes including synthetic cathinones. This route of administration exposes the user to a chemical cocktail containing the parent compound and numerous degradants, which could lead to increased harm compared to ingesting the parent compound alone. This study examined the pharmacological effects of vaporized and injected methamphetamine (METH) and α-pyrrolidinopentophenone (alpha-PVP).

Methods: Male and female mice were administered METH or alpha-PVP through vapor or i.p. injection. Dose-effect curves were determined for locomotor activity and a functional observational battery (FOB). The timecourse of locomotor activity was also examined.

Results: Vapor and injection produced similar efficacy in locomotor activation for both drugs, with injection producing more variability across doses than vapor. During a 6 hr session, vaporized METH and alpha-PVP elevated beam breaks for an additional 60 min or 120 min compared to injected METH and alpha-PVP, respectively. Injected METH produced greater beam breaks for females than males. Both routes of administration produced typical stimulant effects in the FOB for both drugs. Injection was associated with more bizarre behaviors in the FOB than vapor, particularly for alpha-PVP.

Conclusions: Injection and vapor produced typical stimulant effects for METH and alpha-PVP. Injected parent compound led to greater adverse effects and shorter durations of locomotor activation compared to the chemical cocktail in vapor, which was unexpected. This indicates that degradants of METH and alpha-PVP do not produce observable adverse effects when administered acutely, and that injection and vapor exposure have different pharmacokinetics. Based on these assays, both routes of administration could lead to abuse, but neither route showed enhanced abuse liability compared to the other.

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EARLY AGE OF CIGARETTE SMOKING ONSET IS ASSOCIATED WITH GREATER P300 SMOKING CUE REACTIVITY.

Yasmin Mashhoon1, Jennifer Betts2, Stacey L Farmer3, Scott E Lukas1; 1McLean Imaging Center, Harvard Medical School | McLean Hospital, Belmont, MA, 2McLean Imaging Center, McLean Hospital, Belmont, MA

Aims: The age range for developing nicotine dependence, ages 15-18, coincides with critical neuromaturation. Thus, early-onset (EO:age<16yrs), relative to late-onset (LO:age>16yrs), smoking may be uniquely deleterious for developmentally immature systems that regulate neural signaling reactivity. This study investigates age of smoking onset effects on neurophysiological measures of smoking cue reactivity and reported craving in adult smokers.

Methods: EO smokers (EOS:n=8/4 females) and LO smokers (LOS:n=10/5 females) in withdrawal and healthy non-smokers (HNS:n=10/5 females) participated in an EEG cue reactivity study. Participants handled neutral objects during one interval and smoking-related objects during a second interval. After each interval, they viewed smoking-related, neutral, or arousing images displayed using an oddball paradigm. P300 event-related potentials were recorded during image presentation and craving was assessed during session.

Results: P300 amplitudes were significantly higher in central midline (Cz) channel in all groups to smoking (p<0.03), but not neutral or arousing, images after handling smoking objects. Past bue tests revealed Cz P300 smoking amplitudes were greater in EOS (p<0.03) and LOS (p<0.05) relative to HNS. Additional comparisons uncovered trend-level significance that EOS P300 smoking amplitudes (p=0.06) were greater relative to LOS P300 smoking amplitudes. EOS and LOS reported greater craving (p<0.05) after handling smoking objects.

Conclusions: P300 reactivity, particularly in EOS, was associated with salient smoking cues. P300 reactivity profiles of EOS and LOS may reflect differences in neuroadaptations of signaling systems to effects of smoking during early maturation. EO smoking may alter neurophysiological signaling involved in responding to smoking-related images and tactile cues, which could impact development of smoking cessation interventions.

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KEY INGREDIENTS FOR CONDUCTING DAILY OR WEEKLY IVR/SMS SURVEYS.

Lynn Massey1, M A Walton1, R M Cunningham1, James Cranford1, Anne Buu1; 1Psychiatry, University of Michigan, Ann Arbor, MI, 2Emergency Medicine, University of Michigan, Ann Arbor, MI, 3School of Nursing, University of Michigan, Ann Arbor, MI

Aims: Prospective data collection, using interactive voice response (IVR) and text-messaging (SMS) systems, provide an exciting new research methodology for examination of substance use and other risk behaviors. This paper presents data from an experimental study of a high risk sample of emerging adults to examine compliance under different data collection methods (IVR, SMS) and assessment schedules (daily, weekly).

Methods: Emerging adults (18-28) who agreed to be re-contacted (n=279) from the FVI study completed a baseline assessment and were randomized into one of four groups: either weekly (12 weeks) or daily (90 days) surveys by IVR or by SMS. In addition, the amount of the incentive for completion changed by study group (n=279). Smaller incentives were given for weekly IVR ($5) and for SMS ($5). Incentives increased for weekly IVR ($10) and for SMS ($10).

Results: The mean time for weekly survey was 35.2 minutes for SMS and 7.4 minutes for IVR and for daily was 16.9 minutes for SMS and 2.2 minutes for IVR. Overall, ANOVA analysis shows that the main effect of assessment schedule was significant (p<0.05), with post-hoc tests indicating that IVR weekly reported higher compliance (mean = 76.0) than SMS weekly (mean = 68.0); SMS weekly (mean = 55.3) did not differ from SMS daily (mean = 55.3). Overall, Cohort 2 showed significantly greater compliance (mean = 61.0) than cohort 1 (mean = 45.1) (p<0.001). When examining cohort differences by experimental groups, Cohort 2 had significantly better compliance than cohort 1 for the IVR-weekly (p<0.01) and the SMS daily (p<0.05), but not for the other groups.

Conclusions: Rates of compliance varied by frequency and method of data collection. Although support was found for increasing incentives on improved compliance rates, these effects varied by method of data collection. Future analyses will examine the effects of assessment schedule and data collection methods on reliability and validity of self-reports of substance use and other high risk behaviors.

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FACTORS ASSOCIATED WITH NONFATAL OVERDOSE AMONG YOUNG OPIOID USERS: HEROIN AND BENZODIAZEPINE USE, PRESCRIPTION OPIOID AND HEROIN INJECTION AND HCV STATUS.

Pedro Mateu-Gelabert1, Honoria Guarino1, David Frank1, Kelly Ruggles1, Cassandra Syckes1, Elizabeth Goodbody1, Samuel R Friedman1; 1NDRI, New York, NY, 2NYU, New York, NY

Aims: To describe factors associated with nonfatal overdose (OD) among young opioid users.

Methods: New York City young adults (N=451) were recruited via respondent-driven sampling for an ongoing survey to assess drug use patterns and OD experiences. Eligible participants were ages 18-29 and had used prescription opioids (POs) non-medically and/or heroin in the past 30 days. Participants were HCV antibody tested on-site.

Results: Participants were 33% female, 27% Latino, 81% White and 19% other races (mean age=24.5 years). Most participants (84%) initiated nonmedical PO use in their teens (mean age at PO initiation=16.7 years), with 61% progressing to regular PO use (>3 times/week) in their teens. 84% of participants reported regular heroin use, 63% regular heroin injection, and 56% regular benzodiazepine use. 21% had injected POs in their lifetime. 21% tested HCV antibody positive. 47% reported lifetime overdose experience (3.1 ODs on average; median 2). OD was correlated with: regular PO injection (X2= 7.65, p<0.01); regular benzodiazepine use (X2= 8, p=0.005); months of regular heroin use (t= 5.34, p<0.001); months of regular heroin injection (t= 4.81, p<0.001); and HCV positive status (t= 32.13, p <0.001). However, OD was not correlated (t<.01 level) with months of regular PO use.

Conclusions: Results suggest that, among opioid users, heroin use and drug injection are associated with increased OD risk. Additionally, opioid users who OD are more likely to be HCV positive. As opioid use increases in the U.S., there is a pressing need to expand OD prevention education and access to naloxone and sterile syringes. Also, OD rates might serve as a possible indicator of emerging HCV infections among opioid users.

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NICOTINE WITHDRAWAL INDUCES NEGATIVE CORRELATION IN RESTING CONNECTIVITY BETWEEN INSULA AND EXECUTIVE CONTROL NETWORKS IN SMOKERS.

Alison J. Matous, John Fedota, Kim Slater, Betty Jo Salmeron, Hong Gu, Thomas Ross, Elliot Stein; NIDA-IRP, Baltimore, MD

Aims: Because the insula is central in detecting and acting upon internal states and external stimuli, understanding how it interacts with other brain regions to modify behavior may help elucidate neural mechanisms of nicotine withdrawal. The insula is a key node of the salience network (SN), the large-scale brain network implicated in switching attention between executive control (ECN) and default mode (DMN) networks. The ECN, which is activated in effortful cognitive processing, is anticorrelated with the DMN, which deactivates during externally-oriented tasks. Nicotine withdrawal alters interactions among these networks such that DMN-insula connectivity is upregulated in abstinent smokers. Yet, the downregulation predicted between insula and ECN in withdrawn smokers has not been demonstrated.

Methods: Resting-state BOLD data were acquired from 18 smokers at baseline smoking and again following ~48 hours of smoking abstinence. Based on previous literature, we derived 3 regions of interest in the insula (dorsal anterior, ventral anterior & posterior) and conducted seed-based analyses examining the functional connection between each insula seed and each of the 3 networks of interest-SN, ECN & DMN.

Results: The contrast of abstinence minus baseline showed upregulated connectivity between dorsal insula and DMN and downregulated connectivity between ventral insula and ECN during abstinence. Surprisingly, the magnitude of both correlations increased in abstinence. The connectivity between insula and DMN became more positive, while the correlation between insula and ECN became negative.

Conclusions: Instead of seeing the predicted switch of strong positive insula-ECN connectivity at baseline for strong positive insula-DMN connectivity in abstinence, results suggest increased, yet directionally opposite, connectivity between insula and both ECN and DMN in abstinence. This pattern suggests in smokers the absence of nicotine enhances connectivity in multiple brain networks. Thus, future treatments may aim to downregulate these connections simultaneously.

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THE ROMANTIC RELATIONSHIP CONTEXT OF ADOLESCENT MARIJUANA USE.

Pamela A Matson1, Nicholas Ialongo1, Shang-En Chung2, Georgiy Bobushou3, Jonathan H. Kim4, Ellen5; Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 1Johns Hopkins School of Medicine, Baltimore, MD, 2RTI International, Durham, NC, 3All Children’s Hospital Johns Hopkins Medicine, St. Petersburg, FL

Aims: Adolescents have heterogeneous patterns of marijuana use, the most common pattern being intermittent or occasional use. Youth who use marijuana are at risk of multiple problems in school and personal life. Adolescents may change their romantic partners more frequently than their non-romantic peers. Partner change may explain adolescents’ intermittent marijuana use. We examined: 1) whether having a marijuana using romantic partner predicts marijuana use among adolescent females, and 2) if feelings of intimacy for the partner is associated with marijuana use concordance.

Methods: A cohort of adolescent females (N = 122), aged 16-19 at baseline, recruited from health clinics or community venues, completed quarterly interviews for 18 months. At each interview, participants reported on their past 3 month marijuana use and their partner’s marijuana use. Participants reported their feelings of closeness and trust for their current main partner. Concordance was both use or neither use. Random-intercept logistic regression was used to estimate subject-specific effects.

Results: Seventy-five percent of participants who reported any marijuana use had periods of use and no use over the study follow-up. A participant was more than twice as likely to report using marijuana when her current partner used marijuana compared to when she had a non-marijuana using partner (OR: 2.33, 95%CI: 1.27, 4.27). Participants who reported high feelings of intimacy for their partner were 47% more likely to be concordant on marijuana use with that partner (OR: 1.47, 95%CI: 1.04, 2.16).

Conclusions: It is developmentally appropriate for adolescents to move toward intimate relationships. Romantic partners are different from non-romantic peers in unique and significant ways, particularly the level of emotional intimacy achieved in the relationship. Results suggest that strong feelings of intimacy for a partner may pose a unique context for risk.

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PARTICIPANT TREATMENT ASSIGNMENT PERCEPTIONS IN THE NIDA CTN COCAINE USE REDUCTION WITH BUPRENORPHINESTUDY.

Abigail G Matthews1, Maureen P Hillhouse1, C Thomas1, Walter Ling, D Blumberg1; 1UCLA, Los Angeles, CA, 2Emmes, Rockville, MD

Aims: The use of blinding in trials is an established element of study design, intended to minimize bias and expectation effects and strengthen the internal validity of the results. The goal of the current analysis was to assess participants’ perceptions of their blinded treatment assignment and examine whether these perceptions were associated with the primary outcome results of the trial.

Methods: Perceived treatment assignment was evaluated in the National Drug Abuse Treatment Clinical Trials Network (CTN) trial Cocaine Use Reduction with Buprenorphine (CURB) at the end of active medication. Participants were randomly assigned to 3 conditions: 16mg buprenorphine-naloxone (BUP16), 4mg (BUP4), placebo (PLB), plus cognitive behavioral therapy and XR-NTX.

Results: Data was available for 281/302 participants (93%). 57% of participants had an opinion regarding their assignment and 43% were unsure. Of those who had an opinion, 46% guessed correctly. There was no association with actual treatment group (p=0.25). In the BUP16 arm, 55% guessed correctly, 44% in the BUP4 arm and 39% in the PLB arm. Perceived treatment assignment was not related to the primary outcome (self-reported cocaine use combined with urine drug screens during last 30 days of medication) or the number of cocaine-negative UDS collected during that period. The fewest average number of days of cocaine use was 6.4 for participants who believed they got BUP16, and greatest for PLB 8.0 days. These differences were not significant (p=0.33). There was no difference in the number of cocaine-negative UDS across perceived treatment (p=0.24).

Conclusions: This secondary analysis showed that the blind was maintained in CURB. Participants who speculated about their arm were no more likely to be correct than by chance. The finding increases the confidence in the validity of trial results. Further examination revealed no association with cocaine abstinence.

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PREDICTORS OF CANNABIS UPTAKE IN AN ADOLESCENT COHORT: ASSOCIATIONS WITH TOBACCO USE, DRINKING, AND CHILD, PEER, AND FAMILIAL FACTORS.

Richard Phillip Mattick1, Philip Clare1, Alexandra Aiken1, Monika Wadolowski1, Raimondo Bruno1, Kypros Kyri1, Jake Najman1, D Hutchinson1, Nyanda McBride2; 1National Drug and Alcohol Research Centre, University of New South Wales, Sydney, NSW, Australia, 2School of Medicine, University of Tasmania, Hobart, TAS, Australia, 3School of Medicine and Public Health, University of New Castle, New Lambton Heights, NSW, Australia, 4School of Public Health, University of Queensland, Brisbane, QLD, Australia

Aims: Cannabis use before adulthood is associated with subsequent adverse outcomes and might be prevented by a better understanding the factors associated with uptake. We aimed to estimate associations between child tobacco and alcohol use, and child, peer, parental, and familial factors, and cannabis use before age 18.

Methods: 1,910 adolescents (initial M age=12.9) were surveyed over five years. Associations between child alcohol use, tobacco use and time and subsequent use of cannabis were assessed using mixed model logistic regression. Confounders (age, sex, psychological factors, parental drinking/smoking) were included and analysis regression and sensitivity analyses conducted.

Results: Before adjustment, adolescents exposed to drinking and smoking in a past year were at greatly increased risk of cannabis use (OR=124.57 95%CI=70.80-219.16, and OR=329.17 95%CI=158.45-683.82), and these estimates remained significant in a model including drinking (OR=22.48 95%CI=11.83-42.74), smoking tobacco (OR=95.60 95%CI=46.13-198.09) and time. Analyses suggest tobacco use is a time-varying mediator. Several child, peer, parental, and family factors were significant predictors of cannabis use in fully adjusted models.

Conclusions: Smoking tobacco and consuming alcohol in early adolescence are associated with higher risk of cannabis use. Prevention of early drinking and smoking may reduce cannabis use rates in mid-adolescence.

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BARRIERS TO LONG-ACTING REVERSIBLE CONTRACEPTIVE USE AMONG OPIOID-MAINTAINED WOMEN.
Alexis K Matusiewicz, Heidi Sara Melbostad, Sarah Hughes Heil; Department of Psychiatry, University of Vermont, Burlington, VT

Aims: Among women who are opioid-maintained (OM), approximately 85% of pregnancies are unintended. The intrauterine device (IUD) and contraceptive implant, collectively referred to as long acting reversible contraceptive (LARC) methods, are safe and highly effective methods to prevent unintended pregnancies. However, only about 6% of OM women are at risk of getting pregnant report using a LARC method. The aim of this study was to examine potential barriers to LARC use in a sample of OM women who did not wish to become pregnant.

Methods: Participants were 47 OM women who completed an eligibility screening for a family planning clinical trial, including a survey of contraception knowledge and attitudes and a reproductive history interview.

Results: Participants reported that they only “knew a little” about IUDs, but they showed comparable levels of knowledge of IUDs and more widely used types of contraception. Only 47% of participants correctly identified IUDs as more effective than oral contraceptives, and only 38% of participants indicated they were likely to use an IUD. Of those who reported that they were unlikely to use an IUD (n=24), 70% were deterred by unfounded concerns about side effects including infection (41%) and future infertility (41%), while 65% endorsed “other reasons” for not wanting to use an IUD. A qualitative analysis revealed three areas of concern: lack of information/awareness, worry that LARCs would hurt or “feel funny” or partner’s dissatisfaction with LARCs.

Conclusions: OM women underestimate the benefits of LARCs and overestimate the potential costs/risks. This population may benefit from education about the efficacy of LARCs and information to debunk inaccurate beliefs about the nature and frequency of side effects associated with these methods. Continued research is needed to understand the concerns that OM women have about LARCs.

Financial Support: This research was supported by R01DA036670 and T32DA007242 from the National Institute of Drug Abuse.

DOES PERCEIVED AVAILABILITY OF MARIJUANA EXPLAIN CHANGES IN MARIJUANA USE AFTER MEDICAL MARIJUANA LAW IMPLEMENTATION AMONG U.S. ADULTS?
Christine Mauro1, Julian Santella2, June H Kim2, Melanie M Wall1, Silvia S Martins;1 Biostatistics, Columbia University, New York, NY, NY, Epidemiology, Columbia University, New York, NY

Aims: Previous work showed an increase in marijuana use (MU) after passage of medical marijuana laws (MML) in those aged 26-39 and older, but not among those 12-17 and 18-25. Further, perceived availability (PA) of marijuana was found to be a partial mediator of this relationship. The current aim is to further characterize the associations between MU, MML, and PA by stratifying those 26 and older into three groups: 26-39, 40-64, or 65+.

Methods: Data were from the National Survey of Drug Use and Health (NSDUH) restricted use data portal 2004-2013. The primary exposure was a time-varying indicator of state-level MML (0=Before vs. 1=After), the outcome was past-month MU, and the potential mediator was PA (easy vs. difficult). A multilevel logistic regression model of individual level data tested the state-level MML effect on MU and PA by age (26-39, 40-64, 65+). The model included a random intercept by state and controlled for secular trends and individual- and state-level covariates.

Results: Among all age groups of interest (26-39, 40-64, 65+), prevalence of marijuana increased after MML passage. In those 26-39, prevalence increased from 8.9% to 10.2% (AOR=1.2 [1.1, 1.3]); among those 40-64, from 4.5% to 6.0% (AOR=1.1 [1.0, 1.2]); and among those 65+ from 0.3% to 0.8% (AOR=2.6 [1.5, 4.6]). Controlling for MML, PA was significantly associated with MU in each age group. Further, in these age categories, passing an MML significantly increased PA of marijuana. After accounting for PA, the association between MML and MU decreased by 14.7%, 14.5%, and 13.0%, respectively, indicating that PA is a partial mediator.

Conclusions: MU increased after passage of MML among adults ages 26-39, 40-64, and 65+. These increases were partially mediated by PA of marijuana. Further exploration of other factors related to availability of marijuana in states with MML were warranted.

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DEVELOPMENT OF A COMBINATION HEROIN-HEROIN VACCINE.
Gary R Matyas1, Oscar Torres2, Rashmi Jalali3, Joshua Antoline4, Kristina K Peachman1, Mangala Rao1, Arthur Jacobson3,4, Carl Alving1, Kenner Rice1,4; 1US Military HIV Research Program, Walter Reed Army Institute of Research, Silver Spring, MD, 2US Military HIV Research Program, Henry M. Jackson Foundation, Silver Spring, MD, 3NIDA, NIH, Bethesda, MD, 4NIAAA, NIH, Bethesda, MD

Aims: Injection drug use is a major factor in the transmission of HIV-1. This study sought to develop a combination heroin-HIV vaccine that blocks the effects of heroin and also prevents HIV-1 transmission. The HIV portion of the vaccine utilized a cyclic V2 (cV2) peptide identified as a correlative of prevention of acquisition of HIV in the RV144 phase III clinical trial. RV144 is the only HIV vaccine trial that has demonstrated efficacy to date.

Methods: The heroin hapten MorHap was attached to tetanus toxoid and mixed with Army Liposome Formulation (ALF) containing palmitoylated CV2. Mice were immunized at weeks 0, 3 and 6 and were bled at weeks 8 and 10. Sera were assayed by ELISA for heroin hapten, HIV recombinant proteins, gp70-V1V2 (correlate of RV144) and gp120, and cV2 antibodies. Sera were assayed for the ability to block the binding of cV2 to α6β7 integrin. Mice were challenged at week 10 with 1 mg/kg heroin, and efficacy was assessed by antinociception assays.

Results: High anti-hapten IgG (1.3 mg/ml) was induced. Vaccinated groups were protected from heroin challenge with %MPE (~15%) in the tail-flick assay. There was no difference between mice receiving the heroin-HIV vaccine and the heroin-only vaccine. Antibody titers to cV2, gp70-V1V2, and gp120 were from 200,000-600,000 similar to those from animals receiving only the ALF-cV2 vaccine. The combination vaccine group sera inhibited the binding of cV2 to α6β7 integrin by 65%.

Conclusions: The heroin-HIV vaccine induced protection against heroin challenge and very high titer cV2 antibodies, that blocked α6β7 integrin receptor binding, a proposed mechanism of efficacy of the V2 antibodies in RV144. The findings suggest that an effective heroin-HIV vaccine is feasible.

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Pia M Mauro, Dvora Shmulewitz, Deborah Hasin, Aaron L Sarvet, Reanne Rahim-Juwel, Qiana Brown, Hannah Carliner, Melanie Wall, Silvia S Martins; Columbia University, New York, NY

Aims: Recent increases in marijuana use (MU) among U.S. adults call for a nuanced assessment of trends by age. We estimated age-specific trends in MU and perception of great risk of regular MU, and estimated the public health burden of adult MU in 2002-2013.

Methods: Adults 18+ from the 2002-2013 National Surveys on Drug Use and Health were included (N=451,160). Logistic regressions estimated temporal trends by age (18-25, 26-34, 35-49, 50-64, 65+ years) for past-year MU prevalence and perception of great risk of regular MU, adjusting for complex sampling, sex, race/ethnicity, income, education, and marital status. Age-year interactions tested differences in rate of change; changes in the number of adults reporting past-year MU from 2002 to 2013 were estimated.

Results: In 2002, 30.1% of adults ages 18-25, 14.8% of 26-34, 9.1% of 35-49, 3.4% of 50-64, and 0.6% of 65+ reported past-year MU. By 2013, MU increased significantly for all ages except 35-49. Rate of increase differed by age (interaction p<0.001), and was greatest in magnitude for ages 50 and older. By age, the estimated additional adult past-year users in 2013 compared to 2002 were 2.2 million ages 18-25, 2.5 million ages 26-34, 3.2 million ages 50-64, and 0.6 million ages 65 and older. In 2002, 2.5% of ages 18-25, 4.5% of 26-34, 4.9% of 35-49, 5.1% of 50-64, and 66.1% of 65+ perceived great risk of regular MU; this decreased significantly for all ages by 2013. Rate of decrease differed by age (interaction p<0.001), and was greatest in magnitude for ages 26-34 and 50-64, and smallest for ages 35-49.

Conclusions: In a changing marijuana policy landscape, public health consequences and implications of the growing number of younger (18-34) and older (50+) adults reporting MU (and perceiving its use to be less risky) requires attention, particularly as baby boomers (50+) enter older adulthood. In the 55-49 age group, potential age-specific buffering factors affecting MU (e.g., number of young children) should be explored.

Financial Support: T32DA0031099, R01DA0257866, R01DA034244, New York State Psychiatric Institute
METHAMPHETAMINE DEPENDENCE LINKED TO INTERCEPTIVE PROCESSING DEFICITS DURING AVERSIVE BREATHING LOAD.
April Chelsea May1, Jennifer Lorraine Stewart1, Paul Davenport2, Susan Taper1, Martin P Paulus3; 1UC San Diego, San Diego, CA, 2Physiological Sciences, University of Florida, Gainesville, FL, 3Laureate Institute for Brain Research, Tulsa, OK, 4Queens College, City University of New York, Flushing, NY

Aims: Inspiratory breathing load is an experimental tool to induce a negative interceptive state and investigate the processes that contribute to drug-taking behavior as a consequence of negative reinforcement mechanisms. Previous studies have shown that individuals with methamphetamine dependence (MD) exhibit impaired functioning in neural networks underlying these mental processes. It was hypothesized that MD would show attenuated functioning in insular cortex, anterior cingulate cortex (ACC), and inferior frontal gyrus (IFG) in response to breathing load, which would be consistent with an overall dysfunction in interceptive response and decision-making.

Methods: Recently abstinent MD (n=31) and healthy comparison (CTL, n=26) subjects completed a continuous performance task while they anticipated and experienced varying magnitudes (low, high) of negatively valenced interceptive stimuli (breathing loads) during fMRI.

Results: MD exhibited lower activation within right posterior insula and ACC than CTL across low and high magnitudes for anticipation and breathing load conditions. MD also showed attenuated activation within bilateral middle insula and left IFG while experiencing both low and high breathing load magnitudes. Moreover, while anticipating and experiencing high magnitude breathing load, MD showed lower right IFG and ACC activation than CTL.

Conclusions: In response to an aversive interceptive event, MD expend fewer neural resources and these attenuations are particularly evident within the context of a high magnitude stressor. In other words, these aversive states may exert less of an influence on behavior in MD individuals relative to comparison subjects. These findings may provide a neural basis for the observation that individuals with MD engage in drug-taking behavior despite experience aversive life consequences.

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PAIN AS A PREDICTOR AND CONSEQUENCE OF TOBACCO WITHDRAWAL AMONG AFRICAN AMERICAN SMOKERS.
Julia Fallon McBeth1, Joseph Ditre2, Matthew Kirkpatrick1, Lara Ray1, Adam Leventhal3, Preventive Medicine, University of Southern California, Los Angeles, CA, 2Psychology, Syracuse University, Syracuse, NY, 3Psychology, University of California Los Angeles, Los Angeles, CA, Preventive Medicine, University of Southern California, Los Angeles, CA

Aims: African Americans (AA) are subject to health disparities in smoking and pain conditions. While nicotine has been shown to produce acute analgesic effects, there is also reason to suspect that pain may be amplified during the early stages of smoking abstinence. This study evaluated the effect of tobacco abstinence on current pain intensity and as a function of pre-existing chronic pain in AA smokers.

Methods: AA smokers (N = 214; 44% female; 47.7 ±11.04 age) completed a baseline session at which chronic pain was assessed followed by two counterbalanced experimental sessions (non-abstinence vs. 16-hr abstinence). At both experimental sessions, self-reported measures of current pain intensity and tobacco withdrawal symptoms were administered. Abstinence-induced changes scores (abstinence vs. non-abstinence) were calculated for each outcome.

Results: In the overall sample, smoking abstinence significantly increased current pain intensity (d = .17, p < .05) which correlated with changes in negative affect (r = .16, p < .05) and marginally correlated with changes in smoking urges and composite withdrawal symptoms (r = .13, p = .05). The presence and severity of pre-existing chronic pain predicted greater abstinence-induced pain amplification, after controlling for other relevant factors (β = .29–.31; p < .001).

Conclusions: These findings indicate pain may be exacerbated by smoking abstinence, especially among smokers with chronic pain. Notably, these effects were observed in a sample of AA smokers who are subject to disparities in tobacco-related disease and chronic pain. Acute pain may be an important component of the tobacco withdrawal syndrome and addressing pain in smoking cessation treatment deserves consideration in efforts to offset tobacco-related health disparities.


RICH RECOVERY: INTEGRATING PRIMARY AND BEHAVIORAL HEALTHCARE FOR INDIVIDUALS WITH SUBSTANCE USE DISORDERS.
Jim May1, Dawn Farrell-Moore1,2, David Neal Mastri1,2, Brittany Cox1,2, Grants, Research, Evaluation and Planning, RBHA, Richmond, VA, 1Richmond Behavioral Health Authority, Richmond, VA

Aims: It is well established in the literature that physical health outcomes for individuals with co-occurring mental health and substance use disorders are far worse than outcomes in the general population. The Richmond Behavioral Health Authority (RBHA), a behavioral health services provider serving residents in the city of Richmond, Virginia, has significantly expanded their initial integrated health care program over the last five years to create a full scale, primary health care clinic serving those who receive behavioral health services from RBHA. Most of the individuals served in the program have a co-occurring mental health and substance use disorder diagnosis. The goals of the program are to: 1) Improve health outcomes for those with co-occurring substance use disorder and mental health disorders; 2) Reduce costs associated with the care of individuals with behavioral health disorders; 3) Adapt to the changing healthcare landscape precipitated by the ACA and the push towards integrated care; 4) Use technology innovations to improve patient care; and 5) Develop a sustainable model for the delivery of integrated care into the future.

Conclusions: This program description will include: 1) Challenges met and innovations initiated at startup; 2) Details about populations served, including numbers served, demographics, and high-level outcome data; 3) Challenges with regard to staffing, culture change, and integration into the culture of behavioral health; and 4) Lessons learned and plans for sustainability. The integrated care initiative has led to a culture change in RBHA’s approach to the delivery of behavioral health and substance use disorders services that is more holistic, patient-centered, and has the potential to greatly decrease costs of care to a population that has been historically expensive to treat. Our integrated care initiative is an innovative program that meets the challenges of the future while improving outcomes for the people we serve.

Financial Support: This project is primarily supported by SAMSHA SM-60927.
NEUROPHARMACOLOGICAL INVESTIGATION OF WITHDRAWAL-INDUCED INHIBITORY CONTROL DEFICITS AMONG SMOKERS WITH ADHD.
Francis Joseph McClernon, Scott H Kollins, Rachel Kozink, Matthew Hallyburton, Maggie Sweitzer, Jason Oliver; Psychiatry and Behavioral Sciences, Duke Univ. Medical Center, Durham, NC

Aims: Smoking withdrawal negatively impacts inhibitory control and these effects have been shown to be greater for smokers with pre-existing attention problems. In the current study we investigated withdrawal-induced changes in inhibitory control using fMRI among smokers with ADHD and the role of dopaminergic neurotransmission in these changes by examining the effects of a pro-dopaminergic drug (i.e. 40 mg methylphenidate; MPH) on brain and behavior.

Methods: Adult daily smokers with mixed (n=17) and without (n=20) ADHD were fMRI scanned under three counterbalanced conditions: (a) smoking as usual + placebo; (b) 24 hr smoking abstinence + placebo and (c) 24 hr smoking abstinence + MPH. During scanning, participants completed a version of the Go/No-Go task that assesses sustained inhibitory control.

Results: Analysis of performance data identified a trend for a main effect of condition on inhibitory control, F=2.58; p=.057 due to methylphenidate-induced improvements in performance in both groups. In the ADHD group specifically, MPH significantly improved inhibitory control during abstinence, t=2.3, p=.024. Voxel-wise analysis of task-related BOLD signal identified a cluster in occipital cortex (peak voxel: x=-28, y=-88, z=26; p=.001, k=28). In this cluster, abstinence-induced decreases in activation observed among ADHD smokers were reversed by methylphenidate. Correlation between inhibitory control and occipital cortex activation across groups and conditions, r=.35, p<.001, suggests that abstinence- and MPH-induced changes in visual attention areas may be responsible for abstinence-induced deficits in inhibitory control.

Conclusions: These findings provide novel evidence that withdrawal-induced inhibitory control deficits among smokers with ADHD involve changes in visual information processing and are under the control of dopaminergic neurotransmission.

Financial Support: This research was supported by R01 DA024838 (FJM).

INTEGRATING OPIOID OVERDOSE PREVENTION IN THE EMERGENCY DEPARTMENT.
Ryan McCormack, MD; Christian Koziatek, MD; Ada Rubin, Lauren O’Donnell, Lewis Nelson; 1NYU School of Medicine, New York, NY, 2Ronald O. Perelman Department of Emergency Medicine, NYU School of Medicine, New York, NY

Aims: Currently, there aren’t validated training or screening procedures. Our objective was to pilot and assess the feasibility of an ED-based OEND program using undergraduate, post-baccalaureate, or pharmacy student volunteers.

Methods: A multidisciplinary working group developed the protocol and performed regular iterative quality improvements to it. This group included representatives from emergency medicine, addiction psychiatry, pharmacy, public health, and the Poison Center and Health Department. The protocol was informed by reviewing known risk factors for overdose, proposed common data elements for substance use screening, and existing studies and clinical practice. Volunteers completed an initial training and reviewed a refresher video prior to their 8 hour/week shifts in our high-volume municipal ED. Qualitative feedback solicited from the volunteers was used for continuous quality improvement.

Results: 946 (62%) of the 1533 adults approached agreed to be screened. Among those screened, 143 (15%) were identified as at risk of experiencing or witnessing an opioid overdose. Of those, 100 (70%) accepted training and naloxone kits. As the study progressed, we found that altering the order of screening questions, minimizing branching, and highlighting responses indicating positive screens ensured the volunteers completed and interpreted screenings accurately. Volunteers were highly engaged in the program, which was often described as "meaningful." Most quickly overcame initial difficulties with the subject matter.

Conclusions: A multidisciplinary approach using supervised student volunteers may be a practical way to implement OEND in EDs. Further study is needed to inform questionnaire development and ED workflow integration as well as to assess harm reduction-related outcomes.

Financial Support: This initiative was supported by the NYU School of Medicine Department of Emergency Medicine.

CONDOM BARRIERS AMONG AFRICAN AMERICAN SUBSTANCE USERS: AGE AND GENDER DIFFERENCES.
Caravella L. McCuisitan, Kathy Burlew; Psychology, University of Cincinnati, Cincinnati, OH

Aims: Specific attitudes act as barriers to condom use. Substance using men report more sexual experience barriers than women (Calyn, et. al., 2013). Such gender differences may also be moderated by age. This study explores barriers among African American substance users, a group at high risk for HIV. The first aim is to explore if gender influences barriers. It is hypothesized that African American male substance users will endorse more sexual experience barriers and that African American female substance users will endorse more partner barriers. The second aim is to explore whether age moderates gender differences in barriers. It is hypothesized that African American men will endorse more sexual experience barriers than women among younger but not older substance users. It is also hypothesized that women will endorse more partner barriers than men among younger but not older substance users.

Methods: This study is a secondary analysis of the baseline data from two Clinical Trial Network data sets assessing the efficacy of gender specific HIV prevention interventions (CTN 0018 and CTN 0019). Only African Americans are included in the current study (N=273).

Results: Men endorsed significantly more sexual experience barriers (t(270) = 3.87, p < .000) and motivational barriers (t(271) = 3.45, p < .001) than women. Age did not moderate the relationship between gender and any barriers. However, additional findings suggest that age significantly influenced certain barriers. The regression analysis suggested that as age increased, access/availability became more of a barrier (b = .26, t (6) = 4.07, p < .000), and more motivational barriers were reported (b = .145, t (6) = -2.32, p = .000).

Conclusions: Gender differences were noticed for sexual experience and motivational barriers. Age did not moderate the relationship between gender and barriers, but it seems to influence specific barriers including access/availability and motivational barriers. These findings suggest prevention should include making condoms feel better to men, making them more accessible to older adults, and addressing motivations for use for men and older adults.

Financial Support: None
OXYTOCIN DECREASES METHAMPHETAMINE-SEEKING AND GENE EXPRESSION CHANGES IN RATS AFTER TRAUMATIC STRESS.

Jacqueline F McGinty; Neuroscience, Med Univ SC, Charleston, SC

Aims: While alterations in several neural systems are implicated in increased vulnerability to substance use disorders (SUDs) following traumatic stress, the endogenous oxytocin system has emerged as a potential inhibitor of SUDs and traumatic stress interactions. The goal of this study was to examine whether systemic oxytocin administration attenuated methamphetamine (METH)–seeking and consequent neuroadaptations in rats exposed to a preclinical model of traumatic stress.

Methods: Rats were pre-exposed for 2 days to the predator odor, 2,4,5-trimethylthiazoline (TMT-PE) or saline (saline-PE) before METH self-administration or yoked-saline. Rats received 10 daily 1 mg/kg, ip oxytocin or saline injections in the interval between TMT-PE or saline-PE and METH self-administration. We examined drug-seeking induced by TMT and alterations in mRNA expression in the prefrontal cortex and hypothalamus. Rats were euthanized immediately after the reinstatement test and brain areas processed for gene expression using nPCR.

Results: TMT pre-exposed (PE) rats that were injected with saline reinstated more to METH-paired cues or TMT than saline-PE rats. A single injection of oxytocin before reinstatement or 10 daily oxytocin injections before METH self-administration suppressed METH-seeking in both saline-PE and TMT-PE rats. After reinstatement, the prefrontal cortex of TMT-PE rats injected with saline had a significant reduction in the epigenetic marker, Hda5, a corresponding increase in Bdnf exon IV mRNA, and a decrease in acetylation of the Bdnf exon IV promoter compared to saline-PE rats with a history of METH. Further, there were decreases in endogenous oxytocin and oxytocin receptor mRNA in the hypothalamus and prefrontal cortex of TMT-PE rats. A single dose or repeated injections of OXT attenuated these effects in the PFC of TMT-PE rats.

Conclusions: These results support the development of oxytocin as a novel therapeutic for SUD with concurrent PTSD.

Financial Support: This study was supported by DoD grant W81XWH-12-2-0048 Suhaward 8A-293 and T32 DA007288.
**DEVELOPMENT AND PILOT TEST OF INTEGRATED COGNITIVE BEHAVIORAL THERAPY FOR ANXIETY AND OPIOID USE DISORDER.**

Kathryn McHugh, Shelly F Greenfield, Roger Weiss; McLean Hospital/Harvard Medical School, Belmont, MA

**Aims:** Anxiety disorders are common among those with opioid use disorder and are associated with a more severe course and poor treatment outcome. The aim of this study was to develop and pilot test the feasibility and initial clinical outcomes of a novel cognitive behavioral therapy for this population.

**Methods:** This Stage I A behavioral treatment development trial enrolled a sample of 5 adults with opioid use disorder and a DSM-5 anxiety disorder in an open trial of 12 weeks of cognitive behavioral therapy. Feasibility was evaluated using participant ratings of satisfaction. Urine-confirmed self-report of opioid use, opioid craving and anxiety symptom severity were collected weekly.

**Results:** Treatment satisfaction was very high at mid-treatment; all participants reported being at least mostly satisfied with the treatment. Three participants completed all treatment sessions, one participant dropped out at mid-treatment; and one participant died of an accidental opioid overdose. Opioid use decreased for all participants who completed treatment, with 2 participants remaining abstinent for the last 4 weeks and 1 decreasing use by 50%. Anxiety also decreased throughout treatment, with 3 of the 5 participants reporting anxiety below the cut-off for clinical anxiety by their final session.

**Conclusions:** Initial results from this pilot test indicate that this novel approach is feasible and associated with high satisfaction and improvement in both opioid use and anxiety symptoms. Efficacy testing in a randomized clinical trial is ongoing.

**Financial Support:** This study was supported by NIDA grant K23DA035297.

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**POLYDRUG USE AMONG A COHORT OF ADOLESCENT LIGHT SMOKERS.**

Karina McKevey, Danielle Ramo, Kevin Delucchi, Mark Rubinstein; UCSF, San Francisco, CA

**Aims:** Classify distinct subgroups of polydrug users among ALS & identify associated personal characteristics and 3-year outcomes.

**Methods:** Participants were 176 teens (age-16; 35% male; 27% white) who reported smoking at least 1 cigarette in the past month and no more than 10 per day. Latent class analysis was used to identify subgroups of polydrug users based on past month use of other tobacco (pipe, cigar, spit) alcohol, marijuana, and other drugs (e.g. ecstasy, hallucinogens, prescriptions) (y/n); classes were compared on drug use and psychometrics over 3 years.

**Results:** Most (96%) reported using, on average, 2 (SD=9.7) drugs (alcohol, tobacco, or other drugs (ATOD)) in addition to cigarettes. A two-class model fit the data best (LMR p<0.05). Subgroups were Divergent Users (DU) (16%), with high likelihood of ATOD use; and Typical Users, with likelihood of alcohol, tobacco, and marijuana use. Subgroups did not differ on age, gender, race, mother’s education level, or proportion reporting marijuana or alcohol use. At baseline, DU were more likely to report smoking the entire cigarette (RR=1.24; 95% CI 1.08,1.42); using a pipe (2.76; 1.11,6.88); using more drugs (t(174)=9.33, p<0.001); more depressive symptoms (t(164)=2.12, p<0.04); and feeling nervous, restless, or anxious when they couldn’t smoke (x2=21; p<0.01). At baseline and 12 months DU were more likely to report other drug use. Mean depression scores at 24 (t(150)=2.32, p<0.03) and 36 months (t(26)=2.18; p<0.04) were higher for DU and higher than baseline.

**Conclusions:** ALS should be targeted for polydrug use interventions as they are a group at risk for early drug use, primarily alcohol and marijuana. Screening for depressive symptoms among ALS could identify those at increased risk to use additional illicit drugs (e.g. prescription drugs, hallucinogens).

**Financial Support:** Study: R01 CA140216 (Rubinstein); abstract & analysis: R23 DA035278 (Ramo) & R25 CA113770 (McKevey)

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**HIV-1 TAT-PROTEIN ELEVATES FOREBRAIN GLUTATHIONE LEVELS AND INCREASES MORPHINE DRUG-SEEKING AND DEPRESSION-LIKE BEHAVIORS IN MICE.**

Jay P McLaughlin2, Shainnel Eans2, Jessica Medina2, Kristen Hymel3, Anna Rock3, Dionysios Minzopoulos, Marc J Kaufman; 1Brain Imaging Center, McLean Hospital, Belmont, MA, 2Pharmacodynamics, University of Florida, Gainesville, FL, 3McLean Imaging Center, McLean Hospital, Belmont, MA

**Aims:** As HIV-1 Tat protein induces oxidative stress, and oxidative stress is associated with morphine dependence and behavioral depression, we hypothesized that HIV-1 Tat expressed in brain would elevate intracerebral levels of glutathione (GSH) in forebrain and increase the rewarding effects of morphine and depression-like behavior.

**Methods:** Using the GT-tg bigenic mouse model, in which brain-selective Tat expression can be induced by doxycycline (Dox), magnetic resonance spectroscopy (MRS) was used to determine whether expression to Tat protein alters medial frontal cortex intracellular GSH levels. In behavioral tests, we characterized effects of Tat protein on the rewarding effects of morphine with the conditioned place preference (CPP) assay and on depression-like behavior with the tail-suspension test (TST). We also assessed effects of treatments that modulate GSH levels.

**Results:** MRS studies of medial frontal cortex GSH found significant increases in GT-tg mice administered Dox (100 mg/kg/d, i.p.) for 7 days. In a separate GT-tg mouse cohort given Dox for 7 days, morphine-CPP doubled in a manner dependent on the magnitude of exposure to Tat protein. GT-tg bigenic mice induced with Dox for 1 or 7 d also demonstrated significant increases in time spent immobile during the TST. Notably, daily co-treatment with the antioxidant methyl sulfonfonyl methane reversed behavioral effects of Tat protein. By contrast, GSH depletion with diethyl maleate increased depression-like behavior in a dose-related manner in saline-treated GT-tg mice not exposed to Tat protein.

**Conclusions:** Overall, these data suggest that behavioral effects of HIV-1 Tat protein could be a consequence of oxidative stress, and that treatments mitigating oxidative stress could be beneficial for alleviating maladaptive behavioral responses.

**Financial Support:** NIH grants R01-MH085607, R01-DA039044, and S10-RR019356.

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**FOUNDATIONAL DEVELOPMENT OF A POSTMARKET SURVEILLANCE PROGRAM FOR E-VAPOR PRODUCTS USING INTERNET FORUM DATA.**

E C McNaughton, Taryn M Dailey, M Behling, Stephen F Butler; Inflexxion, Inc., Newton, MA

**Aims:** To establish a new postmarket surveillance program for e-vapor products using Internet forum data by developing an automated data collection application and a qualitative coding manual for content evaluation.

**Methods:** Draft guidance from the Food and Drug Administration highlights the need to monitor and understand the effect that the authorization of a modified risk tobacco product may have on consumer perception, behavior, and health through postmarket surveillance. General consensus supports the notion that tobacco surveillance should incorporate multiple and diverse approaches to provide data in a timely manner, including data from the Internet. Evaluating Internet forum discussion among e-vapor consumers presents a unique opportunity to assess perceptions and use of e-vapor products in a real world setting. Building from prior exploratory research efforts, we describe our new postmarket surveillance program that is designed to evaluate discussion of e-vapor products across seven Internet forums using quantitative and qualitative analytic approaches. Technologic enhancements were made to expand data collection capabilities through the creation of an automated, systematic harvesting application. Methodologically, data retrieval queries were developed and content validity was established for a qualitative coding manual designed to assess consumers’ perceptions and use of e-vapor products.

**Results:** Since April 2015, over 2.7 million posts have been collected, representing discussion among nearly 50,000 unique participants. Qualitative evaluations were conducted to assess the frequency of discussion related to various types of e-vapor products and qualitative coding was performed to assess the content.

**Conclusions:** Automated data collection and quantitative and qualitative evaluation of Internet forum discussion related to e-vapor products can be used as a component of a postmarket surveillance strategy to address questions related to consumer perceptions, use patterns, and health.

**Financial Support:** Inflexxion, Inc., Altria Client Services LLC
A BRIEF SUBSTANCE USE SCREENING AND ASSESSMENT FOR GENERAL MEDICAL SETTINGS: VALIDATION OF THE TOBACCO, ALCOHOL, PRESCRIPTION MEDICATION, AND OTHER SUBSTANCE USE TOOL
Jennifer McNeely1, Li-Tzy Wu2, Geetha Subramaniam3, Gaurav Sharma4, Robert P Schwartz2,3; 1NYU School of Med, NYC, NY, 2Duke U School of Med, Durham, NC, 3NIDA, Bethesda, MD, 4Emmes Corp, Rockville, MD, 4Friends Research Inst, Baltimore, MD
Aims: The TAPS Tool was developed to provide a brief substance use screening and assessment approach that is brief, accurate, and sufficiently detailed to inform clinical care in medical settings. Through a series of studies on the NIDAMED and brief assessment based on a modified ASSIST-lite, it identifies past-year use of tobacco, alcohol, illicit drugs, and non-medical use of prescription medications, and provides substance-specific assessment of current use and risk level for 8 substance classes. This study sought to validate the TAPS Tool in primary care patients.
Methods: A total of 2,000 adults were consecutively recruited from 5 primary care clinic waiting areas. Participants were randomly assigned in counter-balanced order to complete interviewer-administered and self-administered (on an iPad) versions of the TAPS Tool. The TAPS Tool was compared to the reference standard modified Composite International Diagnostic Interview to determine its diagnostic accuracy for identifying current problem use and DSM-5 substance use disorder (SUD) for each substance class.
Results: The self-administered and interviewer-administered TAPS Tool had similar diagnostic characteristics. For identifying problem use, at a cutoff score of ≥1 the TAPS Tool had sensitivity and specificity of 0.93 and 0.87, respectively, for tobacco, and 0.74 and 0.79 for alcohol. For problem use of illicit and prescription drugs, sensitivity ranged from 0.82 for marijuana to 0.63 for sedatives, and specificity was 0.93-1.0. For identifying SUD, at a cutoff of ≥2 sensitivity of the TAPS Tool ranged from 0.74 for tobacco to 0.48 for prescription opioids, and specificities were 0.89 or greater.
Conclusions: The TAPS Tool detected clinically relevant substance use and risk level in a diverse sample of primary care patients, and could ease barriers to incorporating substance use screening into medical settings.
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LATENT CLASSES OF POLYDRUG USE AND ASSOCIATIONS WITH HIV RISK BEHAVIORS AND OVERDOSE AMONG PEOPLE WHO INJECT DRUGS IN TIJUANA, MEXICO
Meredith C Meacham1,2,3, Scott Roesch2, Steffanie Strathdee1, Patricia Gonzalez-Zuniga1, Tommi Gaines4; 1University of California San Diego, La Jolla, CA, 2San Diego State University, San Diego, CA, 3University of California at San Francisco, San Francisco, CA, 4University of Nevada, Las Vegas, NV
Aims: Patterns of polydrug use among people who inject drugs (PWID) may be differentially associated with overdose as well as with HIV risk behaviors. Subgroups of PWID in Tijuana, Mexico, were identified based on substances used, route of administration, frequency of use, and co-injection indicators.
Methods: Participants were PWID residing in Tijuana 2011-2012 age ≥ 18 who reported injecting in the past month (N = 735). Latent class analysis was conducted to determine discrete classes of polydrug use as characterized by 11 indicators of past 6 month substance use. Multinomial logistic regression examined class membership association with HIV infection and sexual risk behaviors, overdose, and other covariates.
Results: PWID in Tijuana were classified into 5 distinct subgroups. Two polydrug and polyroute classes were defined by use of multiple substances through several routes of administration and were primarily distinguished from each other by cocaine use (Class 1: 5% vs. Class 2: 29%). The other three classes consisted primarily of injectors, distinguished by the substances injected: stimulant and heroin injection (Class 3: 4%); methamphetamine and heroin injection (Class 4: 10%); and heroin injection (Class 5: 52%). Regression analyses showed that, compared to the heroin injection class, the two polydrug and polyroute use classes were significantly associated with HIV risk behaviors, as well as with pre-disposing background and risk environment factors.
Conclusions: Findings highlight the heterogeneity in substance use patterns among PWID and demonstrate that polydrug and polyroute users are a high-risk subgroup who may require more tailored prevention and treatment interventions. Polyroute users may also represent an HIV transmission "bridge population" to networks of non-injection drug users.
Financial Support: T32DA023356; R37DA019829

PRELIMINARY FINDINGS: HIV/STD RISK AMONG CRACK COCAINE-DEPENDENT PATIENTS IN TREATMENT IN BRAZIL’S ‘CRACKLAND’
Sandra McPherson1, Andra Sandi Madruga1, Andre Q.C. Miguel1, Michael G McDonellF, Ariade Ribeiro1; 1Psychiatry, UNIFESP, Sao Paulo, Brazil, 2Washington State University, Spokane, WA
Aims: To examine demographics are predictors of human immunodeficiency virus (HIV) and sexually transmitted disease (STD), and whether education was a mediator between demographic predictors and HIV/STD status among crack cocaine dependent patients being treated in Sao Paulo, Brazil.
Methods: Crack cocaine dependent adults, aged 18 or above with no history of injection drug use were interviewed at the Reference Centre of Drug Addiction Treatment (CRATOD). Participants provided samples that were tested using validated, rapid tests for HIV and STDs (including Hepatitis C [HepC], and syphilis). We used path analytic techniques to examine age, sex, and housing status as predictors of HIV/STDs, and whether education was a mediator between demographic predictors and HIV/STD status. Because we treated this small sample (n=107) study as preliminary, our alpha threshold was set at 0.075 for all analyses.
Results: Education was a predictor of syphilis status such that those with more education were less likely to have contracted syphilis (odds ratio [OR]=0.44, p=0.062). Education was a full mediator for housing status such that housing status was positively associated with education (β=0.44, p=0.001) but not syphilis status. There was a significant, direct relationship between sex and syphilis (OR=5.84, p=0.003), and education partially mediated this relationship (β=0.30, p=0.054). Age was significantly associated with HepC status such that older adults (β=0.06, p=0.024) were more likely to test positive for HepC and less likely to be HIV positive (β=0.12, p=0.069).
Conclusions: More precise strategies are needed to design effective treatment modalities to fight the two-front battle of HIV/STD and crack cocaine use, both of which have reached high levels and are feeding one another’s epidemic numbers throughout Brazil.
Financial Support: FAPESP Grant numbers 2011/01460-7 and 2013/04138-7 financed this study.

A PILOT TRIAL OF TWO MODELS OF CLINICAL SUPERVISION OF INTEGRATED COGNITIVE BEHAVIORAL THERAPY FOR PTSD AND SUBSTANCE USE DISORDERS
Andrea Meier1, Mark P McGovern2, Chantal Lambert-Harris3, Bethany McLean3, Elizabeth Saunders4; 1Psychiatry, Geisel School of Medicine at Dartmouth, Lebanon, NH, 2Psychiatry and Community & Family Medicine, Geisel School of Medicine at Dartmouth, Lebanon, NH, 3Psychiatric Research Center, Geisel School of Medicine at Dartmouth, Lebanon, NH
Aims: Implementing evidence-based therapies for addiction is a challenge. Training and supervision strategies, designed to support routine practice, vary widely. This pilot trial examines patient- and therapist-level outcomes of two models of clinical supervision.
Methods: 19 therapists from four outpatient addiction treatment programs were trained and randomized by site to a centralized (expert-led) or a localized models of supervision. Patients engaged in treatment and improved in PTSD across both models of supervision, as was therapist retention. Patient attrition in the localized model had a greater reduction in drug use (p=0.03).
Conclusions: Therapist adherence and competence were acceptable and equivalent across both models of supervision, as was therapist retention. Patient attrition also did not vary by supervision type. Patients had comparable improvements in PTSD across both supervision models. Patients receiving ICBT from therapists in the localized model had a greater reduction in drug use (p=0.03).
Financial Support: This research was supported by the National Institute on Drug Abuse (NIDA) R01 DA027650 (McGovern, PI).
CONTRACEPTIVE USE AMONG FEMALE SMOKERS.
Heidi Sara Melbostad1, Gary J Badger2, Alexi K Matusiewicz2, Sarah Hughes Heil2; Psychiatry, University of Vermont, Burlington, VT; 1Psychology, University of Vermont, Burlington, VT; 2Medial BioStatistics, University of Vermont, Burlington, VT

Aims: Approximately 24% of US women of reproductive age smoke cigarettes. Little is known about contraceptive use among female smokers, despite substantial adverse consequences of smoking on a pregnancy. The aim of the current study was to characterize the contraceptive use patterns of sexually active female smokers.

Methods: Estimates from the 2011-2013 National Survey on Family Growth (NSFG) were weighted to reflect the US household population of women 15-44 years old. Analyses excluded women who did not have at least one male sex partner in the past 12 months. Current contraceptive methods were based on respondents' reports about use in the past 12 months. Current smokers were defined as those who reported having smoked ≥ 100 cigarettes, with additional information gathered about number of cigarettes smoked per day (CPD). Statistics were produced using SURVEY procedures in SAS software comparing percentages using Chi square tests.

Results: The sample (N=4,319) averaged 31 years of age, the majority were Caucasian, unmarried, had completed ≥ a high school education, and reported using a contraceptive method in the past 12 months. Twenty-five percent of women were smokers. Use of birth control pills was significantly negatively associated with smoking rate (33%, 34%, 19%, 25%, and 20% pill use among non-smokers and women smoking 1-4 CPD, 5-14 CPD, 15-24 CPD, and ≥ 25 CPD, respectively; p < .01) as was any condom use (41%, 40%, 39%, 29%, and 24% condom use among non-smokers and women smoking 1-4 CPD, 5-14 CPD, 15-24 CPD, and ≥ 25 CPD, respectively; p < .01). Stimulation was significantly positively associated with smoking rate (22%, 25%, 27%, 39%, and 61% for non-smokers and women smoking 1-4 CPD, 5-14 CPD, 15-24 CPD, and ≥ 25 CPD, respectively; p < .02).

Conclusions: Evidence that smoking at different rates is associated with different choices about contraceptive methods may inform recommendations about contraceptive counseling among non-smokers and smokers.

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AGE-RELATED DIFFERENCES IN LICKING
MICROSTRUCTURAL INDICES OF INCENTIVE MOTIVATION AND HEDONIC IMPACT IN RATS.
Ian A Mendoza1, Niall Murphy1, Sean Ostlund2, Nigel Maidment1; 1Psychiatry and Biobehavioral Sciences, UCLA, Los Angeles, CA; 2Anesthesiology and Perioperative Care, UCI, Irvine, CA

Aims: Aberrant food consumption can lead to serious health problems, including obesity, cardiovascular disease and cancer. While feeding behavior in adolescents has been well studied, food consumption in aged individuals is less understood. Analysis of licking microstructures may be used to discerned with subsequent use. These findings are important for determining how to end, licking microstructure during consumption of sweet solutions was studied in adult (20 weeks old) and aged (21 months old) rats.

Methods: Animals were trained to lick for a 0.1% concentration of the non-caloric sweetener, saccharin, under sated conditions. Following training, microstructural licking responses to varying concentrations of saccharin (0.05%, 0.1%, 0.2%, and 0.4%) and sweetened condensed milk (2.5%, 10%, 25%, 50%) were studied under sated and hungry (12 hr food deprivation) conditions using a lickometer.

Results: When licking for saccharin across a range of saccharin concentrations, aged rats again exhibited significantly fewer bouts of licking, but similar bout lengths, under both sated and hungry states. When sweetened condensed milk was used, aged rats exhibited significantly fewer bouts of licking and shorter bout lengths across all concentrations, when tested sated and hungry. Despite generally attenuated licking, aged rats displayed significantly higher locomotor activity than adult rats across all tests.

Conclusions: Observed decreases in total licking bout numbers across all conditions suggests general motivational deficits in aged rats, while observed decreases in licking bout lengths with milk and not saccharin suggests damped hedonic impact in aged rats, when consuming calorie dense foods. Understanding how aging impacts incentive motivation and reward palatability may contribute to the development of targeted therapies for age-dependent impairments in reward seeking and taking behavior.

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CLASSIFYING YOUTH SUBSTANCE USE WITH NON-INVASIVE QUESTIONS.
Alexandra Mellis1, Celia Eddy2, Chris Franks3, Arlington G Wilson2, Mikhail Nikolaos Kofifarnas2, Warren Kurt Bickel1; 1Addiction Recovery Research Center, Virginia Tech Carilion Research Institute, Roanoke, VA; 2Department of Psychology, University of Kentucky, Lexington, Lexington, KY; 3Department of Statistics, Virginia Tech, Blacksburg, VA

Aims: The Youth Risk Behavior Survey (YRBS) is an anonymous survey of health risks in high school. This anonymity means that although the YRBS is useful for examining co-occurrence of risks, it cannot be used to identify students who use substances without self-report of taboo behavior. Our objective was thus to use YRBS data to generate a list of non-invasive questions which predict substance use.

Methods: YRBS data were collected from students in a single county. We employed as predictors only questions that avoided interrogation of substance use. Our dependent variable was report of alcohol, tobacco, or marijuana use. We used logistic regression with forward selection and cross validation to select, fit, and validate our model. Evaluation of predictive accuracy was based on concordance indices (c-statistics). This measures the trade-off between true positive and negative rates across predictions and ranges from 0.5 (chance) to 1 (perfect) accuracy.

Results: In the model for alcohol use, the forward selection process resulted in a model with 14 predictor variables. The training set had a c-statistic of 0.871, and the test set had a c-statistic of 0.831. For tobacco, the model contained 10 variables. The training c-statistic was 0.873, and the test c-statistic was 0.837. For marijuana, the model contained 19 predictors, and had training and test set c-statistics of 0.921 and 0.876, respectively. The model for a binary use outcome of any substance contained 16 variables. The training and test c-statistics were 0.895 and 0.837, in order.

Conclusions: The observed model performance demonstrates that even non-invasive questions, which avoid interrogating illicit substance use in adolescents, can have strong predictive accuracy for identifying youths who have engaged in risky substance behaviors. These questions, which center on peer influences and parental opinions of substance harms, could be used to develop future risk calculators.

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INITIAL SUBJECTIVE FAVORABILITY MODERATES THE RELATIONSHIP BETWEEN FALSE HARM BELIEFS AND DAILY CONSUMPTION OF REDUCED NICOTINE CONTENT CIGARETTES.
Melissa Mercincavage, Megan L Saddleson, Andrew Strasser; Center for Interdisciplinary Research on Nicotine Addiction and Tobacco Center of Regulatory Science, University of Pennsylvania, Philadelphia, PA

Aims: To determine if product beliefs resulting from viewing an advertisement for reduced nicotine content (RNC) cigarettes affect subsequent use behaviors, and if initial subjective ratings moderate these effects. We hypothesized that false beliefs would increase smoking behaviors, and that this relationship would be stronger among smokers with favorable (vs. negative) initial subjective responses to RNC cigarettes.

Methods: Data were taken from 77 non-treatment-seeking daily smokers (66.2% male) participating in a randomized controlled trial of RNC cigarette effects on use behaviors and harm exposure. After viewing an RNC cigarette advertisement and smoking their preferred cigarette brand for 5 days, smokers then used RNC cigarettes for 10 days. Smokers self-reported daily cigarette consumption, collected spent filters, and provided topography assessments every 5 days.

Results: Stepwise regression analyses found that false beliefs did not affect smoking behaviors (p’s = 0.07-0.49), but subjective ratings moderated the association of false beliefs with daily cigarette consumption (β = 0.18, SE = 0.06, p = 0.005). Among smokers with favorable initial subjective responses, false beliefs increased daily consumption of RNC cigarettes.

Conclusions: Initial subjective responses to RNC cigarettes have important implications for understanding how false beliefs about product risks are associated with subsequent use. These findings are important for determining how to minimize risks of RNC cigarette use; such efforts may need to account for subjective product responses to fully evaluate the impact of disseminating this information.

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EARLY LIFE TRAUMA, NEUROCOGNITIVE FUNCTIONING, AND SUBSTANCE USE.  
Jackelyn Leigh Meyers1,2, Vivia V McCutcheon3, Jacqueline Salvatore2, David Chorlian1, Ashwini Pandey4, *Collaborative Study on the Genetics of Alcoholism Collaborators1, Kathleen K Bucholz5, Bernice Porjesz3, *Psychiatry, The State University of New York, Brooklyn, NY, *Columbia University, New York, NY, 1Washington University School of Medicine, St. Louis, MO, 4Virginia Commonwealth University, Richmond, VA  
Aims: Early trauma may alter neurobiologic and behavioral stress response systems which could subsequently increase risk for substance use disorders. The current study investigates the effects of trauma exposure on neurocognitive functioning and substance use data from the Collaborative Study of the Genetics of Alcoholism (COGA) prospective cohort, comprising offspring from high-risk and comparison families who were aged 12-22 at enrollment and who have been interviewed every 2 years since 2004.  
Methods: One strength of COGA is the longitudinal recording of event-related oscillations (EROs) during a variety of cognitive tasks, which offer time-frequency measures of brain rhythms during cognitive processing. Traumatic exposures were categorized as non-sexual assaultive, non-assaultive, and sexual assaultive. We examined the influence of traumatic exposures on one ERO measured across ages 12-32, the total theta power of oscillatory brain signals during an equal probability “Go/No-Go” task, assessing possible brain dysfunction related to the inhibition of a motor response (“No-Go” task condition), and cigarette, alcohol, and marijuana use.  
Results: More than half (64%) of the sample reported experiencing one or more types of trauma. Individuals who had experienced any assaultive trauma prior to age 12 showed significantly lower total theta power in the “No-Go” task condition following trauma exposure (p<0.001) and significant decreases in theta power across ages 18-20 (p<0.01). Further, assaultive trauma was associated with risk for regular alcohol and marijuana use at older age. Association varied significantly by sex.  
Conclusions: Results suggest that early life trauma may lead to neurocognitive deficits, which in turn could increase risk later substance use in young adulthood.

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USE OF CONTINGENCY MANAGEMENT FOR CRACK COCAINE DEPENDENCE IN SOUTH AMERICA: PRELIMINARY RESULTS FROM A RANDOMIZED CLINICAL TRIAL.

André Q.C. Miguel 1, Clarice S. Madruga 2, Sterling McPherson 3, Michael G. McDonell 4, John M. Roll 5, Ronaldo Laranjeira 6, 7, 8; 1Psychiatry, University of São Paulo, São Paulo, Brazil, 2Psychiatry, Unileps, São Paulo, Brazil, 3Psychiatry, Federal University of São Paulo, São Paulo, Brazil, 4Psychiatry, Unileps, São Paulo, Brazil, 5Washington State University, Spokane, WA

Aims: To report preliminary findings on the first Contingency Management Randomized Controlled Trial ever conducted in South America designed to increase crack cocaine abstinence and treatment retention.

Methods: 48 current crack cocaine dependent individuals were randomized into 2 groups for 12 weeks of treatment. 23 participants were allocated to the Standard Treatment + Contingency Management (STCM) group and 21 participants to the Standard Treatment Alone (STA) group. Both groups were scheduled to provide urine samples thrice weekly. Only STCM participants could earn prizes for being abstinent.

Results: 10 (43.5%) STCM participants achieved a period of 4 weeks or more continued abstinence in comparison to 2 (9.5%) STA participants (odds ratio [OR] = 7.30, p < 0.05); 9 (39.1%) STCM participants achieved a period of 8 weeks or more continued abstinence in comparison to 1 (4.8%) STA participant (OR = 12.85, p < 0.05); and 7 (30.4%) STCM participants achieved all 12 weeks of continued abstinence in comparison to 0 STA participants (OR = 19.54, p < 0.05). 15 (65.2%) STCM participants were adherent to treatment until the 4th week in comparison to 8 (38.1%) STA participants (OR = 3.04, p < 0.05); 15 (65.2%) STCM participants were adherent to treatment until the 8th week in comparison to 5 (23.8%) STA participants (OR = 6.00, p < 0.05); and 13 (56.5%) STCM participants were adherent during all 12 weeks of treatment in comparison to STA participants (OR = 55.285, p < 0.05).

Conclusions: The results from this study support the hypothesis that adding Contingency Management to standard outpatient treatment can significantly improve abstinence and treatment retention, and significantly promote continuous abstinence among crack cocaine dependent individuals in Brazil.


EFFECTS OF PLASMA PREGNANOLONE LEVELS ON STRESS RESPONSE, MOOD AND DRUG CRAVING IN COCAINE-DEPENDENT MEN AND WOMEN.

Verica Milivojevic 9, Helen C. Fox 9, Jonathan Covault 9, Rajita Sinha 10; 11Psychiatry, Yale University School of Medicine, New Haven, CT, 12Psychiatry, University of Connecticut School of Medicine, Farmington, CT

Aims: Fluctuations in progesterone levels during the menstrual cycle affect physiological and subjective effects of cocaine. We previously showed that following drug-cue exposure, cocaine dependent women with high levels of progesterone display lower blood pressure responses and report lower levels of anxiety and drug craving compared to cocaine dependent women with low levels of progesterone. In the current study, we examined the role of the progesterone derived neuroactive steroid pregnanolone on stress arousal, mood and drug craving in cocaine dependent subjects.

Methods: Plasma levels of pregnanolone were measured using GC/MS in 46 cocaine dependent men and women on day 5 of a 7-day treatment regimen of micronized progesterone (15mg/8F) (400mg/day) or placebo (14M / 9F) administered in a double blind, randomized manner. All subjects participated in laboratory sessions on days 5-7 of progesterone/placebo administration in which they were exposed to personalized guided imagery of either a stressful situation, cocaine use or of a neutral setting. Dependent variables of subjective craving, they were exposed to personalized guided imagery of either a stressful situation, cocaine use or of a neutral setting. Dependent variables of subjective craving, mood and plasma HPA axis markers were assessed. Participants were grouped by high or low pregnanolone level and dependent variables compared between progesterone groups.

Results: Progesterone relative to placebo significantly increased pregnanolone levels. At baseline, the high pregnanolone group showed decreased levels of ACTH and NE and higher positive mood. Individuals with high levels of pregnanolone also had a higher ACTH response to neutral and drug-cue imagery and reduced cocaine craving in response to all imagery conditions.

Conclusions: High levels of pregnanolone appeared to normalize basal and stress response levels of ACTH, decrease cocaine craving and improve positive emotion. These findings suggest that pregnanolone plays a role in stress arousal, mood and drug craving in cocaine dependence.

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ASSOCIATION BETWEEN PRESCRIPTION OPIOID USE AND FREQUENT EMERGENCY DEPARTMENT USE.

Sadaf Areli Milani, Hannah Renee Crooke, Linda Cotler, Catherine Woodstock Stiley; Epidemiology, University of Florida, Gainesville, FL

Aims: With emergency department (ED) use on the rise, it is important to understand the association between prescription opioid use and healthcare utilization, which has not been widely described. This analysis will build on the literature to assess the association between past 30-day prescription opioid use and frequent emergency department use in a community sample.

Methods: HealthStreet is a community engagement program at the University of Florida which uses the Community Health Worker Model to assess health problems and concerns of community residents in Northeast and North Central Florida. For this cross-sectional analysis, participants who completed an intake from November 2011 to November 2015 were included (n=6,486). Opioid use was defined as past 30-day prescription opioid use (yes/no). Frequent ED use (FED) was dichotomized as yes/no (2 or more visits or 0-1 visit past 6 months). Using SAS 9.4, multivariate logistic regression was used to estimate the association.

Results: Of the 6,486 respondents, 14.3% were categorized as FED users. Among the FED users, 30.9% reported past 30-day prescription opioid use. In adjusted analyses, past 30-day prescription opioid use was positively associated with FED use. Those who reported past 30-day prescription opioid use had 2.9 times the odds of FED use compared to those who did not report past 30-day prescription opioid use (95% CI=2.5-3.5). Age, race, employment status, educational status, and life time depression were found to be significant variables associated with ED use (p<0.001).

Conclusions: Individuals who reported past 30-day prescription opioid use had significantly higher odds of frequent ED use compared to those who did not. It is important to understand the characteristics of FED users to inform interventions to reduce the burden of unnecessary emergency department visits.

Financial Support: Funding from Clinical and Translational Science Institute (CTSI), funded in part by National Institutes of Health National Center for Advancing Translational Sciences UL1 TR000064, to the University of Florida.

OPIOID USE FOLLOWING AN OUTPATIENT DETOXIFICATION AND INDUCTION ONTO XR-NTX: TESTING THE BLOCKADE AS A PREDICTOR OF RETENTION IN TREATMENT.

Kaitlyn Mishlen 1, Vincent A. Barbieri 1, Maria A. Sullivan 1,2,3, Adam Bisaga 1; 1Substance Abuse, Columbia University/ New York State Psychiatric Institute, New York, NY, 2Alkerms, Inc., Walhamp, MA, 3Columbia University, New York, NY

Aims: Antagonist treatment such as long-acting injectable naltrexone (XR-NTX) is an effective treatment for opioid dependence. XR-NTX blocks the reinforcing effects of opioids if used after detoxification, suggesting that XR-NTX reduces future episodes of opioid use through extinction for individuals who “test the blockade.” The aim of this study is to compare treatment outcomes between individuals who tested the blockade vs. those who remained abstinent after XR-NTX induction.

Methods: Opioid-dependent participants were treated using 3 different outpatient induction schedules: 1. Seven-day buprenorphine taper, 7-day washout and XR-NTX (n=16); 2. One day of buprenorphine, washout day, 5-day ascending oral naltrexone taper and XR-NTX (20mg) 3. One day of buprenorphine, washout day, 3-day ascending oral naltrexone taper and XR-NTX (n=14).

Results: 86 participants were induced onto XR-NTX, 85% received the 2nd injection, and 64% received the 3rd. The sample was primarily white (67%), male (86%), with a mean age of 34 (SD=11), and 49% Rx users. After receiving the first injection of XR-NTX, 30.2% used opioids at least once, of whom 56% used in the first week after detoxification. Participants who tested the blockade were significantly less likely to receive the 2nd injection (68%) vs.non-users (91%; p=0.003). There was no difference in percentage of participants who received the 3rd injection: 80% for non-users vs. 59% for opioid-users during weeks 1-4 (p=0.07). There was no difference in treatment retention: 90% for non-users vs. opioid-users (p=0.44).

Conclusions: The data from this study suggest that testing an opioid blockade does not predict earlier dropout from treatment for participants who have been initiated onto XR-NTX on an outpatient basis. This data also suggest that opioid use after completion of detoxification and initial administration of XR-NTX does predict continued treatment with XR-NTX.

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EMOTION DISREGULATION IN ADULT SMOKERS WITH AND WITHOUT ADHD: BASELINE DIFFERENCES AND ABSTINENCE-INDUCED EFFECTS.

John T Mitton1, F. John McClinton2, Jean Beckham1,3, Richard A Brown4, Scott H Kollins1; 1Psychiatry, Duke University Medical Center, Durham, NC, 2Psychiatry & Behavioral Sciences, Duke University Medical Center, Durham, NC, 3Veterans Affairs Medical Center, Durham, NC, 4University of Maryland, College Park, MD, *University of Texas at Austin, Austin, TX

Aims: Cigarette smoking is robustly associated with ADHD and emotion dysregulation, and it is a behavioral mechanism that may account for this comorbidity. This study examined emotion dysregulation as a maintenance factor for cigarette smoking in ADHD. Emotion dysregulation was predicted to be higher in ADHD smokers at baseline and after 24-hour smoking abstinence in comparison to non-ADHD smokers.

Methods: Smokers with (n=20) and without (n=20) ADHD completed baseline and two experimental sessions (smoking as usual, smoking abstinence). Baseline measures included the Difficulties in Emotion Regulation Scale (DERS) and Regulation of Emotion subscale from the Deficits in Executive Functioning Scale (RE). Experimental sessions also included the modulated Paced Serial Addition Task (mPASAT) and Mirror Tracing Performance Task (mMTPT).

Results: Baseline group differences characterized by greater emotion dysregulation in ADHD emerged on both measures (p’s < .001). Group (ADHD, non-ADHD) x condition (smoking satiated, smoking abstinence) interactions were not significant, although group main effects emerged and indicated higher emotion dysregulation in the ADHD group across all measures (p’s < .001). Main effects also emerged for condition and indicated higher emotion dysregulation following smoking abstinence (p < .05 on the RE, p’s < .10 on the DERS, mPASAT).

Conclusions: These findings were characterized by greater emotion dysregulation in adult smokers with ADHD and during smoking abstinence across groups, suggesting that a malleable behavioral mechanism plays a role in smoking both for those with and without ADHD—such findings can inform treatment development.

Financial Support: This work was supported by NIDA (K23 DA032577 to JTM).

APPLICATION OF SYSTEM DYNAMICS TO INFORM A MODEL OF ADOLESCENT SBIRT IMPLEMENTATION IN PRIMARY CARE SETTINGS.

John T Mittone1, Daniel Lounsbury2, Zhi Li3, Robert P Schwartz2, Jan Gryczynski1, Arethusa Kirk4, Marla Oros5, Colleen Hosler6, Kristi Dusiek1, Barry Brown1; 1Friends Research Institute, Baltimore, MD, 2Albert Einstein College of Medicine, Yeshiva University, Bronx, NY, 3Total Health Care, Baltimore, MD, 4The Mosaic Group, Baltimore, MD, 5College of Global Public Health, New York University, New York, NY

Aims: To apply system dynamics (SD) modeling to better understand the influence of different implementation strategies on the effective implementation of screening and brief intervention.

Methods: Using data from an on-going cluster randomized trial of adolescent SBIRT implementation involving seven federally qualified health center sites we examined the effect of varying quality and frequency of training and trouble-shooting efforts. Simulated over a 20-month intervention implementation period, we used our SD model to compare our ‘Basecase’ (calibrated) outcome (i.e., High quality on-going technical assistance (TA) with quarterly site-specific performance feedback reporting (PFR)) to five strategy scenarios.

Results: Our SD model, supported by qualitative and quantitative data from the study, effectively represented the SBIRT intervention, which was calibrated to reflect actual monthly volume of adolescent primary care visits (N=10,090), screenings (N=5,452), positive screenings (N=1,363), and brief interventions (N=9,49). Decreasing PFR to twice per year (Biannual) as opposed to quarterly, and decreasing quality of TA by 50% served to reduce BI delivery by two-thirds (S1 and S4; 64.7% and 68.1% reduction, respectively, by month 20). Merely reducing the quality of TA by 25% was least detrimental (S2; 36.2% reduction by month 20). Most detrimental to BI delivery were reductions in both TA and PFR (S3 and S5; 78.5% and 89.6% reduction, respectively, by month 20).

Conclusions: SD modeling is a robust method for comparative analyses of implementation strategies. This approach facilitates synthesis of multiple sources of information/data and can foster important insights about how to deploy limited resources for training and support in diverse clinical sites.

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EFFECTIVE CONNECTIVITY OF ATTENTIONAL BIAS IN COCAINE DEPENDENCE.

F Gerard Moeller7,8, Liangshu Ma7,9, Joel Steinberg3,5, James Bjork3,5, Scott D Lane10, P A Narayana3, Thomas Kosten1, Antoine Bechara11, Joy Schmitz, Amanda E Price8, Kathryn A Cunningham12; 1Psychiatry, Baylor, Houston, TX, 2Psychiatry & Behavioral Sciences, University of Texas Health Science Center - Houston, Houston, TX, 3Psychiatry and Psychology, Virginia Commonwealth University, Richmond, VA, 4University of Texas Houston, Houston, TX, 5Center for Addiction Research, University of Texas Medical Branch, Galveston, TX, 6Neuroscience Graduate Program, University of Texas Medical Branch, League City, TX, 7Institute for Drug and Alcohol Studies, Virginia Commonwealth University, Richmond, VA, 8Center for Clinical and Translational Research, Richmond, VA, 9Radiology, Virginia Commonwealth University, Richmond, VA, 10Radiology, UT Houston Medical School, Houston, TX, 11Psychology, USC Brain and Creativity Institute, Los Angeles, CA

Aims: To examine effective (directional) connectivity underlying drug-related attentional bias in cocaine dependent subjects (CDs), we employed dynamic causal modeling (DCM) under the experimental conditions in which attentional bias occurs.

Methods: The DCM analysis was conducted based on fMRI data acquired from 8 CDs and 10 controls while performing a cocaine-stroop task.

Results: In the CDs and during the CW period, seven effective connectivities significantly increased and three effective connectivities significantly decreased. Among them, Left (L) insula to L anterior cingulate cortex (ACC) and L ACC to L medial orbital frontal cortex (MOFC) were the two showing largest change (i.e., increase).

Conclusions: The increased L insula to L ACC effective connectivity could reflect the representations of interoceptive states, a consequence of exposure to cocaine cues, are integrated in ACC. This procedure could result in enhanced attention to CW stimuli and conscious feelings of the urge to use cocaine. The increased L ACC to L MOFC could reflect increased reward related to cocaine use. These connectivities could be used as targets for medication development.

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INCREASED NICOTINE EXPOSURE DECREASES SENSITIVITY TO THE NICOTINE-LIKE EFFECTS OF ACHE INHIBITORS IN MONKEYS DISCRIMINATING NICOTINE.

Megan Jo Moere, L McMahon; Pharmacology, University of Texas Health Science Center, San Antonio, TX

Aims: The acetylcholinesterase (ACHE) inhibitor galantamine was reported to decrease cigarette smoking in alcohol-dependent patients. Galantamine could decrease cigarette smoking by mimicking the effects of nicotine, indirectly stimulating nicotinic acetylcholine receptors (nAChRs) through the inhibition of AChE breakdown. To test this hypothesis, a nonhuman primate model of subjective effects was used to examine the extent to which galantamine shares effects with nicotine and whether its effects would vary according to magnitude of nicotine exposure.

Methods: One group of rhesus monkeys discriminated nicotine (1.78 mg/kg base weight) from saline under a fixed ratio 5 schedule of stimulus-shock termination (Intermittent group). A second group of monkeys discriminated the same dose of nicotine (1.78 mg/kg) from saline, followed by daily nicotine treatment (1.78 mg/kg every 2 h, 8.9 mg/kg/day; Daily group). Test drugs were nicotine, the ACHE inhibitors galantamine and donepezil, and the muscarinic AChR agonist oxotremorine.

Results: In the Intermittent nicotine group, nicotine, galantamine, donepezil and oxotremorine all dose-dependently increased responding on the nicotine lever to a maximum of 100%, 98%, 89%, and 96%, respectively. The ED50 values (95% confidence limits) were 0.41 (0.1-1.74) mg/kg for nicotine, 0.77 (0.46-1.28) mg/kg for galantamine, 0.20 (0.14-0.29) mg/kg for donepezil, and 0.014 (0.008-0.024) mg/kg for oxotremorine. In the Daily nicotine group, nicotine produced a maximum of 98% nicotine lever responding; the ED50 value (95% confidence limits) was 0.68 (0.52-0.89) mg/kg. However, responding on the nicotine lever for galantamine and donepezil in the Daily nicotine group reached a maximum of 44% and 41%, respectively.

Conclusions: These results suggest that ACHE inhibition, through nAChR or mAChR stimulation, results in overlapping subjective effects with nicotine, an effect that is attenuated under conditions of chronic nicotine administration.

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PATIENT PERSPECTIVES OF TRANSITIONING FROM PRESCRIPTION OPIOIDS TO HEROIN AND THE ROLE OF ROUTE OF ADMINISTRATION.
Laura Monica, Shannon Gwin Mitchell; Friends Research Institute, Baltimore, MD

Aims: To explore factors associated with patients’ transition from prescription opioid use to heroin.

Methods: In-depth, semi-structured interviews (n=20) were conducted with buprenorphine patients in an opioid treatment program. Respondents were predominantly White (n=13) and male (n=13), with a range of treatment tenure (4 days to 2 years). Qualitative interviews were inductively coded using Atlas.ti.

Results: A vast majority of respondents in this study (n=15) initiated opioid use with either licit (n=8) or illicit (n=7) prescription opioids (e.g. hydrocodone, oxycodone, morphine). Of these respondents, all but two transitioned from prescription opioids to heroin (n=13). For those respondents who transitioned to heroin, most initiated heroin use intranasally (n=12), after using prescription opioids in the same manner (n=9), but before using heroin intravenously (n=9). Respondents attributed this transition between substances to common explanations, such as “it’s cheaper” and “the same thing as pills.” However, respondents also dispel these myths by describing: 1) heroin quality is always uncertain, often resulting in spending more money over time; 2) dramatic increases in tolerance, resulting in spending more money over time and transitioning to intravenous use; 3) more severe withdrawal symptoms, especially when respondents transitioned to intravenous use.

Conclusions: As the availability of prescription opioids decreases, heroin use and heroin related overdose deaths are increasing. Understanding how route of administration and common myths shape key transition points for opioid users will allow practitioners to develop effective harm reduction and prevention materials that target individuals already using prescription opioids.

Financial Support: None.

MENTHOLATED CIGARETTE USE AMONG AFRICAN AMERICAN WOMEN AND MEN: WHAT’S BLUNT SMOKING GOT TO DO WITH IT?
LaTrice Montgomery; Counseling/Substance Abuse Counseling. University of Cincinnati, Cincinnati, OH

Aims: The present study was designed to examine the relationship between two significant public health problems, blunt and mentholated cigarette use, among African American women and men.

Methods: A secondary analysis of data from the 2013 National Survey on Drug Use and Health was conducted to examine if past month blunt use and age of onset of first blunt use predicted past month mentholated cigarette use among African American women (n = 320) and men (n = 447).

Results: Approximately 43% of past month mentholated cigarette smokers reported smoking blunts in the past month. Logistic regression analyses revealed that past month blunt use did not predict past month mentholated cigarette use among women or men. Further, the age of blunt use onset did not predict past month mentholated cigarette use among men. However, late onset of blunt use among women was associated with a greater probability of past month mentholated cigarette use, (AOR = 1.19, 95% CI = 1.10 - 1.29, p < 0.01).

Conclusions: More research is needed to examine the relationship between blunt and menthol cigarettes, especially among African American women who initiate blunt use as an adult.

Financial Support: N/A

SIMILARITIES ACROSS ADDICTIVE PROCESSES: CROSS-COMMODITY DISCOUNTING OF ALCOHOL, FOOD, AND MONEY.
Lara Moody1, Warren Kurt Bickel2; Virginia Tech, Roanoke, VA, 1Addiction Recovery and Research Center, Virginia Tech Carilion Research Institute, Roanoke, VA

Aims: If self-control deficits among individuals with substance addictions, such as alcohol abuse, are similar to deficits in behavioral addictions, such as excessive eating, is an area of debate in need of study. Here, we use cross-commodity discounting tasks to assess if eating patterns are associated with distinctive patterns of discounting similar to those observed in substance use.

Methods: Two samples completed delay discounting with alcohol and money or food and money (N = 41 and 39, respectively). Participants completed four discounting tasks (i.e., money now, commodity later; money now, money later; commodity now, money later, and commodity now, commodity later) on Amazon’s Mechanical Turk. Area under the curve (AUC) was calculated for each of the delay discounting tasks. Participants also completed the Alcohol Use Identification Test (AUDIT) and the Three-Factor Eating Questionnaire- Revised 18 (TFEQ-R18). Simple linear regressions were used to predict AUC with AUDIT and TFEQ-R18, respectively.

Results: In the alcohol group, higher AUDIT scores were negatively associated with the alcohol now, money later condition (R²= 0.12; p=.021). Controlled and cognitively restrained eating patterns, as calculated from the TFEQ-R18, were positively associated with discounting of food now, money later (R²=0.16; p=.011 and R²=0.10; p=.033, respectively). So too, more controlled eating patterns were positively associated with AUC in the single commodity money now, money later condition (R²= 0.12; p=.002).

Conclusions: Cross-commodity discounting of alcohol showed a pattern where more severe drinking was associated with greater discounting of money when faced with immediately available alcohol. Less controlled and cognitively restrained eating was also associated with greater discounting of food now, money later, and with regards to controllability, money now, money later. Cross-commodity discounting of food and alcohol showed similar patterns. These results suggest there may be similar deficits underlying both substance and behavioral addictions.

Financial Support: VTCRI

THE IMPACT OF DISCRIMINATION ON DRUG DEPENDENCE AMONG GAY AND BISEXUAL MEN: A LOOK AT THE ROLE OF EMOTION DYSREGULATION.
Raymond L Moody1,2, Jeffrey T Parsons1,2, Christian Grov2; 1Psychology, Graduate Center, City University of New York, New York, NY, 2Center for HIV Educational Studies and Training (CHEST), New York, NY

Aims: Minority stress and emotion regulation difficulties have been associated with increased risk for drug dependence. The present study hypothesized that emotion regulation difficulties would mediate the association between gay-related discrimination and drug dependence in a sample of urban gay and bisexual men (GBM).

Methods: A diverse sample of 342 highly sexually active (≥9 partners in previous 90 days) GBM, aged 18-73 (M age=37.27), completed a survey including the Everyday Discrimination Scale, the Difficulties with Emotion Regulation Scale, and the Computerized Diagnostic Interview Schedule (CDIS) on drug dependence.

Results: One-third of the sample met criteria for lifetime drug dependence (33.3%). Path analyses revealed a significant direct effect for gay-related discrimination on drug dependency (β = .159, p = .023). After including emotion regulation in the model a significant direct effect was observed for gay-related discrimination and emotion regulation difficulties (β = .237, p<.001), and for emotion regulation difficulties and drug dependence (β = .192, p = .009). These effects were due primarily to two factors: limited access to emotion regulation strategies and difficulty control impulses. The direct association between gay-related discrimination and drug dependence was not significant (β = .114, p = .115) and a significant indirect effect was observed for gay-related discrimination on drug dependence through emotion regulation difficulties (β = .046, p = .024).

Conclusions: These findings support the hypothesis that experiences of gay-related discrimination are associated with increased risk for drug dependence through difficulties with emotion regulation. Further, data suggest this association is driven by difficulties with controlling impulses in the presence of emotional distress and limited access to emotion regulation strategies. Emotion regulation therapies may buffer the impact of discrimination on drug dependence among GBM.

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CUE-INDUCED COCAINE CRAVING INCREASES WITH ARIPIPRAZOLE TREATMENT IN METHADONE-MAINTENANCE PATIENTS.

Landin-Robinett, M1; Morley-Backman2; Phillips3; William J Kowalczyk1; Udi Ghizaz4; David H Epstein5; Kenzie L Preston5; 1NIDA-IRP, Baltimore, MD, 2NIDA, Baltimore, MD

**Aims:** Aripiprazole, a partial D2 agonist, has been proposed as a potential treatment for psychostimulant addiction. In the rat reinstatement model of relapse, after psychostimulants are no longer available, it blocks cued or drug-primed psychostimulant seeking, suggesting a benefit. However, in humans who have not yet become abstinent from psychostimulants, it may increase ongoing use. We hypothesized that it would prevent relapse specifically in humans who had achieved abstinence.

**Methods:** We employed a randomized double-blind clinical trial for patients in an outpatient methadone-maintenance clinic with two treatment groups: aripiprazole (15 mg oral daily; n=9) and placebo (n=9). To establish abstinence prior to aripiprazole induction, contingent vouchers were given for each cocaine-negative urine specimen during the first 12 weeks. Participants who were abstinent from cocaine during weeks 11 and 12 were randomized to receive aripiprazole or placebo in weeks 13 through 27. Participants reported stress levels and drug use via Ecological Momentary Assessment (EMA), in which participants carried PDAs to report activities and moods.

**Results:** Due to slow enrollment and a relatively low rate of initial abstinence (only 18/40 of the enrolled participants met the abstinence criterion for randomization), we ended the study after enrolling 40 participants. There was no difference between treatment groups in time to relapse or in the number of cocaine-negative urines. EMA reports of cocaine craving were greater in participants who received aripiprazole (17.29% vs. 7.79%, F=7.89, p=0.005) and in those who reported real-time exposure to cocaine-related cues (46.61% vs. 11.28%, F=14.41, p<0.0001). The effect of cues on craving was more pronounced in the aripiprazole group (aripiprazole, 73.25% vs. placebo, 21.77%; F=19.42, p=0.005).

**Conclusions:** Aripiprazole is not likely to be an effective treatment for prevention of cocaine relapse, and may in fact increase cue-induced craving that could result in relapse.

**Financial Support:** NIDA, IRP

IS PARENTING REALLY THAT STRESSFUL? DAILY BEHAVIORAL STRESS IN DRUG USING PARENTS COMPARED TO NON-PARENTS.

Angela Moreland1; Delisa Brown2; Nate Baker2; Aimee McAtee-Clark2; 1Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, SC, 2Medical University of South Carolina, Charleston, SC, 3Howard University, Washington, DC

**Aims:** Evidence indicates that both acute and chronic stress play a critical role in drug use, with particular emphasis on the negative impact of behavioral stress (Sinha, 2000). Less literature has examined the role of stress caused by parenting – which is surprising given the cumulative negative effect of seemingly minor stressors, such as those related to parenting (Fox et al., 2010). This study hypothesized that: (1) drug using parents will report higher baseline levels of behavioral stress than non-parents; and (2) female parents will indicate higher levels of behavioral stress than non-parents.

**Methods:** Participants (n=115) were collected in two distinct medication/lifestyle studies in cocaine dependent participants. Data collection involved identifying all cocaine dependent study participants' parental status, age(s) of their child or children, and level of daily behavioral stress (Daily Hassles Scale).

**Results:** Female parents reported significantly higher DHS total scores as compared to male parents (75.5±8.2 vs. 38.3±5.6; t110=3.74; p<0.001) while female and male non-parents were not appreciably different from one another (41.6±13.1 vs. 45.1±7.0; t110=0.23; p=0.819). There were no noted main effects or confounding effects of race, marital status, or study group on the relationship between parental status with gender on DHS total scores (all p>0.25).

**Conclusions:** Results suggest that, for drug using parents, females may be impacted more significantly by daily behavioral stressors in their environment than their male counterparts. Further research is necessary to increase generalization and knowledge regarding this important link, as well as to examine additional factors that may be involved.

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ONGOING SURVEY OF ALTERNATIVE NICOTINE AND TOBACCO USE AMONG CARDIAC PATIENTS.

Zachary H Morford1; Diann Gaallem1; Rebecca Elliott1; Philip Ades2; Stephen Higgins3; 1University of Vermont, South Burlington, VT, 2University of Vermont, Burlington, VT

**Aims:** The use of nicotine and tobacco products among cardiac patients is of interest because these individuals are often motivated to quit smoking following a serious event, however smoking cessation remains a critical challenge. Patients may switch to one or more noncombustible product following their event if they are unable to completely abstain from nicotine.

**Methods:** We have surveyed inpatient cardiac patients who had a myocardial infarction or heart surgery across three sites in Vermont, Texas, and Kentucky. Participants were asked a series of questions regarding their past and current tobacco andnicotine use and their knowledge of alternative (i.e., noncombustible cigarette) tobacco products. All patients surveyed will also be given the same survey over the phone three months after the initial survey.

**Results:** Initial data from 40 participants have been collected at the University of Vermont. Thus far patients have been mostly white (94.9%) and male (65%), the median age of the group thus far is 56.5 years of age, and most participants reported that they plan on quitting smoking within the next 30 days (88.2%). Most participants have heard of electronic cigarettes (95.0%) and chew tobacco (92.5%), but fewer participants had heard of snus (30%) or dissolvables (7.5%). Some participants reported using electronic cigarettes (27.5%); cigars, little cigars, or cigarillos (27.5%); smokeless tobacco (10%); snus (2.5%); and bidi or clove cigarettes (2.5%) at least once a year before taking the survey.

**Conclusions:** While we have data preliminary data regarding baseline levels of combustible cigarette and alternative tobacco use, we have yet to know how patterns of use change as a function of cardiac events, and whether such changes are predicted by other factors such as age or education level. Cardiac patients switching to alternative unregulated nicotine products instead of completely abstaining from nicotine use could have important regulatory implications.

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ALEXITHYMIA AND ADDICTION: A REVIEW AND PRELIMINARY DATA SUGGESTING NEUROBIOLOGICAL LINKS TO REWARD/Loss PROCESSING.

Kristen Paula Morie1; Sarah W Yip2; Charla Nich1; Karen Hunkele3; Kathleen Carroll4; Marc N Potenza5; 1Diagnostic Radiology, Yale University, New Haven, CT, 2Psychiatry, Yale University, New Haven, CT, 3Connecticut Mental Health Center, New Haven, CT, 4Yale School of Medicine, New Haven, CT

**Aims:** Aims and Background: Alexithymia, characterized by impairments in emotional awareness, is common among individuals with substance use disorders. Although impairments in emotional processing have been linked to brain function underlying reward and loss processing and such brain functions have been found to be abnormal in individuals with addictions, the relationship between alexithymia and the neural correlates of reward and loss processing in drug addictions has yet to be examined.

**Methods:** Twelve methadone-maintained individuals with opioid and cocaine dependence completed the Toronto Alexithymia Scale (TAS-20) upon treatment intake and participated in fMRI scanning during performance of a Monetary Incentive Delay (MID) task.

**Results:** Whole-brain correlational analyses revealed positive associations between scores on the TAS-20 and brain activations during prospect phases (A1 phase of the MID task) in regions including the thalamus, midbrain and middle and inferior frontal gyri during reward prospect and in midbrain and middle and inferior frontal gyri during loss prospect (FWE < .01).

**Conclusions:** The findings suggest that alexithymia is related to the neural correlates of reward and loss processing among cocaine-dependent methadone-maintained individuals. This interplay between reward processing and emotional processing difficulties could have implications for treatment response.

**Financial Support:** The primary source of funding for this work was the National Institute on Drug Abuse grants R37-DA 015969 and P50-DA02241. Clinicaltrials.gov ID number NCT00350610.
GENDER DIFFERENCES IN THE EFFECTS OF CONCURRENT DRUG USE ON THE RISK OF HEROIN RELAPSE.

Andrew L. Moskowitz\textsuperscript{a, b}, Christine E. Grelle\textsuperscript{c}, \textsuperscript{a}Psychology, UCLA, Los Angeles, CA, \textsuperscript{b}Integrated Substance Abuse Programs, UCSD, Los Angeles, CA

\textbf{Aims:} This study aims to determine whether use of alcohol and other drugs increases risk of relapse to heroin use among individuals in a long-term follow-up and gender differences in these relationships.

\textbf{Methods:} The study sample was originally sampled from methadone maintenance treatment programs in California in the 1980s. A follow-up was conducted in 2005/06 of 343 participants (44.3% female; 70.6% of those not deceased in the original cohort). Average age at follow-up was 58.3 (SD=4.9) for males and 55.0 (SD=4.1) for females. A detailed timeline of periods of drug use and abstinence was obtained at the follow-up. Fruity analyses with random effects for persons were conducted to examine the effects of use or abstinence from marijuana, alcohol, and other drugs on the risk of relapsing to heroin. First, separate models examined the effect of each substance on heroin use were conducted by gender; then a final combined model examined the effects of all substances on relapse to heroin by gender.

\textbf{Results:} There was a significant interaction between gender and use of marijuana on heroin use (b=.59, X\textsuperscript{2}=19.08, p=.0001). The risk of relapsing to heroin was reduced by 38.7% in men who abstained from marijuana compared to those who were using (HR=.61, p<0.0001). However, there was no difference in risk of relapse to heroin for women associated with marijuana use. With regard to alcohol, abstinence increased the risk of relapse to heroin for both men (HR=5.26, p<0.0001) and women (HR=7.10, p<0.0001), with a greater effect among women. On average, those who were abstinent from other drugs were 14% less likely than others to relapse to heroin (HR=0.864, p<0.02); however, there was no gender difference. These results were consistent with the final combined model accounting for the effects of use of any substance by gender.

\textbf{Conclusions:} Complex patterns of marijuana and alcohol use and their relationship with relapse to heroin use were observed over a 25-year follow-up study with differential patterns by gender.

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FACTORS ASSOCIATED WITH COCAINE USE IN PREGNANCY.

Regina Melendez Nagarajan, Xiaoxuan Cai, Cristine Hine, Brian Merry, Kimberly Ann Yonkers; Psychiatry, Yale University, New Haven, CT

\textbf{Aims:} To identify correlates of heavy and ongoing cocaine use in pregnancy.

\textbf{Methods:} We analyzed retrospective data from 50 postpartum women with a history of cocaine use or dependence who participated in a treatment trial for postpartum cocaine use. Study variables included amount and frequency of cocaine use 6 months prior to pregnancy, age of onset of use, comorbid mental illness, other substance use, trauma, and social support history. Data were analyzed using GLMM Negative Binomial Regression and Chi-Square models.

\textbf{Results:} The strongest correlate of ongoing cocaine use in pregnancy was the frequency of use 6 months prior to pregnancy. Daily cocaine use before pregnancy was associated with a 3.16 increase in the degree of cocaine use in pregnancy, compared to monthly cocaine use (SD=0.54, p<0.0001) on a scale of 0 to 8 measuring frequency of use. Weekly cocaine use prior to pregnancy was associated with a 2.7 increase in amount of cocaine use (SD=0.54, p<0.0001). Any marijuana use in pregnancy was associated with a 0.86 increase in frequency of cocaine use (SD=0.24, p=0.0008), and alcohol use a 0.82 increase in frequency (SD=0.23, p=0.0008). Older age at onset of cocaine use and higher social support scores were both significant, but weakly associated with heavier cocaine use in pregnancy. Having a comorbid mental illness was not statistically significantly associated with greater cocaine use in pregnancy but was weakly associated with achieving sustained remission at a later stage in pregnancy (p<0.05). The strongest factor associated with earlier (within the first trimester) sustained remission through pregnancy was co-habiting with the child (p<0.0001).

\textbf{Conclusions:} This study identified several correlates of cocaine use in pregnancy and some factors associated with time to remission. These results may guide clinicians in improving screening and directing resources for education of pregnant, cocaine using women.

\textbf{Financial Support:} Grants from the US National Institute on Drug Abuse (R21-DA025914, P50-DA00241, and K12-DA000167) and the Veterans Health Administration Mental Illness Research, Education and Clinical Center (West Haven, CT, USA).

INITIAL ASSESSMENT OF SMOKING STATUS OF PREGNANT WOMEN ENROLLED IN A CLINICAL TRIAL FOR SMOKING CESSATION.

Taritana Nanovskayev\textsuperscript{1}, Valentina M Fokin\textsuperscript{2}, Holly West\textsuperscript{2}, Cheryl Oncken\textsuperscript{2}, Mahmoud S Ahmed\textsuperscript{4}, Gary Hankins\textsuperscript{1}; \textsuperscript{1}OB/GYN Maternal Fetal Medicine, University of Texas Medical Branch, Galveston, TX, \textsuperscript{2}UTMB, Galveston, TX, \textsuperscript{3}University of Connecticut Health Center, Farmington, CT

\textbf{Aims:} A pilot double-blind placebo controlled clinical trial for the safety and efficacy of bupropion as an aid for smoking cessation during pregnancy along with behavioral counseling is underway at UTMB. The aim of this work is to assess the validity of self-reported smoking status by its confirmation with biochemical markers at time of enrollment.

\textbf{Methods:} The criteria for enrollment were: >18 years of age, at least 13 weeks of gestation, self-reporting of smoking and a desire to achieve cessation. The biochemical markers were exhaled carbon monoxide (CO) and urinary cotinine. The cut off points to discriminate smokers from non-smokers were 4 ppm for exhaled CO and 50 ng/ml of urinary cotinine.

\textbf{Results:} To date, sixty-two pregnant smokers were qualified to enroll in the clinical trial. At enrollment, the mean maternal age was 26 ± 6 years, mean gestational age was 19 ± 5 weeks. Thirty eight (61.3%) participants were white/non-hispanic; 31 (50%) had yearly income <10,000$; 25 (40.3%) had a high school diploma or GED, 27 (43.5%) were unemployed, 54 (87.1%) were Medicaid recipients. In fifty five (89%) participant’s self-reported smoking was confirmed by the two biochemical determinations. However, in 5 (8%) subjects self-reported smoking was confirmed by one marker only and both biochemical markers were negative in 2 (3%) of the subjects.

\textbf{Conclusions:} Self-reported smoking was a reliable parameter for the majority of the patients enrolled in the study. However, 3% of the patients misreported smoking. In 8% of the patients the discrepancy observed between one of the biochemical marker and self-reported smoking could be explained by one or more of the following: the period of time since last cigarette was smoked, inter-individual variability in nicotine metabolism as well as the smoking manner.

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USED SYRINGES ANALYSIS: A NEW APPROACH TO BETTER-KNOW WHAT IS INJECTED.
Thomas Nefâz1,2,3, Sara Kartelâk1, Yves Lev1, Vincent Thibaul1, Catherine Duplade-Gauchy1, Jean-Louis Bara1,2, SAFE association, Paris, France, 3Univ Paris Sud, Châtenay-Malabry, France, 4Virology Laboratory, Hôpital Pitîé-Salpêtrière, Paris, France

Aims: Real-time knowledge about the evolution of psychoactive substances injected in a given territory is important to better target support methods for drug users. We conducted a study for the analysis of chemical residue in used syringes and exposure to viruses.

Methods: 5500 syringes were collected in specialized bin container between 2010 and 2014. A method of sample preparation and analysis by HPLC - mass spectrometry has been developed to analyze the content of these syringes. In addition we tested for HIV, HCV and HBV on used syringes.

Results: During 2014, the study found significant changes in the variety of injected substances with, in particular a reduction in heroin injection and increasing injection of cocaine, morphine and new psychoactive substances (NPS). Consumption of NPS seems to increase on the regional territory of Paris with the exception of some sites where cocaine use is still very high. Year 2012 marked the emergence of NPS and the results of analyses of 2014 testify to the spreading of their consumption. The study also highlights a high level of poly-consumption and reuse and/or sharing practices of needles. Analyses revealed that some syringes were used to inject at least 7 products, including NPS. Moreover, another study has been conducted, researching of HIV, HCV and HBV on used syringes. It was performed on 276 syringes collected on four different sites. The results demonstrate that the syringes contaminated with HCV are more numerous than those infected with HIV. Some sites are more affected than others by contamination with HCV.

Conclusions: Chemical and virological analyzes have demonstrated that monitoring of IDU practices and uses is possible. This monitoring may help better understand the uses and have a quicker and more targeted harm reduction response.

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PHYSIOLOGICAL AND PHARMACOKINETIC EFFECTS OF E-CIGARETTE TYPE EXPOSURE TO DELTA-9- TETRAHYDROCANNABINOL IN RATS.
Jacques D Nguyen1, Sherry M Austin1, Sophia Vandewater1, Yananel Grant1, David G Stouffer1, Maury Cole1, Loren Parsons1, Michael A Taffe1; 1CNAD, The Scripps Research Institute, San Diego, CA, 2La Jolla Alcohol Research Inc., La Jolla, CA

Aims: The increase in availability of electronic cigarettes (e-cigarettes) for delivery of nicotine has led to the adaptation of these devices for the delivery of marijuana. Although there have been studies investigating the effects of intrapulmonary delivery of Delta-9-tetrahydrocannabinol (THC), no studies have investigated the effects of e-cigarette type exposure in rodents. The goal of this study was to determine if vapor delivery of THC using e-cigarette technology would produce cannabinoid-typical effects observed in rodents using other routes of administration.

Methods: Male Sprague Dawley and Wistar rats received an injection of THC (0.3-10 mg/kg, i.p.) or intravenous infusion (0.3-10 mg/kg, i.v.) or were exposed to vaporized THC or crude marijuana extract in propylene glycol (PG) vehicle (200mg/mL and 400 mg/mL respectively; 4 puffs per 5 min for 10-40 min). Rats were tested for changes in spontaneous locomotor activity, body temperature and nociception, and plasma THC content was analyzed using fast liquid chromatography/mass spectrometry (LC/MS).

Results: Vapor exposure to THC or crude extract significantly reduced activity and body temperature up to 180 min following vapor initiation, with similar magnitudes of effect compared to intraperitoneal or intravenous route of administration. Vapor-induced reductions in body temperature were partially attenuated by pre-treatment with SR131716 (4 mg/kg, i.p.). Tail flick latency was assessed using a hot water bath (52°C), and results showed increased latency up to 60 min post-vape initiation. Plasma THC levels following a 10mg/kg intraperitoneal injection were similar to levels produced by 30 min of inhalation exposure to THC in PG.

Conclusions: Our results demonstrate that intrapulmonary delivery of THC using e-cigarette type devices produces physiological effects, and this study validates this novel method of intrapulmonary THC delivery in rats.

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A SYSTEMATIC REVIEW OF OPIOID AGONIST TREATMENTS FOR PHARMACOECONOMIC OPINION DEPENDENCE.

Suzanne Nielsen, Brony Laranca, Louise Degenhardt, Linda Gowing, Nicholas Lintzeris, University of Adelaide, SA, Australia, 2South Eastern Sydney Local Health District, Sydney, NSW, Australia, 3UNSW Australia, Sydney, NSW, Australia, 4University of Sydney, Sydney, NSW, Australia

Aims: To conduct a systematic review to examine the evidence for agonist pharmacotherapy treatments for pharmacoeconomic opioid dependence.

Methods: The search was conducted using the CENTRAL, PubMed, EMBASE:ISI Web of Science; and PsyCINFO. We included randomised controlled trials that compared: 1) Full opioid agonists versus different full opioid agonists or partial opioid agonists for maintenance treatment; 2) Full or partial opioid agonist maintenance versus placebo, detoxification only or psychological treatment (without opioid agonist treatment). Analyses used standard Cochrane methodological procedures.

Results: We identified six randomised controlled trials (607 participants). We found moderate quality evidence of no statistically significant difference in self-reported opioid use (RR 0.41, 95%CI 0.05 to 3.27) or opioid positive urine drug tests (RR 0.81, 95%CI 0.56 - 1.18) between buprenorphine and methadone. There was low quality evidence of no difference in retention between buprenorphine and methadone (RR 0.63, 95%CI 0.30 to 1.31). There was low quality evidence favouring maintenance buprenorphine maintenance over detoxification or psychological treatment in terms of lower opioid use and less drop-out from treatment (RR 0.33, 95%CI 0.23 to 0.47).

Conclusions: There is evidence supporting the use of maintenance agonist pharmacotherapy treatment for pharmacoeconomic opioid dependence. The current evidence suggests methadone and buprenorphine are equally effective. Maintenance treatment with buprenorphine appears more effective than detoxification and/or psychological treatments.

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MARIJUANA DOESN'T COUNT: IS OBJECTIVE SCREENING IN OBSTETRICS CLINICS NEEDED TO IDENTIFY AND ASSIST PREGNANT MARIJUANA USERS?

T Northrup, Michelle R Klawans, Yolanda Villarreal, Pamela Berens, Angela Stotts, Family and Community Medicine, University of Texas Health Science Center at Houston, Houston, TX, 2OB/GYN, University of Texas Health Science Center at Houston, Houston, TX

Aims: Marijuana use in pregnancy has been linked to adverse birth outcomes (e.g., small for gestational age). Unfortunately, rates of marijuana use are rising. Screening and brief intervention in the prenatal clinic are recommended, yet reliance on patient reports for screening may be inadequate; marijuana self-disclosure rates among pregnant women are unknown. The aim of this quality improvement project was to determine the accuracy of marijuana self-disclosure among pregnant women in an urban, obstetrics clinic.

Methods: To date, 147 consecutive OB patients completed both a drug use self-report form and a UDS during their initial intake visit.

Results: The sample was 62% Black; 18% White; and 15% Latino; mean age was 25.7 (SD = 5.3). Few women were married (30%); the majority of pregnancies were unplanned (68%) and 75% reported using no birth control prior to pregnancy. Almost 11% of women tested positive for marijuana, with 1.5% positive for opioids and 1% positive for cocaine. Of the pregnant women testing positive for marijuana, 62% reported they had never used it. Relative to non-users, a higher proportion of marijuana users reported their current pregnancy to be unplanned (66% vs. 75%) and reported more pregnancies overall (2.6 vs. 3.3).

Conclusions: Data highlight the high risk for substance-exposed pregnancies in this population and the failure of current self-reported screening methods to identify pregnant drug users. While legal implications need to be evaluated, clinics should consider routine objective screening to identify pregnant women in need of brief or more extensive intervention.

Financial Support: UTHealth Family Medicine and OB/GYN Departments.

NALTREXONE REDUCES APPETITIVE AND CONSUMMATORY RESPONSES TO ALCOHOL IN A SEX-DEPENDENT MANNER IN RATS.

Steven J Nieto, Kevin J Winoske, Threse A Kosten, Psychology, University of Houston, Houston, TX

Aims: A wealth of animal studies provide support for the use of the mu-opioid antagonist, naltrexone, for the treatment of alcohol use disorders (AUDs). Although clinical studies show efficacy of naltrexone for AUDs, the data on whether it is differentially effective in males and females is mixed. Moreover, there are sex and gender differences in mu-opioid system that suggest naltrexone may alter alcohol self-administration differentially by sex in animals. The present study tested whether sex differences exist in the ability of naltrexone to decrease consummatory (e.g., numbers of reinforcers delivered) and appetitive behaviors (e.g., head entries into the dipper area) in an operant alcohol self-administration paradigm.

Methods: Separate groups of male and female Sprague-Dawley rats (n’s=6-11) were trained to lever press for either ethanol (10%: EtOH) or sucrose (3%; SUC) in standard operant chambers under a fixed-ratio 2 (FR2) schedule of reinforcement. The effects of a broad range of naltrexone doses (0, 0.1, 0.3, 1, 3, & 10 mg/kg) were assessed in tests conducted under a progressive ratio schedule of reinforcement.

Results: In males, naltrexone administration led to dose-related decreases in both appetitive and consummatory behaviors in the EtOH group, but not in the SUC group. Naltrexone was more efficacious for appetitive vs. consummatory behaviors. For example, numbers of active lever presses were significantly decreased at doses of 1 mg/kg and higher whereas consummatory behaviors were significantly reduced only at the 10 mg/kg in the EtOH group. Naltrexone administration did not significantly alter these behaviors in the female EtOH or SUC group.

Conclusions: Together, our findings suggest that naltrexone decreases appetitive and consummatory behaviors for alcohol only in male rodents. These findings highlight the need for further investigations assessing the effectiveness of pharmacological treatments for alcohol use disorders in both genders.

Financial Support: This work was supported by NIAAA U01-AA013476.

LINKING ANIMAL MODELS TO HUMAN SELF-ADMINISTRATION PRACTICES AMONG MEDICAL CANNABIS PATIENTS: A DAILY DIARY STUDY.

Scott P Novak, Nick Peiper, Jenny Wiley, Behavioral Epidemiology, RTI International, Research Triangle Park, NC

Aims: Surprisingly little is known about the self-administration practices among patients using cannabis for medical purposes. Information is lacking on the diversity of products (e.g., combustible/edible), strength (e.g., THC, CBD), and dosage. Our best theoretical models are derived from animal studies, namely continuous reinforcement paradigms that identify variability in consumption. Yet, data are lacking on how well this paradigm parallels human behavior.

Methods: In 2014, medical cannabis patients (n=50) were recruited in California (ages 18+) to complete a baseline survey and then a paper diary capturing specific product use and motivations for use throughout each day. Latent trajectory analysis was used to compare empirical subtypes to animal models of addiction.

Results: Five classes were extracted, two of which were stable dosing groups: one using multiple (5 or more) combustible products per day (10% of users) and another (15%) mixing in combustible products and vaporizers. Three classes, representing the majority of the sample, were characterized by variable dosing and product selection. Edibles were used rather infrequently (10% of the patients), largely as a means to consume in places where use is stigmatized. Income was the strongest predictor of trajectory classes (O.R.s 1.9-3.9) involving non-stable consumption. Qualitative interviews suggested that pay periods were important drivers of usage frequency, and additional analyses of the diary data showed frequency was highest in the 48 hour period on dates commonly associated with pay periods (e.g., 48 hours starting from the 1st to the 2nd of the month, 15th to the 16th of month). Approximately 25% of the events were used exclusively to self-treat pain, the rest being mixed (53%) or exclusively euphoria/relaxation (22%).

Conclusions: The ability to pay for cannabis appeared to a major driver of consumption among pain patients. The natural environment’s role in consumption has important implications for testing animal models of addiction.

Financial Support: NIDA R01 DA038427 PII Novak
THE RESEARCH IN ADDICTION MEDICINE SCHOLARS PROGRAM – DEVELOPING RESEARCHERS IN ADDICTION FELLOWSHIPS.

Patrick O’Connor1, Judith I Tsui1, Danna Gobel1, Belle Brett1, Carly Bridden1, Jeffrey H Samet1,2; 1Boston Medical Center, Boston, MA, 2Internal Medicine, University of Washington School of Medicine, Seattle, WA, 3Yale University, New Haven, CT, 4Psychiatry, Yale University School of Medicine, New Haven, CT.

Aims: Addiction physician investigators are a limited resource. Given the creation of the American Board of Addiction Medicine and new Addiction Medicine fellowship programs, efforts to develop addiction physician researchers gained added urgency. The Research in Addiction Medicine Scholars (RAMS) Program was created to provide an infrastructure to supplement the training and mentoring of Addiction Medicine and Addiction Psychiatry fellows from North America so as to develop a cadre of addiction physician clinical investigators.

Methods: The RAMS Program began in 2012 with NIDA support and aims to develop skills in addiction research among physicians from addiction fellowship programs. Annual recruitment seeks 5 scholars, and in the first 4 years, 19 fellows were selected (11 Addiction Medicine and 8 Addiction Psychiatry). The 2-year program provides mentoring, training, and funds, all to supplement the development of research projects and training for scholars to advance on their path to a clinical research career. Scholars participate in two annual retreats over each of 2 years in Boston and at the CPDD conference. These include group seminars, one-on-one mentoring, and workshops on research methods and career development paths. The program also includes monthly faculty or scholar-driven webinars.

Results: To date, the 19 scholars are from 9 institutions. All admitted scholars have completed the program. Of the first cohort (n=4) of RAM Scholars, all accepted academic faculty positions. Scholars have published over 20 publications since enrolling in the program and are recipients of four grants.

Conclusions: The Research in Addiction Medicine Scholars (RAMS) Program is positioned to make important contributions to the development of the next generation of addiction physician researchers.

Financial Support: Supported by R25DA033211

NICOTINE WITHDRAWAL INDUCES NEURAL AND BEHAVIORAL DEFICITS IN REWARD PROCESSING.

Jason Oliver1, David E Evans2, Merideth Addicott3, Thomas Brandon4, David J Drobes2; 1Psychiatry and Behavioral Sciences, Duke University, Durham, NC, 2Health outcomes and behavior, Moffitt Cancer Center, Tampa, FL.

Aims: The present study examined the effects of nicotine withdrawal on neural and behavioral responses to rewards in humans. Despite a substantial body of literature demonstrating these effects in animal models, little human research has been conducted on the topic.

Methods: Heavy smokers (N = 48) attended two laboratory sessions following overnight abstinence. Participants smoked three nicotinized or denicotinized cigarettes at each session and completed a reward prediction task while their neural activity was recorded. During the task, participants were presented with trials consisting of a predictor stimulus and a reward-determining stimulus in varying combinations, resulting in four different trial types: 1) Unpredicted non-rewards; 2) Predicted non-rewards; 3) Predicted rewards; and 4) Unpredicted rewards. The task is designed to elicit a medial frontal negativity.

Results: Nicotine withdrawal decreased the amplitude of the medial frontal negativity across all trial types (p < .001). Time to initiate the next trial was enhanced following unpredicted non-rewards during withdrawal, relative to satiation (p < .001). Responses to unpredicted rewards during withdrawal were slower among those with high nicotine dependence (p < .001) or neuroticism (p = .004) and faster among those high in extraversion (p < .001) or behavioral inhibition (p < .001).

Conclusions: Results support the presence of withdrawal-induced deficits in reward processing. Behavioral manifestations of these deficits relate to a number of clinically-relevant individual differences. Future research should explore factors that mitigate these effects as potential smoking cessation interventions.

Financial Support: American Heart Association (13PRE146600076), a student grant from the Association for Psychological Science, a dissertation research award from the American Psychological Association and a graduate research scholarship from the American Psychological Foundation.

WITHIN-SUBJECT EVALUATION OF INTERIM BUPRENORPHINE VS. WAITLIST ON ILLICIT OPIOID USE.

Taylor A Ochalek1, Jacob D Pusey2, Bryce Hruska1, Sarah Hughes Heil1, Stephen Hearn1, Gail Rose1, Brett A More1; 1Addiction Medicine, VA Boston Healthcare System, Somerville, MA, 2Psychiatry, The University of Vermont, Burlington, VT.

Aims: Despite the effectiveness of agonist maintenance for opioid dependence, patients can remain on waitlists for months before treatment is available. We are conducting a randomized controlled trial evaluating Interim Buprenorphine Treatment (IBT) vs. continued waitlist control (WLC) for waitlisted opioid abusers. IBT includes buprenorphine dispensed via computerized device (Med-O-Wheel Secure, Addoz, Finland), daily monitoring via a phone-based Interactive Voice Response (IVR) system and IVR-generated random call-backs. WLC participants who did not enter treatment by Week 12 are offered an opportunity to cross over to IBT, permitting an additional within-subject evaluation of IBT effects. This presentation will focus on this within-subject comparison of participants originally randomized to WLC who then cross over to receive the full IBT intervention.

Methods: Thus far, 23 opioid-dependent adults have been randomized to WLC. Of those, 14 have crossed over at Week 12 to receive IBT. We examine participants’ biochemically-verified illicit opioid abstinence and self-reported IV opioid use during each phase. We hypothesize that illicit opioid abstinence will be greater during participants’ IBT vs. WLC phase.

Results: On average, participants are submitting 0% illicit opioid negative urine specimens during their initial WLC phase, followed by 45% during IBT crossover. Self-reported IV opioid use averages 7±13.0 days out of the past 30 during WLC vs. 0.2±0.45 during IBT. Outcomes from the full WLC-to-IBT crossover sample will be presented at the June meeting.

Conclusions: Providing Interim Buprenorphine Treatment with minimal other support to waitlisted patients may significantly reduce individual and societal risks during delays to comprehensive opioid treatment, even among those originally randomized to a waitlist control condition.

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IMPROVING BUPRENORPHINE TREATMENT OUTCOMES WITH THE L-TYPE CALCIUM CHANNEL BLOCKER ISRADIPINE.

Alison Oliveto1, Janette McGaugh1, J Benjamin Guise1, Jeff D Thostenson2, Michael J Mancino3; 1Psychiatry, University of Arkansas for Medical Sciences, Little Rock, AR, 2Biostatistics, University of Arkansas for Medical Sciences, Little Rock, AR.

Aims: The efficacy of the L-type calcium channel blocker isradipine (ISR) to improve outcomes during brief buprenorphine (BUP) stabilization and detoxification was explored in an 8-wk, double blinded, placebo (PLA) controlled, randomized, pilot outpatient trial.

Methods: Opioid-dependent subjects were randomized by sex, primary opioid of abuse, baseline THC use and baseline opioid withdrawal score to receive either ISR or PLA, inducted onto BUP (12 mg/day) on days 1-2 of wk 1 and inducted onto ISR (up to 10 mg BID) or PLA during wks 1-4. The 10-day BUP taper occurred during wks 5-6 and the ISR taper occurred during wks 7-8. Assessments included urine drug screens, opioid withdrawal scales, craving measures, and vital signs.

Results: Thus far, 25 subjects (52% Male, 96% Cau, mean age 31.3 yrs) have been enrolled, with 15 completing the ISR induction and 6 completing the detox. Six subjects were discharged due to vitals being outside of ISR dosing parameters. Baseline characteristics, retention and opioid withdrawal ratings did not differ between groups. Analyses of data during BUP/ISR induction (weeks 1-4) indicate that ISR significantly decreased illicit opioid-positive urines (t=-2.42, p=0.017) and tended toward lower craving intensity (t=-1.70, p=0.09) over time relative to PLA. Vitals taken pre and 2 hrs post the first scheduled ISR dose and at each scheduled dose change increased medication group, such that post-blood pressure measures generally decreased and increased relative to pre-blood pressure measures in the ISR- and PLA-treated subjects, respectively (p<0.05).

Conclusions: These preliminary results suggest ISR may improve treatment outcomes during BUP stabilization, but its effectiveness is likely limited by the low vital signs typically observed in this population that would contraindicate its use.

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CRAVING AND ANXIETY RESPONSES TO LABORATORY STRESS FOR INDIVIDUALS SEEKING TREATMENT FOR CANNABIS USE DISORDER: A PILOT STUDY.

Matthew Olonoff1, Martina Pavlicov2, Suzanne Evans2, John J Mariani3, Jean Choi1, Daniel J Brooks1, Amy Mahony3, Frances R Levin2; 1Substance Abuse, NYSPI, New York, NY, 2Columbia University, New York State Psychiatric Institute, New York, NY, 3Columbia University, New York, NY

Aims: Research shows that some individuals with cannabis use disorder (CUD) have an increased desire to use following a stressful event. The goal of this study is to examine the characteristics of anxiety that exist in individuals seeking treatment for CUD. We hypothesize that for individuals seeking treatment for CUD, anxiety and concomitant cravings for cannabis would be increased and correlated following stress exposure.

Methods: Individuals currently enrolled in a randomized clinical trial for treatment of CUD were asked to participate in a session at the beginning of the trial, to examine their response to a social stressor, the Trier Social Stress Test (TSST) in a laboratory setting. Anxiety and craving measures were assessed before the TSST, immediately after the TSST, and at multiple intervals for 1.5 hours after stress exposure.

Results: A total of 13 individuals in the clinical trial underwent the TSST. There was a significant positive association between changes from baseline in anxiety and changes from baseline in cannabis craving for individuals 30 minutes post-TSST [r = .63, t(11) = 2.73, p = .0197] and at all subsequent time points. Additionally, changes from baseline in anxiety 15 minutes post-TSST were significantly positively associated with changes from baseline in cravings at times 30, 60, and 90 minutes.

Conclusions: Even with a limited sample size, our results suggest that stress-induced increases in anxiety precede increases in cravings for cannabis among treatment-seeking individuals with CUD. These results provide important information that can be incorporated into more effective treatment strategies related to stress-induced cannabis use among individuals with CUD.

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HARM REDUCTION SERVICE UTILIZATION AND HIV INCIDENCE AMONG PEOPLE WHO INJECT DRUGS IN UKRAINE.

Michael C. Ompalai1, Jiayu Wang1, Konstantin Dumchev2, Julia Barska2, Maria Samko3, Oleksandr Zezulin1, Tetyana Salyuk4, Olga Varetska5, Jack DeHovitz1; 1New York University, New York, NY, 2Ukrainian Institute on Public Health Policy, Kiev, Ukraine, 3Alliance for Public Health Ukraine, Kiev, Ukraine, 4SUNY Downstate Medical Center, Brooklyn, NY

Aims: We describe program utilization patterns within the large network of harm reduction NGOs and determine the relationship between these patterns and HIV incidence.

Methods: Data were extracted from Alliance for Public Health-Ukraine’s SyrEx database (6/2011-9/2014, n=327,758). We conducted a latent profile analysis on the mean number of condoms, syringes, and services (i.e., testing, information and counseling sessions) PWIDs received monthly.

Results: In the final 4-class model, class 1 clients (34.0%) on average received 0.1 HIV tests, 1.3 syringes, 0.6 condoms and minimal counseling/information sessions per month. Class 2 clients (33.6%) received 8.6 syringe; 3.2 condoms; and 0.5 HIV tests, counseling and information sessions. Class 3 clients (19.1%) received 1 HIV test, 11.9 syringes, 4.3 condoms, and 0.7 information/counseling sessions. Class 4 clients (13.3%) received approximately 1 HIV test, 26.1 syringes, 10.3 condoms and 1.8 information and 1.9 counseling sessions. In Cox proportional hazards models, class 4 clients had significantly decreased risk for HIV seroconversion as compared to class 1 clients, after controlling for obstial-level HIV incidence, ARV coverage, and syringe coverage.

Conclusions: In light of the uncertain funding environment in Ukraine, understanding the role of harm reduction in HIV incidence among PWIDs is important. These findings suggest that receiving more syringes and condoms was associated with decreased risk of HIV acquisition.

Financial Support: This study was funded with a grant from the Fogarty International Center, National Institutes of Health (USA, D43 TW000233). DCO was supported by the National Institute of Drug Abuse (USA) funded Center for Drug Use and HIV Research (CDUHR-P30 DA011041).

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RISK FACTORS FOR PRESCRIPTION OPIOID MISUSE BY DURATION OF MISUSE.

Vicki Osborne, Sonam Ongun Lasopa, Catherine Woodstock Striley, Linda Cottler; Epidemiology, University of Florida, Gainesville, FL

Aims: Prescription opioid misuse occurs when a person has a current prescription for a drug but uses it in a way other than prescribed. It also occurs when people use opioids that were not prescribed for them. The aim was to examine risk factors for duration of prescription opioid misuse in adults.

Methods: Data were collected as part of the NIDA-funded Prescription Drug Misuse, Abuse, and Dependence study in St. Louis, where participants were recruited from the community through community health workers and other screenings. Misuse was defined as use of prescription drugs in a way other than prescribed or use without a prescription, for at least 1 day in the past 12 months. Information was also collected on age (18-29, 30-49 and 50-65 years), employment status (employed or unemployed), stimulant misuse and sedative misuse. Summary descriptive and Chi square statistics were calculated using SAS 9.4.

Results: In total, 350 adults reported misusing opioids in the past 12 months. Of these, duration of misuse was less than 1 month for 34.0%, 1 to <3 months for 26.6% and 2-3 months for 39.4%. Adults who misused opioids for less than 1 month were more likely to be older (aged 18-29 years; 41.2%), be employed (40.3%) and have misused stimulants in the past 12 months (22.9%). Adults who misused opioids for 2-3 months were more likely to be older (aged 50-65 years; 34.8%), be unemployed (84.1%) and have misused sedatives in the past 12 months (63.8%). Age, employment status, sedative misuse and stimulant misuse were all significantly associated with duration of opioid misuse (p<0.05).

Conclusions: The results suggest a possible differential risk for duration of opioid misuse by age group, employment status, stimulant misuse and stimulant misuse. In particular, being employed appears to be a preventative factor for longer duration of opioid misuse.

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PERCEIVED NICOTINE CONTENT AND ITS ASSOCIATION WITH PERCEIVED DISEASE RISKS OF SPECTRUM RESEARCH CIGARETTES.

Lauren Pack1, Francis Joseph McClernon1, Rachel Denlinger1, Melissa Mercincavage2, Andrew Strasser3, Ryan Vandrey4, Natalie Nardone5, Dorothy Hatsuakami2, Eric Donny6, Brown University, Providence, RI, 1Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC, 2Johns Hopkins University, Baltimore, MD, 3Psychiatry, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, 4Psychology, University of Pittsburgh, Pittsburgh, PA, 5University of Minnesota Medical School, Minneapolis, MN, 6University of California San Francisco, San Francisco, CA

Aims: Assess if perceived nicotine content of research cigarettes is associated with perceived smoking-related disease risk. We hypothesize that persons who perceived that their assigned cigarettes had lower nicotine would perceive less disease risk from those cigarettes.

Methods: An RCT in general population smokers was conducted at 10 U.S. sites (2013-2014). Participants were assigned to smoke SPECTRUM research cigarettes with one of 6 nicotine contents (0.4mg of nicotine/gram of tobacco-15.8mg/g) for 6 weeks. Participants (n=697) reported the nicotine level they believed to be in their research cigarette (very low-very high) and completed the Perceived Health Risk scale, that involves rating perceived disease risk (lung cancer, emphysema, bronchitis, other cancers, heart disease, risk for addiction, stroke) associated with research cigarettes. Linear regression analyses were used.

Results: 7.7% perceived high-very high, 25.7% perceived moderate, 34.1% perceived low, and 32.4% perceived very low nicotine content. Perceived nicotine content was related to perceived disease risk in a dose-dependent manner: the lower the perceived nicotine content, the lower the perceived disease risk for each of the 7 items (p<0.007).

Conclusions: Perceived nicotine content is associated with perceived disease risk of research cigarettes. Findings inform the need for warning labels and educational/ mass media campaigns to clarify the relative harm of nicotine versus other harmful byproducts of smoking tobacco, particularly in the face of a nationwide nicotine reduction policy.

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CD8+ LYMPHOCYTES AND CD14highCD16neg MONOCYTES IN CHRONIC MARIJUANA USING HIV PATIENTS.
Jun Panee, Linda Chang; University of Hawaii, Honolulu, HI

Aims: Up to 50% of HIV patients use marijuana (MJ) for recreational or medicinal purposes. HIV is associated with chronic inflammation that is partially attributable to overactivation of CD8+ cytotoxic T cells and monocytes (especially CD14highCD16neg monocytes). Although MJ has immunosuppressive effects, few studies have investigated the effects of MJ use on the immune cells in HIV patients. This study aimed to test the hypothesis that chronic MJ use inhibits the expansion of CD8+ lymphocytes and CD14highCD16neg monocyte populations, which may lessen the systemic inflammation in HIV patients.

Methods: Four subject groups were evaluated: HIV-negative non-MJ users (n=20), HIV-negative MJ users (n=17), HIV-positive non-MJ users (n=16), and HIV-positive MJ users (n=19). Peripheral blood mononuclear cells were collected and stained for immune cell surface markers for flow cytometry. Two-way ANCOVA, covaried for age, was used to compare the groups. CD8+ lymphocytes were separated to CD8-high (T cells) and CD8-low (T cells + NK cells) subgroups according to CD8 expressing level.

Results: Greater numbers of CD8-high lymphocytes were found in the two HIV-positive groups, regardless of their MJ status (P=0.0053), and these numbers proportionately increased with the total lymphocyte counts, but HIV+ MJ users showed less steep slope than HIV+ non-MJ users (interaction P=0.036). The numbers of CD8-low lymphocytes were not elevated in the two HIV-positive groups, HIV+ non-MJ users had higher numbers than HIV+ MJ users, especially in those with higher total lymphocyte counts (interaction P=0.0087). Higher ratios of CD14highCD16neg/CD14lowCD16neg monocyte (P=0.022) and lower numbers of CD14highCD16neg/CD14lowCD16neg monocyte (P=0.024) were found in the HIV-positive groups, regardless of their MJ status. The numbers of CD14highCD16neg monocyte were in proportion to total monocyte count only in HIV+ non-MJ users, not in HIV+ MJ users (interaction P=0.014).

Conclusions: These data suggest that MJ use might have immunosuppressive properties only in HIV patients with higher lymphocyte and monocyte counts.

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PREMENSTRUAL SYMPTOM SEVERITY AND TOBACCO WITHDRAWAL, CRAVING, AND MOOD AFTER OVERNIGHT TOBACCO ABSTINENCE.
Raine Pang1, Adam Leventhal2; 1University of Southern California, Los Angeles, CA, 2Preventive Medicine, University of Southern California, Los Angeles, CA

Aims: Women with greater phase base variability in premenstrual symptoms have been shown to experience increased withdrawal and poorer cessation success. In this study we compared women with high and none/mild severity of premenstrual symptoms on tobacco withdrawal, craving, and mood following overnight tobacco abstinence.

Methods: At a baseline session women were screened for premenstrual symptoms. An extreme groups approach was used with women in the lowest quartile of premenstrual symptoms classified as none/mild premenstrual symptoms (n=21) and women in the highest quartile of premenstrual symptoms classified as having high premenstrual symptoms (n=18). Following the baseline session, women completed three counterbalanced experimental sessions following overnight abstinence. At each session participant completed self-report measures of tobacco withdrawal, tobacco craving, negative mood, and positive mood.

Results: Women with high premenstrual symptoms reported greater tobacco withdrawal and negative affect following overnight abstinence [F(1,37)=6.63, 9.82, p<.02], which remained significant after controlling for depressive symptoms [F(1,36)=4.41, 5.98, p<.05]. There were no significant differences between women with none/mild and high premenstrual symptoms on cigarette craving and positive affect.

Conclusions: Our findings suggest that women who experience severe premenstrual symptoms may experience greater tobacco withdrawal and negative affect during acute tobacco abstinence, which may increase their risk for cessation failure during a quit attempt.

Financial Support: NIDA K01 DA040043 and R21 DA034768

EMERGING ROLE OF MICRONORNAS IN REGULATION OF NICOTINE DEPENDENCE: A CAENORHABDITIS ELEGANS MODEL.
Xiping Pan, Joseph Ryan Polli; Biology, East Carolina University, Greenville, NC

Aims: 1) To establish a C. elegans model of nicotine-dependent behaviors. (2) To investigate the in vivo expression of nAChRs in the context of nicotine dependence. (3) To identify aberrant expressed microRNAs (miRNAs) regulating nAChRs in development of nicotine dependence.

Methods: Age synchronized wild type C. elegans at L3 stage were doped with 6.17 and 61.7 uM of L-nicotine. Locomotion behavior were monitored with Wormtracker and analyzed with Wormlab software. The acute response of worms were recorded within 30 minute of dosing, while the chronic response of worms were recorded after 24 hours of dosing. After 24 hours of dosing, nicotine-treated worms were transferred to nicotine-containing and nicotine-deprived environments for behaviors tracking. Locomotion speed were recorded and analyzed. Quantitative real-time PCR (qRT-PCR) were used to identify aberrant expressed nAChRs genes after dosing. miRNA algorithm database TargetScan and miRbase were used for in silico identification of miRNAs that potentially target changed nAChR genes following nicotine treatment. The expression of selected miRNAs were detected using qRT-PCR.

Results: Multiple aspects of nicotine-induced behaviors can be characterized, including drug stimulation, tolerance/adaptation, and dependence/withdrawal responses. Chronic low-level nicotine exposure has been shown to change the activity/abundance of nAChRs in a dose-specific manner. Regulation of the 28 nAChRs may be related to possible molecular regulatory mechanisms, such as microRNAs (miRNAs). Our results showed that some miRNAs were aberrantly expressed in worms displaying nicotine-dependent behaviors, which included let-7, miR-1, miR-255, miR-355, miR-70, miR-71, miR-788*, miR-797, and miR-85.

Conclusions: This study provides valuable information regarding the comprehensive in vivo expression pattern of the 28 core nAChR genes and miRNAs following different dosages of chronic nicotine treatments, which provide insights into the link between nAChRs, miRNA, and addiction neurophysiology.

Financial Support: This work was partially supported by the National Institute on Drug Abuse (NIDA) Grant R03DA032515.
ASSOCIATION BETWEEN ANY MAJOR DISCRIMINATION AND CURRENT CIGARETTE SMOKING AMONG ADULT AFRICAN AMERICAN MEN.
Lauren J Parker1, Ballington Kinlock2, Dakarai Chisolm3, Debra Furr-Holden4, Roland Thorpe5; 1Health, Behavior, and Society, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 2Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 3Sociology, Morgan State University, Baltimore, MD
Aims: Cigarette smoking is proposed to be an externalizing coping mechanism used to alleviate discrimination. At the national scale, it is unclear if major discrimination is associated with cigarette smoking among African American (AA) men. The aim of the study was to examine the association between major discrimination and cigarette smoking among a national sample of AA men.
Methods: Data from 1,271 AA men in the National Survey of American Life was used for the study. Men who smoked more than 100 cigarettes, and currently smoked were considered smokers. Major discrimination was assessed using Williams’ nine-item Major Experiences of Discrimination Scale. Multivariate logistic regression was used to examine the relationship between major discrimination and cigarette smoking, controlling for major stress, age, being married, household income, and education.
Results: Thirty-two percent of the men were current smokers, and 70% of the men in the sample experienced any major discrimination. In the adjusted model, men who experienced major discrimination had a higher odd of being a current smoker (Odds Ratio: 1.68, 95% Confidence Interval: 1.19-2.39) than men who did not experience discrimination.
Conclusions: Findings from the study suggests that AA men may use cigarette smoking as a mechanism to alleviate the experiences of major discrimination. Future studies should examine how gender specific factors like masculinity and gendered social norms influence AA men’s engagement in smoking behaviors to mitigate stress at different stages over the life course in effort to inform culturally relevant interventions.
Financial Support: NIDA T32DA007292-23 (Parker, Kinlock), NIMHD P60MD002214 (Thorpe).

PERSISTENCE OF EXTRA-MEDICAL PRESCRIPTION PAIN RELIEVER USE AMONG UNITED STATES ADOLESCENTS: A LATENT CLASS ANALYSIS.
Maria A Parker, James C Anthony; Epidemiology & Biostatistics, Michigan State University, East Lansing, MI
Aims: To investigate discrete classes (subgroups) of adolescents with similar profiles based on their extra-medical use of prescription pain relievers (PPR) and alcohol, with empirical evaluation of the underlying structure of identified subgroups and their epidemiological distributions in the United States (US).
Methods: US National Surveys on Drug Use and Health, 2002-2013, sampled, recruited, and assessed 24,749 12-to-20-year-old newly incident PPR users, with self-interviews on PPR, alcohol, and covariates. Latent classes were formed based on PPR and alcohol status variables. Then, age and sex were studied as potential important covariates of class membership. Analysis-weighted estimates and delta method variances were derived.
Results: Three classes were distinguished by extra-medical PPR and alcohol use patterns: (1) Nondependent/Low level users, (2) Moderately persistent users, and (3) Persistent/Dependent users. Being female and younger were associated with greater odds of being in the Persistent/Dependent user class compared to the Nondependent/Low level class; being younger was associated with being in the Moderately persistent user class compared to the Nondependent/Low level class; being male was associated with being in the Moderately persistent user class compared to the Persistent/Dependent user class.
Conclusions: Persistent adolescent extra-medical PPR and alcohol users’ characteristics require tailored public health prevention and intervention strategies based on their vulnerability to continue use over time. Underage recency of drinking can be an indicator of persisting in extra-medical use of PPR, particularly if presenting clinical features of alcohol dependence and/or PPR dependence already have become manifest at or near time of first onset of such PPR use.
Financial Support: Supported by NIDA T32DA021129 (MAP); K05DA015799 (JCA).
CONFLICTS BETWEEN YOUTHS AND THEIR PARENTS IN RELATION TO FUTURE NIDA PREVENTION RESEARCH.

Jose Ruben Parra-Cardona1, Hsueh-Han H Yeh2, James C. Anthony2; 1Michigan State University, East Lansing, MI, 2Epidemiology, Michigan State University, East Lansing, MI

Aims: For a variety of reasons, foreign-born first generation immigrant adolescents in the United States seem to be protected against early-onset drug involvement, relative to the US-born. We are working up a line of NIDA research on the possibility that lower levels of parent-youth conflict might contribute to the observed protection. For this reason, our aim is to investigate parent-youth conflict in US-born versus foreign-born adolescents in each of four ethnic subgroups: (a) Hispanic, (b) non-Hispanic African-American, (c) non-Hispanic Asians, and (c) non-Hispanic Whites, with an expectation of greater conflict for the US-born.

Methods: The National Surveys on Drug Use and Health (NSDUH), 2002-2013, secured representative adolescent samples for our four subgroups: (n = 122,897 12-to-17-year-olds), with standardized assessment of frequent parent-youth conflict. Analysis-weighted Cochran-Mantel-Haenszel tests with Taylor series variances provided age-sex-adjusted odds ratio estimates (OR).

Results: US-born youths (v. foreign-born) had modestly greater odds of frequent parent-youth conflict (OR: 1.3, 1.7; 95% CI: 1.1, 2.0). Among US-born adolescents, non-Hispanic Whites were more likely to have conflict (18% at age 12 to 29% at age 17), and African-American youths were least likely (8% at age 12 to 16% at age 17). A congruent pattern of subgroup estimates was seen for foreign-born adolescents, but with confidence intervals showing overlap.

Conclusions: The observed subgroup contrasts in frequency of parent-youth conflict in this multi-ethnic research and the overall higher risk for conflict in US-born samples justify extending this line of research in a direction that might help to guide future family-oriented drug use prevention and intervention practices.

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WITHDRAWN

CODEINE MISUSE/DEPENDENCE: BEST PRACTICE AND FUTURE INNOVATIONS IN ADDRESSING RISK, HARM AND SUCCESSFUL TREATMENT.

Charles D Parry1, Marie Claire van Houw1, Jan Norman1; 1Alcohol, Tobacco & Other Drug Research Unit, South African Medical Research Council, Cape Town, South Africa, 2School of Health Sciences, Waterford Institute of Technology, Waterford, Ireland, 3Florence Nightingale Faculty of Nursing & Midwifery, King’s College London, London, United Kingdom

Aims: To investigate existing good practice to reduce the risk of misuse/dependence from prescribed and over-the-counter (OTC) codeine to identify innovations for consideration by policy makers and health care practitioners.

Methods: Following a literature review on codeine, 20 in depth interviews were conducted with key informants and stakeholders from national public health, addiction, pharmaceutical and medicines control organisations in three countries operating under distinct regulatory regimes: Ireland, South Africa, and the UK.

We then conducted a rating exercise of these innovations for their acceptability, practicality and potential contribution to reducing public risk and prevalence of codeine misuse/dependence, and for enhancing safe use of codeine and medicines compliance.

Results: Forty-seven innovations were identified in 9 categories: manufacture (7); product information and public education (5); responsible prescribing (12); monitoring and surveillance (5); dispensing, screening and brief interventions in community pharmacies (7); safety in workplace and on the road (3); internet supply of codeine and online support (4); treatment of codeine dependence (4); and learning resources and training for health professionals (2). The most promising innovations appear to be in the areas of pharmaceutical manufacture, responsible prescribing of codeine containing medicines and design of specific learning and resources for health professionals.

Conclusions: The availability of codeine as an OTC medicine, but under stricter sales regimes, with stronger warnings on packages and better monitoring of sales across pharmacies, better training of pharmacy staff, and measures to highlight its abuse potential and reinforce appropriateness of seeking help if people experience problems warrants consideration.

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INHIBITORY PROCESSING PREDICTS INCREASES IN BINGE DRINKING BEHAVIOR: A SIX-MONTH LONGITUDINAL DESIGN.

Andres L Paz2, Joshua Conniff1, Debora Ferrato2, Raul Gonzalez3, Monica Rosselli1; 1Florida Atlantic University, Davie, FL, 2Neuropsychology, Florida Atlantic University, Miami, FL, 3Florida International University, Miami, FL

Aims: The current project aims to identify which three inhibitory processing subcomponents are most sensitive to predicting changes in binge drinking behavior.

Methods: Study design consisted of a six-month longitudinal project with participants assessed at two time points (baseline, T1; follow-up, T2). 210 young adults were recruited from three undergraduate universities in South Florida, USA. 183 participants (48.6% male), ranging from 18-25 years old (M = 21.03, SD = 1.87), completed both assessments (87% retention). The following inhibitory measures were implemented as predictors in the regression model: stop signal reaction time derived from Stop Signal Task; number of go no go errors derived from Go-No Go task; and Simon effect derived from Simon Task.

Changes in drinking behavior was measured by subtracting participant’s Alcohol Use Questionnaire binge score (AUQ) and Alcohol Use Identification Test (AUDIT) score at T1 from T2. Higher scores represent an increase in drinking behavior. Based on differences in drinking habits, female and male participants were analyzed independently.

Results: Among male participants, the overall model explained a significant proportion of variance (10.8%) in AUQ binge score (R² = .108, F(3, 78) = 3.15, p = .03). Simon effect, b = .329, t(78) = 2.47, p = .016, emerged as a significant predictor. A greater interference effect was shown to have a positive relationship with increases in AUQ binge score over time. The model did not significantly predict changes in AUDIT scores among males, nor predict changes in female drinking scores.

Conclusions: Reduced inhibitory processing at T1 predicted an increase in male binge drinking behavior over a six-month timeframe. The results suggest that interference inhibition, as opposed to action withholding or action cancellation, is a more sensitive cognitive predictor of future increases in male binge drinking behaviors.

SAME-DAY USE OF OPIOIDS AND DEPRESSANTS: A RETROSPECTIVE DIARY STUDY,
Amy Peacock1, Raimondo Bruno1, Briony Larance2, Nicholas Linzeris1, Robert Ali1, Dominic Oen1, Olivia Mosugia Sotade1, Nancy White1, Louisa Degenhardt1; 1Langton Centre, Sydney, NSW, Australia, 2University of Adelaide, Adelaide, SA, Australia, 3National Drug and Alcohol Research Centre, University of NSW, Sydney, NSW, Australia, 4University of New South Wales, Sydney, NSW, Australia, 5School of Medicine, University of Tasmania, Hobart, TAS, Australia
Aims: Increased prescribing of pharmaceutical opioids has been accompanied by an increase in harms. Use of other CNS depressants (e.g., alcohol, benzodiazepines) with opioids may alter opioid pharmacokinetics and elevate risk of adverse outcomes, including overdose. As such, the aim was to determine the consumption patterns associated with same-day use of prescription opioids, benzodiazepines, and alcohol amongst people who regularly tamper with prescription opioids.
Methods: A cohort of 431 people who regularly tamper with pharmaceutical opioids completed a retrospective past 7-day diary detailing their licit and illicit substance use.
Results: Nearly half (47%) reported use of pharmaceutical opioids only; 26% opioid and benzodiazepine same-day use, 14% opioid and alcohol same-day use; and 11% opioid, benzodiazepine and alcohol same-day use. Half (51%) of the latter group reported co-ingestion of all three on only one occasion within the past week. Median oral morphine equivalence when consuming pharmaceutical opioids only was 395mg (inter-quartile range (IQR) 199-621mg); opioids and benzodiazepines 400mg (IQR 180-595mg); opioids and alcohol 352mg (IQR 182-559mg); and opioids, benzodiazepines and alcohol 410mg (IQR 270-616mg). Same-day pharmaceutical opioids use with other depressants was not significantly associated with an increased risk of overdose in the past 12 months after controlling for demographics (although a low overdose rate should be noted).
Conclusions: Same-day use of opioids with other CNS depressants is common amongst people who regularly tamper with pharmaceutical opioids, with little indication of variation in opioid dose in compensation.
Financial Support: This study received untied educational grant funding from Mundipharma. The funder has no role in the design, conduct or interpretation of the study. AP, LD and BL are supported by NHMRC research fellowships.

HEAVY EPISODIC DRINKING AND WEIGHT CONTROL BEHAVIOR AMONG COLLEGE STUDENTS: DOES GENDER MATTER?
Robert L. Peralta1, Peter B Barr2; 1Department of Sociology, The University of Akron, Akron, OH, 2Department of Psychology and African American Studies, Virginia Commonwealth University, Richmond, VA
Aims: We examine weight-control-behavior used to (a) compensate for caloric content of heavy alcohol use; and (b) enhance the psycho-active effects of alcohol. We evaluate the role of gender-identity and sex in strategies to reconcile heavy alcohol use and weight gain concern.
Methods: A convenience sample of college students completed an online survey at a Midwest public university (N=841; 59.8% female; 40.2% male). Weight control behavior was assessed via the Compensatory-Eating-and-Behaviors-in-Response-to-Alcohol-Consumption-Scale (question item example: “I have skipped one or more meals before drinking to make up for the calories in alcohol”). Control variables included sex, race/ethnicity, age, and depression. Gender was measured by the Bem Sex Role Inventory. The prevalence and probability of alcohol-related weight-control-behavior using ordinal logistic regression are reported.
Results: Between 8% and 31% of women and men report engaging in specific alcohol-related weight-control-behavior items. Men and women do not significantly differ in alcohol-related compensatory-weight-control-behavior. However, regression models suggest age, depression, substance use, and masculine identity are positively associated with alcohol-related weight control behavior.
Conclusions: Sex was not a robust predictor of alcohol-related weight control behavior. Masculine identity should be considered a possible risk factor for these behaviors and considered when designing prevention and intervention strategies.
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INSULA REACTIVITY TO NEGATIVE STIMULI IS ASSOCIATED WITH DAILY SMOKING BEHAVIOR: A PRELIMINARY INVESTIGATION USING THE HUMAN CONNECTOME DATASET.
Andrew Leigh Peschatka1,2, Nadeeka Dias3, Amy Janes1; 1McLean Imaging Center, McLean Hospital, Belmont, MA, 2Psychology, Suffolk University, Boston, MA, 3McLean Imaging Center, McLean Hospital/ Harvard Medical School, Belmont, MA
Aims: Individuals who smoke a large volume of cigarettes per day are at greater risk for developing smoking-related illness and have more difficulty quitting. We evaluate daily smoking-related negative mood is one factor thought to motivate drug use. However, heavy smokers are more sensitive than light smokers to negative affect regardless of origin. One possibility is that individual differences in the brain processes negative affective stimuli may relate to smoking volume. Given the wealth of data implicating the insula in nicotine dependence and affective processing, we hypothesize that the number of cigarettes an individual smokes per day will relate to insula reactivity to negative stimuli.
Methods: A functional magnetic resonance imaging emotional processing task collected by the Human Connectome Project was assessed in 21 daily tobacco smokers who reported smoking between 5-20 cigarettes per day. The number of cigarettes smoked per day was correlated with right and left anterior insula reactivity to faces expressing a negative emotion relative to a control. This anterior insula region of interest has been associated with treatment outcome and smoking cue-reactivity in our prior work.
Results: Individuals who smoked more daily cigarettes showed greater right insula reactivity to negative stimuli (U=0.564, p = 0.008). Left insula reactivity was not associated with cigarettes smoked per day.
Conclusions: Smokers who use more cigarettes per day have greater right insula reactivity to negative stimuli. As the role of the bilateral and left insula in nicotine use is more clearly defined, these results further the field’s understanding of the right insula’s involvement in nicotine use and suggest a mechanism contributing to higher rates of daily smoking. Furthermore, treatments focused on affective regulation may be particularly beneficial to heavier smokers.
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THE HIGHLY SELECTIVE 5-HT2C RECEPTOR AGONIST WAY163909 REDUCES COMPULSIVE BEHAVIOR AND FOOD INTAKE IN FEMALE RHESUS MONKEYS.
Maylen Perez Diaz1, Leonard Howell2,3, Mark Wilson2,3; 1Neuropharmacology and Neurologic Diseases, Emory University, Atlanta, GA, 2Yerkes National Primate Research Center, Emory University, Atlanta, GA, 3Psychiatry and Behavioral Sciences, Emory University, Atlanta, GA
Aims: Compulsivity has been linked to several types of addiction, a highly prevalent public health issue. It can be defined as a general inability to alter behavior with changing reinforcement contingencies. A switch from random or recreational use of reinforcers, such as drugs or highly palatable foods, to compulsive use is one of the hallmarks of addiction. Thus, compulsivity appears to be a core behavioral feature of addiction, although no one has evaluated this hypothesis directly. A highly selective 5-HT2C receptor agonist, WAY163909 (WAY), has been shown to decrease food consumption and effectively reduce self-administration of psychostimulants. If compulsivity is a core feature of addiction, then activation of 5-HT2C receptors should also reduce compulsive behavior.
Methods: In order to test this hypothesis, we evaluated the effects of WAY (vehicle, 0.1mg/kg, 0.3mg/kg, and 1.0mg/kg) on perseverative responding during a Discrimination Reversal Learning (DRL) task, as well as food intake, in rhesus monkeys (N=5).
Results: WAY increased correct responses (p<0.05), while decreasing perseverative responses (p>0.05). A proof-of-concept experiment was conducted which demonstrated that WAY also reduced food consumption in our subjects.
Conclusions: These results demonstrate the modulatory role of 5-HT2C receptors in both food consumption and compulsivity, which may inform the search for novel pharmacotherapies for treatment of addiction. In addition, we are currently measuring compulsivity using the DRL task in abstinent monkeys with an extensive history of cocaine (COC) self-administration (SA) and will determine whether their prior levels of COC intake during SA are predictive of compulsivity levels.
Financial Support: This research was supported by USPHS Grants DA10344 (LLH), DA31246 (LLH) and P51OD11132 (Yerkes National Primate Research Center).

THE HIGHLY SELECTIVE 5-HT2C RECEPTOR AGONIST WAY163909 REDUCES COMPULSIVE BEHAVIOR AND FOOD INTAKE IN FEMALE RHESUS MONKEYS.
COMMUNITY BASED DRUG TREATMENT IN THAILAND.
Usaneya Perngporn, Chitlada Areesantichai; Drug Dependence Research Center WHO Collaborating Center for Research and Training in Drug Dependence (WHOCC), Chulalongkorn University, Bangkok, Thailand

Aims: To review drug situation in Thailand and the initiation of community based drug treatment

Results: Since 1960 Thailand has banned opium and launched the first drug dependence treatment center in the vicinity of Bangkok. After that heroin became the main problem of drug use. The majority (70-85%) of drug dependence treatment population was heroin users; in 1997, the rate of heroin users attending treatment declined to 48%. After the War on Drug in 2004, methamphetamine, the main problem, was nearly eradicated. However, the 2011 national household survey reported that marijuana has re-emerged with methamphetamine and ice (crystal methamphetamine). Recently heroin also re-emerges especially in most southern areas. In addition, rate of drug injection, related health problems and overdose death have increased. Treatment systems are mainly provided in the hospital/center. About 80% of heroin users was in voluntary system while methamphetamine users tend to be in compulsory system. In May 2014, there were about 225,000 prisoners. Of these 86% was male, 69% related to drug use and trafficking, 91% related to ATS and 5% heroin. In 1980s, a few research projects aimed at opium treatment in the hill tribal communities with the community support. The outcomes showed the effectiveness of treatment, but presently there is no policy of community treatment. In October 2013, methadone treatment was dispensed at a community in the mountain area by a joint team of community hospital, NGO group and drug user families. It is a part of harm reduction program, not drug treatment. Injecting drug users (235 cases) registered for methadone and 77 cases received methadone maintenance.

Conclusions: It is anticipated that the success of this community based treatment can be a selective drug user program.

Financial Support: Chulalongkorn University

PHYSICAL ACTIVITY ENJOYMENT PREDICTS SENSITIVITY TO THE ACUTE SUBJECTIVE EFFECTS OF AMPHETAMINE IN HEALTHY VOLUNTEERS.
Mollie Pester, Matthew Kirkpatrick, Adam Leventhal; Preventive Medicine, University of Southern California, Los Angeles, CA

Aims: Individual differences in reward sensitivity may cross over between drug and non-drug (e.g., exercise, food) rewards. However, this supposition has received very little empirical attention in human research. The current human behavioral pharmacology study tested the hypothesis that individual differences in physical activity enjoyment would predict the acute self-reported rewarding effects of amphetamines.

Methods: Healthy volunteers (N=95) completed self-report measures of typical enjoyment during exercise, physical activity level, and other characteristics at a baseline session. Participants then completed a counterbalanced 4-hour session at which they received either a 20 mg dose of oral d-amphetamine or placebo under double blind conditions, and three composite assessments of subjective drug reward (i.e., positive mood, arousal, and drug high) were collected before and repeatedly after drug administration. Area under the curve (AUC) was calculated for each subjective drug reward measure at placebo and amphetamine sessions, and drug effect difference scores (AUC amphetamine - placebo) served as outcomes. For each measure of drug reward, physical activity enjoyment was modeled as a predictor of drug effects in separate regression analyses, controlling for placebo AUC, gender, age, BMI, and self-reported total time of physical activity.

Results: Enjoyment of physical activity significantly predicted larger amphetamine-induced increases in positive mood (β = .229, p = .018) and arousal (β = .215, p = .025), but was not associated with amphetamine-induced changes in drug high (β = .132, p = .207).

Conclusions: These results provide novel evidence of individual differences in reward sensitivity that cross over between drug (i.e., amphetamine) and non-drug (i.e., exercise) rewards, which has implications for understanding the nature of reward sensitivity, a pharma-mono-synaptic indicator of exercise likelihood, and sources of risk for abuse liability.

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HEALTH KNOWLEDGE AND SOCIODEMOGRAPHIC PREDICTORS OF RISKY BEHAVIORS.

Bridgette Peter1, Michele Staton-Tindall2, Psychology, University of Cincinnati, Cincinnati, OH, 1Social Work, University of Kentucky, Lexington, KY

Aims: Rural incarcerated women have an increased HIV risk due to drug and sexual behaviors. Research implicates health knowledge (HIV/Hepatitis C) and social considerations (age/education) as factors associated with risk reduction. The aim of this study is to examine the impact of health knowledge (HIV and Hepatitis C), education, and age on risky sex and drug behaviors (injection drug use [IDU], lifetime sex exchange, and lifetime sexually transmitted diseases [STDs]).

Methods: This study is a secondary analysis of baseline data from 400 women from rural jails in one southern state.

Results: Logistic regression revealed that increased HIV knowledge was associated with a decrease in risky behaviors including STDs (OR=1.08; p<.00), IDU (OR=1.09; p<.00), and sex exchange (OR=1.18; p<.00). Increases in HIV knowledge yielded similar results, STDs (OR=1.20; p<.00), IDU (OR=1.51; p<.00), and sex exchange (OR=1.52; p<.00). Conversely, age was associated with reduced odds of IDU (OR=0.93; p<.00) and lifetime sex exchange (OR=0.97; p<.00). Education was associated with reduced odds of IDU (OR=0.95; p<.00), lifetime sex exchange (OR=0.93; p<.00), and STDs (OR=0.97; p<.02).

Conclusions: Based on these findings we need to further examine the utility of knowledge-based interventions to increase behavior change in disadvantaged rural women. Further research is needed to identify additive sociodemographic factors (e.g., age and education) that coupled together can improve the impact of health knowledge on risky behavior. Subsequently, appropriate tailored interventions can be designed to further facilitate behavior change.

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THE ROLE OF THE α7 AND α4β2 NICOTINIC RECEPTORS IN NICOTINE SENSITIZATION AND NEURAL PLASTICITY OF ADOLESCENT RATS NEONATALLY TREATED WITH QUINPIROLE: EFFECTS ON MTOR AND NICOTINIC RECEPTOR DENSITY.

Daniel J Peterson1,2, Jim Wherry1, Elizabeth D Cummins1, Don Hoover2, Russell W Brown1; 1Psychology, East Tennessee State University, Johnson City, TN, 2Biomedical Sciences, East Tennessee State University, Johnson City, Tennessee, TN; 3Psychology, University of Nebraska, Lincoln, NE

Aims: Aim 1: Analyze the roles of α7 and α4β2 nicotinic receptors (nAChRs) in nicotine sensitization in adolescent male and female rats neonatally treated with quinpirole as well as their effects on Brain-Derived Neurotrophic Factor (BDNF) and mammalian target of rapamycin (mTOR) 1hr and 24hr post drug treatment. Aim 2: Analyze the effects of behavioral sensitization to nicotine on α7 and α4β2 nAChR density in the nucleus accumbens and dorsal striatum.

Methods: Animals were neonatally treated with quinpirole (1 mg/kg) or saline from postnatal days (P1-21). Beginning on P33, animals were ip injected with either the α7 nicotinic receptor (nAChr) antagonist methyllycaconitine (MLA; 2 or 4 mg/kg) or the α4β2 nAChr antagonist dihyro-β-erythroidine (DhβE; 1 or 3 mg/kg). Brain tissue was taken either 1 h or 24 h after the last day of testing. In a second experiment, animals were identically treated and brain tissue analyzed for nAChR density using the autoradiographic technique.

Results: Neonatal quinpirole enhanced nicotine sensitization and the 3 mg/kg dose DhβE effectively blocked nicotine sensitization on Day 9 but enhanced the hypnagogic response to nicotine on Day 9. MLA appears more important in the acute response to nicotine. Neonatal quinpirole sensitized the accumbal BDNF response to nicotine, but resulted in a decrease of accumbal mTOR. The nAChR density data will be presented.

Conclusions: The α4β2 receptor played a critical role in the development of adolescent nicotine sensitization, and both nAChRs appear to be important in accumbal BDNF and in the mTOR response, demonstrating their important role in synaptic plasticity.

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DO AS I SAY, NOT AS I DO: A UNIQUE SOCIAL SUPPORT NETWORK AMONG WOMEN, BUT NOT MEN, SEEKING TREATMENT FOR ALCOHOL AND DRUG USE DISORDERS.

Deena Peyser, Jennifer Buckman, Laura Banu, Marsha Bates; Psychology, Rutgers University, Piscataway, NJ

Aims: The importance of social support in addiction treatment outcomes and relapse prevention is well known. Yet, sex differences have been identified in the characteristics of social support and the ways individuals are influenced by the substance use behaviors of their network members. We examined whether treatment-seeking men and women differed in the nature of their social support at addiction treatment entry.

Methods: Participants included 409 women and 1,579 men from the combined Project MATCH (Matching Alcoholism Treatments to Client Heterogeneity) and Project ARC (Rutgers Alcohol Research Center) samples. Latent class analysis was used to identify homogeneous subgroups of individuals based on eight indicators of social support for abstinence or substance use and the frequency of contact with network members.

Results: Men and women showed similarities and differences in the makeup of their social support networks. Among both men and women, four similar classes of social support were identified: two with support for abstinence that differed in the amount of contact the client had with network members (frequent positive and limited positive), and two with support for substance use that differed in the amount of contact the client had with network members (frequent negative and limited negative). Among women, an additional class emerged of network members who were heavy users themselves, but who strongly supported the client’s abstinence. This class did not have poorer substance use outcomes than the positive support class.

Conclusions: The results highlight the sex differences in social support, which can inform understanding of the development of substance use disorders and of effective treatment interventions. Specifically, in addressing women’s social support networks, recognition of positive support, even from unlikely sources such as active substance users, may provide a previously unexplored dimension to interventions aimed to reduce substance use.

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CURRENT DRUG USERS AND WOMEN HAVE HIGHER RATES OF RISKY SEXUAL BEHAVIORS.

Karran A Phillips, Landhing Moran, Sara K Hertzell, David H Epstein, Kenzie L Preston; Treatment Section, NIDA IRP, Baltimore, MD

Aims: HIV risk behavior includes drug risk behavior and sexual risk behavior and may be influenced by an individual’s activity space. We sought to assess sexual risk behavior and neighborhood-level indicators of social and drug disorder exposure in a cohort of both non-drug users (NDU) and drug users (CDU).

Methods: We analyzed data from 415 participants enrolled in a 12 month study of genetics and environment on drug use trajectories. Participants completed the HIV Risk-taking Behavior Scale, Addiction Severity Index, and PhenX Drug Use Survey. Neighborhood risk was determined using the Neighborhood Inventory for Environmental Typology (NIEtY).

Results: Of the 415 participants enrolled, 125 (30%) were non-drug users (NDU), 139 (34%) current marijuana users (CMU), 83 (20%) current opioid or stimulant users (COSU), and 70 (16%) current alcohol and other substance users (OTH). The CMU, COSU, and OTH groups were collapsed into one group, CDUs, which was compared to NDU. After controlling for age, race, gender, marital status, and NIEtY score, ordinal logistic regression demonstrated that CDUs had significantly more sexual partners than NDU (coefficient 0.165, 95%CI 0.025, 0.305, z=2.31, p<0.021). Condom use, regardless of partner type was not different between the CDU and NDU groups (p=ns) but condom use was lower among women having sex with their regular partners (p=0.030).

Conclusions: Working with CDUs to decrease risky drug behavior is an important part of recovery; this analysis demonstrates that it may be equally important to work with CDUs to decrease their risky sexual behavior. Regardless of drug use status, it is of paramount importance to work specifically with women to increase their ability to negotiate condom use with their partners in order to decrease risk.

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PREDICTORS OF SKIN INFECTIONS AMONG HOSPITALIZED INJECTION DRUG USERS IN BOSTON.

Kristina T Phillips, Bradley J Anderson, Jane M Liebschutz, M Stein 
Moss Chair of Excellence endowment associated with perceptions of peritraumatic control, current responsibility, and significant \( (p < .07) \). No other relationships were revealed. 

Methods: Active IDUs were recruited from inpatient medical units at a large urban hospital and invited to be part of a larger RCT focused on reducing risk of bacterial and viral infections. Baseline data with 136 IDUs focused on demographics, opiate dependence, alcohol use, years of injection, days of cocaine injection, and history of skin infections within the last year. The Bacterial Infections Risk Scale for Injectors (BIRSI) was used to examine the frequency of high-risk injection practices associated with bacterial infections, such as lack of skin cleaning.

Results: The sample was 42.7% female, 56.6% Caucasian, and averaged 38.9 (SD = 10.7) years of age. Most participants reported use of heroin (98.5%) or cocaine (72.8%) within the last three months. 87 participants (65%) reported at least one skin infection within the last year. Mean number of past year skin infections across all participants was 1.59 (SD = 2.43). Associations with any skin infection in the past year estimated with logistic regression demonstrated that the BIRSI (OR = 1.06, \( p < .005 \)) and days of cocaine injection in the last month (OR = 1.02, \( p < .05 \)) predicted last year skin infections.

Conclusions: Rates of last year skin infections were high in this sample of IDUs. Consistent with past studies, cocaine use and high-risk injection practices were associated with skin infections. Results suggest that interventions should target specific injection practices to reduce infection risk.

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EVENT-LEVEL SUBSTANCE USE DURING EPISODES OF INTIMATE PARTNER VIOLENCE.

Alison Marisa Pickover, J Gayle Beck; Psychology, University of Memphis, Memphis, TN

Aims: Research indicates that violence perpetrated against women in intimate relationships is more severe when male partners are intoxicated. However, the link between event-level substance use (SU) and peritraumatic stress during violent episodes has not been explored. Such work may inform our understanding of SU-related violence and mental health outcomes, as peritraumatic stress is implicated in the development of PTSD. We examined peritraumatic stress and current SU severity as a function of violent dyads’ event-level SU.

Methods: Female survivors of intimate partner violence (IPV; \( n=300 \)) reported on dyad SU and injury severity (categorically coded) during violent episodes. Most women reported no event-level SU by self or partner (n=120), 106 reported partner only SU, and 88 reported self and partner SU. Ratings (0-100) were obtained for peritraumatic fear, helplessness, perceived danger, perceived control, extent to which she thought she would die, how responsible she felt, and how responsible the partner was, for the abuse. Current PTSD and SU severity were assessed with the Clinician-Administered PTSD Scale and Drug and Alcohol Screening Test (DAST), respectively.

Results: Chi-square tests revealed that injury severity during episodes of physical and sexual abuse (\( p=2.20 \)) and PTSD status (PTSD+ vs. PTSD-) did not differ as a function of event-level SU (no use, partner only, both). Kruskal-Wallis tests revealed significant differences for peritraumatic control (\( \chi^2(2)=6.45, p=.04 \)), responsibility (\( \chi^2(2)=8.17, p=.02 \)), and DAST (\( \chi^2(2)=24.25, p<.001 \)), such that perceived control was lowest, and responsibility and DAST highest, among women who used during violent episodes. Partner use only was marginally associated with higher peritraumatic danger (\( p=.07 \)). No other relationships were significant (\( p=.20 \)).

Conclusions: Our study found event-level SU during violent episodes to be associated with perceptions of peritraumatic control, current responsibility, and substance use severity in female IPV survivors. These results have implications for PTSD and SU disorder development and remission in this group.

Financial Support: Moss Chair of Excellence endowment

S-MEPHEDRONE: PRECLINICAL INVESTIGATION AGAINST BEHAVIORAL EFFECTS OF THE SYNTHETIC CATHINONE MDPV.

Helene Philogene, Scott Rawls, Allen Reitz; ‘Center for Substance Abuse Research, Lewis Katz School of Medicine at Temple University, Philadelphia, PA; ‘Fox Chase Chemical Diversity Center, Doylestown, PA

Aims: The aim of this study is to characterize S-mephedrone (S-MEPH), a monoamine transporter substrate, to provide a pharmacological template that may lead to the development of maintenance therapy for acute MDPV withdrawal.

Methods: The effect of S-MEPH was tested using rat elevated plus maze (EPM) paradigm. Four groups (N=7-8/group) were used: Saline + Saline, Saline + S-MEPH, MDPV + Saline, and MDPV + S-MEPH. Rats received saline or MDPV (1.0 mg/kg, i.p.) 3x/day for 10 days in 1-h intervals. Twenty-four hours following the last injection, saline or S-MEPH (10 mg/kg, i.p.) was administered 2x/day for 2 days 6-h apart. The day after the last saline or S-MEPH injection, rats were evaluated using the EPM. During testing, rats were placed in the center of the apparatus and allowed to roam freely for 10 min in a drug free state, and time on the open arm vs. closed arm was recorded. Entry from one arm of the plus maze to another was determined when all four limbs crossed into the arm.

Results: Experiment revealed rats withdrawn from repeated MDPV exposure (MDPV - SAL) spent significantly less time on the open arm compared to saline controls (SAL - SAL, p < 0.001). Notably, rats chronically treated with MDPV, then administered subsequent injections of S-MEPH (MDPV - S-MEPH) spent significantly greater time on the open arm compared to those receiving saline (MDPV - SAL, p < 0.05).

Conclusions: These preclinical results suggest that S-MEPH is capable of attenuating symptoms of anxiety during acute MDPV withdrawal. Furthermore, these findings suggest that S-MEPH is an advantageous template to manage withdrawal due to its rapid onset of action compared to SSRIs with slower onset of action.

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MDMA INCREASES AFFILIATIVE BEHAVIORS AND VOCALIZATIONS IN NONHUMAN PRIMATES IN A 5-HT2A RECEPTOR-DEPENDENT MANNER.

Elizabeth Gwynn Pitts, Adelaide Rose Minerva, Erika Beth Oliver, Leonard Howell; Yerkes National Primate Research Center, Emory University, Atlanta, GA

Aims: Several psychiatric disorders are associated with disruption of social interactions, including autism, post-traumatic stress disorder (PTSD), and drug dependence. 3,4-methylenedioxymethamphetamine (MDMA) increases feelings of openness and sociability. Recently, MDMA has been examined as a therapeutic adjunct in the treatment of PTSD, with promising results. Yet, the mechanisms underlying the social effects of MDMA are still not known. We are using group housed nonhuman primates to examine the affiliative social effects of MDMA and the receptor pharmacology underlying these affiliative effects.

Methods: We administered a range of doses of MDMA or its enantiomers, methamphetamine, or saline intramuscularly to four group housed male squirrel monkeys. Additionally, we administered M100907, a 5-HT2A receptor antagonist, one hour prior to MDMA administration. We then used a behavioral ethogram and vocalizations to examine the effects on behavior for one hour following drug administration.

Results: We found that racemic MDMA caused dose-dependent increases in affiliative behavior and vocalizations. The enantiomers of MDMA have dissociable pharmacological effects, however both increased social behaviors. In contrast, methamphetamine did not statistically increase affiliative social behaviors. Additionally, we found that MDMA-induced affiliative behaviors and vocalizations are 5-HT2A receptor dependent, with M100907 pretreatments blocking increases in social behaviors following MDMA administration.

Conclusions: MDMA is a uniquely social drug that increased affiliative behaviors and vocalizations in nonhuman primates in a 5-HT2A receptor dependent manner. Additionally, enantiomers of MDMA both significantly increased affiliative social behaviors, while methamphetamine did not. Using this established nonhuman primate model, we will continue to examine the pharmacological mechanisms mediating the affiliative social effects of MDMA.

Financial Support: K05 DA01246-2, R01 DA12514, and P510D11132

MDMA INCREASES AFFILIATIVE BEHAVIORS AND VOCALIZATIONS IN NONHUMAN PRIMATES IN A 5-HT2A RECEPTOR-DEPENDENT MANNER.
MAJOR DEPRESSIVE DISORDER AND FAMILY HISTORY OF ALCOHOLISM IN TWO TREATMENT SAMPLES: DOES GENDER MATTER?
Kathryn McKenzie1,2, Alex S Edwards1, Kenneth S Kendler2, Dave Svikis1, Enkelejda Ngjelima1, Shannon Spicer2. 1Psychology, Virginia Commonwealth University, Henrico, VA, 2Psychiatry, Virginia Commonwealth University, Richmond, VA

Aims: Major depressive disorder (MDD) is a common comorbidity in persons with substance use disorders, and may influence treatment engagement and outcomes differently for men and women (Polak et al., 2015). Given the renewed NIH focus on gender/sex as a fundamental variable in research, the present study afforded an opportunity to examine associations between MDD, gender and parental alcohol problems (PA) in patients from two disparate treatment modalities.

Methods: Participants (N=245) were enrolled in either opioid-substitution therapy (OST) (50.6%) or a residential treatment (RT) (49.4%) program and completed a 20 minute anonymous computer-administered survey on substance use, mental health, and other domains, as part of a GWAS feasibility study. Data analyses included chi-square for categorical variables and multiple linear regression.

Results: Demographically, the OST sample was predominantly female (58.5%) and black/African American (79.7%), with over one-third (36.7%) unemployed. In contrast, the RT sample was primarily male (62%), white/Caucasian (95%), and employed full time (47.9%). While the two sites did not differ in prevalence of DSM-5 MDD (66% in OST and 55% in RT, NS), females were more likely than males to report MDD in both sites (68% vs 54% overall; p < .01). Females with MDD were also more likely to report PA than those without MDD (84% vs 50%, respectively; p < .001). This pattern was not found among males.

Conclusions: Preliminary analyses found gender differences in associations between MDD and PA, with findings consistent across the diverse OST and RT treatment programs. Higher rates of MDD suggest substance dependent women may benefit from programs with counselors trained in the treatment of co-morbid disorders. Additional analyses will examine other domains including personality and substance use severity.

Financial Support: VCU Presidential Endowment grant to D. Svikis.

HOUSING STATUS, PSYCHIATRIC DISTRESS, AND SUBSTANCE USE AMONG SOBER LIVING HOUSE RESIDENTS.
Douglas L. Pofkin, Rachael Korchia, Amy Mericle, Shalaka Gupta, Jane Withrow; 1Alcohol Research Group, Public Health Institute, Emeryville, CA

Aims: This study aimed to examine changes in housing status over 18 months among 299 individuals entering sober living houses (SLHs), which are alcohol- and drug-free residences for persons recovering from substance use disorders. Specific aims included: 1) Examine how alcohol, drug and psychiatric problems differ by housing status prior to entering SLHs. 2) Examine changes in housing status of SLH residents at 6, 12, and 18 month follow-up. 3) Assess how housing status and psychiatric problems are related to substance use at follow-up.

Methods: Study participants (N=299) were recruited from two organizations operating SLHs. Four houses were associated with an outpatient treatment program and 20 houses were freestanding houses unaffiliated with treatment. Participants needed to be age 18 or older and able to provide informed consent. Participants were interviewed within their first week of entering SLHs and again at 6-, 12-, and 18-months. Study measures included demographics, housing status, the ASI, the Brief Symptom Inventory, peak density (a measure of substance use), and DSM IV Checklist for alcohol and drug dependence.

Results: Between entry into the SLHs and 18-month follow-up homelessness fell from 16% to 4%. Persons who were in marginal housing situations fell from 66% to 46%, while stable housing grew from 13% to 27%. Generalized Estimating Equation (GEE) models showed participants living in SLHs or in stable community housing (e.g., apartment or house) had significantly better outcomes on all alcohol and drug measures compared to those that were marginally housed or homeless. Psychiatric distress declined over time, but higher distress was associated with increased drug problems.

Conclusions: Results support the role of SLHs as an important resource for persons with substance use disorders who are homeless or lack stable housing. Residence in SLHs is associated with improvements in housing status and psychiatric distress, both of which are associated with drug and alcohol outcomes.

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POTENTIAL OPIOID MISUSE IN THE SOCIAL SECURITY HEALTHCARE SYSTEM OF PERU.
Javier Ponce Terashima1, Kim Hoffman1, Fabián Fiesta1, Victor Dongo2, Dennis McCarty2. 1International Center for Advanced Research and Applied Science, Lima, Peru, 2Oregon Health & Science Univ, Portland, OR, 3EsSalud, Lima, Peru

Aims: Opioid use disorders have not been a major concern in Peru. EsSalud, the Social Security Healthcare System for employed Peruvians and their families, does not have clinical practice guidelines for opioid therapy. A 2014 analysis sparked institutional concern about exponential increases in prescriptions of oxycodone prescriptions between 2005 and 2014. This current analysis explores high levels of dosing of oxycodone as well as overlapping oxycodone and benzodiazepine prescriptions.

Methods: Data on 1,047 subjects who had two or more dispensed prescriptions for oxycodone in the EsSalud health care system between January 2014 and March 2015 were analyzed. Participants who visited oncology departments were not included in this analysis. Data included drug formulation, quantity of medication dispensed, and dispense date. Oxycodone was quantified by using the included high RDD and overlapping oxycodone and benzodiazepine prescription dispensed, and dispense date. Oxycodone use was quantified by using the March 2015 were analyzed. Patients who visited oncology departments were not included in this analysis. Data included drug formulation, quantity of medication dispensed, and dispense date. Oxycodone was quantified by using the

Results: 159% (n = 157) of the patients had a RDD of oxycodone of 100 Methadone Equivalent Dose (MED) or more at least once, and 12% (n = 129) had a RDD of 100 MED or more for more than 30 days, 65% (n = 681) of patients had an oxycodone and benzodiazepine prescription overlapping for 7 or more days, and 28% (n = 370) patients had one or more oxycodone and benzodiazepine prescriptions on the same day.

Conclusions: The high levels of MEDs prescribed and the overlapping with benzodiazepine prescriptions suggest the EsSalud system should develop and implement guidelines to promote appropriate prescribing of opioids and awareness of overlapping benzodiazepine prescriptions. Studies should assess attitudes and knowledge toward opioid prescribing in order to develop suitable guidelines. These guidelines could help providers improve patient care and reduce the risk of adverse outcomes related to inappropriate prescription of opioids.

Financial Support: n/a

POTENTIAL OPIOID MISUSE IN THE SOCIAL SECURITY HEALTHCARE SYSTEM OF PERU.
Javier Ponce Terashima1, Kim Hoffman1, Fabián Fiesta1, Victor Dongo2, Dennis McCarty2. 1International Center for Advanced Research and Applied Science, Lima, Peru, 2Oregon Health & Science Univ, Portland, OR, 3EsSalud, Lima, Peru

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Results: 159% (n = 157) of the patients had a RDD of oxycodone of 100 Methadone Equivalent Dose (MED) or more at least once, and 12% (n = 129) had a RDD of 100 MED or more for more than 30 days, 65% (n = 681) of patients had an oxycodone and benzodiazepine prescription overlapping for 7 or more days, and 28% (n = 370) patients had one or more oxycodone and benzodiazepine prescriptions on the same day.

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Financial Support: n/a

HISTORY OF COCAINE SENSITIZATION IN HUMANS IS ASSOCIATED WITH LIPIDOMIC CHANGES SIMILAR TO THOSE IN COCAINE-SENSITIZED RATS.
Kenzie L Preston1, Karran A Phillips2, John J Wagner3, Brian Cummings6, David H Epstein4; 1Treatment Section, NIDA IRP, Baltimore, MD, 2Clinical Pharmacology and Therapeutics Research Branch, NIDA Intramural Research Program, Baltimore, MD, 3University of Georgia, Athens, GA, 4Intramural Research Program, National Institute on Drug Abuse, National Institutes of Health, Baltimore, MD

Aims: To test whether a rodent biomarker for cocaine sensitization is also present in humans. Using rats, two of us (JW and BSC) identified a set of lipids in blood that are selectively increased with cocaine-induced behavioral sensitization. Any human homolog of sensitization is likely to involve longitudinal changes that date from the initiation of cocaine use, so we developed a method to assess those changes.

Methods: We modified the Cocaine Response Scale (Davidson et al., 1993) to assess subjective responses to cocaine from the first lifetime use to typical current use. We then classified cocaine users (n = 80) as “sensitizers” if their score on either positive or negative effects by >5 across their using careers. We compared blood lipid profiles between sensitizers and nonsensitizers, using electrospray ionization-mass spectrometry followed by principal component analysis.

Results: Out of 80 users, there were 8 sensitizers, of whom 3 sensitized to positive effects only, 2 to negative effects only, and 2 to both. In 3D principal least-squares discriminant analyses, blood lipidomic profiles for the sensitizers showed extensive differences from those of nonsensitizers.

Conclusions: Sensitization to cocaine effects—positive, negative, or both—occurs in approximately 10% of frequent users by retrospective self-report. As has been found in rats, sensitization is associated with changes in the blood lipidome. To our knowledge, this is the clearest demonstration to date that the psychostimulant sensitization observable in laboratory animals may have a human counterpart.

Financial Support: National Institute on Drug Abuse, Intramural Research Program
SEX-DIFFERENCES IN GREY MATTER CONCENTRATION IN COCAINE USE DISORDER: A VOLEX-BASED MORPHOMETRY STUDY.

Rebecca N Preston-Campbell, Gabriela Gan, Scott Moeller, Anna Zilverstand, Muhammad A Parvaiz, Nelly Alia-Klein, Rita Goldstein; Ichahn School of Medicine at Mount Sinai, New York, NY

Aims: Individuals with cocaine use disorders (iCUD) show grey matter concentration (GMC) reductions in regions implicated in reward/punishment, goal-directed behavior, and cognitive control [e.g., prefrontal cortex (PFC), and subcortical limbic regions]. Sexually dimorphic neuro-morphological alterations contribute to addiction severity; however, research has focused on men. Here we explore whether sex modulates the grey matter concentration reductions commonly observed in iCUD.

Methods: Twenty-two iCUD (13M/9W) and 25 demographically matched healthy controls (12M/13W) underwent MRI (3T Skyra), providing T1-weighted anatomical images acquired with a 3D MPRAGE sequence. Baseline craving was assessed with the Cocaine Craving Questionnaire. Independent and interactive effects of diagnosis and sex on GMC were examined using a whole-brain 2 (diagnosis: iCUD, control) x 2 (sex: M, W) ANOVA in SPM8, with follow-up comparisons computed as appropriate. Clusters with >20 contiguous voxels, with a FDR <0.05 threshold were considered significant.

Results: Results showed that: (A) iCUD women had lower GMC in the bilateral dorsolateral PFC and left orbitofrontal cortex (OFC) relative to controls; and iCUD men had lower GMC in the right rectus gyrus relative to control men. (B) Compared with iCUD men, iCUD women had greater GMC in the bilateral dorsal anterior cingulate cortex and amygdala, with the latter (left side) correlating with more baseline craving (r=0.66, p<0.04).

Conclusions: Our results suggest that some PFC morphological differences between iCUD and controls may be driven by women. There was also a sex * diagnosis effect in the amygdala, which may mark addiction-mediated changes in the brain’s stress/alarm system that could contribute to, or potentiate, aversive emotions as directly associated with craving in women iCUD. Future longitudinal studies can test whether these GMC sex-differences reflect a predisposition for drug use and/or changes secondary to chronic drug use that are accentuated in iCUD.

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INTEROCEPTIVE AWARENESS TRAINING FOR WOMEN IN SUD TREATMENT:

Cynthia Price1, Sheila E Crowell2, Chieh Cheng1, Elaine Thompson1; 1Biobehavioral Nursing and Health Systems, University of Washington, Seattle, WA, 2Psychology, University of Utah, Salt Lake City, UT

Aims: This NIDA-funded RCT tests the efficacy of Mindful Awareness in Body-oriented Therapy (MABT) as an adjunctive intensive outpatient treatment for women with MABT individuals explicitly, to learn interoceptive awareness skills for regulation. Brain imaging studies suggest the importance of interoception for regulation to support relapse prevention among substance users.

Methods: Participants at 3 SUD clinics were randomly assigned in conjunction with their intensive outpatient treatment (treatment as usual or TAU) to one of 3 study conditions: MABT, Women’s Health Education (WHE) or TAU only. Four assessments conducted across one year include the Multidimensional Assessment of Interoceptive Awareness (MAIA) and measures of respiratory sinus arrhythmia (RSA), a psychophysiology indicator of regulation. To date 145 women have enrolled; 94 completed the post-intervention assessment. Analyses include RM ANOVA and regression analyses.

Results: Participant ages ranged from 20-61, 91% had public health insurance. Primary drugs used were alcohol (43%), stimulants (43%) and narcotics (20%); 20% use multiple substances. At baseline, 66% screened positive for PTSD, 46% for an eating disorder, and 37% for depression. The MABT group, compared to WHE and TAU, showed significant improvements in interoceptive awareness on MAIA scales Noticing (p=0.002), Self-regulation (p =0.002), Emotional Awareness (p=0.001), Listening to Body (p<0.001) and Trust (p =0.03). Compared to WHE and TAU, change in MAIA total scores predicted 3-month RSA in MABT (r=0.40, p=0.04). Moreover, at 3 months for MABT only, MAIA scores were positively associated with RSA.

Conclusions: Results demonstrate that MABT increases interoceptive awareness for women in SUD treatment, confirming that, in a distressed sample of women living with particularly taxing personal circumstances, interoception can be learned with individualized coaching. The findings point to the influence of interoceptive awareness on regulation, yielding new and important clinical implications for research and treatment.

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SUBSTANCE USE AND HIV CARE AMONG PUERTO RICANS LIVING WITH HIV ON RIKERS ISLAND.

Tracy Pugh1, Janet Wiersma2, Paul Teixeira3; 1SMS, Mailman School of Public Health, NYC, NY; 2NYC Correctional Health Services, NYC, NY; 3Weill Cornell Medicine, NYC, NY

Aims: 23% of the Latino HIV cases in the US are among people born in PR, yet Puerto Ricans compose only 9% of the US Latino population. In New York City, Latinos with HIV experience 3 times the death rate of whites. There are also high HIV rates among Latinos incarcerated at Rikers Island, the main jail complex for NYC, an epicenter of HIV. This formative study examines the experience of HIV care among incarcerated men and women who self-identified as Puerto Rican and are affected by substance use, HIV/AIDS and the criminal justice system.

Methods: 20 semi-structured interviews were conducted among adults living with HIV/AIDS on Rikers Island: 10 men, 4 women. Participants discussed experiences surrounding their diagnosis, correctional and community-based care, medication adherence, stigma, social support, criminal justice history and transnationalism. Electronic medical records were used to examine participant characteristics and medical history.

Results: Nearly all participants reported substance use which intertwined with all stages of the HIV care continuum. Related themes included: linkages between drug treatment and healthcare; relapse as a recurring interuptor, or reason for delay, of healthcare; and access to supportive services in drug treatment settings. Few considered provider-related, cultural factors like ethnicity or ability to speak Spanish as pivotal to care. Experience of prejudice related to ethnicity was rarely reported. In line with the concept of familismo, family was a significant motivation for maintaining health and treatment adherence. Transnational practices were moderate in number and reported by few of the participants.

Conclusions: Substance use is a major barrier to HIV treatment access and medication adherence for justice-involved Puerto Ricans living with HIV. Greater sensitivity and linkages to care are needed in drug treatment settings.

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METHAMPHETAMINE ADDICTION VULNERABILITY, THE MARKED SEX DIFFERENCES IN THE PROPENSITY TO SELECT METHAMPHETAMINE OVER FOOD REINFORCEMENT.

Mari Putpura, Philip Viera; Psychological and Brain Sciences, University California Santa Barbara, Santa Barbara, CA

Aims: Recent preclinical data have demonstrated that there is substantial individual variation in the propensity to select drugs of abuse (cocaine or heroin) over a competing reinforcer (food) with the majority of individual exhibiting a strong preference for one reinforcer. Further, the distribution of individuals that prefer cocaine over food exhibits a marked sex difference with females exhibiting a higher propensity to forgo food reinforcement to obtain cocaine as compared to males. Currently, there is limited information on how subject factors may impact the selection of METH over a competing reinforcer and thus, we have begun to explore individual differences in a rat model of METH versus food choice.

Methods: Briefly, rats are implanted with an intravenous catheter and then trained for METH or food reinforcement on alternating days followed by assessment of choice between these reinforcers followed by additional tests at higher doses of METH.

Results: To date, the data indicate that, like cocaine, there is a high degree of individual difference in the selection of METH over food reinforcement and that this selection is dependent upon METH dose with 12.5% selecting 0.05 mg/kg infusion METH and 37.5% selecting 0.1 mg/kg infusion METH over food reinforcement.

Conclusions: Our preliminary data also suggest that, in comparison to reports of employing drug-food choice procedures in male rats, that females exhibit a higher addiction vulnerability for stimulant drugs of abuse. 

Financial Support: National Institute of Health

METHADONE MAINTENANCE THERAPY AND COMORBID SUBSTANCE USE: A BRIEF QUALITATIVE REPORT.

Nitaisha Puri, Ryan McNeil, Will Small; Urban Health Research Institute, BC Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada

Aims: Motivations and reasons for ongoing substance use while on methadone maintenance treatment (MMT) are not well described in the literature. There are a number of potential risks for concurrent substance use while taking methadone, and treatment options are underdeveloped. This study explores motivations, reasoning, and substance use patterns of people who are on MMT.

Methods: Semi-structured qualitative interviews were conducted with 39 MMT patients in Vancouver, Canada. Individuals reporting enrolment in MMT were recruited from within two ongoing cohort studies comprised of people who use drugs. Interview transcripts were analyzed using an inductive and iterative approach.

Results: Two main categories of comorbid substance use were identified: (1) escalating or ongoing stimulant use; and (2) continued opiate use despite MMT. Respondents reported using stimulants in order to counter the sedating effects of methadone, and many acknowledged continued use from prior stimulant use disorders. In addition, some experienced the cocaine-blocking effect of methadone that has been described in previous literature, which prompted them to use more stimulants. Those who continue using opiates generally describe ambivalence toward abstinence, and some choose to stay on low dose maintenance to serve as withdrawal management but allow opiate intoxication while on MMT. Others use higher quantities of opiates in attempts to override the methadone blockade and experience intoxication. Results continue to be analyzed.

Conclusions: Findings underscore the need to screen for escalating stimulant use while on MMT, as well as the need to continually explore recovery goals while on MMT. Those continuing to use opiates in addition to MMT require increased harm reduction measures.

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USING RESIDENTIAL IN-PATIENT DETOXIFICATION UNITS TO FACILITATE EFFECTIVENESS OF THERAPEUTIC COMMUNITY REHABILITATION: A COMPARATIVE FOLLOW-UP PILOT STUDY.
Shari L. Drum, John K. August, Criminology, University of Haifa, Haifa, Israel

Aims: Inpatient detoxification units (IDU) provide medical stabilization of individuals with substance use disorder undergoing physical withdrawal along with concurrent assessment, counselling and intensive interventions for the purpose of placing them in continued treatment. However, few enter post detoxification treatment, and fewer engage in long term residential rehabilitation, despite its crucial importance in maintaining abstinence. Transition to a novel therapeutic framework requires further adaptation, triggering crises that increase treatment dropouts and relapse. The aim of this pilot study was to assess whether detoxification in an IDU within a drug-free therapeutic community (TC) residential treatment facility leads to better TC long-term treatment outcomes compared to detoxification carried outside the TC.

Methods: A comparative study combining retrospective file analysis with prospective follow-up post TC release telephone interviews of 30 young drug abusers; Individuals with substance use disorder that were treated In a TC after they went through physical detoxification in an internal IDU (IDU within the TC facility) were compared with demographically matched concurrently admitted control group (n=15) that were detoxified in an external IDU before TC treatment.

Results: Substance abusers undergoing detoxification in an internal IDU remained in treatment longer and presented better TC adaptation. The longitudinal follow-up showed better abstinence rates, craving, behavioral, and emotional function; optimal continuity between various stages of treatment can reduce TC dropout and hence IDU readmission rates, increase compliance and improve retention of change processes.

Conclusions: This pilot study demonstrates the importance of internal IDU in facilitating long term TC treatment outcomes. A study of larger sample and broader rehabilitation indices will enable a better comparison of the therapeutic success, long-term harm reduction and health implications.


ARE GENDER DIFFERENCES IN THE PREVALENCE OF PAST-YEAR MARIJUANA USE AND RISK PERCEPTION IN THE U.S. NARROWING FROM 2002-2013?
Reanne Rahim-Juwel, Hannah Carliner, Dvora Shmulewitz, Aaron L Sarver, Melanie Wall, Silvia S Martins, Qiana Brown, Pia M Mauro, Deborah Hasin; Columbia University, New York, NY

Aims: In the past decade, adult marijuana use has increased in the US, with more men than women reporting use. Despite the shifting legality of marijuana use, it is unknown whether this "gender gap" has narrowed, as it has for alcohol. We investigated whether time trends in marijuana use and perceived risk of use differed between men and women from 2002-2013.

Methods: Using data from the 2002-2013 US National Survey on Drug Use and Health (210,374 men; 240,786 women), trends in past-year marijuana use and perceived risk of marijuana use were assessed with weighted logistic regression models adjusted for race, age, education, income and marital status. Interaction tests assessed if trends differed by gender and gender-stratified regression analyses were performed.

Results: From 2002-2013, marijuana use increased (p<0.01) by an estimated 7.8 million users. In all years, marijuana use was more prevalent in men (12.4-16.2%) than in women (7.1-9.5%), but trends in use did not differ by gender (p>.77). Perception of great risk of regular marijuana use decreased in both men (p<0.01) and women (p<0.01). In all years, fewer men (29.3-44.1%) than women (44.0-59.6%) reported perceiving great risk in regular marijuana use. Trends did not differ significantly by gender (p>.09).

Conclusions: In contrast to the decreasing "gender gap" for alcohol, for mariju- ana, men and women did not differ in their trends over time. Men and women significantly increased their use of marijuana, and decreased their perception of great risk. This is a public health concern as increased marijuana use can have many effects, including negative health consequences and decreased productivity. Studies are needed to explore gender differences in consequences of marijuana use as Americans increasingly become more permissive about its use, and its legal environment increasingly resembles that of alcohol.

Financial Support: T32DA031099, R01DA037866, R01DA034244, NY State Psychiatric Institute

EFFECT OF A GLUCOCORTICOID RECEPTOR ANTAGONIST - MIFEPRISTONE - ON RELAPSE RISK IN COCAINE-DEPENDENT MEN.
William C. Raby1,4, Francesco DePinto, Edward V Nunes2; 1Psychiatry, Columbia University, New York City, NY, 2Psychiatry, Albert Einstein College of Medicine, Bronx, NY

Aims: Cortisol is a pivotal vector of the stress response in the brain and periphery. When an addicted state is reached, a dysregulated stress response may perpetuate the addiction. Animal studies indicate that blocking cortisol with mifepristone (MIF) may reverse behavioral and neuroanatomical markers related to self-administration of cocaine. Stress induced cravings in cocaine users cause cortisol secretion and predict relapse. This double blind, randomized, placebo (PBO) controlled study investigated if MIF could reduce relapse risk in cocaine-dependent men.

Methods: Cocaine-dependent men (18-60) were hospitalized for a 7-day abstinence induction Phase 1, during which they received two doses of MIF 600 mg or PBO. After discharge, they began a 4 week outpatient phase 2, receiving 600 mg of MIF or PBO 3x/wk under supervision. Followed Phase 3: for 4 weeks, the study continued, but medication stopped to observe longer term effects on relapse risk. Measures at each study visit was urotx and Time-Line-Follow-Back. Outcomes were: 1) days to relapse after abstinence induction in phase 1; 2) proportion of days of use per week in the study. Analyses are based on 20 patients who completed Phase 2, 9 on MIF, 11 on PBO.

Results: Time to relapse survival curve was not significant in Phase 2 (X2=1.8536, P=0.2229, df=1) or Phase 2+3 (X2=1.4254, P=0.2328, df=1). At day 10 of Phase 2, 68% of patients on MIF were abstinent vs. 28% on PBO; at day 28, 44% (MIF) vs. 28% (PBO). At end of phase 3 (day 52), 22% (MIF) vs. 8% (PBO) were abstinent. Proportion of days of use was not significant (X2=0.0009, P=0.9766, df=1). No serious adverse events occurred. Average medication compliance was 96%.

Conclusions: The study was hampered by a small sample size. Outcomes were not statistically significant. MIF was safe and well tolerated. Witnessed medication intake produced good compliance. MIF may reduce relapse risk. Verification with a larger sample is required.

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TRANSITION TO PROBLEM STIMULANT USE MARKED BY AMPLIFIED INSULAR RESPONSING TO PLEASANT INTEROCEPTIVE STIMULI
Evelyn Ramirez-Coombs1, April Chelsea May1, Jennifer Lorraine Stewart1, Susan Tapert3, Martin P Paulus2; 1Psychology, CUNY Graduate Center, New York, NY, 2Psychiatry, UC San Diego, San Diego, CA, 3Psychology, CUNY Queens College, Flushing, NY, Psychiatry Service, Veterans Affairs San Diego Healthcare System, San Diego, CA, 4Laureate Institute of Brain Research, Tulsa, OK

Aims: Altered interoception, how the brain processes signals from the body, may contribute to impaired decision making, leading to addiction development. While processing pleasant interoceptive stimuli via soft touch, chronic stimulant users show attenuation in striatum, insular cortex, anterior cingulate cortex (ACC), and inferior frontal gyrus (IFG) during a simple decision-making task. In contrast, young adults who recently transitioned to problem stimulant use (PSU) exhibit greater insular and IFG activation than those who have desisted stimulant use (DSU) or have never used stimulants (CTL). The present study examined whether PSU findings would replicate during a complex decision-making task involving positive and negative feedback.

Methods: PSU (n=13), DSU (n=10) and CTL (n=13) performed a two-choice decision-making task with three fixed error rates (ER; 20% = reward; 50% = uncertainty, 80% = punishment) while anticipating and experiencing soft touch via soft bristle brush during functional magnetic resonance imaging. Results: PSU exhibited greater bilateral insula activation than DSU and CTL during the experience of soft touch, replicating prior work. However, both PSU and DSU exhibited lower ACC activation than CTL while making decisions within the context of reward and soft touch. Moreover, PSU displayed lower IFG to reward but higher IFG to uncertainty than DSU and CTL. PSU showed within-group striatal increases as a function of soft touch, particularly during reward.

Conclusions: PSU show amplified processing of pleasant interoceptive stimuli, reflecting a potential biomarker of recent-onset, current addiction. In contrast, reduced conflict/error monitoring in PSU and DSU may instead signal a predisposition to experiment with drugs.

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THE TOBACCO STATUS PROJECT: THREE MONTH OUTCOMES FOR A RANDOMIZED CONTROLLED TRIAL OF A FACEBOOK SMOKE CESSATION INTERVENTION FOR YOUNG ADULTS.

Danielle Ramo1, Johannes Thurl1, Kevin Deluca1, S m Hall2, P Ling3, A Belohlavek1, Shirley Zhao4, Beomyun Han1, J Prochaska2; 1UCSF, San Francisco, CA, 2Stanford University, Stanford, CA

Aims: Social media represents a promising strategy to deliver evidence-based smoking cessation treatment. We present outcomes from a trial testing the efficacy of a Facebook smoking cessation intervention for young adults.

Methods: Young adult smokers (N=501; age 18-35) were recruited online and randomized to either the 3 month Tobacco Status Project (TSP) intervention or a referral to a smoking cessation website (Smokefree.gov; control). TSP included assignment to a private Facebook group tailored to readiness to quit smoking, daily Facebook contacts, weekly live counseling sessions, and for those ready to quit, 6 additional Cognitive Behavioral Therapy counseling sessions.

Results: The sample was 73% non-Hispanic White and 55% female with 87% daily smokers, 48% smoking 10 or fewer cigarettes per day, and averaging 2.8 years smoking (SD=6); 30% were in precontemplation (no intention to quit in the next 6 months); 49% contemplation (intending to quit in the next 6 months), and 21% preparation (intending to quit in the next 30 days) for quitting smoking. Three-month follow-up rate was 70% (67% treatment, 74% control; y=2.12; P=.14). Verified smoking 7-day point prevalence abstinence was significantly higher for TSP than control at treatment end (8.3% vs 3.3%; odds ratio [OR]=2.52; 95% confidence interval [CI]=1.56, 4.04; P<0.0001).

A greater proportion of TSP participants reduced the number of cigarettes they smoked in the past week by at least half from baseline to 3 months (52.7% vs 38.8%; OR=1.82; 95% CI=1.33, 2.49; P<0.0002). There were no differences in likelihood of having made a quit attempt during treatment or readiness to quit smoking in the next month across groups.

Conclusions: A novel Facebook intervention is associated with biochemically-verified abstinence from tobacco and reduction of smoking at 3 months. Social media intervention could be disseminated widely and expanded to address additional health risks.

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GENE VARIANTS OF THE DOPAMINERGIC SYSTEM ARE ASSOCIATED WITH NON-DEPENDENT HEROIN USE AND HEROIN DEPENDENCE.

Matthew Randesi1, Orna Levan1, Jurg Ott1, Peter Blanken2, Wim van den Brink3, Jan M van Ree3, Mary Jeanne Kreek1; 1The Rockefeller University, New York, NY, 2Central Committee on the Treatment of Heroin Addicts, Utrecht, Netherlands

Aims: To determine whether specific variants in genes of the dopamine system are associated with non-dependent heroin use and heroin dependence in a population that includes subjects who self-exposed to heroin without becoming addicted, methadone-maintained heroin dependents, and heroin-dependent subjects in heroin-assisted treatment.

Methods: The study was limited to subjects of Dutch Caucasian ancestry. Four subject groups were collected: non-dependent heroin users (NOD) [n=198]; opioid-dependent (OD) patients in methadone maintenance treatment (MMT) [n=204]; opioid-dependent MMT-resistant patients in heroin-assisted treatment (HAT) [n=196]; and healthy controls (HC) with no history of heroin use [n=197]. A total of 118 variants in 13 genes were genotyped using a Illumina GoldenGate array. To establish the role of the dopamine genes in (a) the development of heroin dependence and (b) the outcome of heroin treatment, we performed association analyses with the heroin dependence scores and the opioid treatment drop-out rates.

Results: The analysis of the association between the genetic variants and the heroin dependence scores or treatment drop-out rates revealed 10 significant associations. A strong association was found with SNP rs2073837, located in the dopamine beta-hydroxylase gene (DBH), which was shown to be associated with heroin dependence (OR=4.27; 95% CI=1.98, 9.24; P=.0003). The association of DBH with heroin dependence was significant even after correction for multiple testing (Bonferroni correction). The SNP rs2073837 has previously been shown to be associated with attention deficit hyperactivity disorder (ADHD).

Conclusions: Our findings suggest that the dopamine beta-hydroxylase gene (DBH) is associated with heroin dependence and that this association is independent of the effects of other dopaminergic system genes. These findings provide a potential molecular basis for the development of heroin dependence and could be used to identify individuals at risk for heroin addiction.

Financial Support: Supported by grants from the Addelion Medical Research Foundation, NIDA grant P50-DA05130 (MIK), a special supplement to R01-DA012648 (MIK) and a grant from the Netherlands Ministry of Health, Welfare and Sports.

PRE-CLINICAL ABUSE TESTING APPLICATIONS IN DRUG DEVELOPMENT.

Jovita Randall-Thompson, Michael Klein; Controlled Substance Staff, Food and Drug Administration, Silver Spring, MD

Aims: An abuse potential assessment for a new drug being developed (under IND or NDA) comprises of a mosaic collection of information and data. The drug’s chemical, pharmacological and pharmacokinetic studies should be described independently. The research results from these interdisciplinary studies need to be interconnected. Studies consist of a full screening of the drug’s receptor binding affinity and receptor functional activity assayed on neurotransmitter systems associated with abuse potential. This information is collected early in drug development. The determination whether to conduct additional studies to further elucidate the drug’s abuse potential may often be partially based on such information. However, a novel mechanism of action can often leave grounds of uncertainty of the relative abuse risk of the drug from an overall behavioral and social perspective. There are circumstances when a change in marketed drug product’s dosage form may impact the abuse potential of the active principle ingredient. Under such circumstances, uncertainty is not often addressed until a preclinical abuse study, such as drug discrimination and self-administration, is conducted. Furthermore, there are cases when a human assessment may be needed, yet this does not nullify conducting of a pre-clinical abuse assessment. As a “stepping-stone”, the preclinical abuse assessment provides information concerning effects of drug dose and appropriate selection of comparator drug and assists in planning the course of human assessment of the drug.

Conclusions: The relevance of pre-clinical abuse studies in understanding a drug’s risk of abuse should not be underestimated. The role and parameters of these studies as it relates to abuse assessment planning in drug development will be discussed.

Financial Support: Financial support provided by the Food and Drug Administration.

VULNERABILITY TO GLUTAMATE EXCITOTOXICITY IS SEXUALLY DIMORPHIC IN RATS EXPOSED TO CHRONIC SOCIAL DEFEAT STRESS: RELEVANCE TO ASTROCYTIC GLUTAMATE-GLUTAMINE CYCLE.

VIRGINIE RAPPENEAU1, AMANDA BLAKER2, JEFFREY R PETRO3, Bryan K Yamamoto4, AIKO SHIMAMOTO4; ’Neuroscience and Pharmacology, Meharry Medical College, Nashville, TN, 3Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN

Aims: Functional role of astrocytes has been implicated in behavioral consequences of stress such as drug reinstatement in rodents. Astrocytic transporters eliminate excess glutamate (GLU) from extracellular space (ECS) to maintain GLU balance, and dysfunction in astrocytes may contribute to behavioral deficits by inducing GLU excitotoxicity. We and others have shown that drug-taking is sexually dimorphic, and stress has a major impact on such sex differences. To determine a role of astrocytes on sex differences in stress-induced drug-taking, we first examined sex differences in GLU elimination in the nucleus accumbens (NAc) in rats exposed to chronic social defeat stress (CSDS) or non-CSDS groups. GLU elimination in the ECS was determined in the NAc as well as its astrocytic product, glutamine (GLN), using a no-net flux in vivo microdialysis. Protein levels and immunoreactivity of GFAP and GLT-1, two astrocytic markers, were quantified in the NAc and prefrontal cortex (PFC).

Results: CSDS accumulated GLU in the NAc more in females (n=7) than in males (n=4) (regression analysis, p<0.05). Moreover, CSDS disrupted a correlation of extracellular GLU and GLN in males that was associated with decreased GFAP protein level and cell density (n=6). In females, however, while CSDS decreased GFAP (n=6), it did not alter the GLU-GLN cycle. In the PFC, a major glutamatergic afferent to the NAc, CSDS produced a statistical sex difference in protein levels of GFAP (n=6/group) (t Test, p<0.05). CSDS did not affect GLT-1 protein levels in NAc or PFC in both sexes (n=6/group).

Conclusions: These observations indicate that effects of CSDS on glutamate elimination may be sexually dimorphic, possibly due to astrocytes.

DISTRESS TOLERANCE AMONG SUBSTANCE USERS ASSOCIATED WITH CONNECTIVITY BETWEEN THE MFG AND VMPC/GACD DURING A DISTRESS TOLERANCE TASK. Elizabeth Danielle Reese1, Ryan Patrick Bell1, Jennifer Youngshin Yi1, Thomas Ross2, Elliot Stein3, Stacey B Daughters1; 1Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill, Chapel Hill, NC, 2Neuroimaging Research Branch, National Institute on Drug Abuse, National Institutes of Health, Baltimore, MD

Aims: Distress tolerance (DT), defined as the ability to persist in goal directed behavior while experiencing affective distress, is implicated in the development and maintenance of substance use disorders. While theory and evidence indicate that cortico-limbic neural dysfunction may account for deficits in distress tolerance, the neurobiological mechanisms of DT have yet to be examined.

Methods: We modified a computerized DT task for use in functional magnetic resonance imaging (fMRI), the Paced Auditory Serial Addition Task (PASAT-M), and examined the neural correlates and functional connectivity of DT among a cohort of substance users (n=21; regular cocaine and nicotine users) and healthy controls (n=25).

Results: Findings indicate deactivation and activation of cortico-limbic structures in response to distress during the PASAT-M. Greater activation in a priori network ROIs, namely the right insula, anterior cingulate cortex (ACC), bilateral medial frontal gyrus (MFG), right inferior frontal gyrus (IFG), and right ventromedial prefrontal cortex (vmPFC) significantly predicted higher DT among substance users, but not healthy controls. In addition, greater task-specific functional connectivity during distress between the right MFG and bilateral vmPFC/gACC was associated with higher DT among substance users, but not healthy controls.

Conclusions: The observed positive relationship between DT and neural activation in cortico-limbic structures, as well as functional connectivity between the rMFG and vmPFC/gACC is in line with theory and research suggesting the importance of these structures for persisting in goal directed behavior while experiencing affective distress.

Financial Support: R21 DA029222, NIDA Intramural Research Program (IRP)

THE "LITTLE BRAIN" STEPS UP: CEREBELLAR ACTIVITY DURING SUCCESSFUL INHIBITION PREDICTS TREATMENT OUTCOME IN COCAINE PATIENTS. Paul S Regier1, D Jagannath1, Jesse Suh, Marina Goldman, Kyle Matthew Kampman, Teresa Franklin, Charles P O’Brien, Anna Rose Childress; Psychiatry, University of Pennsylvania, Philadelphia, PA

Aims: People with addiction face serious challenges when trying to regulate drug use. Research suggests that deficits in pre-frontal cortical regions may allow more "automation" behavior, helping to explain the high rates of relapse. Despite compromised pre-frontal cortex function, some individuals with addiction achieve abstinence. One intriguing possibility is that the cerebellum acts as a compensatory mechanism for impaired top-down control, improving the odds of recovery.

Methods: After brief inpatient stabilization, 34 cocaine patients were scanned with fMRI while completing a novel (valenced pictures) Go/NoGo response-inhibition task. After the inpatient stay, individuals were offered 12 weeks of outpatient treatment, with twice-weekly drug-urine screens. Individuals were split into three groups: "Good" outcome (< 30% of screens were cocaine-positive or missing, N=7), "Poor" outcome (> 90% of screens were cocaine positive or missing, N=16), and the remainder "In Between" (N=11).

Conclusions: The observed positive relationship between DT and neural activation in cortico-limbic structures as well as functional connectivity between the rMFG and vmPFC/gACC is in line with theory and research suggesting the importance of these structures for persisting in goal directed behavior while experiencing affective distress.

Financial Support: Commonwealth of Pennsylvania; NIH/NIDA

STRUCTURAL ANALYSIS OF THE LIMBIC SYSTEM IN SUBSTANCE DEPENDENCE. Michael F Regner, Roland Rosello, Justin Honce, Dorothy Yamamoto, Manish Dalwani, Joseph Salai, Jody Tanabe; UCD, Aurora, CO

Aims: The limbic system is altered in addiction, reflecting pathological changes in memory, affect, and reward. Morphometric changes in limbic volumes have been reported but results are inconsistent in part due to the anatomical complexity of limbic structures. Volume is typically measured using voxel-based morphometry (VBM), which for complex structures is more susceptible to shape- and volume-based errors compared to shape-based segmentation. We used FSL-FIRST, a shape-based segmentation algorithm, to investigate the volume, shape, and brain-behavior relationships in limbic subcortical structures of abstinent substance dependent individuals (SDI).

Methods: 127 subjects including 68 controls and 59 SDI completed psychological questionnaires. Controls were recruited to be age- and sex- similar to SDI. Subjects' MRI were registered and segmented using FSL- FIRST. Shape and volume data were analyzed using ANCOVA for main effects of group, group-by-sex interactions, and brain-behavior relationships.

Results: There were no main effects of group or group by sex interactions on limbic volumes. In contrast, bilateral hippocampi and left amygdala shapes differed between SDI and controls (p=0.008), with SDI demonstrating larger surface concavities. Across groups, bilateral hippocampus shapes correlated positively with impulsivity and left amygdala shape correlated negatively with impulsivity. In SDI, left amygdala shape correlated with drug use severity.

Conclusions: Limbic shape but not volume differed between groups. Shape-based segmentation may be more sensitive than VBM in modelling complex anatomical boundaries. Differences in the shapes of limbic structures in drug users compared to controls may reflect underlying functional differences associated with drug related pathophysiology. Findings in the hippocampi and amygdala, specifically, are consistent with hypothesized role of memory and affect circuits in addiction.

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THE INFLUENCE OF BUSPIRONE MAINTENANCE ON THE PHARMACODYNAMIC EFFECTS OF METHAMPHETAMINE. Anna R Reynolds1, William Walton Stoops1,2,3, Joshua A Lile1,2,3, Craig R Rush1,2,3; 1Behavioral Science, University of Kentucky, Lexington, KY, 2Psychology, University of Kentucky, Lexington, KY, 3Psychiatry, University of Kentucky, Lexington, KY

Aims: Preclinical studies have demonstrated that pretreatment with the non-benzodiazepine anxiolytic buspirone attenuates the abuse-related effects of methamphetamine. However, the influence of buspirone maintenance on the pharmacodynamic effects of methamphetamine in humans has not been reported previously. Therefore, this study examined the influence of buspirone maintenance on the reinforcing, subjective and physiological effects of intranasal methamphetamine.

Methods: In this ongoing study, subjects reporting recent illicit stimulant use (n=8 currently) complete a placebo-controlled, crossover, double-blind protocol in which the effects of intranasal methamphetamine (0, 15 and 30 mg) are assessed after at least 6 days of buspirone (0 and 45 mg) maintenance. In each session, subjects first sample the available dose of methamphetamine and complete a battery of subjective effects and physiological measures. The sampling dose is then made available for self-administration later in each session on a progressive-ratio schedule. Data will be analyzed using repeated-measures ANOVA, followed by a priori planned comparisons with the hypothesis that buspirone will attenuate the abuse-related effects of intranasal methamphetamine.

Results: In the subjects who have completed the protocol, methamphetamine functioned as a reinforcer and produced prototypical stimulus-like subjective and cardiovascular effects (e.g., increased ratings of good effects; elevated systolic blood pressure). Maintenance doses of buspirone were well tolerated and generally devoid of effects. Buspirone maintenance failed to reduce methamphetamine self-administration or systematically alter the subjective and physiological effects of methamphetamine.

Conclusions: These outcomes suggest that buspirone is unlikely to be an effective pharmacotherapy for methamphetamine use disorder.

Financial Support: Supported by grant R21 DA 0354810 to CRR.
Aims: One person dies every 19 minutes from unintentional drug overdose and Pennsylvania is among the ten states with the highest opioid use and overdose rate (Paulozzi, 2012). OverdoseFreePA.org is a freely accessible website serving as a “town square” for information to educate the public about overdose and to promote prevention efforts to reduce overdose and overdose deaths in Pennsylvania. Developed through a collaboration with county health departments, health professionals, law enforcement, and family members of overdose victims, the interactive website puts relevant resources, curricula, news information, policies, and data into users’ hands, thus educating and enabling them to make informed decisions. The website also hosts a state-of-the-science data extraction tool for accessing standardized overdose-related death data input by county medical examiners and coroners, which enables an accurate real time understanding of local overdose-related deaths. The website’s interactive “Find Naloxone” page constantly updates listings of pharmacies that stock and distribute Naloxone, which is linked to a mapping tool to help the user find the nearest provider. Customized pages for law enforcement, healthcare professionals, school or worksite personnel, and family members provide targeted educational materials and local resources, including links to local treatment providers and a speaker’s bureau.

Conclusions: The website is a model for communicating about drug overdose prevention and community education. The community-based approach provides relevant information and resources to all users, from healthcare professionals, law enforcement, educators, or concerned family members. The website format can easily be adapted for use by other communities across the United States who are working to reduce opiate-related overdoses.

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RACIAL DISCRIMINATION AND RISK TAKING PROPENSITY AMONG AFRICAN AMERICAN YOUNG ADULTS.
Cristina Maria Risco1, Derek Iwamoto1, Alia Rowe1, Frank Fonseca1, Morgan Benner1, Tobenna Mbonu1, Ivette Espinosa1, C W Lejuez2; 1Psychology, University of Maryland, College Park, MD, 2Psychology, University of Maryland, College Park, College Park, MD

Aims: Racial discrimination has been identified as a key stressor contributing to the emergence of risk behavior among African American young adults. However, the impact of racial discrimination on risk taking in the immediate context is not well understood. To allow for stronger causal inference, we utilized experimental analogue methods to examine the impact of racial discrimination on risk taking among African American young adults using a real-time, behavioral measure of risk-taking propensity. Further, we examined the potential protective effect of racial centrality (an aspect of the self-concept that reflects the saliency of race) in the link between racial discrimination and risk taking.

Methods: A community sample of 153 African American young adults [50% female, M(SD)age=22(2)] participated. Participants were randomly assigned to experimental condition and completed assessments to check the impact of the manipulation. Participants were presented with a virtual analogue of social exclusion (i.e., Cyberball) manipulated to produce social exclusion attributed to race (racial discrimination condition) or no social exclusion (control condition). Following the manipulation, participants completed a computerized task of risk-taking propensity.

Results: Preliminary findings indicate a moderating effect of racial centrality on risk taking such that those in the racial discrimination condition—with higher racial centrality—had a decreasing pattern of risk taking across trials (difference score between trials 1 and 3) on the risk taking propensity task compared to those with higher racial centrality in the no exclusion control condition (β = -.775, p = .01, N =153).

Conclusions: Findings suggest culturally-relevant risk behavior vulnerabilities and protective factors for African American young adults and are discussed within the conceptual framework of ego depletion.

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COCAINE INCREASES PERMEABILITY OF BLOOD-BRAIN-BARRIER IN THE HIPPOCAMPUSS AND STRIATUM: IMPLICATIONS FOR DRUG USE AND ABUSE.
A L Riley1, David Kearns2, Sara Hargrave1, Terry Davidson1; 1Psychology, American University, Washington, DC, 2Psychology, American University, Washington, MD

Aims: Rats chronically exposed to cocaine display deficits in a hippocampal-dependent behavioral task (Riley et al., CPDD, 2015). These results parallel those seen in animals chronically exposed to a high fat (Western) diet. The behavioral deficits in animals exposed to high fat diets are thought to be a function of increases in the permeability of the blood-brain-barrier (BBB) surrounding capillaries in the hippocampus. The resulting infusion of cytokines and glia into this area produces damage that impairs its ability to inhibit stimulus control over feeding which produces dysregulated food intake and obesity. Given the behavioral parallels between high fat diet and cocaine exposure, the present study assessed if chronic cocaine impacts BBB permeability in a manner similar to that seen with the high fat diet condition.

Methods: Sprague-Dawley rats were injected intraperitoneally with vehicle (n = 10) or 20 mg/kg cocaine (n = 10) for 18 days. Following these injections, they were injected with sodium fluorescein (NaFl, MW 376 Da) and then sacrificed to assess permeability of the BBB in the hippocampus, striatum, cortex and cerebellum.

Results: NaFl was detected in significantly greater amounts in cocaine-injected subjects than those injected with vehicle in both the hippocampus and striatum (with greater levels in the hippocampus than striatum). No significant changes in permeability were evident in the cortex or cerebellum.

Conclusions: The fact that cocaine increased the permeability of the BBB in a manner similar to that seen with high fat diets suggests that the hippocampus may be similarly impacted by glial and cytokine migration. Any damage resulting from this activity may be sufficient to impair hippocampal function and may contribute to dysregulated drug intake via a loss of inhibitory control over drug taking in a manner similar to that seen in food intake and obesity.

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MODELLING HEROIN CAREERS OVER 40 YEARS: SOCIAL COSTS.
Alison Ritter1, Van Phuong Hoang1, Vu Lam Cao1, Marian Shanahan1, Nagesh Shukla1, Pascal Perez1, Michael Farrell2; 1Drug Policy Modelling Program, University of New South Wales, Sydney, NSW, Australia, 2NDARC, UNSW, Sydney, NSW, Australia, 3SMART Infrastructure Facility, University of Wollongong, Wollongong, NSW, Australia

Aims: This project sought to build a model of heroin using careers in one Australian state (NSW), which could be used to determine the net social benefit (NSB) of heroin treatment. Most economic analyses take a short term horizon, whereas a heroin careers model enables a long-term perspective on social costs.

Methods: The model represented 42 years of a heroin user’s career (ages 18 to 60), with individuals cycling into and out of heroin using states (including abstinence), as well as treatment and prison states. The model platform was an Individual Sampling Model (micro-simulation), with 9 states, and 111,400 individuals each with age, gender, HIV and HCV status, and treatment history. Probabilities associated with crime commission and individually calculated lengths of stay in each state were determined from multiple datasets. Costs for the calculation of Net Social Benefit included the costs of treatment provision, healthcare services, blood borne virus treatment, criminal activity, life years lost, and family benefit of treatment.

Results: We were able to build a stable, tractable model and verified all parameters. Validation against external data sources followed. The largest costs incurred by society over the life of heroin use was loss of life (approximately 58% of all costs), followed by healthcare costs (30%). Costs associated with the provision of treatment for heroin dependence were relatively small (less than 8%), similarly crime costs were small when compared against loss of life and healthcare.

Conclusions: The heroin career model powerfully demonstrates the net social benefit of the provision of treatment. The model has the potential to now be used for simulations of alternate policy scenarios, such that different treatment configurations can be compared with reference to their respective economic value.

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THE EFFECTS OF SOCIAL CONTACT ON “BINGE” COCAINE SELF-ADMINISTRATION.
Andrea M Robinson1, Ryan Lacy2, Justin C Strickland2, Charlotte P Magee3, Mark A Smith4, Psychology, Franklin and Marshall, Lancaster, PA, University of Kentucky, Lexington, KY, 3Psychology, Davidson College, Davidson, NC

Aims: In drug self-administration procedures, extended-access test sessions (i.e., test sessions lasting 12-24 hours in duration) allow researchers to model “binge” patterns of excessive drug intake that are characteristic of human substance-abusing populations. We recently reported that cocaine self-administration under short-duration and limited-access conditions (i.e., test sessions lasting 2 hours in duration) could either be facilitated or inhibited by social contact, depending on whether a social partner also had access to drugs. The aim of the present study was to determine whether social contact influences cocaine self-administration during 23-hour sessions of unlimited drug access.

Methods: Male rats were obtained at weaning and reared in either isolated or pair-housed conditions for 6 weeks. Rats were then implanted with intravenous catheters and transferred to custom-built operant conditioning chambers that served as home cages for the remainder of the study. These chambers allowed pair-housed rats to self-administer cocaine simultaneously in the same cage. For some pair-housed subjects, both rats had simultaneous access to cocaine; for others, only one rat of the pair had access to cocaine. Once self-administration was acquired, rats were given unlimited access to cocaine during 23-hour test sessions every fourth day, during which different doses of cocaine were tested. Cocaine intake increased linearly as a function of dose in all rats. Cocaine intake was greatest in pair-housed rats that had a partner with access to cocaine, whereas cocaine self-administration was lowest in pair-housed rats that had a partner without access to cocaine.

Conclusions: These data indicate that patterns of excessive drug intake during prolonged “binges” of drug use can either be facilitated or inhibited by social contact.

Financial Support: This study was funded by NIH Grants DA027485 and DA001725.

SCREENING FOR ORAL CANCER IN TOBACCO AND/OR ALCOHOL ADDICTS: A COMPARISON OF DIFFERENT ORGANIZATIONS.
M. ROLLIER; Public health, CHRU de TOURS (FRANCE), TOURS, France

Aims: Three quarters of oral cancers are linked to tobacco and/or alcohol consumption. Oral cancer screening is a public health priority although this is not widely known. This project aimed to compare different organisations for providing access to screening in alcohol addicts.

Methods: Patients were included in this prospective study for systematically oral cancer screening in three different types of health structure specialized in addiction: inpatient re-insertion service (SSR), outpatient addict health, support and prevention service (CSAPA) and liaison addiction team in a French department, between 2010 and 2013. The patients were offered screening at their recruitment site or in a dentist’s office.

Results: In all, 1,424 individuals were included (mean inclusion rate was 20.7% of the active list of each structures). The inclusion rates were significantly higher in the SSR than in the CSAPA and the liaison teams (40.6, 13.1 and 8.1%, respectively; p<0.01). All patients opted for screening sessions on their recruitment sites and no patient opted for screening in a dentist’s office, which was the only screening modality offered by the liaison teams. Four cancers and 22 precancerous lesions were discovered (23 from SSR and 3 from CSAPA). The cost of screening per patient was lower in the SSR than in the CSAPA ($17 vs $53) and could not be calculated for the liaison team.

Conclusions: This study indicates that the SSR has the most suitable organisation for oral cancer screening in terms of inclusion’s rate, efficiency and cost.

Financial Support: This project was accepted as part of a call for proposals of the French National Cancer Institute (INCa) in 2011 relevant to policies for prevention and cancer screening.

NO ASSOCIATION BETWEEN CRACK-COCAINE ADDICTION AND COMT VAL/MET POLYMORPHISM.
Tatiana Roman1, Anderson Ravy Stolf2, Jaqueline Bohrer Schuch3, Diana Muller3, Glaucia Chiyoko Akutagawa-Martins1, Claudina Szobot1, Flavio Pechansky Pechansky1, Felix Henriques P Kessler1, ‘Child and Adolescent Psychiatric Service / Hospital of Clinics of Porto Alegre, UFRGS, Porto Alegre, Brazil, 2Center for Drug and Alcohol Research / HCPC, UFRGS, Porto Alegre, Brazil, 3Post Graduate Program in Genetics and Molecular Biology / Department of Genetics, Federal University of Rio Grande do Sul, Porto Alegre, Brazil

Aims: Catechol-O-methyltransferase gene (COMT) has been studied as a candidate gene for numerous reward-related phenotypes and there is evidence associating it with addiction. The aim of this study was to verify if this gene was also associated with crack-cocaine dependence.

Methods: A cross-sectional study of 237 current adult crack abusers or dependents (DSM-IV TR criteria) from in- and outpatient clinics and 209 community adult controls was conducted in Brazil. Subjects were evaluated with ASRS, ASI6 and MINI-Short. DNA samples extracted from whole blood were genotyped for the COMT Val/Met polymorphism. Association hypothesis was investigated using logistic regression models, grouping the individuals according to the presence of Val allele (Val carriers x others).

Results: Including sex, age and ethnic group as covariates, no association was observed (p>0.948). Other analyses including clinical covariates, attention deficit/hyperactivity disorder, depressive and anxiety symptoms and suicide risk showed similar results (p>0.964).

Conclusions: This study suggests that COMT Val/Met polymorphism, is not associated with crack-cocaine dependence in our sample. However, the influence of this polymorphism in the response to cognitive-behavioral therapy in cocaine dependent has been recently reported in the literature. Future analyses might thus be able to reveal a role for COMT as a susceptibility and/or as a modulator gene in crack-cocaine dependence.

Financial Support: SENAD, FAPERGS, CNPq, CAPES and PRODAH.

USING A LIFETIME RELATIONSHIPS CALENDAR WITH VETERANS TO MODEL THE EFFECTS OF MILITARY DEPLOYMENT ON SEXUAL PARTNERING.
Marc I Rosen1,2, Anne C Black1,2, Thomas McMahon1,2, Lynn Brecht1, Marc N Potenz1,2, ‘Psychiatry, Yale University, West Haven, CT, 2VA Connecticut Healthcare System, West Haven, CT, 3School of Nursing, UCL, Angleterre, UK

Aims: Lifetime trajectories of sexual partnering have not been described for military personnel whose lives are disrupted by deployment and combat exposure. Life history calendars can illustrate the temporal relationship between life events and changes in such patterns. We describe the agreement of a Lifetime Relationships Calendar with aggregated data and its use to describe the effect of deployment on sexual risk-taking.

Methods: Participants were Veterans (n=113) in two substance-use focused parent studies, 78% of whom reported at least one year of alcohol use to intoxication or illicit drug use. In counterbalanced order with an aggregate measure of sexual partnering, they completed a month-by-month Lifetime Relationships Calendar describing major life events, deployment, and casual and regular sexual partners.

Results: Concurrent validity estimates between calendar and aggregated measures were all above 0.90. In multilevel models with deployment as a time-varying covariate, deployment’s effect on the probability of having a new sexual partner was significantly moderated by type of deployment; combat deployment was associated with significantly reduced probabilities whereas non-combat deployment had no effect on this outcome. Age of deployment also moderated the effect of deployment such that soldiers deployed at a younger age were more likely than older soldiers to have a new sexual partner while deployed. Veterans whose age at first sexual experience was below the sample mean had greater probabilities of new and multiple partners over time than Veterans whose first sexual experience was later in the life course.

Conclusions: Veterans’ sexual risk-taking is impacted by deployment type and pre-disposing factors such as age for first sex. The Lifetime Calendar allows for longitudinal analyses that illustrate person by environment interactions.

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SENSITIVITY ANALYSIS OF A COMPARATIVE TRIAL OF 6 MONTH BUPRENORPHINE IMPLANTS (PROBUPHINE) AND SUBLINGUAL BUPRENORPHINE IN STABLE OPIOID-DEPENDENT PATIENTS.
Richard Rosenthal1, Michelle R Lofwall2, Sonnie Kim3, Michael Chen4, Katherine Beebe5, Frank Vocci6; 1University of Kentucky, Lexington, KY, 2Psychiatry, Icahn School of Medicine, New York, NY, 3Braeburn Pharmaceuticals, Princeton, NJ, 4TQM Groups, Berkeley Heights, NJ, 5Titan Pharmaceuticals, South San Francisco, CA, 6Friends Research Institute, Baltimore, MD

Aims: A recent multicenter, double-blind, double dummy, non-inferiority (N-INF) trial compared 6-month buprenorphine implants (BI) to daily sublingual buprenorphine (SLBP) among 177 stable outpatients maintained on 8 mg or less of SLBP. The primary efficacy endpoint in the pivotal trial was the proportion of responders (at least 4 of 6 months without evidence of illicit opioid use by urine test and by self-report). Pre-specified analysis plan included imputation of missing values with penalties applied disproportionately to the BI cohort. Under these rules, the responder rate was 96.4% for BI and 87.6% for SLBP; 0.088 difference. The 95% CI for the rate difference (0.009, 0.167) resulted not only in N-INF, but also superiority in favor of BI (p=0.034). This abstract reports a number of post hoc analyses assessing the robustness of these results.

Methods: Post-hoc analyses were conducted with the intent-to-treat population to support the pre-specified endpoints.

Results: Additional sensitivity analyses applying even more stringent parameters disfavoring the BI cohort were conducted. N-INF of BI to SLBP was demonstrated in the following analyses: participants using supplemental BPN as non-responders (p=0.495), all missing urines imputed as positive (p=0.393), and both supplemental BPN use imputed non-responders and missing urines imputed as positive (p=0.926). The findings of these sensitivity analyses were supportive of the original analysis findings and met maintenance of N-INF.

Conclusions: These additional analyses further support the robustness of the primary efficacy of the 6-month BI in stable opioid-dependent patients. Therefore, BI may be a significant new formulation particularly well-suited to treat this important and growing patient population.

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ASSESSING CIGARETTES SMOKED PER DAY: USE OF SMOKING MEASURES DURING AN OBSERVATIONAL BASELINE STUDY PERIOD VERSUS SELF-REPORTED CIGARETTES SMOKED PER DAY.
Megan L Saddleson, Andrew Strasser; Center for Interdisciplinary Research on Nicotine Addiction and Tobacco Centers of Regulatory Science, Philadelphia, PA

Aims: To examine digit bias among measures of cigarettes smoked per day (CPD) taken at various time points and identify which best predicts exhaled carbon monoxide. To examine the impact of CPD measures on nicotine dependence scores and test for differences in scores.

Methods: Data from a four day observational baseline period for 522 smokers enrolled in laboratory studies were analyzed to investigate relationships among smoking measures including self-reported CPD (phone screen), timeline follow-back (TLFB) for CPD, collection of spent cigarette filters, Fagerström Test for Nicotine Dependence (FTND), exhaled carbon monoxide (CO).

Results: At phone screen, smokers reported 2.8 CPD more and often reported CPD in multiples of ten compared with baseline (multiples of ten:54.7%, vs. 17.2%, respectively). TLFB and filter collection were highly correlated (p=0.90, p<0.001), within subject reliability for baseline CPD was α=0.79 (p=0.05). Smokers rated themselves as more nicotine dependent on FTND scale than what they smoked on average during baseline. FTND score was significantly higher based on phone screen value rather than baseline amount smoked.

Conclusions: This observational period provides a snapshot of smokers’ usual behaviors, evidencing minimal variability in day-to-day consumption. Collecting filters makes smokers mindful of consumption and may increase accuracy of reporting CPD in studies. Filter collection and reporting CPD resulted in less digit bias compared with phone screen self-report. FTND scores derived from average baseline CPD were lower compared with smokers’ self-rated FTND on baseline day one, suggesting smokers believe they are smoking more cigarettes than actual or, they round to a preferred number.

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THE INTERACTIVE EFFECTS OF RACE, COMMUNITY SUPPORT, AND NEIGHBORHOOD ENVIRONMENT IN PREDICTING ADOLESCENT MARIJUANA USE TRAJECTORIES.
Alisa Rowe1, Cristina Maria Risco2, W Felton1, W Lejuez1, L MacPherson1; 1University of Maryland, College Park, MD, 2Psychology, University of Maryland, College Park, MD

Aims: Patterns of substance use among African Americans have been characterized by lower rates during adolescence that then increase in emerging adulthood and approach or exceed those of their non-Black peers. To better understand disparate patterns of use, the current study examined the interactive effects of race, environmental support, and threats in the neighborhood as predictors of marijuana use trajectories among a community sample of adolescents.

Methods: Participants were 136 White and 98 Black youth (44% female, M(SD)age=14.98 (.92)) taking part in a larger, prospective study of maladaptive behaviors. Youth completed three annual assessments including past year marijuana use, community support, and threats in the neighborhood environment.

Results: Latent growth modeling was used to test initial levels and change in marijuana use over time. A multi-group model indicated that marijuana use increased over development for both groups. Community support was then added as a predictor of the latent intercept and slope, controlling for demographic factors. The model fit the data well and community support predicted increases in marijuana use over time, for Black youth only (b=.02, p < .007). Next, the additive and interactive effect of neighborhood environment was examined. Neighborhood environment did not have a main effect on the intercept or slope of marijuana use, but did interact with community support to predict changes in use for Black youth only. Probing this three-way interaction revealed that for Black youth with lower levels of community support, more threats in the neighborhood environment were predictive of greater increases in marijuana use.

Conclusions: For Black youth, community support and neighborhood threats might be important predictors of resilience and risk with regard to marijuana use trajectories.

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WHERE THERE’S SMOKE: PSYCHOSOCIAL AND MENTAL HEALTH CORRELATES OF PRENATAL MARIJUANA USE.
Jaclyn S Sadicario1, Sydney Shane Kelpin2, Dace Sviks; 1Virginia Commonwealth Univ., Richmond, VA, 2Psychology, Virginia Commonwealth University, Richmond, VA

Aims: Prenatal marijuana (MJ) use is prevalent and has been associated with impaired fetal growth and neurobehavioral deficits (Fried, 2002). Screening is critical and provides an opportunity for patient education and if needed, intervention. The present study compared self-report and biochemical measures of prenatal MJ use and examined psychosocial and mental health correlates of such use in an at-risk sample of pregnant women.

Methods: Participants were N=254 pregnant women identified as at risk for prenatal substance use and enrolled in a clinical trial focused on HIV/STD prevention. The sample completed the ASI and provided a urine sample to assay for THC and other drug use. Analyses included chi-square for categorical and t-tests for continuous measures.

Results: The sample was predominantly African American (75.6%) with a mean age of 26 yrs. One-third of the sample (32%) screened positive for recent MJ use. Specifically, 8.9% were positive by self report alone; 4% by urine assay only and 18.1% screened positive on both. When MJ+ and MJ- women were compared, MJ+ women were more likely to report recent anxiety (54% vs 39%; p=.031); lifetime depression (86.8% and 74.2%; p=.03) and recent thoughts of suicide (7.4% and 1.6%; p=.02). MJ+ women were also more likely than MJ- women to report recent emotional abuse (39.7% and 22.6%; p=.007) and recent physical abuse (13.2% vs 3.2%; p=.003).

Conclusions: The majority of MJ+ women screened positive by both self-report and urine drug assay, with only 4% positive by urine assay alone. Findings affirm that pregnant MJ using women present for care with a variety of comorbid concerns. Changing legal and social policies on medical and recreational MJ use affirm the need for further research to better understand associations between these risk factors and adverse maternal and infant outcomes.

Financial Support: This research supported by NIMH/P60 Center Grant (Strauss)
HIGH IMPULSIVITY CORRELATES WITH CANABIS CUE-INDUCED CRAVING IN A NON-TREATMENT SEEKING COHORT OF HEAVY CANABIS USERS. Gregory Sahlem1,6, Robert J. McAlpin4, Aimee McRae-Clark1; 1Psychiatry, Medical University of South Carolina, Charleston, SC; 2Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, SC; 3Department of Public Health Sciences, Medical University of South Carolina, Charleston, SC

Aims: Cannabis use disordered patients have increased craving in response to cannabis cues, and a tendency towards risky decisions in standardized behavioral tasks. Task-based imaging studies have implicated similar neural activation patterns in both cannabis cue induced craving as well as risky decision making; however, there have yet to be direct correlational studies linking cue-craving and risky decision making in the same cohort. We subsequently examined this relationship.

Methods: 24 non-treatment seeking heavy cannabis users (25.3±6.4 years old, 9 women) were recruited for a study examining the effect of stress on cue induced craving, and were randomized to a non-stress condition. In a single visit, cue induced craving was assessed using the Marijuana Craving Questionnaire (MCQ) during a cannabis cue paradigm, and risky decision making was assessed using the balloon analogue risk task (BART). We examined whether cue-induced craving on the MCQ differed in those with increasing burst rates on the BART.

Results: The participants with higher burst rates on the BART did not differ statistically in any baseline variable examined as compared to those with a lower burst rate. Participants with increasing burst rates on the BART had a higher level of craving as measured by the MCQ emotionality [Beta Estimate 49.55(20.41) p=0.0124]. Additionally, there appears to be a differential response in the MCQ purposefulness subscale scores following the cue paradigm [t(30)=-2.10, p=0.04].

Conclusions: Though firm conclusions can not be drawn from this secondary analysis, it does provide behavioral evidence consistent with previously reported imaging evidence. Future directions include prospective studies that include both cue induced craving and risky decision making tasks.


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A NOVEL PARADIGM ASSOCIATED WITH CALLOUS UNEMOTIONAL TRAITS AMONG ADOLESCENTS WITH SUBSTANCE AND CONDUCT PROBLEMS: BEHAVIORAL AND FMRI FINDINGS.

Joseph Sakai2, Manish Dalwani1, Susan Kay Mikulich-Gilbertson1, Shannon K McWilliams2, Kristen Raymond1, Jody Tanabe1, M T Banich2, Thomas J Crowley1; 1University of Colorado, Aurora, CO, 2University of Colorado Boulder, Boulder, CO

Aims: Adolescent-onset substance use disorders (SUD) and conduct disorder (CD) are commonly co-morbid. Neural correlates and subtypes of these externalizing behavior disorders are becoming clearer. For example, data now support the subtyping of SUD/CD youth by the presence of high callous-unemotional (CU) traits.

Methods: Three adolescent groups (age 15-18 years, all male and right handed) were recruited: controls n=26, SUD/CD patients with average CU traits n=22, SUD/CD patients with high CU traits n=23. Subjects performed a novel task in the MRI; they could accept or reject repeated offers in which they would receive money but a donation to a charity would be reduced. The dollar amounts varied in different offers and offers were presented in a standard, pre-set order. Real money but a donation to a charity would be reduced. The dollar amounts varied in different offers and offers were presented in a standard, pre-set order. Real money but a donation to a charity would be reduced.

Results: A one–way repeated measures ANOVA revealed that pre-treatment did not impact locomotor activity. However, a significant main effect of treatment (p ≤ 0.0001) as well as day of testing (p ≤0.0001) was observed.

Conclusions: These data support other findings that cocaine increases locomotor activity after repeated exposure, showing a significant increase in total distance traveled inside an open field chamber throughout the 8 days of testing. Taurine, an amino sulfonic acid found throughout the body, has been shown to inhibit cocaine reward. The aim of this study was to determine if taurine could inhibit cocaine–induced behavioral sensitization, and to assess whether these effects were sex specific.

Methods: Adult male and female rats were pretreated with either saline or taurine for two wks before exposing them to daily injections to cocaine and testing for behavioral sensitization. The subjects were randomly divided into five treatment groups during behavioral testing when they were exposed to cocaine, taurine or a combination of both drugs.

Results: A one–way repeated measures ANOVA revealed that pre-treatment did not impact locomotor activity. However, a significant main effect of treatment (p ≤ 0.0001) as well as day of testing (p ≤0.0001) was observed. This study replicated the effects of cocaine on locomotion in male and female rodents, nevertheless, it concludes that taurine does not inhibit cocaine’s psychomotor effects. Further studies will elucidate the differential mechanisms between cocaine–induced reward and sensitization.

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LINC - A STRENGTHS-BASED CASE MANAGEMENT INTERVENTION TO LINK HIV-INFECTED PWID IN RUSSIA TO HIV CARE – RCT RESULTS.
Jeffrey H Samet1, Elizabeth Santa Ana1, Debbie M Cheng1, Alexander Yale Walley1, Dmitry Liozonov2, Christine Chaisson1, Carly Bridden1, Emily Quinn1, Natalia Gnatienko1, Olga Tousova1, Allen GIFFORD3, Evgeny Krupitsky1, Anita Raj1, 1Boston University, Boston, MA, 2First Pavlov State Medical University, St Petersburg, Russian Federation, 3Boston Medical Center, Boston, MA, University of California, San Diego, CA

Aims: To determine whether the LINC strengths-based case management intervention, connecting narcolepsy treatment and HIV care, was more effective than usual care for 1) linking patients to HIV care and 2) improving HIV outcomes among people who inject drugs (PWID) in Russia.

Methods: We conducted an RCT among HIV-infected PWID not on antiretroviral therapy (ART) recruited July 2012 - May 2014 from inpatient wards of a narcolepsy hospital in St. Petersburg, Russia. Participants were randomized to strengths-based case management (LINC) or usual care. Primary outcomes were 1) linkage (1 or more visit to HIV care) within 6 months of study enrollment, assessed by medical record review; and 2) improved HIV outcomes (CD4 count) at the 12-month study visit. Adjusted logistic and linear regression analyses controlling for past HIV care were performed using the intention-to-treat approach.

Results: Participants (N=349) were 73% male with mean values of the following characteristics: age 34; 7.3 years since HIV diagnosis; CD4 count 365 (SD 270). Any past ART use was reported by 12%. Control and intervention groups were balanced on demographic and clinical variables. Within 6 months of enrollment 45% of the intervention group and 30% of controls linked to HIV care, AOR 2.20; 95% CI: 1.42-3.41; p<0.0004. Mean CD4 count at 12 months was 340 and 372 in the intervention and control groups, respectively (adjusted mean difference -20.2; 95% CI: -83.3, 42.9, p<0.53).

Conclusions: The LINC strengths-based case management intervention was more effective than usual care in linking Russian PWID to HIV care, but did not improve CD4 cell count.

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IMPACT OF GROUP MOTIVATIONAL INTERVIEWING ON ENHANCING TREATMENT ENGAGEMENT FOR HOMELESS VETERANS WITH NICOTINE DEPENDENCE AND OTHER SUBSTANCE USE DISORDERS.
Elizabeth Jane Santa Ana, S LaRowe, Karen J Hartwell, Kayla Lamb; Charleston VAMC and MUSC, Charleston, SC

Aims: We evaluated whether a motivational interviewing component targeting smoking behaviors combined with an existing modified Group Motivational Interviewing intervention, referred to as ‘Tobacco-GMI’ (T-GMI), would increase treatment engagement in smoking cessation programming and improve use of NRT compared to GMI (alone - without smoking cessation component) in nicotine dependent homeless veterans.

Methods: Thirty-seven homeless veterans with alcohol and nicotine use disorder and co-existing psychiatric disorders were recruited to receive four GMI sessions over four consecutive days. The first 16 participants received standard ‘GMI’ alone, aimed at enhancing engagement in substance abuse treatment and reducing substance use, while the remaining 21 participants received a ‘smoking cessation-enhanced’ GMI protocol (T-GMI) that included additional content specific to cessation of tobacco use and smoking treatment along with standard GMI.

Results: Between group differences at baseline were NS for age, cigarettes smoked per day, CO levels, FTND scores, number of reported smoking quit attempts, and years of smoking. 8 of 21 participants (62%) in T-GMI attended one or more smoking cessation classes, compared to only 1 of 16 participants (7%) in GMI; a finding that showed a trend towards significance (Fisher exact test, p = .05). Within T-GMI, 10 participants (48%) received a prescription for NRT smoking medication compared to 3 participants (19%) in GMI, although this difference was not significant (Fisher exact test, p < .10). Within T-GMI, 6 smoking participants (28%) attended at least one smoking cessation class combined with NRT, compared to 0 participants in GMI (Fisher exact test, p = .03).

Conclusions: The T-GMI intervention enhanced treatment engagement among homeless veterans with alcohol and nicotine use disorder with regard to greater attendance in smoking cessation classes alone and for significantly enhancing COMBINED smoking cessation classes- with prescribed (NRT) smoking cessation medications.

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ANXIETY AND DEPRESSION AS PREDICTORS OF LONG TERM ABSTINENCE AMONG STIMULANT DEPENDENT OUTPATIENTS IN A CLINICAL TRIAL OF CONCURRENT SMOKING CESSATION AND SUBSTANCE ABUSE TREATMENT.
Katherine Sanchez1, 2School of Social Work, University of Texas at Arlington, Arlington, TX, Psychiatry, University of Texas Southwestern Medical Center, Dallas, TX

Aims: To examine the presence of anxiety and depression and associated substance use treatment outcomes among a sample of stimulant dependent patients from a multi-site randomized control trial evaluating the impact of concurrent smoking cessation treatment and outpatient stimulant treatment.

Methods: Participants (N=538) were recruited from 12 substance abuse treatment programs, met diagnostic criteria for current cocaine or methamphetamine dependence, and were enrolled in treatment for stimulant use disorder. Participants were randomly assigned to treatment as usual (TAU) or to treatment as usual with smoking-cessation treatment (TAU+SCT) as part of a 10-week, 2 group, Smoking Cessation and Stimulant Treatment conducted within the NIDA Clinical Trials Network (S-CAST, CTN-0046). TAU+SCT received smoking cessation treatment which included extended-release bupropion. Mood outcome was evaluated using the Hospital Anxiety and Depression Scale (HADS).

Results: Participants (N=538) reported experiencing at least some anxiety (n=212, 39.4%) or depression (n=81, 15.1%) at baseline; the majority of those were categorized as mild or moderate (for anxiety, n=184, 34.2%, and for depression, n=80, 14.9%). Scores at baseline significantly decreased by week 10. Depression and anxiety were found to significantly predict SUD treatment outcomes with increased symptom severity predicting greater substance use at the conclusion of treatment and the follow-up points of three and six months.

Conclusions: The results emphasize the prevalence of depression and anxiety among patients with stimulant dependence, and their impact on substance abuse treatment outcomes. Attention to comorbid psychiatric disorders during substance use treatment to sustain improvements made in mood and to achieve long term abstinence is essential, especially for people with depression and anxiety disorders, who are at greater risk for relapse.

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REDUCTIONS IN TRAFFIC FATALITIES RATES ACROSS STATES WITH OPERATIONAL DISPENSARIES OF MARIJUANA.
Julian Sarna2, Christine Mauro1, Melanie M Wall2, June H Kim1, Silvia S Martins3; 1Epidemiology, Columbia University, New York City, NY, 2Biostatistics, Columbia University, New York, NY

Aims: Previous research suggests that medical marijuana laws (MML) are associated with reductions in traffic fatalities. In this study we examined whether the presence of operational marijuana dispensaries further impacted traffic fatality rates.

Methods: We defined our exposure as a 3-level time-varying variable indicating the presence of operating dispensary systems, even if not officially sanctioned (de facto), across the 50 states (states without dispensaries were coded as “never”, states with dispensaries coded as “pre” and “post” for years before and after the implementation of dispensaries). Our outcome was the rate of traffic fatalities at the state-level, among different age groups (15-24, 25-44, 45+), obtained from the Fatality Analysis Reporting System (1985-2013). The effect of dispensaries on fatalities was examined using multilevel regression models, with random intercepts for states, adjusted by a set of state-level covariates (e.g. unemployment rate, drug per se and text) and a variable indicating the date of enactment of MML (similarly as for the dispensaries variable).

Results: We observed a significant reduction in the rate of traffic fatalities across all states (from 15.26 in 1985 to 10.16 per 100,000 in 2013; p<0.05). Results from our models indicate that the presence of dispensaries was associated with a reduction in traffic fatality rates among drivers ages 25-44 (-4.45%, 95%CI: -0.73, -8.17) and 45+ (-7.27%, 95%CI: -4.06, -10.48), but not in those ages 15-24 (-0.13%, 95%CI: 3.91, 4.17).

Conclusions: Operational dispensaries were associated with reductions in traffic fatalities among those 25+. Although it is not clear how the availability of medical marijuana can lead to reductions in fatalities (e.g. marijuana use competing with alcohol use or stronger traffic controls in the years after legislation), findings support the hypothesis of a potential association between MML and traffic fatalities.

Financial Support: NIH grants T32DA031099, R01DA037866 and Colciencias fellowship.
MALE- FEMALE DIFFERENCES IN MAKING A RAPID TRANSITION FROM FIRST HEROIN USE TO ONSET OF HEROIN DEPENDENCE: UNITED STATES, 2005-2013.

Aims: Historically, for tobacco, alcohol, and other CNS-active drugs, male-to-female ratios > 1 have been documented for newly incident users, treatment admissions, and overdose deaths. Some narrowing toward male-female parity has been noted, especially for tobacco and alcohol, but heroin has been under-studied. We seek new epidemiological estimates to fill this evidence gap for heroin. Our primary aim is to estimate a rapid-onset heroin dependence transition probability (HDP) for males versus females, observed soon after 1st heroin use, with 9 independent replication samples to confirm reproducibility.

Methods: US National Surveys on Drug Use and Health, 2005-13, identified nationally representative samples of newly incident heroin users, and assessed DSM-IV heroin dependence. We produced 9 analysis-weighted estimates with Taylor series variances, shown in forest plots, plus estimates from meta-analysis summaries (MAS).

Results: Among 620 newly incident heroin users in the sample, males outnumbered females (322/288), but no male excess in HDP is seen. Soon after 1st heroin use, the HDP MAS estimate is 2.7% (95% CI: 19, 35); 24% for males (95% CI: 14, 33); and 28% for females (95% CI: 21, 35). Cumulative MAS estimates worked stepwise through 2013 suggest modestly increasing HDP, especially for females, but no robust gender gap.

Conclusions: First, males outnumber females among newly incident heroin users. Second, within relatively short intervals after starting heroin use, roughly 3 in 1 or 4 heroin users have become heroin dependent. Third, heroin is apparently an ‘equal opportunity’ drug in this respect, showing no HDTP male excess. Forecasts from our cumulative meta-analyses suggest an emerging female excess HD risk. This possibility deserves attention in future epidemiological studies.

Financial Support: NIDA K05DA015799(JCA), T32DA021129 (OSR) & MSU.
THE IMPACT OF ADDICTION MEDICATIONS ON OUTCOMES FOR PERSONS WITH CO-OCURRENT PTSD AND OPIOID USE DISORDERS.

Elaine Thomas1, Mark P. McGovern2, Chantal Lamberti-Harris2, Andrea Meier3, Bethany McLean4; 1The Dartmouth Institute, Lebanon, NH, 2Psychiatry, Dartmouth Geisel School of Medicine, Lebanon, NH, 3Dartmouth Psychiatric Research Center, Lebanon, NH, 4Psychiatry, Dartmouth Geisel School of Medicine, Lebanon, NH

Aims: Previous research has been inconclusive about whether adding psychosocial treatment to medication assisted treatment (MAT) improves outcomes for patients with co-occurring psychiatric and opioid use disorders. This study evaluated the impact of MAT and psychosocial therapies for patients with co-occurring opioid use and posttraumatic stress disorders (PTSD). We hypothesized that the combination of MAT and integrated treatment would be the most effective condition for substance use and psychiatric outcomes.

Methods: Patients meeting criteria for PTSD and substance use disorders were randomly assigned to one of three treatment conditions: Standard Care (SC) alone, Integrated Cognitive Behavioral Therapy (ICBT) plus SC, or Individual Addiction Counseling (IAC) plus SC. Substance and psychiatric symptoms were assessed at baseline and 6 months with urine drug screens, the Clinician Administered PTSD Scale (CAPS), and the Addiction Severity Index (ASI). Two-way ANOVAs and logistic regression analyses were used to examine associations between treatment conditions and MAT for patients with opioid use disorders and PTSD (N=126).

Results: MAT patients receiving ICBT had significantly decreased odds of positive urine drug screens, compared to non-MAT patients receiving SC alone (OR=.07, 95% CI=.01, .81, p=.003). For PTSD symptoms, a significant MAT by psychosocial treatment condition interaction (F(2,88)=4.74, p=.01) showed that MAT patients had comparable declines in PTSD symptoms regardless of psychosocial treatment type. Non-MAT patients in ICBT had significantly larger reductions in PTSD than non-MAT patients receiving IAC (p=.02) or TAU (p=.02).

Conclusions: For patients with co-occurring opioid use disorders and PTSD, MAT plus ICBT is associated with more significant improvement in substance use. For non-MAT patients, ICBT may be most beneficial for PTSD symptoms.

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A randomized trial of patient-centered methadone treatment with optional counseling.

Robert P. Schwartz1, Sharon M Kelly1, Jan Gryczynski1, Kevin O’Grady2, devang Gandhi3, Yngvild Olsen4, Jerome H Jaffe1, Shannon Gwin Mitchell1; 1Preclinical Pharmacology Section, NIH/NIDA Intramural Research, Baltimore, MD, 2Psychiatry, U of MD, Baltimore, MD, 3Psychiatry, U of MD, College Park, MD, 4IRB REACH, Baltimore, MD, 5Psychiatry, U of MD, Baltimore, MD

Aims: To compared methadone treatment-as-usual with patient-centered methadone in which common clinic policies in U.S. programs were revised in an attempt to increase treatment retention and improve patient outcomes.

Methods: Three hundred adults were randomly assigned within site at two methadone treatment programs (MTPs) in Baltimore, MD to patient-centered methadone (PCM) or TAU. PCM modified the MTP’s rules (e.g., counseling was optional, discharges against the participant’s wishes were minimized) and counselor roles (e.g., counselor not responsible for enforcing clinic rules). The following assessments were administered at baseline and 3-, 6- and 12-month follow-up: Addiction Severity Index, HIV Risk Assessment Battery, WHOQOL-BREF, SF-12, modified CIDI Substance Abuse Module, and urine drug screens. It was hypothesized that the PCM Condition would have superior outcomes to TAU. A Generalized Estimating Equations approach was used to analyze data.

Results: The majority of the participants were male (59% male) and African-American (58%) with a mean age of 42.7 years. There were neither significant differences between conditions in retention nor significant condition by time interactions for self-reported days of opioid or cocaine use or urine positive drug screens, meeting DSM-IV criteria for opioid or cocaine dependence, overall quality of life, HIV-risk behavior, patient satisfaction, or therapeutic alliance.

A randomized trial of patient-centered methadone treatment with optional counseling.

Supported by IRP, NIDA, NIH, DHHS.

A randomized trial of patient-centered methadone treatment with optional counseling.

Supported by IRP, NIDA, NIH, DHHS.
GREATER PSYCHIATRIC MORBIDITY AMONG YOUTH WITH SYNTHETIC CANNABINOID USE IN RESIDENTIAL TREATMENT.

Victoria L. Selby1, Carla Storr2, Marc Fishman3,1; 1Maryland Treatment Centers, Baltimore, MD, 2University of Maryland School of Nursing, Baltimore, MD, 3Johns Hopkins School of Medicine, Baltimore, MD

Aims: Considering that synthetic cannabis (SC) is a full cannabinoid receptor agonist and that there have been various accounts of adverse psychiatric effects such as intense anxiety and psychosis, there may be more psychiatric comorbidity among SC users than nonusers, requiring more psychiatric service utilization in the substance treatment setting. The purpose of this study was to explore whether drug abusing youth who use SC as compared to those who do not have more psychiatric morbidity.

Methods: A retrospective chart review of all patients, ages 12-25 (M = 18.57, SD 2.7), with SC use (n = 217) and a randomized sample of non-SC users (n = 202) seen at a single residential treatment center during 2014 was performed. The sample was mostly white (61.3%), male (66.2%), and with public funded treatment (63.4%). Psychiatric indicators included mental health history, current diagnoses, and psychotropic prescriptions. Logistic regression models estimated the magnitude of the associations while holding age, gender, race, and treatment funding source constant.

Results: Self-reported past psychiatric diagnoses (78.1%) and psychotic treatment (71.5%) was very common, as was diagnosis of a co-occurring psychiatric disorder during treatment (87.2%). SC use was associated with a history of psychiatric morbidity (OR = 1.59, 95% CI 1.03, 2.46) and male gender (OR = 1.56, 95% CI 1.03, 2.39). Among SC users, 9.4% were diagnosed with a psychotic disorder versus 2.7% among non-users (X² = 6.23, p < 0.01). The number of psychotropic medications prescribed prior to discharge (OR = 1.25, 95% CI 0.96, 1.67) and male gender (OR = 1.58, 95% CI 1.04, 2.41) were also associated with SC use.

Conclusions: Youth who have used SC have more psychiatric morbidity, including psychosis. This will impact the need for psychiatric treatment resources.

Financial Support: None.
GENDER DIFFERENCES IN PATTERNS OF PRESCRIPTION OPIOID USE AND BINGE DRINKING AMONG MIDDLE AGED FLORIDIANS.
Mirasa Serdarevic, Linda Cotler; Epidemiology, University of Florida, Gainesville, FL

Aims: An estimated 24.6% of Americans reported binge drinking in the previous month, and an estimated 2% of individuals in the US use opioids regularly. Further, the combination of alcohol and prescription medication is risky; men tend to be more likely than females to be heavier drinkers and opiate dependent. The current analysis aims to examine gender differences in patterns of opioid use and binge drinking in a community sample of adults 25-54 years of age recruited from Northeast Florida through a community outreach program, HealthStreet.

Methods: CHWs assess health of community members in the field. History of drug and alcohol use is elicited by: “In the last 30 days, have you had more than (4 men or 3 (women)) drinks like beer, wine, liquor in a single day?” and “Have you ever used prescription pain medications like Vicodin, Oxycodone, Codeine, Demerol, Morphine, Percocet, Darvon, Hydrocodone?” A 4 level variable was coded: none, binge only, opioid only, and both. Descriptive statistics were used to report on patterns of opioid use and binge drinking. Chi-square tests were used to compare differences between groups on gender.

Results: Women comprised 57.3% of the 3,975 sample. Overall, 37.8% of the sample neither used opioids nor binge drank; 35.3% used opioids only, 13% reported binge drinking only, and 13.8% reported both. Significant differences in the patterns of users were observed by gender: males reported higher rates for binge drinking only while females reported higher rates for opioid with or without binge drinking (p<.0001).

Conclusions: The community setting in Northeast Florida had rates of binge drinking comparable to the nation. However, the rate of opioid use was higher in Northeast Florida with higher prevalence among woman compared to men. Interestingly, 14% of Northeast Floridians used both opioids and alcohol which needs further investigation because of the risk of combined use.

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GAME TYPE AS A MODERATOR OF THE RELATIONSHIP BETWEEN PATHOLOGICAL VIDEO GAME USE, IMPULSIVITY, AGGRESSION, AND GENERAL PSYCHOPATHOLOGY.
Michale Saint Sfera1, S Fields2, Douglas Gentile3; 1Psychology, Texas A&M University, College Station, TX, 2Psychology, Iowa State University, Ames, IA

Aims: Previous research has established a link between Pathological Video Game Use (PVGU), impulsivity, and aggression. Additionally, there is some research to suggest a link exists between these variables and genres of video games played [e.g., First-Person Shooters (FPS), Massively Multiplayer Role Playing Games (MMORPGs)]. However, it is unknown whether video game genre can moderate these relationships. Therefore, the current study sought to examine whether individuals differ according to game genre preference on symptoms of PVGU, impulsivity, and aggression, and whether game genre moderates the relationships between PVGU and impulsivity and aggression.

Methods: Participants were undergraduates recruited at Iowa State University (N = 932) who self-reported data about preference for game genres, PVGU, impulsivity, and aggression. Analysis of Covariance (ANCOVA) model was used to detect differences in psychosocial variables according to game genre.

Results: ANCOVA indicated those preferring MMORPGs reported more impulsivity, and aggression. Analysis of Covariance (ANCOVA) model was used to detect differences in psychosocial variables according to game genre. Moderator regression analyses were used to assess the moderating role of video game genre on the relationships previously identified.

Conclusions: Although preference for game genre did not moderate any of these relationships, individuals did differ in a few expected ways according to genre. These findings provide some insight into tailoring interventions for PVGU according to played genres, while also identifying future directions and engendering discussion about the accurate assessment of genre preference and its role in PVGU.

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 HOW PSYCHIATRIC COMORBIDITY AND MOOD STATES INFLUENCE CRAVING AND SUBSTANCE USE IN DAILY LIFE? AN ECOLOGICAL MOMENTARY ASSESSMENT STUDY IN PATIENTS WITH ALCOHOL, TOBACCO, CANNABIS AND HEROIN USE DISORDERS.
Fuschia Sere1, M Fares2, J Swensden3, M Auriaimbrace3; 1Addiction Psychiatry (CNRS USR 3413), Universite Bordeaux, Bordeaux, France, 2CNRs UMR 5287 - INCA, Univ. Bordeaux, Bordeaux, France

Aims: We aimed to examine the influence of psychiatric comorbidity, mood states and stressful events on craving intensity and substance use in daily life.

Methods: A total of 159 participants were recruited from an outpatient addiction clinic and completed 2 weeks of computerized ambulatory monitoring of daily life experiences using Ecological Momentary Assessment (EMA). The main substances of dependence were alcohol (n=48), tobacco (n=43), cannabis (n=35), or opiates (n=33). Patients described in real-time positive and negative mood states, stressful daily events, craving intensity, and substance use. Psychiatric comorbidities were assessed using the MINI-plus. Data were analyzed using hierarchical linear models (HLM).

Results: A diagnosis of a current comorbid mood and/or anxiety disorder was associated with higher craving intensity (γ = -0.611, p = 0.019) and more frequent substance use reports in daily life (γ = -0.754, p = 0.004). Craving intensity strongly predicted substance use reported at the subsequent assessment 4 hours later (γ = -0.136, p = 0.001), but psychiatric comorbidity did not modify this relationship. Interestingly, current mood and/or anxiety disorders were associated with substance use independently from their effect on craving intensity. More surprisingly, negative moods and stressful event reports were not associated with subsequent reports of craving intensity and substance use, even after controlling on psychiatric comorbidity.

Conclusions: Substance-dependent patients with current mood and anxiety disorders were more likely to experience higher levels of craving and to report substance use in daily life. The effect of psychiatric comorbidity on substance use was explained partially through its moderation of craving intensity, but also by a direct effect on substance use.


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CONCORDANCE BETWEEN URINE DRUG SCREEN AND SELF-REPORTED COCAINE USE.
Gaurav Sharma, Neal Oden, Paul VanVeldhuizen; The Emmes Corporation, Rockville, MD

Aims: To study the temporal relationship between qualitative urine results & self-report; and identify the look-back period that is associated with the highest concordance with urine results across four cocaine use studies.

Methods: This study is a secondary analysis using data from four National Drug Abuse Treatment Clinical Trials Network (NIDA CTN)-funded randomized trials (NCT01141608 (N=302), NCT01140805 (N=507), NCT01402492 (N=302) and NCT01641159 (N=62)), with baseline % cocaine use days being 22%, 9%, 33% and 46%, respectively. Self-reported use evaluated using Timeline Follow Back (TLFB) instrument was compared to urine drug screen (UDS) for cocaine during the primary outcome evaluation period (ranging 4-12 weeks with 2 or 3 urine samples collected/week). Longitudinal analysis for each study was performed predicting cocaine use on UDS using the cocaine use daily reports on TLFB covering 20 days prior to urine collection date. Further, concordance statistics were estimated to calculate the optimum look back period.

Results: The significance of TLFB use days prior to urine collection decays exponentially as the lag between TLFB day and UDS collection increases, with one day prior to urine collection (Day-1) being the most significant predictor of UDS (OR=50, p-value<.01). Including Day 0 in the 3-day look back period does not improve concordance between TLFB and UDS (% agreement average across 4 studies with day 0 is 90.0% compared with 90.3% excluding day 0). Agreement across studies ranged from 83% to 97%. Agreement was higher when the look back period was 5 days (average of 4 studies=92%) compared to when the look back period was 3 days (average of 4 studies=90%). For the four studies, when the look back period was 5-day, the sensitivity ranged from 62%-82% and specificity from 92%-99%.

Conclusions: Urine analysis can be an important biological measure to assess cocaine use, and can be used to assist in corroborating self-report. These analyses show that day zero does not improve agreement between TLFB and UDS; and 5-day look back period may provide better concordance when corroborating self-report.

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TOBACCO CESSION AMONG POOR AND UNDERSERVED: EXPANDING ALTERNATIVES THROUGH COMMUNITY-BASED PARTICIPATORY RESEARCH

Payam Sheikhattari1,2, Christine Schutzman, Timeeka Addison1,2, Jummai Apatara1, Jane Buceri1, Mary Gunning1, Fernando Antonio Wagner1,2; 1PSRC, Morgan State University, Baltimore, MD; 2CEASE, Baltimore, MD

Aims: Despite significant declines in tobacco use and its associated health conditions, lower income communities continue to smoke at higher rates. Efficacious cessation interventions have been developed but the uptake among low SES communities has been more than slow. CEASE (Communities Engaged and Advocating for a Smoke-free Environment) is a research partnership to address tobacco use in two low-income urban communities. We report the latest phases of our CBPR project that sought to combine rigorous research with “Best-Practices” models and community action.

Methods: CEASE smoking cessation program is a 12-week support group intervention led by peer-motivators. The Program was developed through two consecutive trials (Phase I & II, n=404 & 398), comparing a clinical model of care with a community-based support group. Based on lessons learned, Phase III intervention (n=163) was conducted to disseminate the CEASE intervention among organizations serving vulnerable populations (e.g., mental health clinics, addiction treatment programs, non-profit organization serving homeless clients, etc.). New tools were developed for motivation enhancement, quit smoking, and relapse prevention.

Results: Cessation rates in Phase I and II were 9.4% to 24.4%, respectively. In Phase II compared to Phase I retention rate (attending more than six sessions) increased from 13.6% to 50.8%. The Phase III results showed 22.1% cessation and 67.5% retention rates. Overall, the odds of quitting increased about 40% per each session attended in the program in all three phases (OR = 1.4, CI = 1.3, 1.5).

Conclusions: Translating evidence-based interventions require addressing barriers that affect their effectiveness. A community-based peer-led support group is an effective way to ensure fit between users’ needs, expectations, and problems.


Takuya Shimane, Toshihiko Matsumoto; Department of Drug Dependence Research, National Institute of Mental Health, National Center of Neurology and Psychiatry, Tokyo, Japan

Aims: Assessing the degree of problems related to drug abuse is important in each treatment setting. The Drug Abuse Screening Test-20 (DAST-20) is a brief, simple 20-item instrument to measure the degree of problems related to drug use. The objective of the present study is to examine the reliability and validity of the Japanese version of the DAST-20.

Methods: We translated the DAST-20 into Japanese using back translation. The anonymous self-administered questionnaire was completed by 310 drug users at the Drug Addiction Rehabilitation Centers (DARC group, n = 113) and at HIV/AIDS regional hospitals (HIV group, n = 197) in Japan.

Results: The average DAST-20 score was 7.6 (DARC group = 14.7, HIV group = 2.8). Each item score was highly correlated with the total score (r = 0.50-0.88). A high internal consistency (Cronbach’s α = 0.95) was observed (men = 0.95, women = 0.84). Overall test-retest reliability was 0.86 (men = 0.85, women = 0.90). The total DAST-20 score was strongly positively correlated with the Severity of Dependence Scale-J score (r = 0.85), but moderately positively correlated with the Alcohol Use Disorders Identification Test score (r = 0.41). In addition, confirmatory factor analysis indicated an acceptable fit to the data (goodness-of-fit index [GFI] = 0.893, adjusted goodness-of-fit index [AGFI] = 0.854, comparative fit index [CFI] = 0.948, root mean square residual [RMR] = 0.008, root mean square error of approximation [RMSEA] = 0.073).

Conclusions: Our results clearly suggest that the Japanese version of the DAST-20 has sufficient internal consistency and acceptable levels of concurrent validity and construct validity.

Financial Support: All authors declare that they have no conflicts of interest. This study was supported by Health and Labour Sciences Research Grants from the Ministry of Health, Labour and Welfare of Japan.

GENDER DIFFERENCES IN CANNABIS USE DISORDER TREATMENT: CHANGE READINESS AND TAKING STEPS PREDICT WORSE OUTCOMES FOR WOMEN.

Robert J Sherman1, Nate A Ladd2; 1Psychiatry, Medical University of South Carolina, Charleston, SC; 2Medical University of South Carolina, Charleston, SC

Aims: Gender differences in cannabis use and CUD have been established, yet differences in treatment response are not well understood. Though some evidence suggests women fare worse than men, the mechanisms are unclear. The current study aims to identify factors associated with gender differences in cannabis use outcomes.1) Examine how motivation to change and self-efficacy impact treatment outcomes, and whether gender moderates these relationships.2) Explore additional clinical correlates that may account for gender differences in cannabis outcomes.

Methods: A secondary data analysis of a 12-week double-blind placebo controlled trial of bupropion treatment for cannabis dependent adults (N=175) was conducted. Self-report assessments of motivation, self-efficacy, and other clinical correlates were completed at baseline, and cannabis use was measured weekly using self-report and urine toxicology. Primary outcomes included point prevalence abstinence and creatinine adjusted cannabinoid levels.

Results: There was a significant interaction between gender and SOCRATES-Taking Steps on abstinence (p<.018). Higher taking steps reduced likelihood of achieving abstinence among women (p<.001); there was no association among men. Subsequently, taking steps was positively associated with self-efficacy (p<.006) and quantity of use (p<.000) among men, and cannabis related problems (p<.04) among women. There was a significant interaction between gender and MJ Ladder - Readiness to Change on creatinine adjusted cannabinoid levels (p<.004). Change readiness was positively associated with cannabinoid levels among women (p<.000), but not men.

Conclusions: Readiness to change and initiation of change behavior predicts worse cannabis outcomes in women. Men and women differ in what motivates change behavior. Social desirability, neurobiology, and treatment type may impact these effects. Gender differences in cannabis treatment response must be considered in future studies.

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PATTERNS OF SUBSTANCE USE AND ARREST AMONG HOSPITALIZED PEOPLE LIVING WITH HIV: A LATENT CLASS ANALYSIS.

Karen Shiu1, Ahnalee Marie Brincks1, Daniel J Feaster1, Jemima A Fringham1, Lauren Gooden1, Ank Nijhawan1, Robert P Schwartz2, Louise Haynes2, Susan Tross3, James Sorensen1, Mari-Lynn Draimon1, Raul Mandler1, Carlos del Rio1, Ronald D Pettus-Davis1, Jennifer M Weiss1; 1Columbia University, New York, NY, 2Friends Research Institute, Baltimore, MD, 3MUSC, Charleston, SC, 4University of California, San Francisco, San Francisco, CA, NIDA, Bethesda, MD, 5Emory University, Atlanta, GA, 6University of Miami, Miami, FL, 7UT Southwestern Medical Center, Dallas, TX, 8Boston University, Boston, MA

Aims: Substance use and criminal involvement negatively impact clinical outcomes of people living with HIV (PLWH); however, their relationship is not well understood. We described patterns of substance use and arrest among a national sample of hospitalized PLWH and identified their relationship to substance treatment.

Methods: Baseline data from 801 PLWH enrolled in the NIDA Clinical Trials Network 0049 Study were used. Latent class analyses examined classes of substance use and arrest. Classes were examined for associations with lifetime substance treatment and key demographics variables.

Results: Substance use classes were “hazardous alcohol use” (25%), “polydrug use” (6%), “cannabis use” (5%), “substantial cocaine & heroin use” (15%), and “dependent alcohol & substantial cannabis use” (20%). Arrest classes were “none” (74%), “moderate” (16%), and “serious” (10%). Significantly greater proportions of the “substantial cocaine & heroin use” and “dependent alcohol & substantial cannabis use” classes have been in substance treatment (p<0.01). Significantly greater proportions of the “moderate” and “serious” arrest classes have been in substance treatment (p<0.01).

Conclusions: Our results suggest substance treatment may present opportunities for increasing engagement in HIV care for PLWH with serious substance use disorders who are involved with the criminal justice system.

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US TRENDS IN PAST-YEAR MARIJUANA USE AND PERCEIVED RISK OF REGULAR USE, 2002-2013, BY RACE/ETHNICITY.
Dvora Shmulewitz, Qiana Brown, Reanne Rahim-Juwel, Silvia S Martins, Melanie M Wall, Pia M Mauro, Hannah Carlmer, Aaron L Sarvet, DeborahHasin; Columbia University, New York, NY

Aims: Little is known about racial/ethnic differences in time trends in adult marijuana use and perceived risk of use. This study investigated such trends in past-year marijuana use and perceived risk from 2002-2013, testing for differences by race/ethnicity.

Methods: Non-Hispanic Black, White, and Hispanic adults aged 18+ (N=414,798) from the 2002-2013 US National Surveys on Drug Use and Health were analyzed for trends from 2002-2013 in past-year marijuana use and perceived great risk of regular marijuana use with logistic regression, unadjusted and adjusted for sociodemographics (gender, race, age, education, income, marital status). Interaction tests determined if rates of change differed by race, followed by race-stratified regressions.

Results: From 2002-2013, marijuana use increased significantly overall and in all race groups (unadjusted and adjusted). Prevalence of use overall was higher among Blacks, followed by Whites, then Hispanics. Rates of change differed significantly by race (interaction p<.027); Hispanics showed the largest increase over time. Between 2002 and 2013, an additional 4.1 million Whites, 1.1 million Blacks, and 1.9 million Hispanics became past-year users. Perceived great risk of regular use decreased significantly in all race groups (unadjusted and adjusted). Compared to 2002, 23.3 million fewer Whites, Blacks, and Hispanics perceived regular use as a great risk in 2013. Overall, Blacks and Whites were less likely than Hispanics to perceive great risk. Rates of change did not differ by race (interaction p=.345).

Conclusions: Trends in marijuana use over time vary by race/ethnicity, with Blacks at highest risk of use throughout. The greater increase over time in Hispanic marijuana use is also a public health concern, as the U.S. Hispanic population is rapidly increasing. The relationship between perceived risk and likelihood of use merits further attention, as does whether consequences of mari­juana use differ by race/ethnic group.
Financial Support: NIH grants T32DA031099, R01DA037866 and R01DA034244, New York State Psychiatric Institute.

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MODELING A THEORY-BASED APPROACH TO EXAMINE THE INFLUENCE OF NEUROCOGNITIVE IMPAIRMENT ON HIV RISK REDUCTION BEHAVIORS AMONG DRUG USERS IN TREATMENT.
Romek Shrestha1, Tania B Huedo-Medina1,3, Michael Copenhaver1,2,3; 1Department of Community Medicine & Health Care, University of Connecticut Health Center, Farmington, CT, 2Center for Health, Intervention, and Prevention, University of Connecticut, Storrs, CT, 3Department of Allied Health Sciences, University of Connecticut, Storrs, CT

Aims: Although it is well established that people who use drugs (PWUDs) are characterized by significant neurocognitive impairment (NCI), there has been no examination of how NCI may impede one’s ability to accrue the expected HIV prevention benefits stemming from an otherwise efficacious intervention. This paper incorporated a theoretical IMB model of health behavior change to examine the potential influence of NCI on HIV prevention outcomes as significantly moderating the mediation defined in the original model.

Methods: 304 HIV-negative opioid-dependent individuals enrolled in a community-based methadone maintenance treatment and reporting drug- and/or sex-related HIV risk behaviors were included. The IMB model-based measures of NCI (ncIMB models) were developed and fitted for drug- and sex-related HIV risk reduction variables separately. Using structural equation modelling in MPlus, the moderated mediation effect was tested for each domain.

Results: The findings showed that enhancement of HIV risk reduction information and motivation positively influences HIV behavioral skills, which in turn, predicted better HIV prevention outcomes (i.e., consistent condom use and clean needle use). Furthermore, the translation of HIV risk reduction knowledge and motivation into HIV preventive behaviors via HIV risk reduction behavioral skills was significantly weakened as a function of NCI severity.

Conclusions: The findings make an important contribution to our understanding of the applicability of theoretically-grounded models of HIV prevention behavior for persons who may be characterized by higher levels of NCI. This provides support for the utility of the ncIMB framework of HIV risk reduction to inform future interventions targeting high risk PWUDs in drug treatment.
Financial Support: NIDA Grants: R01-DA022122; K02DA033139

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INTERIM BUPRENORPHINE TREATMENT FOR REDUCING ILLICIT OPIOID USE DURING TREATMENT DELAYS.
Stacey C Sigmon1, Taylor A Ochalek2, Bryce Hruska1, Sarah Hughes Heil1, Stephen Higgins1, Gail Rose1, Brent A Moore3; 1Psychiatry, The University of Melbourne, Melbourne, VIC, Australia, 2University of Queensland, Brisbane, QLD, Australia

Aims: Despite the effectiveness of agonist maintenance for opioid dependence, patients can remain on waitlists for months before treatment becomes available. One effort to mitigate risks associated with these delays is to extend interim methadone treatment (IMT; i.e., daily methadone + emergency counseling only) to waitlisted individuals that includes to inform future interventions targeting high risk PWUDs in drug treatment.

Methods: 304 HIV-negative opioid-dependent individuals enrolled in a community-based methadone maintenance treatment and reporting drug- and/or sex-related HIV risk behaviors were included. The IMB model-based measures of NCI (ncIMB models) were developed and fitted for drug- and sex-related HIV risk reduction variables separately. Using structural equation modelling in MPlus, the moderated mediation effect was tested for each domain.

Results: The findings showed that enhancement of HIV risk reduction information and motivation positively influences HIV behavioral skills, which in turn, predicted better HIV prevention outcomes (i.e., consistent condom use and clean needle use). Furthermore, the translation of HIV risk reduction knowledge and motivation into HIV preventive behaviors via HIV risk reduction behavioral skills was significantly weakened as a function of NCI severity.

Conclusions: The findings make an important contribution to our understanding of the applicability of theoretically-grounded models of HIV prevention behavior for persons who may be characterized by higher levels of NCI. This provides support for the utility of the ncIMB framework of HIV risk reduction to inform future interventions targeting high risk PWUDs in drug treatment.
Financial Support: NIDA Grants: R01-DA022122; K02DA033139

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ADOLESCENT ALCOHOL MISUSE AND CONSEQUENCES TO AGE 30 YEARS: AN INTEGRATIVE DATA ANALYSIS OF 4 AUSTRALASIAN COHORTS.
Edmund Silins1, L J Horwood1, G Patton1, Jake Najman2, J Toubourou2, Richard Phillip Mattick3; 1University of Otago, Christchurch, New Zealand, 2 UNSW Australia, Sydney, NSW, Australia, 3University of Melbourne, Melbourne, VIC, Australia

Aims: To develop a profile of the associations between alcohol misuse in adolescence and a wide range of outcomes to age 30 years.

Methods: We integrated participant-level data from 4 longitudinal studies: Australian Temperament Project, Christchurch Health and Development Study, Mater University Study of Pregnancy, Victorian Adolescent Health Cohort Study. We investigated bivariate associations between maximum frequency of alcohol use before age 17 (never, <weekly, weekly+) and 30 outcomes to age 30 regarding substance use, antisocial behaviour, sexual risk-taking, mental health, socioeconomic status, and relationship and life satisfaction. Associations were adjusted using propensity scores. Three other measures of alcohol misuse were also examined. Number of participants varied by analysis (up to N=7081).

Results: There were statistically significant (p<.05) bivariate associations between frequency of adolescent alcohol use and 21 outcomes. After adjustment, associations with 9 outcomes remained statistically significant. Effects were strongest for substance use related outcomes. Those who used alcohol at least weekly prior to age 17 had odds of these outcomes that were between 2.5 times higher than for those who were non-drinkers (OR: 1.5 to 4.6; 95%CI 1.15-11.10). The association between adolescent alcohol misuse and other outcomes in adulthood were largely accounted for by confounding factors.

Conclusions: Persistent linkages exist between early alcohol use and substance use throughout the life. Many of the harms associated with adolescent alcohol misuse are likely explained by individual, parental, and peer characteristics.
Financial Support: Supported by an NHMRC Project Grant. NDaRC at UNSW is supported by the Australian Government.
LOW SOCIOECONOMIC STATUS IS ASSOCIATED WITH E-CIGARETTE AND TOBACCO PRODUCT USE: LONG-TERM EFFECTS ON COCAINE HYDROLASE ACTIVITY AND COCAINE USE BEHAVIOR

Patricia Simpson1, Megan Spoon1, Dana Anne Cavallö1, Meghan E Morean2, Kevin Michael Gutierrez2, Suchitra Krishnan-Sarin2, Camenga1, Grace Kong2, Dana Anne Cavallo2

Aims: Among adolescents, low socioeconomic status (SES) is associated with tobacco use. However, there have been few examinations of the role of SES in e-cigarette use status. Moreover, existing examinations of tobacco user profiles (e.g. non-users, all-product users) have not included e-cigarette use. This study aims to describe the association between a) SES and e-cigarette use and b) SES and tobacco product use profiles.

Methods: Participants (n = 1,932; 50.6% female; 88.6% White; Mage = 16.0 years) were drawn from a larger school-wide survey conducted in Spring 2014. We assessed SES with the Family Affluence Scale (Boyce & Dallago, 2004). We used logistic regression to examine the association between SES and lifetime use of e-cigarettes. We conducted Latent Class Analysis (LCA) to identify tobacco user profiles (i.e., latent classes based on blunt, cigarette, cigarillo, e-cigarette, hookah, and smokeless tobacco use). We used multinomial regression to examine whether SES was associated with tobacco product use latent classes. We controlled for race, age, gender, and school in all regression analyses.

Results: Results showed that low SES, relative to high SES, was associated with increased odds of e-cigarettes use (OR 1.8; 95% CI 1.4, 2.3). The final LCA solution consisted of 3 classes: non-experimenters (65.4%) cigarette/e-cigarette/hookah/blunt experimenters (23.3%), and all-product experimenters (11.3%). Both all-product experimenters (OR 1.7; 95% CI 1.3, 2.1) and cigarette/e-cigarette/hookah/blunt experimenters (OR 1.5; 95% CI 1.1, 2.0) were more likely to report low SES than high SES relative to non-experimenters.

Conclusions: In sum, lower SES, relative to higher SES, appears to be a risk factor for e-cigarette and poly-tobacco product use among youth.

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LONG-TERM BLOCKADE OF COCAINE USE AND LOCOMOTOR ACTIVATION IN RATS BY AN ADENOVIRAL VECTOR-DELIVERED COCAINE HYDROLASE

John R Smithells1, Natasha Svalve1, Stephen Brimijoin1, Robin Parks1, Marilyn E Carrell1, 1Molecular Pharmacology, Mayo Clinic, Rochester, MN, 2University of Minnesota, St. Paul, MN, 3Ottawa Hospital Research Institute, Ottawa, ON, Canada

Aims: A promising approach to treating cocaine abuse is to metabolize cocaine in the blood using a mutated butyrylcholinesterase (BChE) that functions as a cocaine hydrolase (CocH). In rats, a helper-dependent adenoviral (hdAD) vector-mediated delivery of CocH abolished ongoing cocaine use and reinstatement of drug-seeking for several months. This enzyme also metabolizes ghrelin, an effect that may be beneficial in maintaining healthy weights. A single hdAD-CocH vector injection was examined in rats on measures of anxiety, body weight, cocaine self-administration and cocaine-induced locomotor activity.

Methods: To examine anxiety, CocH vector (or control) peri-adolescent rats were tested in an elevated-plus maze. Weight gain was then examined under 4 rodent diets. Ten months after CocH-injection, adult rats were trained to self-administer cocaine intravenously and, subsequently, cocaine-induced locomotor activation was also tested.

Results: Viral gene transfer produced sustained plasma levels of CocH for over 13 months of testing. The CocH vector did not alter measures of anxiety, and transiently reduced weight gain during the first 3 weeks post-injection. At 10 months post-injection, 90% of controls met acquisition criteria for cocaine self-administration, versus none of the CocH-treated rats. At 13 months, the control-treated rats showed a dose-dependent enhancement of cocaine-induced locomotor activity, whereas, the CocH-treated rats showed no response to any dose of cocaine compared with saline.

Conclusions: CocH viral-vector produced a long-term blockade of the rewarding and behavioral effects of cocaine in rats, emphasizing its role as a promising therapeutic intervention in cocaine abuse. CocH effects on other behaviors, anxiety and feeding, were minimal.

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OPIOID THERAPY MISUSE FACTORS: A SYSTEMATIC REVIEW.
Kangwon Song1,2, Don McGue3, MARY PUGH4,5, William Kazanis6, Samantha Megan Panagi6, Erin Finley4,6, Ashley A Garcia6,7, Vikhyat Bebarata1,2, David Carnahan8, Jennifer Sharpe Potter2; Pharmacotherapy Education & Research Center, University of Texas Health Sciences Center at San Antonio, San Antonio, Texas, UT; Psychiatry, UT Health Science Center, San Antonio, TX; Pharmacy, South Texas Veterans Healthcare System, San Antonio, Texas, TX; South Texas Veterans Healthcare System, San Antonio, TX; Epidemiology & Biostatistics, University of Texas Health Sciences Center at San Antonio, San Antonio, Texas, TX; Division of Clinical Epidemiology, University of Texas Health Sciences Center at San Antonio, San Antonio, Texas, TX; San Antonio Military Medical Center, San Antonio, Texas, TX; Defense Health Agency, San Antonio, Texas, TX; United States Air Force Medical Support Agency, San Antonio, Texas, TX

Aims: Opioid misuse is a complex problem, and existing surveillance strategies only assess some domains of interest. The aim was to systematically identify multi-dimensional factors associated with opioid misuse and abuse to provide guidance on how to expand assessment and increase sensitivity to misuse.

Methods: We included randomized and observational studies with at least 100 adults exposed to non-cancer opioid therapy. This review included 33 articles published between January 2000 and December 2014 with sample sizes ranging between 546 and 3,000,000 participants.

Results: Increased opioid misuse was strongly associated with depression, substance use, non-analytic related opioid use. Studies suggest decreased opioid misuse in individuals with joint pain, more education, and female sex.

Conclusions: Expanding opioid misuse assessment to include the factors identified in this review may help prescribers improve treatment and more accurately identify risk for misuse.

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DISRUPTION OF THE SEROTONIN 5-HT5R RECEPTOR INTERACTION WITH PROTEIN PHOSPHATASE AND TENSIN HOMOLOGUE REGULATES THE BEHAVIORAL EFFECTS OF THE SELECTIVE 5-HT5R AGONIST WAY163909.
Claudia Soto1, Robert G Fox1, Noelle C Anastasio1,2, Huang Chi Du3, Scott Gilbertson4, Kathryn A Cunningham1,5; 1Department of Pharm & Tox, UTMB, Galveston, TX, 2Department of Chemistry, University of Houston, Houston, TX, 3Ctr for Addl Res, UTMB, Galveston, TX, 4Columbia University, New York, NY

Aims: Agonist stimulation of the 5-HT5R leads to activation of phospholipase C β (PLCβ) through G protein-dependent mechanisms. Disruption of the 5-HT5R-PTEN complex by 3L4F, a peptide fragment of the third intracellular loop of the 5-HT5R, augmented 5-HT5R-mediated signaling in live cells and regulated the effects of the selective 5-HT5R agonist WAY163909 on motor activity. In the present study, we investigated the ability of 3L4F to control the subjective effects of WAY163909 through PLCβ signaling pathways.

Methods: Male Sprague-Dawley rats (n=12) were trained to discriminate WAY163909 (0.75 mg/kg) from saline (1 ml/kg) in a two-lever, water reinforced drug discrimination paradigm. Upon acquisition, substitution and combination tests were conducted with WAY163909 (0.25-0.625 mg/kg) alone or in combination with 3L4F (1 μmol/kg, IP), the PLCβ inhibitor U73122 (0.5 mg/kg, IP) or both compounds 15 min prior to test sessions.

Results: Rats readily learned to discriminate WAY163909 from saline with an orderly dose-response relationship. Neither 3L4F nor U73122 alone substituted for WAY163909. A low dose of WAY163909 (0.5 mg/kg) plus 3L4F partially substituted, while U73122 suppressed the stimulus effects of WAY163909. The triple combination induced a full substitution.

Conclusions: These data suggest that the discriminative effects of WAY163909 may be mediated in part by G protein-dependent mechanisms through PLCβ and that disruption of the 5-HT5R-PTEN complex may shift 5-HT5R signal transduction away from PLCβ-dependent mechanisms. These findings provide preliminary insight into the potential to modulate the subjective effects of WAY163909 through targeting a specific protein/protein interaction.

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THE RELATIONSHIP OF AGE TO CANNABIS USE AND MOTIVES FOR USE AMONG MEDICAL CANNABIS DISPENSARY PATIENTS

James F. Soret1, Nancy A Haug1, Claudia Beatriz Padula2, Adrienne Heinz1,3 Marcel O Bonn-Miller1,3 1Palo Alto University, Palo Alto, CA, 2Psychiatry, VA Palo Alto Health Care System, Palo Alto, CA, 3Center of Excellence in Substance Abuse Treatment and Education, VA Palo Alto Health Care System, Menlo Park, CA

Aims: Adults across the lifespan are increasingly using medical cannabis for a variety of conditions. The objectives of the present study are to: (1) characterize cannabis use patterns of dispensary patients by age-defined groups; (2) examine problematic cannabis use as a function of age group; and (3) identify differential motives for use.

Methods: Participants included 217 adults using cannabis for a physical or mental health condition recruited from medical cannabis dispensaries in San Francisco, CA. They provided consent and completed a survey including the Cannabis Smoking History Questionnaire, Cannabis Use Disorder Identification Test (CUDIT), and Comprehensive Cannabis Motives Questionnaire. The sample was divided into three age groups (younger: 18-30, middle: 31-50, older: 51-72).

Results: A one-way ANOVA indicated all three age groups had similar use patterns over the previous 30 days (p=0.63); however, the CUDIT total score was significantly higher among younger users relative to middle-aged and older users (p<0.001). Regression analysis revealed the association between age cohort and CUDIT total score was moderated by age of regular use onset (F=7.62, p<0.001; t=3.15, p<0.01), such that earlier age of regular use onset was associated with higher CUDIT total score in the younger users but not in the older users. An ANOVA indicated younger users used cannabis more often for boredom (F=3.06, p<0.05) than middle aged or older adults.

Conclusions: Considering that negative consequences of cannabis use were higher among younger users, and that the association was moderated by age of regular use onset, delaying initiation of regular cannabis use may be an effective harm reduction strategy for younger adults.

Financial Support: San Francisco Patient and Resource Center (Bonn-Miller); Department of Veterans Affairs Rehabilitation Research and Development Career Development Award - 2 (Heinz)

ALCOHOL USE DURING AN N-ACETYLCYSTEINE CANNABIS CESSATION TRIAL IN ADOLESCENTS.

Lindsay Marie Svegla1, Nate Baker1, Erin A McClure1, Kevin Michael Gray1
Medical University of South Carolina, Charleston, SC

Aims: Current adolescent alcohol and cannabis cessation treatments have modest effects. Evaluation of novel candidate treatments is warranted. N-acetylcysteine (NAC), an over-the-counter antioxidant supplement with glutamatergic properties, is a promising pharmacotherapy for cannabis cessation in adolescents; however, the effect of NAC on adolescent drinking has not been examined. To that end, this study evaluated: (1) The effect of NAC or placebo on co-occurring alcohol use over an 8-week adolescent cannabis treatment trial, and (2) If co-occurring alcohol use resulted in poorer cannabis treatment outcomes.

Methods: Cannabis-dependent adolescents (ages 15-21; N=116) interested in treatment were randomized to 1200 mg bid NAC or matched placebo for 8 weeks. Participants did not need to be alcohol users or be interested in alcohol cessation to qualify. Primary drinking outcomes of interest were standard drinks, drinking days and heavy-drinking days per week.

Results: There were no demographic or alcohol use differences between participants randomized to NAC versus placebo (p>.05). Of the 89 participants with follow up use data, 77% reported at least one alcoholic drink in the 30 days prior to the study and averaged 1.3 (SD=1.4) heavy drinking days per week. There was no effect of NAC on alcohol use outcomes in the study cohort or the subset that reported any drinking at baseline (p>.1). There was no correlation between weekly quantitative or qualitative cannabinoid levels with co-occurring alcohol use (p>.2).

Conclusions: This is the first exploratory analysis from a randomized cannabis treatment trial examining the effects of NAC on adolescent alcohol use. Co-occurring occasional alcohol use did not affect cannabis treatment outcomes. No evidence was found of compensatory alcohol use. NAC trials specifically focused on alcohol-using adolescents are warranted.

Financial Support: K12 DA031379 (Svegla), R01DA026777 (Gray), UL1TR000662 (Brady)

EVALUATING PRESCRIPTION DRUG ABUSE SURVEY QUESTIONS.

Beth Sproule1, M Zhang1,2 1University of Toronto, Toronto, ON, Canada, 2Centre for Addiction and Mental Health, Toronto, ON, Canada

Aims: Population surveys provide important information on the prevalence of prescription drug abuse. Key challenges in these surveys include ensuring the participants know what medications are being referred to and distinguishing non-medical use from appropriate medical use. The terminology and definitions used in current surveys may be subject to a broad range of interpretations. The purpose of this study was to conduct a preliminary evaluation of the performance of prescription drug related questions used in 5 population drug use surveys from 3 different countries.

Methods: Current users of prescription opioids, sedative-hypnotics and/or stimulants were recruited to answer self report questions based on existing surveys, followed by a face to face structured interview that focused on their prescription drug use behaviours and experiences.

Results: Preliminary data from 25 participants (mean age 44±11 years, 52% male) revealed that questions describing the types of prescription medications of interest were misinterpreted by 44% of participants. For example, incorrect identification included clonazepam and acetaminophen for opioids, paroxetine and loxapine for sedatives, and zopiclone and risperidone for stimulants. Each of the 5 surveys had different definitions to characterize non-medical use, and participants did not respond uniformly across these descriptions. The number of participants who identified their use as non-medical based on endorsing at least one definition and based on endorsing all 5 definitions were as follows: 15 and 11 participants for opioids, 12 and 7 for sedatives, and 8 and 5 for stimulants, respectively. Features identified by participants as important in considering non-medical use included reason for use (medical or not) by 96%, method of use (route or patterns) by 88%, and source (prescription or not) by 76%.

Conclusions: These preliminary results suggest that current prescription drug related survey questions are interpreted differently amongst survey participants, which has implications for how comparable results may be across surveys.

Financial Support: Internal funding.

COMPARING PREDICTORS OF TREATMENT COMPLETION AND LENGTH OF STAY FOR OUTPATIENT TREATMENT.

Gerald Stahler1, Jeremy Mennis2, Temple University, Philadelphia, PA

Aims: Length of stay in treatment has been used as a proxy measure of treatment completion but the two are related but different concepts. This study examines the similarities and differences between predictors of treatment completion and length of stay for outpatient substance use treatment.

Methods: Data were extracted from the 2011 SAMHSA TEDS-D dataset using first-admission discharges for non-intensive outpatient treatment. The two dependent variables were treatment completion and length-of-stay, an ordinal variable with the following categories: 1-15 days, 16-30, 31-45, 46-60, 61-90, 91-120, 121-180, 181-365, >1 year. Logistic regression was used to model treatment completion and ordinal regression to model length-of-stay. Explanatory variables included age, sex, race/ethnicity (white, black, Hispanic), educational attainment, employment, living arrangement, prior arrests, primary substance (alcohol, methamphetamine, cannabis, cocaine, heroin), number of substances, and referral source.

Results: Similarities in the predictors of both dependent variables included older age, higher educational attainment, fewer number of arrests, and fewer recent substances used. Differences included females being more likely to complete treatment yet having no differences in length of stay. Whites were more likely to complete treatment compared to Hispanics, whereas blacks were less likely to do so than Hispanics. However, both whites and blacks had a shorter length of stay than Hispanics. Homeless clients were less likely, and those living in dependent living situations more likely, to complete treatment compared to those living independently. However, those living independently had longer lengths of stay than either of these two groups.

Conclusions: Treatment completion and length of stay may both be indicators of proximal outcomes, but have different admission variables associated with positive outcomes. Identifying admission variables associated with each distinct intermediate outcome may enable programs to enhance treatment outcomes.

Financial Support: None
PRELIMINARY OUTCOMES OF A BRIEF INTERVENTION TO REDUCE HIV AND HCV RISK AMONG RURAL WOMEN.

Michele Staton-Tindall1, Gabrielle Ciciurkaitis2, Jennifer R Havens3, Bridgette Petree4, Matthew Webster2, Carrie B Oser1. 1Sociology, Psychiatry, University of Kentucky, Lexington, KY; 2Behavioral Science, University of Kentucky, Lexington, KY; 3Social Work, University of Kentucky, Lexington, KY; 4University of Cincinnati, Cincinnati, OH

Aims: Rural women drug users are at high risk for HIV and HCV due to their increasing engagement in injection drug use and risky sex. Research on interventions in real world settings to target high risk behaviors among rural women has been limited. The purpose of this study is to examine preliminary outcomes including high risk drug use and risky sexual activity following participating in a brief motivational intervention targeted to rural drug-using women in jails.

Methods: This study involved random selection, screening, and face-to-face interviews with 400 women from rural jails in one Appalachian state. Participants were randomized to a brief motivational intervention or HIV education while incarcerated. Intent-to-treat analysis using t-tests and chi-squares focused on differences in drug use and risky sexual activity 6 months post-release.

Results: About 76% of women reported lifetime injection drug use and about three-quarters of those women reported recent injection in the 6 months before jail. Data collection is on-going, but preliminary intent-to-treat analyses (n=258) indicate trends toward significant reductions at 6 months for drug use for the intervention group vs. the comparison group (32.8% vs. 42.3%, p<0.10), as well as reductions in engaging in sex with an injection drug user (41.8% vs. 51.6%, p<0.10).

Conclusions: Based on rates of high risk drug use and sexual practices among rural women in Appalachia, there is significant need to examine delivery of interventions in real-world settings in this area. These findings indicate that brief interventions in jails may hold promise in changing behaviors that increase the likelihood of acquiring chronic infectious diseases such as HIV and HCV.

Financial Support: Research was supported by NIDA/NIH (R01DA033866).

THE EFFECTS OF REPEATED COCAINE ADMINISTRATION ON THE SURFACE EXPRESSION OF GLUTAMATE RECEPTOR SUBUNITS IN THE MEDIAL PREFRONTAL CORTEX.

Jeffery D Steketee1, Kyle C Summers4, 1Pharmacology, University of Tennessee Health Science Center, Memphis, TN

Aims: Past research suggests that enhanced excitability of neurons in the medial prefrontal cortex (mPFC) plays an important role in the behavioral sensitization induced by repeated cocaine exposure. Since AMPA and NMDA receptors regulate neuronal activity, the present studies tested the hypothesis that repeated cocaine exposure alters the surface expression of glutaamate receptor subunits that could lead to increased mPFC excitability.

Methods: Male Sprague Dawley rats (N= 4-8) received once daily injections of saline or cocaine (15 mg/kg, ip) over 4 consecutive days. Following an abstinence period of 1, 14 or 21 days animals received a challenge injection of saline or cocaine and motor activity was monitored for 2 hr. Immediately following collection of activity data, animals were sacrificed and the dmPFC and vmPFC were dissected, diced and incubated with the protein crosslinker BS3. Following incubation, tissue samples were prepared for western blot analysis of surface and internal levels of glutamate receptor subunits using standard techniques. Data were analyzed by a one-way ANOVA and a student Newman-Keuls test when appropriate.

Results: Cocaine produced a motor stimulant response that was significantly enhanced in sensitized animals at all time points tested. Acute and repeated cocaine exposure reduced both surface and internal levels of GluR1 in the dmPFC that was further reduced by cocaine challenge following 2 weeks of abstinence. In the vmPFC, cocaine exposure increased internal GluR2 and overall NR2A levels with former being enhanced by cocaine challenge in sensitized animals. Three weeks after daily cocaine exposure, the surface expression of NR2B was decreased in sensitized animals challenged with cocaine on test day in the dmPFC and GluR2 levels in the vmPFC were increased.

Conclusions: The data demonstrate that repeated cocaine has a time- and mPFC subregion dependent impact on surface and internal expression of glutamate receptor subunits that are indicative of enhanced excitability of mPFC neurons.

Financial Support: Research was supported by UTHSC bridge funds.

NEURAL RESPONSES TO RISK AND REWARD PREDICT TRANSITION TO PROBLEM STIMULANT USE.

Jennifer Lorraine Stewart1, 1, April Chelsea May1, Martina Reske1, Susan Taper1, Martin P Paulus4, 1Psychiatry, UC San Diego, La Jolla, CA; 2Psychology, CUNY Graduate Center, New York, NY; 3Psychology, CUNY Queens College, Flushing, NY; 4Institute of Neuroscience and Medicine-4, Medical Imaging Physics, Forschungszentrum Jülich GmbH, Jülich, Germany; 5Psychiatric Service, Veterans Affairs San Diego Healthcare System, San Diego, CA; 6Laureate Institute of Brain Research, Tulsa, OK

Aims: Biobehavioral markers of addiction risk during risky decision making may facilitate early intervention for young adults vulnerable to chronic problem use. Chronic stimulant users exhibit altered function in brain regions implicated in risk aversion and error monitoring such as insular cortex and anterior cingulate cortex, as well as frontal and subcortical regions involved in reward valuation and cognitive control. The present study examined whether brain activation during cognitive control. The present study examined whether brain activation during risk and reward processing could predict problem use three years later in young adults experimenting with stimulants.

Methods: Occasional stimulant users and healthy comparison subjects (CTL) performed a risky gains decision making task during functional magnetic resonance imaging (fMRI). Three years later, once-occasional users were classified as problem stimulant users (PSU), desisted stimulant users (DSU), or neither on the basis of follow-up clinical interview and interim drug use data. Groups were problem stimulant users (PSU), desisted stimulant users (DSU), or neither on the basis of follow-up clinical interview and interim drug use data. Groups were problem stimulant users (PSU), desisted stimulant users (DSU), or neither on the basis of follow-up clinical interview and interim drug use data. Groups were problem stimulant users (PSU), desisted stimulant users (DSU), or neither on the basis of follow-up clinical interview and interim drug use data. Groups were problem stimulant users (PSU), desisted stimulant users (DSU), or neither on the basis of follow-up clinical interview and interim drug use data. Groups were problem stimulant users (PSU), desisted stimulant users (DSU), or neither on the basis of follow-up clinical interview and interim drug use data. Groups were problem stimulant users (PSU), desisted stimulant users (DSU), or neither on the basis of follow-up clinical interview and interim drug use data. Groups were problem stimulant users (PSU), desisted stimulant users (DSU), or neither on the basis of follow-up clinical interview and interim drug use data.

Results: PSU exhibited lower medial frontal and insular activation than DSU and CTL for safe compared to risky choices. Moreover, PSU displayed lower medial frontal and striatal responses than DSU and CTL for risky losses compared to risky wins. However, PSU and DSU both showed less medial temporal cortex differentiation of safe compared to risky choices than CTL.

Conclusions: Occasional stimulant users who exhibited diminished resources to evaluate risk aversion and reward valuation errors transitioned to problem stimulant use. Findings suggest that neural impairments processing risk preclude addiction.

AN EVALUATION OF OPIOID SUBSTITUTION TREATMENT IN PRISON ON RISK OF MORTALITY IN PERIOD IMMEDIATELY AFTER PRISON: DOES LEAVING PRISON ON OST REDUCE THE RISK OF DEATH?

Garry Stillwell1, Hayley Jones2, Jenny Shaw3, Michael Farrell4, John Marsden1; 1National Addiction Centre, Institute of Psychiatry, Kings College London, London, United Kingdom, 2School of Social and Community Medicine, University of Bristol, Bristol, United Kingdom; 3Institute of Brain, Behaviour and Mental Health, University of Manchester, Manchester, United Kingdom, 4National Drug and Alcohol Research Centre, University of New South Wales, Sydney, NSW, Australia

Aims: We test whether leaving prison on opioid substitution treatment (OST) compared to leaving drug free can reduce the risk of death in the period immediately after prison release for opioid dependent prisoners.

Methods: Prospective cohort of opioid dependent adult prisoners ≥218 recruited from 39 prisons in England from September 2010 to August 2013 followed up until September 2015. Information on the outcome (mortality), date of prison release, main exposure (release from prison on opioid substitution treatment - OST), confounders and other exposures (OST in the community) were obtained through record linkage.

Results: We recruited 15,141 incarcerations of which 8645 (57%) were released on OST – 162 people died in the first year and 24 in the first month after release. People released on OST were more likely to enter treatment programmes in the community compared to those released without OST – 162 people died in the first year and 24 in the first month after release. People released on OST were more likely to enter treatment programmes in the community compared to those released without OST – 162 people died in the first year and 24 in the first month after release. People released on OST were more likely to enter treatment programmes in the community compared to those released without OST – 162 people died in the first year and 24 in the first month after release. People released on OST were more likely to enter treatment programmes in the community compared to those released without OST – 162 people died in the first year and 24 in the first month after release. People released on OST were more likely to enter treatment programmes in the community compared to those released without OST – 162 people died in the first year and 24 in the first month after release.

Conclusions: Opioid dependent people leaving prison on OST had a mortality risk substantially lower than if they had left prison drug free – removing the excess risk of death in the first 4 weeks after release. Leaving prison on OST also increased the likelihood of entering drug treatment in the community.

Financial Support: Applied for International Travel Award. Otherwise grant funded.

AN EVALUATION OF OPIOID SUBSTITUTION TREATMENT IN PRISON ON RISK OF MORTALITY IN PERIOD IMMEDIATELY AFTER PRISON: DOES LEAVING PRISON ON OST REDUCE THE RISK OF DEATH?
THE ROLE OF DOPAMINERGIC SYSTEM ON CRACK-COCaine ADDICTION: DRD2 AND DRD4 GENES AND THEIR INDIVIDUAL AND INTERACTION EFFECTS.

André G. Rauenkopf1,2, Jaqueline E. Bolot1, Schuch1, Diana Muller1, Glauca Chiyoko Akutagava-Martins1, Claudia Szobot1, Flavio Pechansky Pechansky1, Félix Henriques P Kessler2, Tatiana Roman1, 1Post Graduate Program in Genetics and Molecular Biology / Department of Genetics, Federal University of Rio Grande do Sul, Porto Alegre, Brazil, 2Center for Drug and Alcohol Research, HC/UFPRGS, Porto Alegre, Brazil, 3Child and Adolescent Psychiatric Service / Hospital of Clínica de Porto Alegre, Federal University of Rio Grande do Sul, Porto Alegre, Brazil

Aims: To evaluate a possible interaction effect between DRD4 and DRD2 genes, as well as isolated effects, in crack-cocaine addiction, since previous studies have addressed the association of both DRD2 and DRD4 genes in alcoholism and other drug addictions.

Methods: A cross-sectional study of 237 current adult crack abusers or dependents (DSM-IV TR criteria) from in- and outpatient clinics and 209 community adult controls was conducted in Brazil. Subjects were evaluated with ASRS, ASI6 and MINI-Short. DNA samples extracted from whole blood were genotyped for the DRD4 exon 3 assay and DRD2 T 28283265 polymorphisms. Subjects were classified according to the presence of DRD4 7 repeats (7R carriers) and DRD2 T (T carriers) alleles. The hypothesis of association was investigated using logistic regression models.

Results: No significant interaction between DRD4 and DRD2 genes was observed (p<0.146) including sex, age and ethnic group as covariates. However, the presence of DRD4 7R showed an effect in crack-cocaine addiction (OR=0.55; CI=0.315-0.908; p=0.021). We performed additional analyses considering clinical covariates, including ADHD, depressive and anxiety symptoms and suicide risk, with similar results (p=0.895 for interaction; OR=0.316, CI=0.155-0.645, p=0.002 for DRD4 7R effect).

Conclusions: An interaction effect between DRD4 and DRD2 genes was not detected in our sample. Nevertheless the possible protective role of DRD4 7R itself suggested by our results may represent an important factor related to crack-cocaine addiction and should be investigated in future studies.

Financial Support: SENAD, FAPERGS, CNPq, CAPES and PRODAH.

RACIAL AND ETHNIC DIFFERENCES IN SUBSTANCE USE DIAGNOSES, COMORBID PSYCHIATRIC DISORDERS AND TREATMENT INITIATION AMONG HIV-POSITIVE AND HIV-NEGATIVE WOMEN.

Erik David Storholm1,2, Michael Silverberg3; Derek Satre2; 1Rand Corporation, Santa Monica, CA, 2Kaiser Permanente, Oakland, CA, 3Psychiatry, UCSF, San Francisco, CA

Aims: Access to substance use disorder (SUD) treatment is a critical issue for women with HIV. This study examined racial/ethnic differences in SUD diagnoses, comorbid psychiatric diagnoses, and predictors of SUD treatment initiation among a racial/ethnically diverse sample of HIV-positive women (N=228) and a demographically similar cohort of HIV-negative women (N=693).

Methods: Diagnoses and service utilization data were obtained from electronic health records of members of a large integrated healthcare system in Northern California.

Results: HIV-positive women were less likely to initiate SUD treatment. Among HIV-positive women, being diagnosed with an amphetamine use disorder, comorbid depressive disorder, and anxiety disorder were associated with being white, while cocaine diagnosis was associated with being black. Among HIV-negative women, a diagnosis of alcohol SUD, comorbid depressive disorder, and comorbid anxiety disorder were associated with being white; diagnosis of cannabis SUD and cocaine SUD were associated with being black; and a diagnosis of amphetamine SUD and depressive disorder were associated with being Latina. Multivariable logistic regression models showed that alcohol, cannabis, and opiate diagnoses were predictive of SUD treatment initiation for both cohorts, while amphetamine SUD, comorbid depressive disorder, and being white or Latina were predictive of SUD treatment initiation for HIV-negative, but not HIV-positive women.

Conclusions: Findings suggest that clinicians need to be aware of differences in substances of abuse, comorbid psychiatric disorders, and to consider social and structural issues that may contribute to HIV and racial/ethnic differences in SUD treatment initiation among women.

Financial Support: This study is supported in part by a research grant from Pfizer with additional funding for Dr. Storholm provided by a National Institute of Drug Abuse training grant (T32 DA007250).

SAFETY AND TOLERABILITY OF COCAINE DURING PHENIDMETRAZINE MAINTENANCE.

William W. Swope1,2, Joshua A. Lile1, Lon R. Hays1, Abner O. Rayapati2, Craig B. Rush1,3; 1Behavioral Science, University of Kentucky, Lexington, KY, 2Psychology, University of Kentucky, Lexington, KY, 3Psychiatry, University of Kentucky, Lexington, KY

Aims: Phenidmetazine, a prodrug for the monoamine releaser phenmetrazine, appears to have limited abuse potential and reduces cocaine self-administration in preclinical studies. No human studies have evaluated the safety and tolerability of cocaine in combination with phenidmetazine, preventing further work to examine the efficacy of phenidmetrazine for cocaine use disorder. The aim of this study is to determine the cardiovascular and behavioral effects of acute intranasal cocaine doses during chronic phenidmetrazine treatment. We hypothesized that cocaine would be well tolerated during phenidmetrazine maintenance.

Methods: Ten human cocaine users will complete the study, with 9 completing to date. Subjects are maintained on ascending oral phenidmetrazine doses (0, 70, 140 and 210 mg/day). After at least 7 maintenance days at each dose, subjects received ascending doses of intranasal cocaine (0, 10, 20, 40 and 80 mg), separated by 90 minutes, within a single session. Repeated measures analysis of variance were used to analyze peak effect data.

Results: During placebo maintenance, cocaine produced prototypical cardiovascular and subjective effects (e.g., increased blood pressure and ratings of liking drug). The acute cardiovascular effects of cocaine alone were not clinically significant. Phenidmetrazine dose-dependently enhanced the peak heart rate produced by low cocaine doses, but these effects were also not clinically significant. No unexpected or serious adverse events occurred. Phenidmetrazine did not produce any other effects on its own, nor did it alter the subjective effects of cocaine.

Conclusions: Cocaine is safe and well tolerated during maintenance on a range of phenidmetrazine doses. Given this safety profile, the reduced abuse potential of phenidmetrazine and promising preclinical research, future human laboratory studies and clinical trials should evaluate the efficacy of phenidmetrazine for reducing cocaine use.

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IMPROVEMENT IN PSYCHIATRIC SYMPTOMS DURING INTERIM BUPRENORPHINE TREATMENT.

Joanna Mayers Streck1, Taylor A Ochalek1, Bryce Hruska1, Jacob D Pusey2, Stacey C Sigmund2; 1Psychological Science, University of Vermont, Burlington, VT, 2Psychiatry, University of Vermont, Burlington, VT

Aims: Prevalence of affective disorders among opioid abusers exceeds the general population. While depression, anxiety and other symptoms often improve upon entry into opioid treatment, this has been seen with treatments that involve psychosocial counseling. Here we examine changes in psychiatric symptoms during a randomized clinical trial evaluating a novel treatment for wailstl opioid-dependent (OD) adults involving buprenorphine (BUP) maintenance with minimal monitoring and no counseling.

Methods: OD adults are randomized to one of two 12-week conditions: Interim Buprenorphine Treatment (IBT) consists of BUP maintenance with bi-monthly visits and the remaining doses dispensed via computerized device. Waitlist Control (WLC) participants remain on the WL of their local clinic. We examined between- and within-group differences on the Brief Symptom Inventory (BSI) and Beck Depression Inventory (BDI-II) at intake and Weeks 4, 8 and 12.

Results: 28 participants have been randomized to IBT (n=14) and WLC (n=14) conditions. Participants are 33 years old and 57% male, 61% endorse heroin as their primary drug, and 82% have a lifetime history of IV drug use. On the Global Severity Index (GSI) subscale of the BSI, IBT participants randomized to reporting lower levels of psychological distress at Weeks 4 and 8 relative to WLC participants (F(3,69)=3.24, p<0.05). IBT participants GSI scores are also decreasing over time (p<0.01), with no change in WLC participants. On the BDI, IBT participants report lower depression scores at Weeks 4, 8, 12 vs. WLC participants (F (3,69)=3.24, p<0.01). BDI scores are also significantly decreasing over time in IBT participants (p<0.01) vs. no change in WLC participants.

Conclusions: Preliminary data suggest that IBT, without counseling or psycho-social support, may be associated with reductions in psychiatric distress among wailstl OD adults. For the 2016 meeting, we will present data from the completed randomized trial of 70 participants.

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INFLUENCE OF COCAINE CUES ON MONETARY CHOICE IN COCAINE USERS.
Justin C Strickland1, Craig R Rush1,2,3, William W Stoops1,2,3; 1Psychology, University of Kentucky, Lexington, KY, 2Behavioral Science, University of Kentucky, Lexington, KY, 3Psychiatry, University of Kentucky, Lexington, KY

Aims: Numerous studies have demonstrated selective attention to drug-related cues in active drug users. However, few studies have evaluated how attentional bias to drug-related discriminative stimuli may impact choice between concurrently available reinforcers. This study tested the hypothesis that cocaine-related cues would bias choice towards monetary reinforcers signaled by cocaine cues relative to those signaled by neutral cues.

Methods: Twenty-five active cocaine users (9 female) completed a choice task in which choices for varying monetary values were assessed in the presence of concurrent cocaine and neutral discriminative cues. Critical task stimuli (n = 24 choices) were cocaine images (e.g., crack pipe) matched with neutral images (e.g., pen) with equal monetary choices located under each image (e.g., $0.05 versus $0.05). Choice bias was calculated as the difference score for choice of cocaine and neutral-associated values on these critical trials (cocaine = neutral). Eye-tracking technology was used to measure time spent fixating on each image. Data were analyzed using dependent-sample t-tests, bivariate correlations, and effect sizes calculated as Cohen’s d for repeated measures.

Results: A significant and robust choice bias for monetary amounts associated with cocaine cues was observed (median choice bias = 10 choices; t = 3.32; d = 0.66). A significant attentional bias for cocaine cues was also observed, replicating previous work (t = 3.14; dt = 0.64). Choice and attentional bias were modestly correlated (r = 0.33). Demographic factors did not influence these outcomes.

Conclusions: These findings indicate that drug cues may alter behavior towards drug-associated alternatives during decision-making events. Future studies are needed to determine the specific behavioral mechanisms and boundary conditions under which drug-related cues can alter choice for concurrent reinforcers.

Financial Support: Grants R21 DA035376

A THEORY OF SOCIAL ROLES IN ADDICTION AND RECOVERY SUITABLE FOR DYNAMIC SIMULATION MODELING.
Erin Stringfellow; Brown School of Social Work, Washington University in St. Louis, St. Louis, MO

Aims: -Review the literature on social roles and relationships in drug addiction.-Offer a theoretical framework which posits that identification with conventional or drug-related social roles exists in a two-dimensional ‘state space’ driven by feedback loops in relationships; these relationships form a complex adaptive system (CAS).-Discuss how dynamic simulation modeling is used to test theories of CAS and develop improved interventions.-Highlight the empirical data needed for dynamic simulation modeling to test this theory.

Conclusions: Many people with addictions identify with drug-related roles, e.g., addict, hustler, runner, dealer. In order to achieve long-term recovery, they reconstruct identities based on conventional social roles, e.g., parent, spouse, employee. The extent of identification with these roles is conceptualized as existing in a 2-dimensional ‘state space’. However, identity reconstruction is a deeply personal enterprise that is also unavoidably social. Whether people in early recovery can strengthen conventional social roles and detach from drug-related roles depends on other people associated with these roles (e.g., family members, drug buddies). Drug users and the people with whom they have relationships have expectations for each other’s behavior based on social roles, which influences behaviors and shapes social roles, which further shapes expectations. This process is a dynamic feedback loop affecting locations in the social role state space. These relationships are a complex adaptive system (CAS), in which the interrelated components adapt over time in response to changes in the system. Dynamic simulation modeling uses insight about CAS to develop better interventions by estimating their impacts given varying conditions. Agent-based modeling can model movement through ‘state space’ based on social interactions, while system dynamics accounts for feedback effects. To accomplish this we need better data; dynamic data from dyads and networks about social roles could greatly improve our ability to develop peer-, family-, and community-based interventions.

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AGE AND WORKING MEMORY PREDICT DELAY DISCOUNTING IN ADOLESCENTS IN TREATMENT FOR CANNABIS USE DISORDERS.
Mary Margaret Sweeney, Matthew W Johnson; Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD

Aims: Delay discounting predicts treatment outcomes in adolescents with cannabis use disorders. Predictors of delay discounting, such as age and working memory, may illuminate developmental or cognitive mechanisms of discounting or provide targets for intervention. Younger adolescents tend to discount delayed, hypothetical rewards more steeply than older adolescents, but these differences may be related to inexperience with long delays. Thus, we examined delay discounting as a function of age and working memory in adolescents receiving treatment for cannabis use disorder using real rewards and short delays.

Methods: Adolescents enrolled in treatment for cannabis use disorder completed the Quick Discounting Operant Task (QDOT) as a part of a pre-assessment for a working memory training program (n = 87). The QDOT is a real-reward measure of delay discounting with a maximum delay of 80 seconds and a maximum reward of 80 cents. Adolescents made discrete choices between a smaller immediate reward (e.g., ‘get 40 cents now’) and a larger delayed reward (e.g., ‘wait 5 seconds to get 80 cents’). Outcomes were delivered via coin dispenser. Working memory was assessed using digit span.

Results: Participant age ranged from 14-20 years (mean = 16.3). Discounting on the QDOT was examined using area under the curve (AUC). Using linear regression, age and digit span significantly and independently predicted AUC, but average daily cannabis, alcohol, and tobacco use did not.

Conclusions: Older participants and those with longer digit spans had a greater tendency to choose larger later over smaller sooner rewards. Our use of a real-reward discounting procedure with short delays suggests that previously shown differences in discounting as a function of age were not because of inexperience with long delays or the hypothetical nature of the rewards. These data are supportive of working memory as a target for intervention to improve delay discounting and treatment outcomes in adolescents with substance use disorders.

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CANNABIDIOL ATTENUATES A SPATIAL WORKING MEMORY IMPAIRMENT CAUSED BY THC IN MONKEY.

Michael A Taffe1, Courtnie Glavis-Bloom2, Jacques D Nguyen3; 1CNAD, The Scripps Research Institute, La Jolla, CA, 2SR1, International, Menlo Park, CA.

Aims: Increased content of the non-psychoactive marijuana constituent cannabidiol (CBD) was associated with protection from the memory impairing effects of marijuana smoking, presumably due to Δ2-tetrahydrocannabinol (THC) delivery, in human users. Unfortunately, the inability to control self-selection of different marijuana strains complicates making a clean interpretation of human studies. This study was designed to test effects of CBD on THC-induced memory impairment in a controlled, nonhuman primate model.

Methods: Male cynomolgous monkeys (N=8) were trained to perform the Self-Ordered Spatial Search (SOSS) task from the monkey CANTAB and subsequently challenged with THC: (0.1-0.5 mg/kg, i.m.) or cannabidiol (CBD; 0.1-1.0 mg/kg, i.m.) alone and in combination. Additional studies in a subset (N=4) obtained blood samples after individual and combined dosing with THC and CBD.

Results: Administration of THC decreased trial completion accuracy in the SOSS task, but CBD alone did not affect performance. The administration of CBD 60 min prior to THC attenuated the effects of 0.5 mg/kg THC in a dose-dependent manner. The pharmacokinetic studies found minimal effect of CBD on the plasma levels of THC in the monkeys.

Conclusions: This study verifies the potential of CBD to ameliorate cognitive effects of THC and shows that studies in monkeys may be more translational than those in rodents. The lack of effect of CBD on THC pharmacokinetic distribution indicates the cognitive effect is a pharmacodynamic one. These results also suggest that a requirement for CBD-high marijuana cultivation may be a potential regulatory avenue for harm reduction in the face of increased liberalization of recreational and medical marijuana laws.

Financial Support: These studies were funded by USPHS Grant R01 DA035482

OPTIMAL PREVENTION OF RELAPSE AMONG OPIOID USERS: A 12-WEEK RANDOMIZED CONTROLLED TRIAL OF EXTENDED-RELEASE NALTREXONE INJECTIONS VERSUS DAILY BUPRENORPHINE-NALOXONE.

Dana Hakan Tanum1, Anja Oden1, Kristin Solli1, Kamni Sharma-Haase1, Zill-e-Huma Latif1, Nikolaj Kunoe1; 1R&D mental health, Akershus University Hospital, Lørenskog (Oslo), Norway, 2Department of addiction medicine, Haukeland University Hospital, Bergen, Norway, 3University of Oslo, Norwegian Centre for Addiction Research, Oslo, Norway

Aims: To investigate whether four-weekly XR-NTX injections are more effective than daily BP-NLX in preventing drug use, craving, maintaining abstinence from opioid/secondary addictions and preventing injected drug use, preventing drug craving, improving health and quality of life.

Methods: In this multi-centre open-label comparison, opioid dependent (DSM-IV) adults (18+) without serious mental or somatic disease were eligible to participate. After screening, 164 patients in treatment for opioid dependence were randomly assigned (1:1) to receive 12 weeks of treatment with either XR-NTX every four weeks (380 mg) or daily BP-NLX 4-24 mg flexible dose. Urine drug tests were scheduled weekly and clinical follow-up assessments every four weeks. Following RCT completion, participants were allowed to continue or transition to XR-NTX for further 36 weeks with clinical assessment every four weeks.

Results: Three out of four completed the 12 week study, 75% were males. Among the completers, we found a more frequent use of heroin and other illicit opioids in the BP-NLX group compared to the XR-NTX group (p=0.003). There was no significant difference between the groups on use of other illicit drugs including non-prescribed benzodiazepines, or on self-reported quality of life, drug craving and mental health problems.

Conclusions: The results indicate that opioid blocking treatment with XR-NTX reduce illicit opioid use to a greater extent that BP-NLX, but not the use of other illicit drugs. XR-NTX may be an alternative treatment for opioid addiction and should be considered for subjects who want to terminate treatment with opioid agonists.

Financial Support: Grant support from The Research Council of Norway (grant # 204725-3)Financial support from Akershus University Hospital, Oslo and Norwegian Centre for Addiction Research, University of Oslo

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ADDICTIVE BEHAVIORS AND PSYCHIATRIC COMORBIDITIES OF INCARCERATED WOMEN IN A FRENCH OVERSEAS TERRITORY.

L Techer1, Jean-Marc Alexandre2, David Méet1, Marc Auriaumont2, M Fatsea3; 1Addiction Psychiatry (CNRS USR 3413), Universite Bordeaux, Bordeaux, France, 2Addiction Treatment Center, CHU l’ile de la Réunion, Saint Denis, Reunion, France

Aims: To describe addictive behaviors and psychiatric comorbidities of incarcerated women in Reunion Island, France (overseas territory).

Methods: From January to October 2015, women incarcerated at the penitentiary of Reunion Island were proposed an interview with the modified Addiction Severity Index (ASI) and the Mini International Neuropsychiatric Interview (MINI).

Results: 32 women were included (response rate 73%) Average age was 35.5 y.o. (SD=12.7 y.). Half of our sample was awaiting trial (n=16). Average duration of incarceration was 19 months (SD=49 months). Sentences ranged from 1 month to 30 years. Sixty percent of subjects (n=19) reported current use of tobacco. Other substances used in the past 30 days were prescribed benzodiazepines (34% n=11) and prescribed opioids (n=1). Fifteen subjects (47%) met criteria for current tobacco dependence, 4 (13%) for alcohol, 4 (13%) for sedatives and 1 (3%) for cannabis. A third of subjects (34% n=11) received some treatment for addiction in the past. According to the mASI (interviewer sensitivity ratings ≥4), half of the sample (50% n=16) exhibited a current need for tobacco treatment, 25% (n=8) for alcohol, and 16% for other substances. Nearly a third (31% n=10) of women reported substance use during pregnancy. Also, 20 women (63%) were in need of psychological treatment. 41% (n=13) had current mood disorder (75% lifetime), and half (50% n=23) had current anxiety disorder (50% lifetime). Twenty-four women (75%) had received psychological treatment at some time during their incarceration.

Conclusions: Despite the efforts of prison care services, a large proportion of incarcerated women still remain in need for help for addiction and psychological comorbidities. An improvement in the detection of addictions and psychiatric comorbidities and treatment offer is needed.

Financial Support: Supported by internal funds.

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THE BALTIMORE REPRODUCTIVE HEALTH INITIATIVE: BRINGING FAMILY PLANNING TO WOMEN IN TREATMENT.

Mishka Terplan1, Jennifer Kirschen2, Sadiya Muqueeth2, Rebecca Dineen3; 1Behavioral Health System Baltimore, Baltimore, MD, 2Baltimore City Health Department, Baltimore, MD

Aims: Women in substance use disorder (SUD) treatment have unique issues related to reproductive health. In addition to an increased risk for acquiring sexually transmitted infections, they have higher lifetime parity than comparison populations, report more unintended pregnancies, and have more abortions. These differences are due in part to a decreased prevalence in the use of contraception, particularly long acting reversible contraception which may be due to decreased access to preventative health services including family planning. To address the unique needs of women in treatment and reduce barriers to care, the Behavioral Health System Baltimore in collaboration with Baltimore City Health Department initiated the Baltimore Reproductive Health Initiative. This initiative involves integrating three domains into SUD treatment: screening, education, and on-site service delivery. 1) Screening: All clients are asked, “Would you like to be pregnant in the next year?” (One Key Question) at treatment intake. 2) Education: A curriculum specific to the population was developed and delivered over 6 weeks by nursing student volunteers. 3) Service delivery: Utilizing Title X as a funding and organizational framework, clinics were set up at each of the treatment sites to provide a full range of reproductive services including all contraceptive methods.

Conclusions: To date the Baltimore Reproductive Initiative is integrated into three treatment sites. Over 200 women have been screened for reproductive health needs and 90 have accessed services of whom 80% needed contraception. Almost 90% of those needing contraception received a method, the most popular being the implant. This pilot program confirms the unmet reproductive health care needs of women in treatment and demonstrates the feasibility of integrating screening and onsite service delivery.

Financial Support: The Abell Foundation
ALEXITHYMIA IN ALCOHOL-DEPENDENT PATIENTS IS MEDIATED BY STRESS, ANXIETY AND LOSS OF SELF-CONTROL OVER DRINKING.
Fred Arne, Thomas Young1, Michael Lyvers2, Jason Connor3, Reidar Tyssen4, Edythe London5, Gerald Feeney6; 1Natl Ctrn Dual Diagnosis, Inlandnet Hosp Trust, Ottestad, Norway, 2Qld Univ Technol, Brisbane, QLD, Australia, 3Univ Calif Los Angeles, Los Angeles, CA, 4Bond Univ, Gold Coast, QLD, Australia, 5Univ Qld, Brisbane, QLD, Australia, 6Behav Sciences in Medicine, Univ Oslo, Oslo, Norway, Princess Alex Hosp, Brisbane, QLD, Australia

Aims: Up to 67% of alcohol-dependent patients in treatment have alexithymia, a personality trait associated with emotion regulation difficulties. A single study reported that alcohol expectancies related to affective change and social enhancement partially mediated the relationship of alexithymia and alcohol dependence. However, no research has explored the potential explanatory power of other key factors such as stress, anxiety and obsessive thoughts about alcohol use and compulsive behaviors associated with alcohol dependence as mechanisms to elucidate the role of alcohol in alcohol-dependent patients with alexithymia. By integrating frontal lobe theory, the stress-alexithymia hypothesis and the hyperarousal model, the objective of the present study, was to examine the extent to which these factors mediate the relationship of alexithymia and alcohol dependence.

Methods: 354 outpatients in Cognitive-Behavioral Therapy for alcohol dependence were recruited. Participants were detoxified prior to assessment, and completed the Toronto Alexithymia Scale (TAS-20), Depression Anxiety Stress Scales (DASS), Obsessive Compulsive Drinking Scale (OCDS) and Alcohol Use Disorder Identification Test (AUDIT).

Results: Path analyses showed that DASS-Stress, DASS-Anxiety and total OCDS-scores fully mediated the relationship of alexithymia with alcohol dependence.

Conclusions: Taken together this research highlights the importance of future interventions that address stress, anxiety and a loss of control over drinking when tailoring treatment for alcohol-dependent patients with alexithymia.

Financial Support: Inlandnet Hosp Trust

ENVIRONMENTAL SMOKE EXPOSURE AMONG DAILY SMOKERS WITH LOW VS. HIGH EDUCATIONAL ATTAINMENT.
Reidar Tysse1, Babak Tofighi2, Rachel Denlinger1, Dorothy Haruskami3, Eric Donny3; 1Behavioral and Social Sciences, Brown University, Providence, RI, 2Center for Alcohol & Addictions Studies, Brown University, Providence, RI, 3Psychology, University of Pittsburgh, Pittsburgh, PA, 4Masonic Cancer Center, University of Minnesota Medical School, Minneapolis, MN

Aims: Low educational attainment is a risk factor for smoking persistence. In this study, we examined associations between educational attainment and environmental smoke exposure among non-treatment-seeking smokers who had participated in a multisite study of very low nicotine content cigarettes.

Methods: At baseline, participants (n = 839) completed a questionnaire asking about smoke exposure in their home, social and work environments. We compared continuous and categorical data among those with lower (<12 years) vs. higher (>12 years) educational attainment using t-tests and chi-square tests.

Results: Participants with lower educational attainment (n=368) were more likely to be male (62 vs. 54%, p<0.05), African American (47 vs. 32% p<0.001), menthol smokers (64 vs. 52%, p <0.01) and heavier smokers (18.4 vs. 16.1 cigarettes per day, p <0.001) than those with higher educational attainment. Lower educational attainment was associated with greater likelihood that smoking was allowed inside the home (p <0.01) and inside the workplace (p <0.05), greater likelihood of being exposed to at least 1 h/day of smoke while at work (p <0.01), greater likelihood of daily smoke exposure in social settings (p <0.001), and a higher density of smoking among close friends (p <0.001). Those with lower educational attainment were also less likely to have received advice to quit from a parent, sibling, or co-worker (p<0.05). Likelihood of having recently received advice to quit from a health provider was low overall (<15%) and did not differ by group.

Conclusions: Smokers with lower educational attainment are a vulnerable population, both in terms of their own smoking rates and exposure to smoke from others in their environments. Multi-modal public health and treatment interventions are needed to reduce smoke exposure in this vulnerable population.

Financial Support: Supported by U56DA033659.

COMPARISON OF RISK BEHAVIOR, ADDICTION SEVERITY, AND HISTORY OF OVERDOSE BETWEEN ACTIVE AND AGONIST-MAINTAINED HEROIN USERS.
Briana Todhunter1, Katrina Wehmeier1, Jermaine D Jones1, Sandra D Comer1; 1Psychology, Columbia University, Teachers College, New York, NY, 2Psychiatry, Columbia University and NYSPI, New York, NY, 3Division of Substance Abuse, New York Psychiatric Institute, Columbia Medical School, New York, NY

Aims: This study sought to characterize psychosocial function of non-treatment seeking heroin users to those in opioid agonist maintenance therapy. Additionally, we sought to understand how these variables were related to overdose history.

Methods: This study compared individuals who were currently using heroin and not treatment seeking (Current) to those maintained on methadone or buprenorphine (In Tx). Participants completed basic demographic information, a substance use inventory, the Addiction Severity Index (ASI), the Risk Assessment Battery (RAB), and a Treatment Services Review (TSR). We ran a MANOVA between our groups with a series of drug use variables as our out-}

Conclusions: Taken together this research highlights the importance of future interventions that address stress, anxiety and a loss of control over drinking when tailoring treatment for alcohol-dependent patients with alexithymia.

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Briana Todhunter1, Katrina Wehmeier1, Jermaine D Jones1, Sandra D Comer1; 1Psychology, Columbia University, Teachers College, New York, NY, 2Psychiatry, Columbia University and NYSPI, New York, NY, 3Division of Substance Abuse, New York Psychiatric Institute, Columbia Medical School, New York, NY

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ANALGESIA AND ABUSE LIABILITY OF HIGH-DOSE INTRAVENOUS OPIOIDS IN PATIENTS ON METHADONE OR BUPRENORPHINE
D A Tompkins, M T Smith1, R R Edwards2, G E Bigelow1, Eric C Strain1; 1Johns Hopkins University, Baltimore, MD, 2Harvard Medical School, Boston, MA

Aims: Patients with opioid use disorders (OUD) on medication-assisted therapy (MAT; i.e. methadone and buprenorphine) are at increased risk for severe pain. However, controlled investigations of opioid analgesia and abuse liability to guide clinical practice are limited.

Methods: Healthy, pain-free buprenorphine (SL, 12-16 mg/day) and methadone (PO, 80-100 mg/day) maintained participants without active drug use were recruited for an ongoing within subject, placebo (PL) controlled within-in-session ascending dose effect evaluation of intravenous (IV) hydromorphone (H; total dose 32 mg) and IV buprenorphine (BUP; total dose 32 mg). Methadone participants (N=5) had 2 residential sessions (PL and H); buprenorphine participants (N=5) had 3 sessions (PL, H, and BUP). Volunteers underwent quantitative sensory testing (QST; for analgesia) and standard abuse liability assessments at baseline, after 4 escalating study medication injections, and twice after final injection. Repeated measures 2-factor ANOVA (time, study medication, time x study medication) on all outcomes were performed separately by baseline condition.

Results: Buprenorphine participants showed significant (p<0.05) differences between IV medications on both analgesia and abuse liability outcomes. There were only significant increases on QST (not abuse liability) for H vs. PL in methadone participants. In post-hoc analyses of buprenorphine participants, H injections resulted in significantly greater analgesia and abuse liability compared to BUP and PL. For all participants, significant differences between IV medications generally did not occur until after receiving the full 32 mg dose.

Conclusions: These preliminary results suggest high-dose IV H is required for analgesia in patients on standard doses of MAT. Methadone maintenance was associated with significantly blunted H abuse liability without comparable analgesic blockade.

Financial Support: Research was supported by NIDA (DA029609, DA023186), and BUP was provided by Indivior.

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PRENATAL CANNABIS EXPOSURE AND COGNITIVE FUNCTIONING: A CRITICAL REVIEW.
Ciara A Torres1, Carl L Hart3,1; 1Psychology, Columbia University, New York, NY, 2School of Social Work, Columbia University, New York, NY, 3Psychiatry, Columbia University, New York, NY

Aims: Concerns have been raised about potential harmful effects of cannabis exposure on the developing fetus, especially as it relates to subsequent cognitive functioning. Previous findings and interpretations have been mixed.

Methods: This article addresses an important gap in our knowledge by providing a critical review of results from longitudinal studies examining the impact of prenatal cannabis exposure on multiple domains of cognitive functioning. In addition, neuroimaging data on cannabis-exposed offspring are also reviewed in this article.

Results: Differences on tryptophan concentrations between T0 and T2 were statistically significant for all groups evaluated (p<0.01). An increase in T2 HDRS total scores was observed in two groups (MD and CMD) reaching statistically significance only in CMD group (t0 mean=1.33±1.17 vs. T2 mean=2.6±1.72; p<0.01). No changes were found in the other groups.

Conclusions: These preliminary results show a different response to ATD test between independent depression and cocaine-induced major depression, supporting the idea of a minor implication of the serotonergic system in substance-induced depressions.


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ACUTE TRYPTOPHAN DEPLETION IN COCAINE DEPENDENT SUBJECTS WITH COMORBID DEPRESSION.
Marta Torres1,2,3, Joan I Mestre-Pintó1, Clara Pérez-Matá1,2, Esther Papaseit1,3, Francina Fonseca1,4, Magí Farre1,4,1; 1Institut Hospital del Mar d’Investigacions Mèdiques, PSMAR, Barcelona, Spain, 2Institut de Neuropsiquiatria i Addiccions, Parc de Salut Mar, Barcelona, Spain, 3Universitat Autònoma de Barcelona, Barcelona, Spain, 4Hospital Universitari Germans Trias i Pujol-IGTP, Badalona, Spain

Aims: The aim of the study was to assess the ATD response in five groups: (1) cocaine-dependent patients (CDP) (2) with independent major depression (CMD) or (3) cocaine-induced major depression (CIMD), (4) matched-healthy controls (HC), and (5) patients only with major depression (MD).

Methods: Subjects participated in two sessions (one ATD and one non-ATD), the sessions were randomized, and double-blind. A total of 54 subjects participated: 33 cocaine dependent patients (DSM-IV-TR) divided in 3 groups (15 CMD, 9 CIMD, and 9 CDP), 4 MD, and 17 HC (DSM-IV-TR). ATD test was performed and mood changes were evaluated by the Hamilton Rating Scale for Depression (HSRD) during the experimental sessions at baseline (T0) and after 5 hours (T2).

Results: Differences on tryptophan concentrations between T0 and T2 were statistically significant for all groups evaluated (p<0.01). An increase in T2 HDRS total scores was observed in two groups (MD and CMD) reaching statistically significance only in CMD group (T0 mean=1.33±1.17 vs. T2 mean=2.6±1.72; p<0.01). No changes were found in the other groups.

Conclusions: These preliminary results show a different response to ATD test between independent depression and cocaine-induced major depression, supporting the idea of a minor implication of the serotonergic system in substance-induced depressions.

Financial Support: K23 DA-028660, T32 AI-007392, F32 DA-038519

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EFFECTS OF HIV INFECTION AND COCAINE DEPENDENCE ON LABORATORY-BASED DECISION MAKING TASK PERFORMANCE.
Sheri L Towe, Andréa L Hobkirk, Christina S Meade; Psychiatry & Behavioral Sciences, Duke University, Durham, NC

Aims: Drug depende and HIV infection can produce prominent deficits in executive function. These deficits can be observed behaviorally in performance on laboratory-based decision making tasks. Understanding these deficits is important for both primary and secondary HIV prevention. This study investigated the effects of HIV infection and cocaine dependence on performance across 3 common decision making tasks, and examined the relationship of task performance to neuropsychological impairment.

Methods: The sample includes 204 adult participants across four groups who differed on cocaine dependence and HIV status: HIV-positive cocaine users (n=49), HIV-negative cocaine users (n=57), HIV-positive non-drug users (n=62), and HIV-negative non-drug users (n=36). Decision making was assessed using the Iowa Gambling Task (IGT; contingency learning), Balloon Analogue Risk Task (BART; risk preference), and Monetary Choice Questionnaire (MCQ; delay discounting). A comprehensive battery assessed neurocognitive functioning across 7 domains.

Results: The sample was mostly male (65%) and African American (86%), with a mean age of 46 years. There were main effects for HIV in both the IGT (p<0.01) and the BART (p<0.02), such that HIV-infected participants demonstrated more risky responses than HIV-uninfected participants, but there were not cocaine or interaction effects. For the MCQ, there was a cocaine effect (p<0.01), such that cocaine users made more impulsive choices than non-users, but no HIV or interaction effects. Correlations showed that task performance was only somewhat related to neuropsychological test scores globally and across domains (all r<.25).

Conclusions: Results suggest that HIV infection and cocaine dependence have independent and unique effects on decision making. Although there were no interaction effects, the combination of HIV and cocaine could lead to riskier behaviors in real-world settings. These tasks did not strongly correlate with neuropsychological performance.

Financial Support: K23 DA-028660, T32 AI-007392, F32 DA-038519
COMPARISON OF THE REINFORCING EFFICACY OF MIDAZOLAM, ETHANOL, AND MIXTURES OF THE TWO IN MALE RATS. Dwayne M. Watson1,2, James K Rowlerson1,2, Donna Platt1, Kevin Freeman1; 1University of Mississippi Medical Center, Jackson, MS, 2Comparative Pathology, Tulane National Primate Research Center, Covington, LA

Aims: Drugs within the benzodiazepine (BZD) class are remarkably safe when administered alone. However, these drugs can produce severe motor impairment and respiratory depression when co-administered with alcohol. Despite these adverse consequences, rates of concurrent BZD and alcohol use are increasing, and it is unknown if BZD and alcohol combinations possess a higher reinforcing efficacy that could contribute to their co-abuse.

Methods: Eight male rats were trained to orally self-administer solutions of either sucrose (S), sucrose and midazolam (SM), sucrose and ethanol (SE), or sucrose, midazolam, and ethanol (SME). The response requirement was increased between sessions until the number of earned reinforcers was zero. The effect of response requirement on reinforcer consumption was determined using a behavioral economic approach. The order of solution availability was counterbalanced across subjects.

Results: The number of reinforcers earned at the lowest response requirement (i.e., FR 1) was highest when SM was available, followed by S, SE, and SME. Consumption of SM was least affected by increases in cost (i.e., less elastic), indicating it possessed the highest reinforcing efficacy, followed by S, SE, and SME.

Conclusions: The addition of midazolam did not increase the reinforcing efficacy of a sucrose and ethanol mixture in our preparation. This finding does not support the supposition that human BZD and alcohol co-administration is maintained by a higher reinforcing efficacy relative to either drug in isolation. Although SM was the most effective reinforcer examined in this study, it is unclear whether midazolam functioned as a reinforcer or if it increased the reinforcing efficacy of the sucrose solution. To address this, future work will assess the reinforcing efficacy of 1) midazolam in isolation as well as 2) sucrose alone following non-contingent midazolam treatment.

Financial Support: This research was supported by NIH grant DA031835 to KBF.

SUBSTANCE USE DISORDERS, TRAUMA AND VICTIMIZATION IN A REPRESENTATIVE SAMPLE OF LATINO PRISON INMATES. María Vélez Pastrana1,3, Rafael A Gonzalez1,3, Angel Alecia-Rodriguez1,3, Carmen Albizu1; 1Center for Evaluation and Sociommediatral Research, University of Puerto Rico, San Juan, PR, 2Centre for Mental Health, Imperial College London, United Kingdom, 3Carlos Albizu University, San Juan, PR

Aims: Previous evidence suggests that individuals in the criminal justice system are continually exposed to unprecedented levels of traumatic experiences and victimization. Information on the burden of psychiatric morbidity and SUD in relation to trauma for Latinos is limited. (1) to present the rates of psychiatric morbidity associated with substance use disorders (SUD), (2) to establish associations between SUD and history of trauma and victimization, and (3) to examine correlates with forensic outcomes.

Methods: We used data from a probabilistic sample of 1,179 sentenced inmates (81.3% male) from 26 penal institutions in Puerto Rico (USA). Computer Assisted Personal Interviews provided data on demographic characteristics, criminal history, lifetime traumatic events and victimization in prison, and on psychiatric morbidity, including SUD, Post Traumatic Stress Disorder (PTSD), Depression, and ADHD.

Results: SUD were highly comorbid with all other psychiatric disorders. Inmates with lifetime SUD had significantly higher rates of witnessing violence (p < 0.05), being raped or sexually abused (p < 0.05), experiencing highly distressing events (p < 0.05) and having been a victim of violence themselves (p < 0.001). Results from multivariate analyses reveal that being victim of violence is the sole significant type of trauma that is independently associated with a SUD (OR 3.13, p < 0.001).

Conclusions: Findings have important implications for research and clinical work with prisoners, as many inmates report being victims of physical and sexual abuse in their lifetime and a considerable proportion are exposed to extreme forms of violence as part of their offence. Treatment of SUD in criminal justice settings should consider the potential impact of traumatic experiences in this population.

Financial Support: NIDA Grant 5R24DA024868-05.

UTILIZATION OF OPIOID AGONIST THERAPY AMONG PERSONS WHO INJECT DRUGS IN THE SEATTLE AREA. Judith I Tsui1, Sara Nelson Glick2, Hanne Thiède2; 1School of Medicine, University of Washington, Seattle, WA, 2Public Health-Seattle & King County, Seattle, WA

Aims: There is a growing epidemic of opioid misuse and injection drug use in the United States. Treatment with opioid agonist therapy (OAT) is effective yet may not be accessed by all persons who could benefit. The study aim was to describe utilization of OAT among persons who inject drugs (PWID) in Seattle. We used data from the 2015 National HIV Behavioral Surveillance (NHBs) system among PWID in the Seattle area. Persons aged ≥18 years who injected drugs in the past year were recruited using respondent-driven sampling and interviewed. Local supplemental questions assessed whether PWID had received methadone or buprenorphine treatment in the past year and duration of treatment. The analysis was restricted to participants who reported any injection of any opioids in the past year and answered the treatment questions.

We compared the demographics between treated and untreated PWID using parametric and non-parametric testing.

Results: The sample included 476 PWID who injected opioids in the past year, of whom 27.7% reported past year treatment with methadone and 4.8% with buprenorphine; nine reported both treatments. Among the 132 treated with methadone, 6.1% were treated for <1 month, 28.0% for 2-6 months, and 65.9% for >6 months. Among the 22 treated with buprenorphine, 50% were treated for <1 month, 40.9% for 2-6 months, and 9.1% for >6 months. The mean age for those treated with methadone was 42.6 vs. 40.5 for those not treated with methadone (p<0.11), whereas the mean age for those treated with buprenorphine was 35.7 vs. 41.3 for those not treated with buprenorphine (p<0.04). There were no significant differences between groups based on race/ethnicity.

Conclusions: Among PWID in the Seattle area, a minority reported past year treatment with OAT. Treatment retention appeared to be better among those treated with methadone compared to buprenorphine, although the latter group was younger. There is a need to better understand barriers to OAT among active PWID, as well as interventions to improve linkage and retention.

Financial Support: SU1BP003250

MONETARY PAYMENT FOR RESEARCH PARTICIPATION: WHAT DO MARIJUANA USERS THINK? Krishna Vaddiparti, Catherine Woodstock Striley, Evan Kwiatkowski, Linda Cottler; Epidemiology, University of Florida, Gainesville, FL

Aims: To examine the views of marijuana users about financial payment for participation in research studies.

Methods: Data comes from the NIDA-funded study, Transformative Approaches to Reduce Research Disparities Towards Drug Users (Navigation Study). The Substance Abuse Module (SAM) assessed marijuana and drug use, and the Ethics in Sensitive Research Attitude Assessment (ESRAA) assessed views about financial payment for research participation. We stratified 552 individuals recruited through Community Health Workers, into three groups based on their drug use status – Non-drug users (NDU), Marijuana users only (MJU), and users of Marijuana+other drugs (MJ+).

Results: Of the 552 participants included in analyses, 272 (49%) were NDUs, 192 (35%) were MJU and 88 (16%) were MJ+. MJ+ and MJU were more likely than NDU to believe it is unfair to exclude drug users from research studies (61% vs. 57% vs. 37%, p<0.001). No significant differences were noticed with regard to views about monetary payment for participation in research studies. Overall, 90% of the participants thought that research participants should be paid for their time. 98% would participate in a research study that offered a gift card instead of cash, and 86% reported that payment of a lot of money would not cause them ignore the risks of a study.

Conclusions: Unsurprisingly, drug users think that it is unfair to exclude them from research studies. But, drug users and non-drug users expressed similar views about monetary payment for research participation. This study dispels the misconceptions about stereotypical views about drug users.

UNBIASED GENE PROFILING OF THE RHESUS MACAQUE MESOLIMBIC SYSTEM FOLLOWING LONG-TERM COCAINE SELF-ADMINISTRATION.
Eric J Vallender1,2, Dongling Gao3,4, Nina M Shinday1,5,6, W D Yao1, James K Rowlett7,8, 1University of Mississippi Medical Center, Jackson, MS, 2Tulane National Primate Research Center, Covington, LA, 3Harvard Medical School, Southborough, MA

Aims: The behavioral consequences associated with addiction are thought to arise from drug-induced neuroadaptation. The mesolimbic system plays an important initial role in this process, and while the dopaminergic system specifically has been evaluated extensively, a complete understanding of the broad transcriptomic changes remains elusive, especially in primates. This study aimed to identify, through unbiased RNA-Seq approaches, the effects that long-term self-administration of cocaine had on the ventral tegmental area (VTA) and nucleus accumbens (NAc) of a rhesus macaque model of addiction.

Methods: Five adult male rhesus macaques with yoked saline controls were given access to cocaine (0.03 mg/kg/inj) under a 1-response, fixed-ratio schedule. Sessions lasted a maximum of one hour or 100 injections, and continued for 100 consecutive days. RNA samples from regions of interest were prepared and sequenced on an Illumina HiSeq 2500. Data analysis was performed using D Nanoex and confirmed through the 'Tuxedo' pipeline.

Results: During self-administration, the monkeys demonstrated escalation in cocaine taking and some evidence for a “binge” pattern of intake, both hallmarks of human cocaine addiction. Changes observed in the VTA included DAT, TH, DDC, and FOXA2; dopaminergic genes. In the NAc, however, the strongest evidence for gene expression changes is found associated with inflammatory response and resulting from chromatin remodeling.

Conclusions: Rhesus macaques reliably demonstrated long-term cocaine self-administration patterns consistent with those seen in humans. The unbiased analysis of effects of cocaine taking on the VTA largely correspond with previous studies focusing on the dopaminergic system, but changes in the NAc were much more varied and reflected epigenetic changes and strong neuroinflammatory responses.

Financial Support: Supported by grants DA021420 and OD011103.

SEX DIFFERENCES IN A MOOD-BASED IMPULSIVITY MODEL AS A PREDICTOR FOR AMPHETAMINE CPP IN RATS.
Dolores Beatriz Vazquez Sanroman1, Michael Thomas Bardo1,2, 1Psychology, University of Kentucky, Lexington, KY, 2Psychology, Center for Drug Abuse Research Translation, Lexington, KY

Aims: Negative urgency (NU) is a mood-based construct that refers to the tendency to act rashly in response to distress, and is a strong predictor of problematic drug abuse; little is known about sex differences in NU and drug use. The aim of this study is determined if sex differences exist in the relation between responding after reward omission and amphetamine conditioned place preference.

Methods: Male and female Sprague-Dawley rats were used. Rats were trained in an operant conditioning to expect a non-contingent food reward (US) upon presentation of a light (CS) (Pavlovian component). They then received operant training on an FR10. After acquisition, randomly, the expected food reward in the Pavlovian component was omitted and responding in the operant component was measured. "NU" was defined by an increase in responding observed following reward omission compared to responding following reward presenta-

Results: During self-administration, the monkeys demonstrated escalation in cocaine taking and some evidence for a “binge” pattern of intake, both hallmarks of human cocaine addiction. Changes observed in the VTA included DAT, TH, DDC, and FOXA2; dopaminergic genes. In the NAc, however, the strongest evidence for gene expression changes is found associated with inflammatory response and resulting from chromatin remodeling.

Conclusions: Rhesus macaques reliably demonstrated long-term cocaine self-administration patterns consistent with those seen in humans. The unbiased analysis of effects of cocaine taking on the VTA largely correspond with previous studies focusing on the dopaminergic system, but changes in the NAc were much more varied and reflected epigenetic changes and strong neuroinflammatory responses.

Financial Support: Supported by grants DA021420 and OD011103.

MORTALITY RATES AMONG SUBSTANCE USE DISORDER PARTICIPANTS IN CLINICAL TRIALS: POOLED ANALYSIS OF 22 NIDA CTN STUDIES.
Paul VanVeldhuizen1,2, E Hu3, R Lindblad4, Neal Odlen5, Paul Wakim6, Carmen Rosa7,8,9, Emmes, Rockville, MD, 1NIH, Bethesda, MD, 2NIDA, Rockville, MD

Aims: Most substance use disorders (SUD) treatment trials are too short and small to reliably estimate the incidence of rare events like death. Our aim is to estimate the mortality rate among a SUD treatment-seeking population by pooling participants from multiple trials conducted through the NIDA-sponsored National Drug Abuse Treatment Clinical Trials Network (CTN).

Methods: This study is a pooled analysis of mortality among 9,866 participants in 22 SUD CTN treatment trials. Age- and gender-standardized mortality rate(s) (SM rate(s)), and age- and gender-standardized mortality ratio(s) (SM ratio(s)) were calculated among CTN participants relative to the U.S. general population.

Results: The age- and gender-SM rate among CTN participants was 1403 (95% CI: 862-2074) per 100,000 person years (PY) compared to 542 (95% CI: 541-543) per 100,000 PY among the 2005 US population. The age-SM rates of female and male CTN participants were 1141 (95% CI: 465-2080) and 1672 (95% CI: 869-2738) per 100,000 PY compared to 444 (95% CI: 443-446) and 642 (95% CI: 640-643) per 100,000 PY of the female and male US population. The age- and gender-SM ratio of the CTN participants was 4 times that of the US population (SM-ratio= 4.02 (95% CI: 2.97-5.32). The age-SM ratio for female CTN participants was over 5 times (SM-ratio=5.35, 95% CI: 3.31-8.19)) and male CTN participants was over 3 times (SM-ratio=3.95, 95% CI: 2.25-4.90) higher than their gender comparable peers in the US population.

Conclusions: Age and gender-standardized mortality rates and ratios among NIDA CTN SUD treatment-seeking trial participants are higher than the comparable US population. Mortality rates among CTN participants with varied types of substance use are similar to those reported in large US and non-US cohorts of opioid users during or following SUD treatment.

Financial Support: NIDA-HHSN271201400028C.
LIFE IN THE BARRIO: STRESS, DEPRESSION AND DRUG USE.

Yolanda Villarreal1, Michelle R Klawans 1, Luis Torres 2, Patrick Bordnick 2, Abeena Achempong 2, Sarah Messiah 1; 1University of Miami, Miami, FL, 2University of Florida, Gainesville, FL

Aims: Marijuana use has more than doubled in the last decade in the US, a nation that is experiencing an epidemic level of diabetes. Independently, both marijuana use and physical activity have been shown to lower glucose levels; yet, the literature does not describe physical activity patterns among marijuana users. Our aim is to examine these patterns in a nationally representative US adult sample.

Methods: A cross-sectional analysis of 20 to 59 year olds (N=9,379) from the 2007–2012 National Health and Nutrition Examination Surveys was conducted. Marijuana use was categorized as never (reference), past (previously but not within the last 30-days), and current (≥1 day in the last 30-days) use. Physical activity was self-reported as moderate (small increase in heart rate/breathing for >10 minutes) and vigorous (large increase in heart rate/breathing for >10 minutes). Adjusted (age, gender, ethnicity, income, body mass index, cigarette use, survey year) odds ratios (AOR) for the relationship between marijuana use and physical activity were estimated from logistic regression models.

Results: Majority were either past (53.4%) or current (22.2%) marijuana users. Proportions of moderate physical activity levels were significantly (p=0.003) higher in current (71.8%) and past (71.3%) users than in never users (64.5%). Vigorous physical activity levels were 53.8%, 48.7% and 40.7%, for current, past, and never users, respectively (p < 0.0001). Current and past users had higher odds of engaging in moderate (Current user AOR: 1.55, 95% CI: 1.10-2.21; Past user AOR: 1.58, 95% CI: 1.16-2.08) and vigorous (Current user AOR: 1.55, 95% CI: 1.16-2.08; Past user AOR: 1.43, 95% CI: 1.12-1.83) physical activity than never users.

Conclusions: Results suggest that current and past marijuana users were more likely to report moderate and vigorous physical activity than never users. Future studies should examine the potential mechanisms and temporality of this relationship.

Financial Support: NHLBI T32 HL007426


Denise Christina Vidot 1, WayWay Hlaing 1, Guillermo Prado 1, Kevin Plaxco 2, Tod Edward Kippin 3; 1Psychological & Brain Sciences, University of California Santa Barbara, Goleta, CA, 2Psychological & Brain Sciences, University of California Santa Barbara, Goleta, CA, 3Psychology University of North Carolina Chapel Hill, Chapel Hill, NC

Aims: This research was supported by NIH/NIDA, 1 R24 DA019798.

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Conclusions: Results suggest that current and past marijuana users were more likely to report moderate and vigorous physical activity than never users. Future studies should examine the potential mechanisms and temporality of this relationship.

Financial Support: NIH and W.M. Keck Foundation

REAL-TIME, CONTINUOUS ELECTROCHEMICAL MONITORING OF DRUGS IN VIVO.

Philip Vieira 1, Nezhahloulouyd Arroyo Carras 2, Jacob Somerson 2, Kyle Plenseau 1, Kevin Plaxco 2, Tod Edward Kippin 3; 1Psychological & Brain Sciences, University of California Santa Barbara, Goleta, CA, 2Chemistry, University of California Santa Barbara, Santa Barbara, CA

Aims: Current methods for measuring dynamic and personalized drug kinetics in vivo are limited by time (microdialysis) or target specificity (voltammetry). In order to better understand the pharmacochemical profile of drugs of abuse, we have developed an electrochemical aptamer-based indwelling sensor that achieves continuous, real-time pharmacochemical measurements of drugs in living animals.

Methods: Male, adult Sprague Dawley rats were anesthetized and maintained under isoflurane anesthesia during the entire procedure. Both jugular veins were cannulated and catheterized. The catheter allows the infusion of drug while the other catheter contains our probe. Aptamer-based electrochemical probes are synthesized and screened for optimal signal to noise ratio before implanting in the jugular vein. Continuous recordings are taken to establish an initial baseline and then track the kinetics of specific drug targets, including aminoglycosides (kanamycin, tobramycin) and the anti-tumor drug doxorubicin.

Results: Our probes are sensitive to micromolar changes in concentration of our drug targets, including aminoglycosides and doxorubicin, both in vitro and in vivo. They also reliably measure the same concentration of a drug target over a period of 6 hours.

Conclusions: This preliminary study establishes a new method of real time monitoring of drug concentrations in the living animal. Our probes are consistent, reliable and stable over time. This technology offers a cost effective alternative for measuring the pharmacochemicals of drugs of abuse in vivo. Future work will focus on developing aptamers that are sensitive to more classes of drugs, drug metabolites, and small molecules relevant to addiction, including neurotransmitters such as dopamine and neuropeptide Y.

Financial Support: NIH and W.M. Keck Foundation
DEALING WITH ZERO-NUMERATORS IN ESTIMATING DRUG-DEPENDENCE CHANCES: A BAYESIAN APPROACH.
Olga A Vsevolozhskaya1, Fernando A Wagner1, James C Anthony3; 1PSRC, Morgan State University, Baltimore, MD, 2Biostatistics, University of Kentucky, Lexington, KY

Aims: This abstract is in the category of theoretical and methodological work-up of a practical research problem and builds upon a prior empirical research report presented at CPDD 2015, in which we applied parametric Hill functions to estimate the probability of drug dependence in relation to the duration of drug-taking experience. A problem we and others have encountered in the estimation of risk of becoming a drug user is an observed zero estimate of zero -- the so-called "zero-numerator problem." This problem can be easily observed in certain low risk subgroups even when the sample is large (e.g., the incidence of heroin dependence among 12-year-old newly incident heroin users) or with small subgroup sample sizes. In these instances, an observed zero point estimate does not necessarily imply zero risk of developing dependence for the subgroup. Here, our aim is to describe our approach to a potential solution to the zero-numerator problem based on a Bayesian model in conjunction with parametric Hill functions.

Methods: The traditional frequentist statistical approach can provide an estimate for the 95% upper bound of an incidence rate even with the observed zero in the numerator. A Bayesian approach is required if estimation of the incidence rate itself is of interest. The Bayesian approach demands specification of a prior distribution for the risk parameter. In this work, we are exploring the sensitivity of the Hill function parameter estimates to the choice of a particular informative prior distribution across a range of estimated changes of developing drug dependence very soon after onset of drug use.

Conclusions: Whereas we framed our work in relation to risk of developing drug dependence syndromes, the zero-numerator problem often is faced in other contexts (e.g., pharmacokinetics; toxicology). Our approach, combining Bayesian statistics in conjunction with Hill functions, is expected to provide a useful solution to these zero numerator problems.

Financial Support: NIDA

ASSOCIATION BETWEEN LIFETIME HEROIN USE AND PERCEIVED RISK OF HEROIN AMONG NONMEDICAL PRESCRIPTION OPIOID USERS.
Fernando A Wagner1,2, Karl C Alcover3, Olga A Vsevolozhskaya2; 1PSRC, Morgan State University, Baltimore, MD, 2Biostatistics, University of Kentucky, Lexington, KY, 3Department of Epidemiology and Biostatistics, Michigan State University, East Lansing, MI

Aims: Using mouse models, ER & DB Kandel re-fertilized a generally barren landscape of "gateway" ideas on drug-to-drug sequences. Uncertainties remain, including: (1) possible sex differences, and (2) whether hypothesized effects require repetitive nicotine exposure 'in close conjunction' with cocaine exposure onsets. Using human epidemiological month-by-month data for onset/setoff of newly incident nicotine and cocaine use, we estimate risk of a rapid-onset cocaine phenotype across strata of nicotine exposure for both sexes.

Methods: With exclusion rules to drop subjects no longer at risk of starting nicotine and cocaine use, our National Surveys on Drug Use and Health samples encompass 233,902 participants, with 23,266 newly incident nicotine users, of whom 420 became newly incident cocaine users. Estimates are from discrete-time survival analyses with nicotine onset/setoff as a time-varying covariate, using conventional analysis-weighted delta method statistical approaches.

Results: Our estimates are as follows. For males and females who never used nicotine, estimated risk of starting to use cocaine is effectively zero. After the first nicotine use, 8 females and 12 males per 10,000, respectively, initiate cocaine use in each of the first nine months. The risk remains relatively stable for males who use nicotine. However, for female nicotine users, starting at month 9, there is a sharp increase in the risk that peaks at up to 20 new cocaine users per 10,000 females per month. These male-female differences in risk of cocaine initiation are statistically robust.

Conclusions: Complexities surface in human tests of the renovated Kandel-Kandel gateway hypothesis and include previously undiscovered male-female variations that must be taken into account in the interpretation of future evidence before complex cocaine dependence phenotypes can be studied.

A NOVEL APPROACH TO NALTREXONE INJECTIONS MAY REDUCE COMPLICATIONS AND INCREASE ADHERENCE.

John Walker, Deidre Santos, Chris Rowe, Glenn-Milo Santos, Sue Jung, Phillip Coffin, Substance Use Research Unit, San Francisco Department of Public Health, San Francisco, CA, 1Community Health Systems, University of California San Francisco, San Francisco, CA, 2Housing and Urban Health, San Francisco Department of Public Health, San Francisco, CA, 3Division of HIV/AIDS, University of California, San Francisco, San Francisco, CA

Aims: Complexity of naltrexone injections (Vivitrol®) may limit treatment uptake and adherence. While large (4 mL) microsphere suspension may result in clogs and injection site reactions, with >5% reporting induration, swelling, nodules, and itching. In our randomized trial of injectable naltrexone vs. placebo among 100 methamphetamine-dependent individuals who have sex with men, we modified the injection approach aiming to reduce complications.

Methods: Within FDA guidelines, we (1) administered injections in the ventrogluteal site, and (2) elevated the needle end of the syringe to 40 degrees after drug preparation and prior to injection.

Results: Overall adherence was 94% with 282 injections completed. Seventeen injections (6%) had ≥1 clog, with a total of 20 clogs. Ninety-five injections (34%) resulted in a total of 162 AEs among 59 participants (pain [87], tenderness [8], bruising [6], pruritus [1]), with 96 classified as mild. There was no relationship between clogs and AEs or adherence.

Conclusions: Our modified injection technique was associated with few clogs and AEs, excluding mild injection-site pain. Factors that may have influenced our high adherence include the uncomplicated nature of our injection, nonjudgmental staff, and convenient geography. This novel approach to naltrexone preparation and injection may result in less complex drug administration and lead to better treatment outcomes.

Financial Support: This study was supported by NIDA Trex grant 5R01DA036178-04.

3,4-METHYLENEDIOXY-N-ETHYL CATHINONE AND ITS ANALOGS DIFFERENTIALLY AFFECT DOPAMINE AND 5-HT SYSTEMS IN RAT BRAIN.

Hailey M. Walters, Ora Dillion-Carter, John S. Paritilla, Farhana Sakdoh, Richard A. Glenon, Charles W. Schindler, Michael H. Baumann, Designer Drug Research Unit, IRP, NIDA, NIH, Baltimore, MD, 1Department of Medicinal Chemistry, VCU School of Pharmacy, Richmond, VA, 2Preclinical Pharmacology Section, IRP, NIDA, NIH, Baltimore, MD

Aims: 3,4-Methylenedioxy-N-ethylcathinone (ethylone) is a constituent of tabaco and its analogs, N-propylcathinone (propyrole) and 3,4-methylenedioxy-N-γ-pyrrolidinopropiophenone (MDPPP), were tested for activity at DAT and SERT using uptake and release assays -pyrrolidinopropiophenone (MDPPP), were tested for activity at DAT and SERT using uptake and release assays in rat brain synaptosomes. Neurochemical effects were examined in vivo using microdialysis in n. accumbens of male rats. Drugs were administered at 1 and 3 mg/kg, i.v., and dialysate dopamine and 5-HT were quantified by HPLC-ECD.

Results: As expected, methylene acted as a fully efficacious releaser at DAT and SERT. By contrast, ethylone and propyrole displayed “hybrid” activity, acting as DAT uptake blockers and SERT releasers. MDPPP was a selective DAT SERT. By contrast, ethylone and propylone displayed “hybrid” activity, acting as DAT uptake blockers and SERT releasers. MDPPP was a selective DAT SERT. By contrast, ethylone and propylone displayed “hybrid” activity, acting as DAT uptake blockers and SERT releasers. MDPPP was a selective DAT SERT. By contrast, ethylone and propylone displayed “hybrid” activity, acting as DAT uptake blockers and SERT releasers. MDPPP was a selective DAT SERT. By contrast, ethylone and propylone displayed “hybrid” activity, acting as DAT uptake blockers and SERT releasers. MDPPP was a selective DAT SERT. By contrast, ethylone and propylone displayed “hybrid” activity, acting as DAT uptake blockers and SERT releasers. MDPPP was a selective DAT SERT. 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SEARCH FOR NOVEL TLR4 ANTAGONISTS FOR THE TREATMENT OF NEUROPATHIC PAIN AND DRUG ABUSE.

Meining Wang, Arthur E. Jacobson; Molecular Targets and Medications Discovery Branch, National Institute of Drug Abuse and National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, Bethesda, MD

Aims: Activation of TLR4 signaling through the homodimerization of TLR4-MD-2-ligand complexes can result in cytokine and chemokine production and a profound pro-inflammatory signal, which were reported as contributing to neuropathic pain and drug abuse. Whether inhibition of this signaling can serve as a novel therapeutic strategy to treat such diseases, however, is still unknown. In order to explore the effect of TLR4 antagonists on neuropathic pain as well as drug abuse, new ligands have been designed and synthesized.

Methods: Using (+)-naltrexone, the pharmacologically inactive opioid isomer that was found to act as an antagonist at TLR4, as a lead compound, we initially focused on opioid-like compounds with unusual N-substituents, and this will be followed by structural modifications that are designed to be much more severe in order to discern the limits of the structural aspects of molecules able to interact with the TLR4 complex. Multiple synthetic methodologies have been used to generate specific (+)-naltrexone analogs.

Results: The design and synthesis of six novel (+)-naltrexone analogs, and more than ten intermediates will be discussed, e.g., to modify a specific molecular area, sinonemine was converted to the N-p-chlorophenyl benzyl and electron-withdrawing analog in 6 steps. New compounds have been carefully analyzed and confirmed using 1H-NMR, 13C-NMR, and MS.

Conclusions: These newly synthesized TLR4 potential antagonists will, after in vitro and in vivo pharmacological examinations, provide the basis for SAR studies as well as mechanistic studies, which could lead to new therapeutic agents for the treatment of neuropathic pain and for exploring the mechanism of TLR4 signaling, and may illuminate the involvement of the TLR4 receptor complex in neurophysiological and neuropathological phenomena.

Financial Support: The work of the Drug Design and Synthesis Section was supported by the NIH Intramural Research Programs of National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism.

PHARMACOLOGICAL CHARACTERIZATION OF THE OPIOID INACTIVE ISOMERS (+)-NALTREXONE AND (+)-NALOXONE AS TOLL-LIKE RECEPTOR 4 ANTAGONISTS.

Xiaohui Wang; Chemical Biology Laboratory, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changshun, China

Aims: Recent evidence implicates toll-like receptor 4 (TLR4) in drug reward/reinforcement. Previous work in our laboratory showed that the opioid inactive isomers (+)-naltrexone and (+)-naloxone act as TLR4 antagonists, reducing opioid and cocaine reward and reinforcement. However, how these agents modulate TLR4 signaling is not clear. Herein, we tried to elucidate the molecular mechanism of (+)-naltrexone and (+)-naloxone on TLR4 signaling.

Methods: BV-2 mouse microglia cell line, primary rat microglia and primary rat peritoneal macrophages were stimulated with lipopolysaccharide (LPS) and TLR4 signaling inhibitor(s).

Results: (+)-Naltrexone and (+)-naloxone each inhibited, with similar potencies the LPS-induced TLR4 downstream signaling and induction of the pro-inflammatory factors nitric oxide (NO) and tumor necrosis factor-α (TNF-α). Similarly, (+)-naltrexone and (+)-naloxone each inhibited LPS-induced reactive oxygen species (ROS) and LPS-induced increase in microglial phagocytosis. However, (+)-naloxone and (+)-naloxone did not directly inhibit LPS-induced interleukin-1β (IL-1β) production. The drug interaction of (+)-naloxone and (+)-naltrexone is additive. (+)-Naltrexone and (+)-naloxone each inhibited LPS-induced interferon regulatory factor 3 (IRF3) activation and interferon-β (IFN-β) increased production. However, they did not inhibit TLR4 signaling via the activation of either nuclear factor kappa B (NF-kB), p-38 or Jun N-terminal kinase (JNK) in these cellular models.

Conclusions: These data show (+)-naltrexone and (+)-naloxone are TRIF-IRF3 axis biased TLR4 antagonists. They block TLR4 downstream signaling leading to NO, TNF-α and ROS. This pattern may explain, at least in part, the in vivo therapeutic effects of (+)-naloxone and (+)-naltrexone.

Financial Support: We thank the starting-up funding for the candidate of 100 Talents Program of Chinese Academy of Sciences, and the National Natural Science Foundation of China (No. 21543013) for the financial support.
REDDON D IN ALCOHOL, TOBACCO, AND ILLICIT DRUG USE DURING CHILDREARING YEARS IN THE USA: A COMPARISON OF PREGNANT AND NON-PREGNANT WOMEN.

Sara M. Watchko1, Qiana Brown1, Silvia S Martins1; 1Epidemiology, Columbia University, New York City, NY, 2Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY

Aims: To explore correlates of substance use reduction among pregnant and non-pregnant women of reproductive age; to replicate research describing substance use trends comparing pregnant and non-pregnant women using a nationally representative dataset.

Methods: Females aged 12-44 (n=121,372) were sampled from five years (2009-2013) of the U.S. National Survey on Drug Use and Health. After descriptive analyses, logistic regression models that accounted for the complex survey design tested whether the odds of alcohol, tobacco, and other drug (ATOD) use were lower among pregnant women than non-pregnant women. Analyses controlled for age, race, income, health insurance, lifetime depression, abuse/dependence, and age of first substance use.

Results: Approximately 44% of pregnant women and 18% of non-pregnant women who were cigarette users reduced their cigarette use in the past year (controlling for covariates, adjusted odds ratio [aOR]=5.90; 95% confidence interval [CI]=4.62, 7.53). Eighty-four percent of pregnant women and 24% of non-pregnant women reduced their alcohol use in the past year (aOR=24.39; 95% CI = 20.45, 29.09). Sixty-eight percent of pregnant women and 46% of non-pregnant women reduced their illicit drug use in the past year (aOR=2.95; 95% CI=2.39, 3.64). Compared to their non-pregnant counterparts, pregnant women showed greater reductions in illicit drug use (p≤0.001), alcohol use (p≤0.001), and cigarette use (p≤0.001) within the past year, controlling for age of first use for alcohol, cigarettes, and illicit drugs, and other covariates.

Conclusions: Pregnant women tended to reduce their ATOD use more than non-pregnant women. The pattern of substance use reduction among pregnant women compared to non-pregnant women remained statistically significant when adjusting for a number of covariates, including age of first use.

Financial Support: This work was supported by research grants from the National Institute on Drug Abuse (grant number T32DA031099 (P.I. Hasin); R01DA037866 (P.I. Martins).
Conclusions: Cannabis use is associated with increased risk of AUD onset and persistence over the course of three years among adults in the United States. Community-based and clinical programs aimed at preventing or treating problematic alcohol use may benefit from integrating information about cannabis use in order to improve outcomes.

Financial Support: Supported by NIH grant R01-DA20892 (to RDG)

THE IMPACT OF PSYCHOPHARMACOTHERAPY ON DISENGAGEMENT FROM OFFICE BASED OPIOID TREATMENT WITH BUPRENORPHINE.

Zoe Margaret Weinstein1,2, Debbie M Cheng1, Emily Quinn1, David Hui1, Hyunjoong Kim1, Gabriela Gryczynski1,2, Colleen Labelle1,2, Jeffrey H Same1,2; 1Boston University, Boston, MA, 2Boston Medical Center, Boston, MA

Aims: Patients on buprenorphine for opioid use disorder are often co-prescribed psychoactive medications (PAMs). The aim of this study was to assess whether PAMs, including those with emerging evidence of misuse ("emerging PAMS") - gabapentin, clonidine and promethazine, are associated with disengagement from an Office Based Opioid Treatment (OBOT) program. Methods: This is a retrospective cohort study of adults on buprenorphine at an OBOT Program from 1/2002 to 2/2014. The primary outcome was early disengagement (within 6 months) from OBOT. The secondary outcome was time to disengagement from OBOT. Independent variables were presence of any PAMs and specific emerging PAMs. We performed separate adjusted analyses to evaluate whether PAMs were associated with early disengagement (logistic regression) or time to disengagement (time-dependent Cox model). We controlled for potential confounders including demographics and drug use history.

Results: At OBOT entry, 43% of patients (562/1308) were prescribed any psychoactive medication (PAM) and 17% (223/1308) an emerging PAM. In separate adjusted analyses, the presence of any PAM (adjusted odds ratio [AOR] 1.07, 95% CI [0.78, 1.46]) or an emerging PAM (AOR 1.28 [0.99, 1.74]) at enrollment were not significantly associated with early disengagement. In multivariable Cox models, the presence of any PAM (adjusted hazards ratio [AHR] 1.16 [1.00 - 1.36]) was not significantly associated with risk of disengagement; however, gabapentin (AHR 1.30 [1.05 - 1.62]) and clonidine (AHR 1.33 [1.01 - 1.75]) were associated with increased risk of disengagement.

Conclusions: PAMs at OBOT entry were not significantly associated with early disengagement. However, gabapentin and clonidine specifically were associated with increased risk of disengagement. Further work is needed to evaluate the effect of PAMs on buprenorphine treatment outcomes.

Financial Support: NIDA R25DA0123582, NIDA R25DA033211, NIAID T32AA15074-07, NIH U1LTR001430

A BRAIN IMAGING STUDY OF DOPAMINE RECEPTOR D2 AVAILABILITY IN CANNABIS-DEPENDENT USERS AFTER RECOVERY FROM CANNABIS INDUCED PSYCHOSIS USING [123I] IZBM IN SINGLE PHOTON EMISSION TOMOGRAPHY.

Hyunjoong Kim1, Hyunjoong Kim1, Gabriela Gryczynski1, Colleen Labelle1,2, Jeffrey H Same1,2; 1Boston University, Boston, MA, 2Boston Medical Center, Boston, MA

Aims: Movements to legalize and decriminalize cannabis have become increasingly common throughout the United States (U.S.). Alcohol and cannabis are commonly used together. Yet, whether cannabis use influences the progression and persistence of alcohol use disorders (AUDs) over time remains unclear. The current study used longitudinal data from a representative sample of U.S. adults to investigate the association between cannabis use and risk of onset and persistence of AUDs.

Methods: The study used data from the National Epidemiological Study of Alcohol Use and Related Disorders (NESARC; Wave 1, 2001-2001, n=43,093; Wave 2, 2004-2005, n=34,653). Analyses included respondents who completed Wave 1 and Wave 2, responded to questions regarding cannabis and alcohol, and for whom the age of first cannabis use preceded the age of any AUD (n=29,582).

Results: Among adults with no history of AUD, cannabis use at Wave 1 was associated with increased incidence of an AUD three years later. Among adults with a history of AUD, cannabis use was associated with increased likelihood of AUD persistence three years later. These relationships remained significant after controlling for demographics, psychiatric disorders, and other substance use disorders.

Conclusions: Cannabis use is associated with increased risk of AUD onset and persistence over the course of three years among adults in the United States. Community-based and clinical programs aimed at preventing or treating problematic alcohol use may benefit from integrating information about cannabis use in order to improve outcomes.

Financial Support: Supported by NIH grant R01-DA20892 (to RDG)

THE IMPACT OF PSYCHOPHARMACOTHERAPY ON DISENGAGEMENT FROM OFFICE BASED OPIOID TREATMENT WITH BUPRENORPHINE.

Zoe Margaret Weinstein1,2, Debbie M Cheng1, Emily Quinn1, David Hui1, Hyunjoong Kim1, Gabriela Gryczynski1, Colleen Labelle1,2, Jeffrey H Same1,2; 1Boston University, Boston, MA, 2Boston Medical Center, Boston, MA

Aims: Patients on buprenorphine for opioid use disorder are often co-prescribed psychoactive medications (PAMs). The aim of this study was to assess whether PAMs, including those with emerging evidence of misuse ("emerging PAMS") - gabapentin, clonidine and promethazine, are associated with disengagement from an Office Based Opioid Treatment (OBOT) program. Methods: This is a retrospective cohort study of adults on buprenorphine at an OBOT Program from 1/2002 to 2/2014. The primary outcome was early disengagement (within 6 months) from OBOT. The secondary outcome was time to disengagement from OBOT. Independent variables were presence of any PAMs and specific emerging PAMs. We performed separate adjusted analyses to evaluate whether PAMs were associated with early disengagement (logistic regression) or time to disengagement (time-dependent Cox model). We controlled for potential confounders including demographics and drug use history.

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Financial Support: NIDA R25DA0123582, NIDA R25DA033211, NIAID T32AA15074-07, NIH U1LTR001430

PAIN SEVERITY AND SUBSEQUENT OPIOID USE DURING BUPRENORPHINE-NALOXONE TREATMENT OF PRESCRIPTION OPIOID-DEPENDENT PATIENTS WITH CHRONIC PAIN.

Roger Weiss1, Margaret L Griffin1, Katherine McDermott1, Kathryn McHugh1, Sterling I Karakula1, Garrett Fitzmaurice1, Harvard Medical School, Belmont, MA; 2Alcohol and Drug Abuse Clinical Research Program, McLean Hospital, Brookline, MA; 3McLean Hospital/HMS, Belmont, MA; 4McLean Hospital/ Harvard Medical School, Belmont, MA

Aims: Patients with prescription opioid dependence commonly report chronic pain as the chief reason for initial opioid use. Understanding the association between pain and opioid use is crucial for understanding how to manage these conditions simultaneously. The aim of this analysis was to examine the proximal association between pain severity and subsequent opioid use during 12 weeks of buprenorphine-naloxone therapy for patients with prescription opioid dependence and chronic pain.

Methods: This was a secondary analysis of the Prescription Opioid Addiction Treatment Study, a NIDA Clinical Trials Network multi-site randomized controlled trial examining combinations of buprenorphine-naloxone and counseling in prescription opioid dependent patients. The association between pain severity in a given week and opioid use in the next week during 12 weeks of buprenorphine-naloxone treatment was examined in the subset of 148 out of 360 patients with chronic pain at baseline.

Results: Although baseline pain severity did not vary by most of the background characteristics examined in bivariate analyses, fewer years of education and the presence of lifetime PTSD were associated with greater baseline pain severity. Results from a multivariable logistic regression model showed that greater pain severity in a given week was significantly associated with increased likelihood of opioid use in the following week over the 12-week treatment, even after adjusting for covariates associated with opioid use outcomes.

Conclusions: Results demonstrated that greater pain severity increased the likelihood of subsequent opioid use among prescription opioid-dependent patients with chronic pain at baseline. This finding could be useful in formulating treatment strategies for this population.

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SOCIAL REINSTATEMENT: A RAT MODEL OF PEER-INDUCED RELAPSE.
Virginia G Weiss1, Justin Ryan Yates1, Michael Thomas Bardo1; 1Experimental Psychology, University of Kentucky, Lexington, KY, 2Psychology, University of Kentucky, Lexington, KY, 3University of Kentucky, Lexington, KY

Aims: One factor that can lead to relapse is encounters with drug-using friends. However, there is little preclinical literature on the effect of social peers on reinstatement. Using social chambers (which allow for rats to interact via adjacent chambers) it has been demonstrated that the presence of a social peer facilitates drug self-administration (SA) SA. The current experiments used these social chambers to assess whether or not a social peer can serve as a cue for drug availability and reinstatement.

Methods: Adult male Sprague-Dawley rats were used for all experiments. In Experiment 1, rats underwent 14 consecutive sessions of cocaine SA (0.5 mg/kg/inf); on each session, a social peer (no SA) was in the adjacent chamber. Following SA, rats underwent extinction (no social peer) and then reinstatement where the social peer was re-introduced. In Experiment 2, rats underwent either 12 or 24 SA sessions that alternated between saline and cocaine; each drug was paired with a different social peer. They then underwent extinction, followed by two reinstatement tests (one with each social peer).

Results: In Experiment 1, re-introduction of the social peer led to reinstatement of drug seeking behavior following extinction (p < 0.01). In Experiment 2, rats showed reinstatement to the cocaine peer (p < 0.01) but not the saline peer (p > 0.05), and this effect was greater following 24 SA sessions than 12 SA sessions.

Conclusions: These results indicate that a social peer can be used as a cue for cocaine availability, and that rats show reinstatement when re-exposed to a cocaine-paired peer, but not a saline-paired peer. With social interaction being extremely prevalent during drug acquisition and escalation in humans, these results further demonstrate that preclinical research can investigate the roles that these social relationships play in drug taking behavior. Future research should focus on investigating how to decrease the reinstatement behavior due to social peers to inform clinical programs designed to reduce relapse.

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PREEXPOSURE ATTENUATES METHYLPHENIDATE-INDUCED TASTE AVOIDANCE, BUT ENHANCES BDNF/TRKB ACTIVITY IN THE INSULAR CORTEX OF THE RAT.
B Bradley Wetzell1, Mirabella Muller1, Shaun M Flax1, Heather Elise King1, Kathleen DeCicco-Skinner1, A L Riley; 1Psychopharmacology Laboratory, American University, Washington, DC, 2Psychology Department, American University in Washington DC, Washington, DC, 3Biology, American University, Washington, DC

Aims: Exogenous brain-derived neurotrophic factor (BDNF) in the insular cortex (IC) influences conditioned taste avoidance (CTA) learning, but little is known of its endogenous role in the phenomenon. A history with many abusable drugs attenuates their ability to induce CTA (preexposure effect), thus providing a platform from which to examine the endogenous role of IC BDNF in CTA. In the present study, this role was examined by assessing the effect of preexposure to methylphenidate (MPH) on MPH-induced CTA, followed by an analysis of changes in expression between BDNF and its primary receptor, the tropomysosin-related kinase receptor type B (TrkB) in the IC, central nucleus of the amygdala (CeA) and the nucleus accumbens (NAc).

Methods: Following preexposure to 18 mg/kg MPH, CTA induced by 0, 10, 18 and 32 mg/kg MPH were assessed in adult male Sprague Dawley rats (n = 64). In separate groups of rats (n = 31), differences in BDNF and TrkB were assessed using Western blots following similar preexposure and conditioning procedures.

Results: In line with previous research with psychostimulants, preexposure to MPH significantly blunted MPH-CTA compared to preexposure to vehicle. Although there were no significant effects of MPH on BDNF activity following CTA conditioning, animals preexposed to MPH exhibited decreased BDNF/TrkB activity in the CeA and enhanced activity in the IC and NAc.

Conclusions: Preexposure to MPH attenuates its aversive effects on subsequent presentations, and BDNF’s endogenous impact on CTA learning may be dependent upon its temporal relation to other CTA-related intracellular cascades.

Financial Support: This work was supported by a Dean’s Grant for Graduate Research (American University, College of Arts and Sciences) to BBW, a Dean’s Grant for Undergraduate Research (American University, College of Arts and Sciences) to MMM and a Mellon Grant to ALR.

STRIATAL RESPONSES TO D-AMPHETAMINE DIFFERENTIATES YOUNG ADULTS AT “HIGH-RISK” OF DRUG ABUSE.
Michael John Wexley1, Joshua A Nile1, C E Emurian1, Catherine Martin2, Jane Joseph1, T H Kelly1; 1Behavioral Science, University of Kentucky, Lexington, KY, 2Psychiatry, University of Kentucky College of Medicine, Lexington, KY, 3Neurosciences, Medical University of South Carolina, Charleston, SC

Aims: Individuals scoring higher on measures of Reward Seeking (RS) and Impulsivity (IMP) are considered “high-risk” for developing drug-related problems. The aim of this study was to determine if “high-risk” young adults displayed a differential functional response to drug administration compared to “low-risk” individuals.

Methods: Twenty matched healthy young adults (average age: 21.65 y) were divided into two classes based on personality phenotypes. Class 1 scored in the upper quartiles on both RS and IMP inventories (High-risk; n = 10) and class 2 scored in the lower quartiles (Low-risk; n = 10). Subjects received D-Amphetamine (15 mg/70kg) and placebo on across separate sessions. After administration, subjects performed a monetary incentive delay (MID) task while in an fMRI scanner. General linear models extracted task-relevant data from striatal BOLD signals for each subject. Multivariate support vector machine (SVM) classification was used in a 10-fold, leave one subject per group across validation scheme, to model and predict class membership. Significance values were obtained from 1000 repetitions of a permutation test.

Results: The SVM model correctly predicted 7 of 10 High-risk subjects and 8 of 10 Low-risk subjects yielding a balanced classification accuracy of 75%. Permutation results revealed a significant balanced classification accuracy of p = 0.037.

Conclusions: Striatal function in response to d-amphetamine differed as a function of personality traits associated with greater risk for drug abuse. These results support prior evidence of the neurobiological basis of personality-based drug abuse vulnerability. These results also support the use of neuroimaging methods to assess the ability of prevention interventions to impact striatal function in at-risk individuals.

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COLLABORATIVE CARE FOR INJURED PATIENTS WITH PRESCRIPTION DRUG MISUSE: A FEASIBILITY STUDY.
Lauren K Whiteside1, Doyanne Darnell2, Karlee Jackson1, Dennis Donovan3, Douglas Zaszycki3, MJK, ETSU Office of Research and Sponsored Programs. Authors have no conflicts of interest. This work was supported by Grants to LW from the UW ADAI and the NIH (K23DA039974)

Aims: Collaborative care is a model of care for patients with complex medical comorbidity such as Prescription Drug Misuse (PDM). The objectives of this study were to determine the feasibility of a collaborative care intervention for injured patients initiated in the Emergency Department (ED) with self-report, PDM and 2) determine if PDM decreases in the one-month after enrollment.

Results: A total of 36 participants (56.2% of patients approached, 33% female, 44.3 years old, 31% homeless/temporarily housed) had PDM (36% prescription stimulant misuse, 25% prescription sedative misuse, 37% prescription opioid misuse). All eligible participants that screened positive for PDM (n=30) agreed to participate and 93% completed the one-month assessment. Baseline levels of polysubstance comorbidity were high: 57% had used heroin, and 83% had used marijuana in the past 6-months and 43% had a prior lifetime overdose. There were no differences in a group of C57BL/6 mice in heroin reward expression. Significance was set at p<0.05. Animals were divided into 3 groups: 1) saline-conditioned, 2) heroin-conditioned, and 3) control group exposed to saline. Significant differences were observed between time spent in the paired chamber prior to conditioning was subtracted from time spent in the paired chamber on test day. Corticosterone (cort) levels were assessed by radioimmunoassay in blood samples collected 20-24 hours after the CPP test.

Results: Significant differences were observed between time spent in the paired chamber between saline (n=9, mean=60.3±33.9 s) and heroin (n=22, mean=174.4±26.7 s) groups (t=18.28, p<0.005). Cort levels between the heroin and saline groups were not significantly different (heroin group: n=22, mean=91.3±17.03 ng/mL; saline group, n=9, mean=84.38±27.39 ng/mL). Analysis of conditioning in the heroin group revealed differences in reward expression with some (17 of 22) animals exhibiting CPP (more than one standard deviation above mean of saline-conditioned animals, 225.4±19.6 s, n=17) and others (5 of 22) exhibiting no CPP (defined as above: 0.8±3.4 s, n=5, t(6.237)=5.208, p<0.005). Cort levels between animals that exhibited CPP (n=17, mean=97.1±21.39, ng/mL) versus those that exhibited no CPP (n=5, mean=71.5±18.79 ng/mL) were not significantly different.

Conclusions: In this study, we describe findings suggesting that individual differences exist in a group of C57BL/6 mice in heroin reward expression. Follow-up studies are being conducted to investigate the possible molecular mechanisms of these differences.

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EXAMINING PROBLEMATIC MARIJUANA USE AMONG MARIJUANA-USING YOUNG ADULTS.
Carolyn F Wong, Ellen Iversen, Stephen E Lankenau. ‘Children’s Hospital Los Angeles, USC, ‘Electrical & Computer Engineering, University of New Mexico, Albuquerque, NM, ‘The Mind Research Network, Albuquerque, NM, ‘Neuroscience, Yale School of Medicine, New Haven, CT

Aims: Marijuana-using young adults in Los Angeles represent a heterogeneous group. Given that higher frequency and intensity of use may not always be associated with problematic use in this group, our aims are to describe and examine differences between medical marijuana patients (MMP) and non-patient users (NPU) who self-declare medical users and/or recreational users in terms of their a) mental health; b) marijuana practices; c) norms about use; and d) dimensions of problematic use.

Methods: 210 MMP and 156 NPU aged 18-25 reported last 90-day marijuana use practices, mental health, norms, and indicators of problematic use. The five user groups based on patient status and self-evaluation of use were: 1) Legitimate Patients (LP); 2) Borderline Patients (BP); 3) Recreational Patients (RP); 4) Medically-inclined Non-Patients (MNP); and 5) Recreational Non-Patients (RNP). Descriptive and multinomial logistic regression analyses examined differences in problematic use between groups.

Results: User groups are distinguished in terms of their a) practices such as where they use, who they use with, forms, strains, and money spent; b) social/personal norms of use; and c) indicators of problematic use such as social and familial functioning and driving under the influence of marijuana, after controlling for effects of covariates. Among MMP, LP reported poorer mental health, used alone, used at home, spent more money, but exhibited lower problematic use. While BP were similar to LP, they differed in marijuana strain and type preference and better mental health than LP. RP were more likely to report use with others, and higher problematic use compared to LP. Among NPU, MNP spent more money on marijuana than RNP and differed in social/personal norms.

Conclusions: As marijuana use becomes more prevalent, traditional psychosocial and behavioral risk factors may no longer predict varying types of problematic use behaviors. A more nuanced approach to evaluate problematic use is needed in order to appropriately identify and intervene with different user-types.

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REGIONAL AND NETWORK-BASED ALTERATIONS IN D2/D3 RECEPTOR AVAILABILITY IN COCAINE USE DISORDER.
Patrick D Worhunsky1,2, David Matuskey 1,2, Jean-Dominique Gallezot 1,2, Michael A. Greicius 1,2, Thomas I. Foltin3, Nicola L. Scott 1,2, Li-Tzy T Wu 2, Susan Spratt 2, Brooke Heidenfelder 2, Betty Tai 4, Udi Ghitza 4; 1Radiology & Biomedical Imaging, Yale School of Medicine, New Haven, CT, 2Psychiatry, Yale School of Medicine, New Haven, CT, 3Electrical & Computer Engineering, University of New Mexico, Albuquerque, NM, 4The Mind Research Network, Albuquerque, NM, 5Neuroscience, Yale School of Medicine, New Haven, CT

Aims: Individuals with cocaine use disorder (CUD) exhibit downregulation of D2 receptors in the dorsal striatum and upregulation of D2 receptors in midbrain regions. The current study aimed to further investigate regional alterations in D2/D3 receptor availability and explore networks of D2/D3 receptor systems.

Methods: Twenty-six non-treatment seeking individuals with CUD and 26 matched healthy comparison (HC) participants completed [11C]PHNO PET scans. Group differences in binding potential (BP_{ND}) were investigated using region-of-interest (ROI), whole-brain and independent component analysis (ICA).

Results: Individuals with CUD exhibited decreased BP_{ND} in D2-related dorsal striatal regions and increased availability in the D2-related substantia nigra, revealed by ROI and whole-brain analyses. ICA identified three components of receptor availability (striatopallidal, pallidonigral, and mesoaccumbal) that represent networks of brain regions displaying coherent variation in receptor availability. CUD subjects displayed reduced striatopallidal and greater pallidonigral network intensity relative to HC participants. Years of cocaine use was negatively associated with striatopallidal network intensity and positively associated with pallidonigral network intensity.

Conclusions: The current study is the first to demonstrate reductions in striatal D2/D3 receptors in CUD using the D3-preferring agonist [11C]PHNO and identify network-based dopamine receptor systems consistent dopaminergic striatal regions and increased availability in the D3-related substantia nigra, representing networks of brain regions displaying coherent variation in receptor availability. CUD subjects displayed reduced striatopallidal and greater pallidonigral network intensity relative to HC participants. Years of cocaine use was negatively associated with striatopallidal network intensity and positively associated with pallidonigral network intensity.

MEDIATIONAL PATHWAYS AMONG TRAIT IMPULSIVITY, USE CONSEQUENCES, AND QUIT ATTEMPTS IN COCAINE USERS.
Eric A Woodcock, Jamey J Lister, Leslie H Lundahl, Mark Greenwald; 5Psychiatry, Wayne State University, Detroit, MI, 6Social Work, Wayne State University, Detroit, MI

Aims: Cocaine-use individuals exhibit higher trait impulsivity than healthy controls. High trait impulsivity is associated with problematic cocaine use, use consequences, and inability to maintain long-term abstinence (i.e. quit attempts). In addition, cocaine use consequences may motivate cocaine quit attempts. It is clinically beneficial to improve mechanistic understanding of factors that foster drug-abstinence behaviors. Here we investigated mediational pathways among trait impulsivity, cocaine use consequences (e.g. overdose), and quit attempts in cocaine users.

Methods: Chronic cocaine-use individuals (N=173) completed self-report measures. Trait impulsivity (BIS-11 Attention, Motor, and Non-planning subscales) was considered as the predictor variable while cocaine use consequences (categorical count variable; range 0-18) and total number of cocaine quit attempts (count variable; range 0-99) were each considered as the mediator and outcome variable (in separate models). Descriptive data are presented M ± 1 SD.

Results: Subjects reported 19.6 ± 8.9 years of cocaine use, 4.1 ± 4.0 cocaine use consequences, and 11.8 ± 23.2 cocaine quit attempts. Bivariate correlations indicated trait impulsivity subcomponents, consequences, and quit attempts were positively related. In separate mediation models (controlling for current age), cocaine use consequences fully mediated all three BIS subscale relationships (R² = 0.30, 0.29, and 0.30, respectively) with cocaine quit attempts (log10 transformed). Quit attempts did not mediate any relationship between BIS subcomponents and consequences.

Conclusions: These results clarify the mechanistic influence of trait impulsivity on cocaine use consequences and abstinence attempts in chronic cocaine users.

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RESEARCH.
Li-Tzy T Wu, Susan Spratt, Brooke Heidenfelder, Betty Tai, Udi Ghitza; 2Duke University, Durham, NC, 3NIDA, Bethesda, MD

Aims: To describe potential opportunities and challenges of using EHR data for clinical research.

Methods: National healthcare reforms, such as incentivizing meaningful use of EHR technology to improve patient care and adopting patient-centered medical home, have shifted the landscape toward integrated, value-based healthcare. They also motivate researchers to incorporate pragmatic characteristics of healthcare settings into research designs. Use of EHR-based clinical decision support (CDS) tools that give providers patient-specific information to enhance healthcare is becoming a centerpiece of patient care. There is a need to generate new clinical data from pragmatic designs that take into account the relationship between patients’ clinical profiles and healthcare use. This line of pragmatic research is a newer area in substance use disorder (SUD) intervention trials. Given the cost of conducting a pragmatic randomized trial in real-life medical settings, a feasibility project is warranted to inform development of practical study designs.

Results: Substance use Screening, Brief Intervention, and Referral to Treatment (SBIRT) has been considered a key service model to help integrate SUD care into medical settings. We describe the study design of a pilot SBIRT study that involves use of the EHR in patient recruitment and data collection of clinical care information. It includes development of an integrated EHR datamart to identify eligible patients and collect substance use and diabetes healthcare data, and the use of a geographic health information system to understand the social context in patients’ communities.

Conclusions: As noted by IOM (2014), there is a need for clinical research to shift to a newer paradigm integrating clinical practice with research efforts and involving patient care data to generate real-time knowledge and inform a science-driven learning health care system. Our research provides a framework to incorporate patients’ EHR data in study recruitment and outcome evaluation.

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USING ELECTRONIC HEALTH RECORDS DATA FOR CLINICAL RESEARCH.
Li-Tzy T Wu, Susan Spratt, Brooke Heidenfelder, Betty Tai, Udi Ghitza; 2Duke University, Durham, NC, 3NIDA, Bethesda, MD

Aims: To describe potential opportunities and challenges of using EHR data for clinical research.

Methods: National healthcare reforms, such as incentivizing meaningful use of EHR technology to improve patient care and adopting patient-centered medical home, have shifted the landscape toward integrated, value-based healthcare. They also motivate researchers to incorporate pragmatic characteristics of healthcare settings into research designs. Use of EHR-based clinical decision support (CDS) tools that give providers patient-specific information to enhance healthcare is becoming a centerpiece of patient care. There is a need to generate new clinical data from pragmatic designs that take into account the relationship between patients’ clinical profiles and healthcare use. This line of pragmatic research is a newer area in substance use disorder (SUD) intervention trials. Given the cost of conducting a pragmatic randomized trial in real-life medical settings, a feasibility project is warranted to inform development of practical study designs.

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RESPONSES TO SOCIAL STRESS IN REGULAR CANNABIS SMOKERS.
Jian Xiang Xia, Divya Nitin Patel, Gillinder Bedi; Psychiatry, Columbia University and NYSPI, New York, NY

Aims: Aspects of stress response are altered in cocaine and alcohol users relative to controls, and these differences are thought to contribute to relapse. Little prior research has focused on stress responses in regular cannabis smokers. This study aimed to assess responses to a social stress assay (Trier Social Stress Task; TSST) in regular cannabis smokers compared to healthy controls (HC). We expected cannabis smokers to show a blunted stress response compared to HC.

Methods: Healthy, non-treatment seeking cannabis smokers (2x2x; 2x2x; 2x2x; 2x2x; 2x2x) aged 21 to 50, and demographically-matched HC completed the TSST, a standardized laboratory stressor that includes public speaking and mental arithmetic. Outcome measures including subjective mood, heart rate, and salivary cortisol were measured at baseline and repeatedly after the stressor. Data were compared with mixed within-group ANOVAs.

Results: To date, 13 cannabis smokers (12M and 9 HC) have completed the TSST. Cannabis smokers (10 black; 2 white; 1 mixed; 28.9+/-5.0 years old) and /HC (6 black; 2 white; 1 Hispanic; 27.7+/-5.4 years old) were well matched on sex, race, and age. Users smoked cannabis 6.4 days/week (+/-1.0) averaging 3.6+/-1.7 'blunts'/day. Six cannabis smokers also smoked cigarettes; none of the HC smoked cigarettes daily. Overall, the TSST produced expected increases in heart rate, anxiety and other mood states. There was no group difference in cardiovascular response to the TSST. Cannabis smokers tended to show blunted subjective stress response relative to HC, but interactions between group and time did not reach significance in this preliminary analysis. Salivary cortisol data are not yet available.

Conclusions: Current results suggest that cannabis smokers may have blunted mood responses to social stress, with no indication of alterations to physiological stress response. Ongoing research will further characterize these differences, and assess the relevance of stress responses in cannabis smokers in relation to relapse to cannabis use.

Financial Support: Supported by NIDA (DA043877 and DA035161)

POORER WORKING MEMORY PERFORMANCE AMONG COCAINE USERS ACCOUNTED FOR BY INCREASED ACTIVATION IN THE MIDDLE FRONTAL GYRUS.
Jennifer Youngshin Yi1, Ryan Patrick Bell1, Thomas Ross2, Elliot Stein2, Stacey B Daughters2; 1Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill, Chapel Hill, NC, 2Neuromaging Research Branch, National Institute on Drug Abuse, National Institutes of Health, Baltimore, MD

Aims: Cocaine users (CU) demonstrate both behavioral and neural deficits in working memory (WM), which in turn are associated with more frequent cocaine use and poorer treatment outcomes. The neural mechanisms accounting for poorer WM performance among CU remains unclear. We examined whether differences in WM performance among CU and healthy controls (HC) are accounted for by neural activation during a WM task.

Methods: Twenty-three CU and 24 HC completed a WM task while undergoing fMRI. Group differences in activation associated with WM were examined using voxel-wise whole brain analysis. Activity in a priori ROIs implicated in WM (bilateral frontal pole, inferior frontal gyrus, inferior parietal lobe, and middle frontal gyrus) were examined as mediators of group differences in WM performance using a parallel mediation analysis.

Results: Voxel-wise whole brain activation revealed greater activation during the N-Back in the frontal pole (FP), right superior frontal gyrus (SFG), right anterior cingulate gyrus, right inferior parietal lobe (IPL), and left cerebral amygdala among HC compared to CU: Activation of the middle frontal gyrus (MFG) mediated the relationship between group and WM performance (β [95% CI] = 5.17 [1.02, 12.35]).

Conclusions: Hypoactivation among CU in WM regions supports previous findings suggesting deficits in integrating multiple cognitive operations such as memory retrieval, monitoring, and attention switching. In particular, poorer WM performance among CU accounted for by increased MFG activation suggests that CU may be engaging in compensatory attention and control processes associated with WM load reduction and stimulus monitoring. Extending these findings to predict cocaine use and treatment outcomes for CU warrants further research.

Financial Support: R21 DA02922, NIDA Intramural Research Program (IRP)

HEMISPHERIC ASSOCIATIONS OF BEHAVIORAL INHIBITION AND APPROACH IN SUBSTANCE DEPENDENCE.
Dorothy Yamamoto1, M T Banich1, Michael F Regner2, Joseph Sakai1, Jody Tanabe1; 1Department of Psychology, University of Colorado Denver, Aurora, CO, 2Department of Radiology and Psychiatry, University of Colorado Denver, Aurora, CO, 3Departments of Radiology and Bioengineering, University of Colorado Denver, Denver, CO, 4Department of Radiology, University of Colorado Denver, Aurora, CO, 5Institute of Cognitive Science, University of Colorado Boulder, Boulder, CO

Aims: Increased approach behavior predicts substance use and risky decision-making. Brain activity related to approach and avoidance traits has shown evidence of hemispheric laterality. We hypothesized that approach behavior would be associated with left prefrontal cortex (PFC) activity during risky decision-making and that avoidance (or inhibition) behavior would be associated with right PFC activity during risky decision-making. We predicted that the association between approach and left PFC activity would be stronger in substance users than controls.

Methods: 31 substance-dependent individuals (14M/17F) and 21 controls (12M/9F) completed the Behavioral Inhibition System/Behavioral Approach System (BIS/BAS) scales and performed a risky decision-making task during functional magnetic resonance imaging (fMRI). fMRI activity in orbital frontal cortex (OFC), dorsolateral PFC, and nucleus accumbens was correlated with BIS/BAS scores.

Results: Across groups, left OFC activity correlated with behavioral approach scores (r=+0.44, p=0.003) and this association was driven by substance dependent individuals. Across groups, increased right OFC activity correlated with behavioral inhibition scores (r=-0.311, p=0.04).

Conclusions: These results are consistent with the hypothesis of hemispheric laterality in the BIS/BAS system. Asymmetry in the neural correlates underlying BIS/BAS may help to explain patterns of risky decision-making in drug users.

Financial Support: National Institute of Drug Abuse DA024104 and DA027748

POORER WORKING MEMORY PERFORMANCE AMONG COCAINE USERS ACCOUNTED FOR BY INCREASED ACTIVATION IN THE MIDDLE FRONTAL GYRUS.

INTRA-INDIVIDUAL CHANGES IN STROOP-RELATED NEURAL ACTIVATIONS LINKED TO CIGARETTE ABSTINENCE IN ADOLESCENT SMOKERS.
Sarah W Yip, Suchitra Krishnan-Sarin, 1 Balodi, Kathleen Carroll, Marc N Potenza; Psychiatry, Yale University, New Haven, CT

Aims: Developing effective interventions to help adolescents quit smoking is critical. Identifying the neural mechanisms of successful behavioral change (abstinence) in this population may be used to design more effective treatments.

Methods: Adolescent smokers participated in fMRI scanning before (n=21) and after (n=14) participation in a five-week smoking-cessationRCT of combined behavioral therapy and Nicotine Replacement Therapy. fMRI data were analyzed using random-effects models in SPM12. Paired t-tests were used to compare neural responses between time points. Regression models were used to identify changes in neural functional responses (post- versus pre-treatment) associated with treatment-outcomes (percent days abstinent, maximum days of consecutive abstinence).

Results: Robust main effects of Stroop task performance (contrast of incongruent versus congruent trials) were seen across a priori ROIs at both pre- and post-treatment (pFWE<0.05) and these did not differ between time points. Intra-individual reductions in Stroop-related activity within cognitive control regions (anterior cingulate and insula) were positively associated with measures of smoking abstinence during treatment (pFWE<0.05).

Conclusions: Robust method effects of Stroop task performance (contrast of incongruent versus congruent trials) were seen across a priori ROIs at both pre- and post-treatment (pFWE<0.05) and these did not differ between time points. Intra-individual reductions in Stroop-related activity within cognitive control regions (anterior cingulate and insula) were positively associated with measures of smoking abstinence during treatment (pFWE<0.05).

Financial Support: P50 DA009241; CASAColumbia
PHARMACOLOGICAL MECHANISMS OF MDMA’S FACILITATORY EFFECT ON FEAR EXTINCTION.
Matthew Young1, Lais F Berro1, Leonard Howell2; 1Emory University, Atlanta, GA, 2Yerkes National Primate Research Center, Emory University, Atlanta, GA

Aims: We have previously observed that 3,4-methylenedioxymethamphetamine (MDMA) improves the extinction of Pavlovian fear conditioning in mice. Given the potential neurotoxic effects and abuse liability of MDMA, it is important to identify the relevant mechanisms of MDMA’s effect to design better clinical treatments. Here, we aimed to identify the specific transporter and receptor mechanisms that are required for MDMA’s effect.

Methods: Specific inhibitors of serotonin (citalopram), dopamine (RTI-336) and norepinephrine (reboxetine) were administered prior to MDMA treatment to determine the requirement of each transporter for the effect of MDMA on fear memory extinction. Given that the amygdala is a crucial site of action for MDMA’s effect, in vivo microdialysis was used to measure dopamine and serotonin release in the amygdala following MDMA administration.

Results: Pre-treatment with citalopram blocked MDMA’s effect on fear memory extinction. No effect of the other inhibitors was observed. Microdialysis from the amygdala revealed a significant increase in serotonin release after MDMA administration. Additionally, a smaller increase in dopamine was observed.

Conclusions: Our observations suggest that the effect of MDMA on fear memory extinction relies on serotonin release in the amygdala. While some increase in dopamine release in the amygdala occurs, it does not appear to contribute the effects of MDMA on fear memory extinction. These data indicate that future studies should focus on the role of the serotonin system in fear memory extinction.

Financial Support: 5K12GM000680-15 (IRACDA) P51OD11132 (Yerkes National Primate Research Center Base Grant)

DAILY ALCOHOL USE AS AN INDEPENDENT RISK FACTOR FOR HIV SEROCONVERSION AMONG PEOPLE WHO INJECT DRUGS.
Samantha Young1, Evan Wood2, Huiri Dong3, Thomas Kerr1,2, Kannan Hayashi2; 1Department of Medicine, University of British Columbia, Vancouver, BC, Canada, 2Urban Health Research Initiative, BC Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada

Aims: While alcohol use has been shown to increase HIV transmission through its effect on sexual risk behaviour, little is known about HIV risk associated with alcohol use among people who inject drugs (PWID). Therefore, we sought to estimate the relationship between daily alcohol use and HIV seroconversion among PWID in a Canadian setting. Our hypothesis was that daily alcohol use is associated with increased hazard of HIV seroconversion among PWID.

Methods: Data were obtained through an open prospective cohort study of PWID in Vancouver, Canada, recruited via snowball sampling and street outreach between May 1996 and November 2013. HIV antibody testing and standardized risk behaviour assessment were conducted semi-annually. Multivariable extended Cox regression was used to assess whether daily use of alcohol was independently associated with the time to HIV seroconversion among baseline HIV-seronegative participants.

Results: Of 1683 baseline HIV-seronegative PWID, there were 176 HIV seroconversions during follow-up with an incidence density of 1.5 (95% confidence interval [CI]: 1.3 – 1.7) cases per 100 person-years. At baseline, 339 (20.1%) consumed alcohol daily in the previous six months. In multivariable analyses, after adjustment for potential confounding factors, daily alcohol use remained independently associated with HIV seroconversion (Adjusted Hazard Ratio: 1.48; 95% CI: 1.00-2.17).

Conclusions: Daily alcohol use was found to be an independent risk factor for HIV seroconversion among PWID in this setting. Our findings highlight the importance of incorporating treatment and education related to alcohol use within HIV prevention strategies in the PWID community.

Financial Support: This study was supported by the US National Institutes of Health, funding from the Canada Research Chairs program through a Tier 1 Canada Research Chair in Inner City Medicine and the Canadian Institutes of Health Research New Investigator Award.

“GROUP PRENATAL CARE” – PROVIDING OBSTETRIC CARE IN A COMMUNITY-BASED SUBSTANCE ABUSE TREATMENT CENTER.
Elizabeth Zadzierski, Stephanie Rogers, Stefanie Gargano, Yukiko Washio; Christiana Care Health Services, Newark, DE

Aims: Pregnant women on methadone maintenance are challenged to receive prenatal care in an environment that meets their needs. Obstetric providers from Christiana Care Health System, the largest provider for obstetric care in the state of Delaware, offer prenatal care within a community-based methadone treatment center in Wilmington DE. The evaluation of a Group Prenatal Care model designed for this patient population has been conducted in collaboration with the methadone treatment center as well as the pediatrics department to assess child development.

Methods: This model is implemented at a community site, the treatment center at Brandywine Counseling Community Services. The project also pilots an integrated approach to prenatal care through a collaboration of clinical care providers including the Christiana Department of Obstetrics and Gynecology, Department of Medicine, Maternal Fetal Medicine, Neonatology, and Child Development Watch.

Results: Outcomes include initiation of prenatal care in the first trimester, attendance at prenatal visits, adherence with antenatal testing recommendations, breastfeeding initiation and duration, attendance at postpartum visit and uptake of postpartum contraception with an emphasis on long-acting reversible contraception (LARC). Neonatal outcomes to evaluate will be duration of stay in the Continued Care Nursery or NICU amongst infants and diagnosis and severity of neonatal abstinence syndrome (NAS); and early identification of delays in child development.

Conclusions: The evaluation of the program will provide valuable information about provider and patient satisfaction, treatment compliance, and maternal and infant outcomes.

Financial Support: Chairs Leadership Council Discretionary Fund at Christiana Care Health Services

OPTIMAL MINIMUM LENGTH OF TREATMENT IN OPIOID-DEPENDENCE WITH BUPRENORPHINE.
Vladimir Zahi1, Nikolay Matveев1, Cheng Chen2, Jane Ruby1; 1Health Economics, ZRx Outcomes Research Inc., Mississauga, ON, Canada, 2College of Pharmacy, University of New Mexico, Albuquerque, NM, 3Medical Affairs / HEOR, Indivior, Inc., Richmond, VA

Aims: There are no previous studies demonstrating length of treatment (LOT) in opioid dependence. The objective was to identify an adequate minimum optimal LOT.

Methods: A retrospective claims analysis was conducted on the (January 2007 – June 2014) Truven MarketScan Medicaid database in all ICD diagnoses related to opioid dependent adults 16-65 years old (N=23,022). The study focused on patient resource use after the end of treatment, which met the criteria for a controlled discontinuation. The assumption was that higher resource use after the end of treatment represented inadequate treatment, compared to lower resource use representing optimal length of treatment. Multiple regression analyses studied key parameters that influenced the use of healthcare resources.

Results: LOT for 9-11 and 12-17 months represented the most optimal LOT by resource use. Correlation coefficient analysis identified outpatient services as the most influential parameter. These results showed statistically significant differences for outpatient resource use between the (LOT) group 3-5 months and LOT groups 9-11, 12-17 and 24+ months (p-values 0.018, 0.052, and <0.001 respectively).For patients who were in their plan at least 6 months after treatment, LOT 9-11 months and LOT 12-17 months were identified as the most optimal length of treatment. For patients who were in their plan at least 12 months after treatment, LOT 9-11 months and LOT 12-17 months were identified as the most optimal length of treatment (p<0.001).

Conclusions: These results suggest that 9-17 months and 24+ months of buprenorphine treatment represent the minimum optimal lengths of treatment for the general opioid dependent population when considering resource use. Further study of patient profiles/subgroups may help to identify and narrow down more specific minimum LOT within the general opioid dependence population.

Financial Support: Study sponsored by Indivior, Inc.
ALTERNATIVE INTRINSIC BRAIN CONNECTIVITY IN PRENATALLY COCAINE-EXPOSED ADOLESCENTS.
Yasmin Zakinaeiz, Sarah W Yip, I Balodis, Cheryl Lacadie, Linda C Mayes, Rajita Sinha, Marc N Potenza; Psychiatry, University, New Haven, CT

Aims: Prenatal cocaine exposure (PCE) is linked to addiction and obesity vulnerability. Altered neural responses to stressful and appetitive cues are seen in adolescents with PCE, which may relate to increased vulnerability. However, no prior studies assessed functional responses among PCE adolescents using a connectivity-based approach. This approach detects synchrony of activations and more precisely models intrinsic brain activity.

Methods: Twenty-two PCE and 22 non-prenatally drug exposed (NDE) age, sex, IQ and BM1-matched adolescents participated in individualized guided imagery with appetitive, stress and neutral cues during fMRI. Current life stress was measured using the Perceived Stress Scale (PSS). A data-driven voxel-wise connectivity analysis was used to examine between-group differences and correlations with PSS scores.

Results: A group-by-cue interaction identified a parietal lobe cluster implicating default-mode-network regions, including posterior cingulate (PCC) and precuneus, where PCE vs. NDE showed decreased connectivity during stress and increased connectivity during neutral-relaxing cues. Follow-up parietal seed analysis revealed that during neutral-relaxing cues, PCE parietal connectivity was increased to the insula and decreased to the anterior cingulate (ACC), primary hubs in a salience network. In NDE, parietal connectivity was increased to sensory areas and decreased to the anterior gyrus during stress cues. In PCE adolescents, PSS negatively correlated with connectivity in the PCC and precuneus during stressful and appetitive cues, respectively. During neutral-relaxing cues, PCE and NDE groups showed a negative correlation between ACC connectivity and PSS scores. The PCE group showed a positive and the NDE group showed a negative correlation in the orbitofrontal cortex with PSS scores.

Conclusions: Findings from this first data-driven connectivity analysis of PCE influences on adolescent brain function indicate differences relating to PCE status and life stress. Future work should examine relationships to addiction and obesity vulnerability.

Financial Support: NIH (NIDA NIAAA ORWH), CASAColumbia

HEPATITIS C VIRUS CORE ANTIGEN RELIABLY DIAGNOSES HCV INFECTION IN INJECTION AND NON-INJECTION DRUG USERS.
Marija Zeremski2, Yang Chen3, Roberto Zavala1, Ype de Jong2, Clewert Sylvester1; 1Research & Evaluation, START: Treatment & Recovery Centers, Brooklyn, NY, 2Weill Cornell Medical College, New York, NY, 3Bioscattistics, University at Buffalo (SUNY), Buffalo, NY, 4START: Treatment & Recovery Centers, Brooklyn, NY, 5Medicine, University at Buffalo (SUNY), Buffalo, NY, 6Abbott Diagnostics, Des Plaines, IL

Aims: To demonstrate that HCV core antigen can be a reliable means of diagnosing HCV infection in populations that are difficult to engage.

Methods: Levels of HCV core Ag (Abbott ARCHITECT) from 109 patients were compared to HCV RNA levels (Roche COBAS Taqman, Labcorp). Assay agreement and associations between baseline predictors were investigated using linear regression.

Results: The mean age was 53.8 years, 59.6% were male, 68.8% African American, and 28.4% were Hispanic. A history of injection and non-injection drug use was reported by 60% and 94% of patients respectively. Active (i.e. previous 6 months) injection and non-injection drug use was reported by 10% and 50% of patients respectively. HCV RNA was detected in 44% of patients, the majority (77%) infected with HCV genotype1. Among HCV RNA (+) patients, 29% (14/48) were HCV / HIV co-infected. HCV core antigen was detectable in 47 of 48 HCV RNA (+) patients. Core antigen was not detected in any HCV RNA (-) patients. In comparison with HCV RNA levels, HCV Core Ag had excellent performance with a sensitivity of 97.9%, specificity of 100%, and positive and negative predictive value of 100%. We found high correlation between HCV RNA and HCV Core antigen assays with a correlation coefficient of 0.88 (95% CI 0.76; 0.93, p<0.01).

Conclusions: Among injection and non-injection drug users, the HCV core antigen has excellent performance for the diagnosis of active HCV infection. These data underscore its potential for development as a Point of Care test for HCV diagnosis in difficult to engage populations, such as patients with substance use disorders.

Financial Support: Abbott Diagnostics

DEVELOPING HOME-BASED CONTINUING CARE: EXPLORING FEASIBILITY AND ACCEPTANCE WITH PARENTS AND YOUNG ADULTS.
Kelly Zentgraf1, David Zaslow1, Elena Bresani2, Kathleen Meyers1, Mary Tabt1, Kimberly C Kirby2,3; 1Treatment Research Institute, Philadelphia, PA, 2Psychology, Rowan University, Glassboro, NJ, 3Psychiatry, University of Pennsylvania, Philadelphia, PA

Aims: Each year nearly 113,000 young adults (YAs; 18-25 years old) enter residential treatment programs, but many are not referred or participate minimally in continuing care services after discharge, increasing risk for relapse. This study collected information on the acceptability of a remotely-delivered Home-based Continuing Care (HCC) program for YAs and their parents.

Methods: We surveyed YAs who have been in residential treatment (n=72) and parents of YAs who have been in residential treatment (n=42) asking questions about the acceptability of the proposed intervention and potential barriers and solutions to participation. We provided a brief description of the proposed HCC, which combines two programs with proven efficacy: Telephone-based Continuing Care and parent-delivered Contingency Management (CM). Parents and YAs would receive 5-7 skill-focused telephone sessions with a therapist, followed by weekly relapse-risk check-ins with the YA and parent-implemented urine testing and reinforcement delivery.

Results: A majority of parents and young adults indicated that they liked the parental involvement in the program (74% of YAs and 71% of parents). Unexpectedly, a significant portion of YAs expressed approval of their parents testing their urine while a similar proportion of parents disliked the idea. Approximately 60% of the YAs sampled reported they would be living with a parent or other family member after discharge. Nearly 90% of YAs and 80% of parents indicated they would participate in the HCC program if it was offered.

Conclusions: The descriptive results suggest that responses were positive enough to merit a pilot study of the program to test its feasibility as a continuing care option for YAs. The pilot study is currently underway.

Financial Support: R21 DA036818

CHILD-PARENT ATTACHMENT MEDIATES BUT NOT MODERATE PARENT AND CHILD SUBSTANCE INVELOPMENT.
Zu Wei Zhai2, Ty Ridenour1, R E Tarter3; 1Research Triangle Institute, Allison Park, PA, 2Psychiatry, Yale University School of Medicine, New Haven, CT, 3University of Pittsburgh School of Pharmacy, Pittsburgh, PA

Aims: Emotional attachment has been reported in numerous studies to be sub-optimal between parents and offspring who have substance use disorders (SUD). Childhood attachment predicts adolescent substance use and SUD risk in young adults. Poor attachment to parents, consequent to the chronic effects of parental SUD, may underlie the association between parents’ and their offspring’s SUD. This investigation aims to determine whether son-father attachment 1) prospectively mediates and/or moderates the association between paternal substance use/ SUD and development of SUD in sons, and 2) accounts for SUD outcomes in sons beyond parental substance use/SUD.

Methods: The sample consisted of 445 boys tracked from 10-12 to 22 years of age. The Substance Use Severity Index and SUD Severity Index were administered to fathers and their biological sons. The Youth Attachment to Parent Scale, measuring strength of bond between sons and fathers, was administered to the boys at baseline assessment. The Structured Clinical Interview for DSM-III-R, administered to the boys at age 22, documented presence of lifetime SUD. Multivariate modeling was conducted using MPLUS.

Results: Substance use severity, relative to SUD, in fathers predicted substance use severity in the sons leading to SUD. Strength of son-father attachment partially mediated the association between severity of paternal substance use and sons’ substance use leading to SUD. Severity of substance use in fathers and sons was not moderated by attachment. Attachment also impacted sons’ risk for SUD beyond the contribution of paternal substance use and SUD.

Conclusions: Weak son-father attachment is an integral factor predisposing to development of SUD in at-risk boys. Intervention and treatment directed at strengthening the bond between sons and their fathers encompassing trust, emotional closeness and communication, potentiates paternal investment in the child’s welfare and concomitantly attenuates SUD risk.

Financial Support: NIDA PS0DA05605, NIDA T32 DA019426
CRABP2 AND FABP5 MEDIATED RETINOIC ACID SIGNALING IS A NOVEL MECHANISM CONTROLLING DEPRESSION- AND ADDICTION-RELATED BEHAVIOR.

Yafang Zhang, Elizabeth Croton, Shyny of Texas Medical Koshy, Thomas A Green; University of Texas Medical Branch, Galveston, TX

Aims: Environmental enrichment (EE) is a non-drug, non-surgical and non-genetic manipulation which produces protective addiction and depression phenotypes in animals. Our previous quantitative RNA sequencing study revealed that the retinoic acid (RA) signaling pathway was regulated by EE and cocaine. RA is involved in several intracellular pathways by binding to different cellular RA binding proteins. The two main RA binding proteins are Crabp2 and Fabp5. This project is to investigate the behavioral response of rats with Crabp2 or Fabp5 knock-down in the NAc shell in depression-related behavior and cocaine self-administration.

Methods: Thirty-six Sprague Dawley rats were injected with an adeno-associated virus (AAV) expressing Crabp2 shRNA, Fabp5 shRNA or control AAV in the NAc shell. After three weeks, sucrose preference was tested in 15 min and 16 hr sessions. Then, rats were placed in a two-lever operant chamber and allowed to respond for sucrose pellets at 85% of free-feed body weight and then 100% body weight. Finally, rats self-administered cocaine in acquisition, maintenance responding (dose-response), extinction and reinstatement.

Results: Our results reveal that knocking down Crabp2 in the NAc shell reduces sucrose intake after 15 min and 16 hr tests. In sucrose operant responding, rats with Crabp2 knockdown made fewer responses for sucrose pellets at 85% of free-feed body weight in FR1, FR2 and FR5. In cocaine self-administration, results demonstrate only a trend for decreased acquisition in Crabp2 shRNA rats, but a significantly decreased acquisition in Fabp5 shRNA rats. Ongoing experiments are testing the dose response, extinction, drug induced reinstatement and cocaine self-administration under PR schedule.

Conclusions: Decreased Crabp2 mediated RA signaling produces a depression-like effect, specifically decreased motivation in operant responding. It is likely that both Crabp2 and Fabp5 knockdown produce a resistant addiction phenotype.

Financial Support: This study has been funded by NIDA DA029091 and T32 DA007287.

RNA-SEQ ANALYSIS: DIFFERENTIAL TRANSCRIPTOME IN THE DORSAL AND VENTRAL STRIATUM IN MALE C57BL/6J MICE AFTER CHRONIC OXYCODONE SELF-ADMINISTRATION.

Yong Zhang1, Yupu Liang2, Matthew Randesi1, Orna Levran1, Vadim Yufe10, Mary Jeanne Kreek1; 1The Laboratory of the Biology of the Addictive Diseases, The Rockefeller University, New York, NY, 2Hospital Informatics, The Rockefeller University, New York, NY

Aims: Abuse of prescription opioids such as oxycodone is a pressing public health issue. We have focused on how oxycodone self administration affects the reward circuitry in the brain, using a mouse model. In this study, using transcriptome-wide sequencing (RNA-seq), we tested the hypothesis that chronic oxycodone self administration alters transcriptome in the dorsal and ventral striatum.

Methods: This study was performed in two sets of male adult (12 week old) C57BL/6J mice. Mice were allowed to self administer oxycodone (0.25 mg/kg/infusion i.v.) for 4 hrs/daily, for 14 consecutive days. The dorsal and ventral striatum were isolated from mice that had self administered oxycodone, or from yoked-saline controls, for mRNA analysis. We performed transcriptome-wide sequencing using samples from the 1st study set, and then validated alteration of selected genes detected by RNA-seq, with real time-PCR.

Results: We found 376 differentially regulated transcripts in the ventral striatum (271 up-regulated and 98 down-regulated) and 76 in dorsal striatum (69 up-regulated and 8 down-regulated) in mice that had self administered oxycodone, versus controls.

Conclusions: This study used an unbiased approach to examine alterations in gene expression. Chronic oxycodone self-administration altered transcriptome-wide gene expression in the dorsal and ventral striatum of adult mice, providing potential mechanisms underlying neuronal adaptation to chronic oxycodone self-exposure.

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TYROSINE470 AND 88 OF HUMAN DOPAMINE TRANSPORTER ARE RESPONSIBLE FOR THE ALLOSTERIC MODULATORY EFFECT OF SRI-30827, SRI-20041 AND HIV-1 TAR PROTEIN ON DOPAMINE TRANSPORTER.

Jun Zhu1, Wei-lun Sun1, Subramaniam Ananthan1, chang-guo zhan1; 1Drug Discovery and Biomedical Sciences, South Carolina College of Pharmacy, University of South Carolina, Columbia, SC, 2Drug Discovery and Biomedical Sciences, University of South Carolina, Columbia, SC, 3Organic Chemistry, Southern Research Institute, Birmingham, AL

Aims: The current study assessed whether SRI-20041 and SRI-30827, via an allosteric modulation of tyrosine470 and 88 sites of human dopamine (DA) transporter (hDAT), pharmacologically block Tat binding to DAT.

Methods: Mutations of Tyrosine470 and 88 of hDAT (Y470H and Y88F) were generated by site-directed mutagenesis. We performed [3H]DA uptake and [3H]WIN35,428 binding assays in PC12 cells transiently transfected with WT and mutated hDAT in the presence of SRI-20041, SRI-30827, cocaine or Tat.

Results: Tat (140 nM) induced a 35% reduction of [3H]DA uptake in WT hDAT but not in Y470H and Y88F. SRI-20041 and SRI-30827 produced a 30% increase in IC50 value for cocaine inhibiting [3H]DA uptake in WT hDAT, however, the effect of the two SRI-compounds on cocaine IC50 was attenuated in Y470H and Y88F. Cocaine-induced dissociation rate in WT was similar to that in Y88F, but was decreased in Y470H. Compared to cocaine alone, the addition of SRI-20041 or SRI-30827 following the addition of cocaine slowed the dissociation rate of [3H]WIN35,428 binding in WT hDAT, however, the effect of SRI compounds on cocaine-induced dissociation was attenuated in Y470H and Y88F.

Conclusions: These results indicate that tyrosine470 and 88 may act as allosteric modulatory sites on DAT responsible for SRI-20041, SRI-30827, and Tat. From these findings, developing therapeutic agents targeting tyrosine470 or 88, such as SRI-30827 could provide a viable approach for overcoming HIV infection-induced neurologic impairments.

Financial Support: NIH grant R01DA035714
GENDER DISPARITIES IN HIV PREVALENCE AND RISK BEHAVIORS AMONG PEOPLE WHO INJECT DRUGS IN TAJKISTAN.

William Zule1, David Oriashvili2, Alisher Latypov3, Steffani Bangel1, Wendee Wechsberg2, 3RTI International, Durham, NC; 3Addiction Research Center, Alternative Georgia, Tbilisi, GA; 3Management Sciences for Health, Leadership, Management and Governance, Kiev, Ukraine

Aims: HIV among people who inject drugs (PWID) is a serious public health problem in Tajikistan and other Central Asian republics, yet relatively few studies have been conducted among PWID in Tajikistan and almost nothing is known about females who inject drugs. This presentation will examine gender differences in HIV status, injection risk behaviors and sex risk behaviors among PWID in Tajikistan.

Methods: Needle and syringe program staff recruited 200 PWID in two Tajikistan cities, Khudjand (n=100) and Kulob (n=100), in 2015. All participants completed a brief interview and were tested for HIV. We conducted bivariate analyses to assess gender differences in the sample. We conducted multiple logistic regression analyses to determine if gender was independently associated with HIV status, injection risk, sex risk, and a history of substance abuse treatment.

Results: The sample included 27 females and 173 males. HIV prevalence was 44% among females and 24% among males. Among participants who tested positive for HIV, 83% of females and 63% of males were unaware that they were infected with HIV. In multivariable models, female gender was associated with increased odds of testing positive for HIV (odds ratio [OR] = 2.71; 95% confidence interval [CI] = 1.08, 6.80), reporting any direct or indirect needle sharing in the past year (OR = 0.08; 95% CI = 2.31, 35.71), and reporting unprotected sex in the past 30 days (OR = 3.40; 95% CI = 1.08, 10.70). Gender was not significantly associated with a history of substance abuse treatment in the model.

Conclusions: Efforts are needed to increase HIV testing among PWID in Tajikistan and to reduce risk behaviors, particularly among females.

Financial Support: This research was supported by NIH grant number R34DA035094 from the National Institute on Drug Abuse.

DRUG USERS' ADVICE ON ENROLLMENT AND RETENTION IN HEALTH RESEARCH.

Abigail Zulich, Amy Elliott, Catherine Woodstock Striley, Linda Cottler; Epidemiology, University of Florida, Gainesville, FL

Aims: Recruitment and retention are key to the success of health research studies. We gathered advice from drug users in the NIDA-funded study, the Transformative Approach to Reduce Research Disparities Towards Drug Users, to improve enrollment and retention rates in future studies.

Methods: Through the HealthStreet community engagement model, participants were recruited for a 90-day intervention to increase drug users' enrollment in research. At 90 days, 209 drug users were asked, through open-ended questions, what researchers should do to make studies easier to enroll in and stay in until completion. Responses were coded and placed into one or more categories.

Results: Nearly three-quarters (72%; n=150) of the sample mentioned something other than being satisfied with the study process or having no advice to give: these comments made up the Analyzable Category (AC) and are reported here. Of these 150 participants, 73% mentioned that logistics like Exclusion Criteria, Flexibility, Contact, Remuneration, or Transportation, were key to increasing enrollment and retention rates. Additionally, 38% of comments in the AC pertained to non-logistics like Advertisement/Outreach. Research Staff Attributes, or Transparency. Contact, Remuneration, and Advertisement/Outreach were mentioned most frequently. Drug users brought up the importance of appointment reminders and regular contact with the study team as well as the amount and the timing of remuneration. Many mentioned that people did not participate in research because they were not aware of the opportunities, emphasizing that enrollment and outreach efforts would increase enrollment.

Conclusions: With special attention to the feedback of drug users who have participated in health studies, rates of recruitment and retention can be increased for this population. Of highest importance are consistent contact, population-appropriate remuneration, and community outreach.


CIGARETTE PURCHASE TASK: IDENTIFYING QUIT SUCCESS IN PREGNANT CIGARETTE SMOKERS.

Ivori A Zvozskova1, Ryan Redner2, Allison Nicole Kurt1,2, Jeff Priest1, S T Higgins3,4; 1University of Vermont, Winouski, VT; 2Psychiatry, University of Vermont, Burlington, VT; 3Psychology, University of Vermont, Burlington, VT; 4Center for Behavior and Health, Burlington, VT

Aims: Maternal cigarette smoking is a major risk factor for adverse birth outcomes. Thus, promoting smoking cessation among pregnant women is critical. Measures that identify women who are less likely to quit during pregnancy may allow for successful tailoring of smoking-cessation treatments. The present study represents an initial examination of whether the Cigarette Purchase Task (CPT), which uses hypothetical choices regarding consumption of cigarettes at varying prices (demand curves) to assess dimensions of cigarette-related reinforcement, may be sensitive to individual differences in the likelihood that pregnant smokers will successfully quit during formal smoking-cessation treatment.

Methods: Participants were 56 pregnant cigarette smokers enrolled in an ongoing smoking-cessation trial comparing usual care alone versus usual care plus voucher-based financial incentives. All women completed the CPT at study intake. Non-parametric Wilcoxon rank sum tests were used to compare differences in CPT indices as a function of biochemically verified late-pregnancy smoking status.

Results: Baseline CPT indices of Intensity of Demand (# cigs smoked/day if cigs were free) and Omax (maximum expenditure) differed significantly between late-pregnancy quitters and smokers while other reinforcement indices did not. Quitters compared to smokers reported both lower baseline demand (10.18 ± 6.90 vs. 18.01 ± 9.60, p = .02) and maximum expenditure (4.73 ± 5.70 vs. 8.17 ± 9.32, p = .01).

Conclusions: These initial results suggest that the CPT may allow for prospective identification of women who may benefit from additional supports. This identification may increase the success of cessation treatments in this vulnerable population, including efficacious incentive-based interventions.

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