THE ASSOCIATION BETWEEN RELIGION/SPRITUALITY AND 30 DAY CRACK/COCAIN AND MARIJUANA USE AMONG FEMALE OFFENDERS.
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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, 474% (N=150) of the women used either CC and/or MJ in the past 30 days (CC+MJ; 16%; CC only 18%; MJ only 19%). Results of bivariate analyses showed that religiosity/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; CC (AOR .17; CC use (AOR .35; CC: AOR .42; MJ: AOR .23), 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.

Financial Support: McKnight Doctoral Fellowship (Acheampong), R01DA2079 (PI: Cottler).

THE INTERACTION BETWEEN COCAINE DEPENDENCE AND HIV INFECTION ON RISKY DECISION MAKING AND ITS NEURAL SUBSTRATES.
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Aims: Stimulant drug abuse is a major driver of HIV infections since stimulant abusers engage in high rates of risky sexual behaviors. Both stimulants 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 undergoing 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.
Results: Behaviorally, 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 < .005).
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.
Financial Support: This research was supported by R21 DA046450 (CSM), K23 DA028660 (CSM), and R01 DA033447 (MAA).

EFFECTS OF ELECTRONIC VS. COMBUSTIBLE CIGARETTE ADMINISTRATION ON SMOKING WITHDRAWAL SUPPRESSION.
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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.
Financial Support: USC TCORS HS-CG-13-00019
ADDRESSING UNMET ADDICTION NEED IN AN URBAN HOSPITAL.
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**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 consultation 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 consultations between January 2009 and December 2012 averaged 940.25 per year. Post-expansion consultations increased in 2013, 2014, and 2015 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.
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**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 Intervention (CRANI), 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., 3.4), mean drinks per day was 3.0 (s.d., 2.3) and mean percent days abstinence (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<0.0001), as was reduction in mean drinks per day (p<0.0001) and mean PDA (p<0.0001), 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 abusers 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.

**Financial Support:** R01DA024606, New York State Psychiatric Institute.

TAURINE’S EFFECTS ON COCAINE REWARD IN ADOLESCENT MALE AND FEMALE RATS.
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**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.

**Financial Support:** 5G12TR003060-26 from the NCRR and 8G12MD7603-27 from the NIMHD (EF, KSR).

ACUTE INHIBITORY CONTROL TRAINING IN COCAINE USERS.
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**Aims:** This ongoing pilot study is assessing the effects of acute inhibitory control training to 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.

**Financial Support:** T32DA035200; R01DA025032; R01DA032554; R01DA033394; R21DA035481; R01DA036827; R21DA034095; R21DA035376; R01DA036553; R01DA033364.
IS RISK OF CANNABIS DEPENDENCE LOWER FOR ‘CANNABIS ONLY’ USERS?
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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 needs to examine the causal pathways of these associations.

Financial Support: NIDA K05DA015799(JCA), T32DA021129 (KCA & internationally regulated drugs. Before discussion of programmatic or policy only’ users – i.e., when cannabis users do not start extra-medical use of other IRD (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.

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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.

Financial Support: NIDA K05DA015799(JCA), T32DA021129 (KCA & CLQ) & MSU.

WITHDRAWN

EFFECT OF LOCAL HEALTH DEPARTMENT LEADERSHIP ON COMMUNITY OVERDOSE PREVENTION COALITIONS.
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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 analgesics (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 7,453 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.

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

Financial Support: K12HD055887
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.

Financial Support: T32DA021129 (OA); K05DA015799 (JCA).
SOCIAL TIES AND SUBSTANCE USE AMONG RESERVE SOLDIERS IN SINGLE AND DUAL MILITARY HOUSEHOLDS.

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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 across military household type with 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<0.05); similar findings were observed for wives in dual military and wife-only households (35% vs 47%, p<0.05). Compared to wives in wife-only households, dual military wives were significantly more likely to be past-year moderate/heavy drinkers (p<0.03) 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<0.05) as well as ties with whom they used illicit drugs in the past year (1% vs 4%, p<0.05). This finding was similar for husbands in dual military and husband-only households (0% vs 2%, p<0.01).

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.

Financial Support: Supported by R01-DA034072.

ASSOCIATIONS BETWEEN INTERVENTION INTENSITY AND UNDERDRINKING OUTCOMES: A METHODOLOGICAL APPROACH FROM THE KANSAS SPF-SIG.

Kaston D Anderson-Carpenter, Gabriel Andreuccetti, Vilma Leyton, Ivan Dieb Miziara, Nikolas P Lemos, Daniel Romero Munoz, Cheryl J Cherpitel, Heralcito Barbara Carvalho; University of Sao Paulo Medical School, Sao Paulo, Brazil; Office of Chief Medical Examiner from San Francisco; LIM-40-HCFMUSP.

Aims: This study examined the association between the intensity of coalition-mediated 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.

DIMINISHED ALTERNATIVE REINFORCEMENT MEDIATES SOCIOECONOMIC DISPARITIES IN ADOLESCENT SUBSTANCE USE: A LONGITUDINAL STUDY.

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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, mediational 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 at the twelve-month follow up at Wave 3. Mediation was tested using the products of coefficients method. Alternative reinforcers and substance use from the preceding wave as well as 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 = -.0007, 95% CI is [-.0177, -.0001]). 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.

INTRODUCING A NEW RESEARCH METHOD FOR EVALUATING ALCOHOL AND OTHER DRUG USE AMONG FATALLY INJURED VICTIMS IN LATIN AMERICA.

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Aims: We report preliminary results from a new proposed research method for collection and analysis of toxicological results in combination with injury context data derived from fatally injured victims to be introduced in the Latin American region for surveillance purposes.

Methods: Based on probability samples with an equal representation of each shift for each day of the week, 93 fatally injured victims necropsied in the city of Sao Paulo were randomly selected. Post-mortem blood samples were obtained from each victim and injury context information was extracted from police records. Blood alcohol concentration was measured, and specimens were analyzed for a range of prescribed and illicit drugs.

Results: The majority of victims (62.4%) studied were under the influence of alcohol and/or other drugs at time of death. Alcohol was the most prevalent substance found (33.3%), followed by cocaine (24.7%), cannabis (19.4%) and central nervous system depressants (19.4%). The highest proportion of alcohol-/50% and drug-positive (59.1%) victims was found among traffic-related casualties, while suicide cases presented the lowest proportion of victims positive for alcohol (7.7%) but a high prevalence of drug positivity (53.9%). Furthermore, victims who had at least one previous criminal conviction were significantly more likely to have used any illicit drugs (cannabis and illegal stimulants) before the event compared to those who did not have a criminal background.

Conclusions: Our findings point to a critical situation regarding the use of both licit and illicit drugs associated with injury occurrence in the largest urban center in Latin America, with almost two in every three fatal victims under the influence of drugs.

Financial Support: Sao Paulo Research Foundation (FAPESP) (#2015/01235-3); Office of Chief Medical Examiner from San Francisco; LIM-40-HCFMUSP.
VALIDITY OF THE MODIFIED CIGARETTE EVALUATION QUESTIONNAIRE IN PREDICTING THE REINFORCING EFFECTS OF CIGARETTES THAT VARY IN NICKEL CONTENT UNDER DOUBLE-BLIND CONDITIONS.

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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 each of 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 < .01; 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

21

COMPARISON OF THE EFFECTS OF PSYCHOSTIMULANT DRUGS OF ABUSE ON BRAIN ENDOTHELIAL BARRIER INTEGRITY AND EXTRACELLULAR MICROVESICLE PRODUCTION.

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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 psychotimulant 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.

Financial Support: R01 NS086570-01(SHR), Shriners Hospitals for Children 85110-PHI-14(SHR), R01 DA039139(SMR), P30 DA013429(SMR), T32 DA007237(AMA)

22

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

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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 US$. 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 peer 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.

23

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

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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
RATES AND CORRELATES OF SPECIALIZED PAIN CLINIC USE NATIONALLY IN THE VETERANS HEALTH ADMINISTRATION.
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Aims: Chronic pain management has become a growing focus of attention, in part due to concern over excessive use of opioids for chronic non-cancer pain. In the Veterans Health Administration (VHA), specialized pain clinics have been established to address the needs of patients with challenging pain issues. The current study sought to identify characteristics of such patients in a national sample of VHA service users in fiscal year 2012.

Methods: Bi-variate analyses were used to compare patients diagnosed with pain who visited a specialty pain clinic with those who did not on sociodemographic characteristics, medical/psychiatric diagnoses, health service use, and psychotropic use. Logistic regression was used to identify variables that independently discerned pain clinic users from non-users.

Results: Altogether, 122,240 of 2,025,765 pain patients (5.79%) attended specialty pain clinics. Results indicated that pain clinic users had higher rates of osteoporosis, herpetic, and fibromyalgia pain, as well as major depression and personality disorders. Further, a diagnosis of fibromyalgia was the strongest independent correlate of pain clinic attendance, along with the number of medical-surgical clinic visits. Those attending a pain clinic also received more opioid prescriptions (10.7, vs. 6.7 for those not utilizing pain clinic services), but not psychotropic medications.

Conclusions: Patients visiting specialty pain clinics have more difficult-to-treat pain conditions and co-morbid psychiatric disorders that are independent of major medical issues, use more outpatient services, and receive more opioid prescriptions. However, these patients do not differ from other patients diagnosed with pain on other factors. These data encourage the inclusion of mental health care in the treatment of chronic pain.

Financial Support: This research was conducted during C. A. Arout’s postdoctoral fellowship (NIDA T32 DA007238; PI: I.L. Petrakis), and is supported by MIRECC.

ALCOHOL, CANNABIS, AND CIGARETTE USE AND NON-MEDICAL PRESCRIPTION DRUG USE STAGES.
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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 Wave 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 reinitiation 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 STU 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 13.6% increased odds of OU reinitiation. For low-risk cannabis/cigarette use, high-risk cannabis/cigarette use compared to low-risk had 12.68% increased odds of STU persistence.

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

Financial Support: No financial support was provided for this study.

ENERGY DRINK USE TRAJECTORIES PREDICT SUBSTANCE USE OUTCOMES.
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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.

Financial Support: NIH R01DA014845, R03DA057936

CANNABINOID RECEPTOR GENE POLYMORPHISM (RS2023239) ASSOCIATED WITH DEMAND FOR MARIJUANA.
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Aims: Demand for marijuana, or reinforcing value, has been associated with marijuana use and symptoms of cannabis dependence. Similarly, polymorphisms in the CNR1 (Cannabinoid Receptor 1) gene have been associated with cannabis dependence, however, the relationship between CNR1 variation and marijuana demand has not yet been investigated. Genetic influences may significantly contribute to variability in intermediate phenotypes related to cannabis use disorder, such as heightened demand for marijuana. This study explored associations between a CNR1 polymorphism and key indices of marijuana demand.

Methods: Participants were frequent marijuana users (n=99, 37% female, 15% cannabis dependent) who provided DNA and completed self-report measures, including a Marijuana Purchase Task, during a baseline laboratory session. Prospective genotyping was utilized to balance the sample by rs2023239 SNP C carriers: T carriers: (C/T) heterozygotes: (T/T) homozygotes: (Cn=52; Tn=47; T/T n=47).

Results: CNR1 rs2023239 SNP was significantly associated with (r= .05-.07) key indices of marijuana demand (intensity, Qmean, and elasticity; ps < .05), controlling for marijuana use frequency, cannabis dependence, and income.

Conclusions: These findings support the role of variation in the CNR1 gene in increasing the reinforcing value of marijuana, suggesting that genetic factors may contribute to greater and more persistent motivation to use marijuana.

Financial Support: K01DA039311 (Aston) and R03DA27484 (Merrick, Knopik)
CONTRIBUTION OF E-LEARNING TO ADDICTION TEACHING: A SUCCESSFUL EXPERIENCE AT THE UNIVERSITY OF BORDEAUX, FRANCE.

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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 success.

Methods: Program description: This course is intended for students of medicine, psychiatry, neurosciences, and midwifery. 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 then 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 make addiction teaching more accessible and valid.

Financial Support: University of Bordeaux

PSYCHOMETRIC ASSESSMENT OF THE MARIJUANA ADOLESCENT PROBLEM INVENTORY.

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Aims: Adolescent cannabis use has multiple consequences including academic, health, and psychiatric problems. The Marijuana Adolescent Problem Inventory (MAPI) is a 23-item scale developed to assess cannabis use problems, adapted from the Rutgers Alcohol Problem Index (RAPI). This study assessed psychometrics of the MAPI with adolescents enrolled in three clinical trials evaluating treatment for cannabis use disorder.

Methods: Analyses were performed on 275 adolescents (mean age=15.9, 84.4% male, 57.5% white) who were randomized into treatment. The sample was randomly divided in half to assess MAPI factor structure. Principal component analysis (PCA) was performed on one half, and confirmatory factor analysis (CFA) was performed on the other. Convergent and predictive validity analyses were performed using the full sample at intake, end of treatment, and 6 months post-treatment.

Results: PCA (n=138) results suggested a 1-component solution, with loadings ranging from .32 to .77 (mean=.59). CFA (n=157), with 23 items loading on 1 factor, had acceptable fit statistics (CFI=.75, RMSEA=.06). With the full sample, internal consistency reliability was .90, and split-half reliability was .87. MAPI scores at intake, end of treatment, and 6 months were all significantly correlated (p<.05). MAPI intake score was significantly correlated with diagnosis of cannabis dependence and measures for internalizing and externalizing psychopathology. At each assessment, MAPI scores were significantly correlated with cannabis use frequency. MAPI score at end of treatment significantly predicted cannabis use frequency at the 6 month follow-up.

Conclusions: Psychometric analyses suggest that the MAPI is a reliable and valid measure of cannabis use problems in adolescents. The MAPI has strong associations with frequency of cannabis use and has potential utility as a brief, self-administered screening tool for assessing cannabis use severity, with scores above 8 strongly predicting dependence.

Financial Support: Research supported by T32DA057202 and R01DA015186.

31 ESTRADIOL INCREASES CHOICE OF COCAINE OVER FOOD IN MALE RATS: THE EFFECT OF ESTRADIOL ON COCAINE CHOICE GENERALIZES TO BOTH SEXES.

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Aims: Female rodents display greater cocaine intake over food relative to males in a choice self-administration procedure. We have previously shown that ovariectomy reduces cocaine preference while exogenous estradiol rescues preference in females. However, the effects of estradiol on male cocaine behavior are less studied. Therefore, we sought to characterize the effects of estradiol in males, on choice behavior and on motivation for both cocaine and food in single-reinforcer progressive ratio (FR) tests.

Methods: Male castrated rats were treated daily with estradiol benzoate (EB) (5ug/0.1 S.C., n=23) or vehicle (peanut oil, n=23) throughout choice testing (3 grain food pellets, 1 mg/kg/infusion I.V. cocaine) and single-reinforcer food and cocaine PR testing. A subset of rats were tested in a modified choice procedure, in which the cost of the reinforcers were manipulated by escalating the fixed-ratio (FR) requirement of the preferred reinforcer while maintaining the FR requirement of the non-preferred reinforcer constant.

Results: EB increased cocaine intake in the choice test. EB subjects also demonstrated greater cocaine PR breakpoints, but had similar food PR breakpoints to controls. However, after a switch from home-cage food restriction to ad libitum feeding, EB subjects increased food PR breakpoints while food PR breakpoints dropped in the control group. In the cost escalation test, cocaine preferring rats defended their cocaine intake to a greater degree than food preferring rats. There was no effect of EB on this measure.

Conclusions: These results indicate that the effects of estradiol on choice behavior are not sex-specific, estradiol increases the allocation of behavior towards cocaine in both sexes. Considering this concordant effect on behavior, the underlying neurobiology of choice behavior may be similarly affected by estradiol in both sexes.

Financial Support: NIDA (R01DA027525)

32 URINE DRUG TESTING FOR PATIENTS ON BUPRENORPHINE: INFORMATIVE BEYOND SELF-REPORTED COCAINE AND OPIOID USE?

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Aims: Urine drug testing (UDT) is recommended to monitor patients on opioid agonist treatment (OAT) with buprenorphine/naloxone (bpn/nlx). Whether UDT data contributes clinically useful information beyond patient self-report of illicit drug use has received minimal attention. The aim of this study is to describe patient self-report of cocaine and opioid use compared to UDT results in a primary care setting where OAT with bpn/nlx is provided.

Methods: We conducted a retrospective review of electronic medical records of patients enrolled in the Office Based Opioid Treatment (OBOT) program at Boston Medical Center between January 2011-April 2013. Typically, patients give a urine sample prior to their clinical visit and are asked about cocaine and opioid use. We compared patient self-report to UDT results in a primary care setting where OAT with bpn/nlx is provided.

Methods: We conducted a retrospective review of electronic medical records of patients enrolled in the Office Based Opioid Treatment (OBOT) program at Boston Medical Center between January 2011-April 2013. Typically, patients give a urine sample prior to their clinical visit and are asked about cocaine and opioid use. We compared patient self-report to UDT results.

Results: Of UDT results (n=2702) from 193 patients, 4% (116/2702) were positive for cocaine and 9% (254/2702) for opioids. Patients disclosed cocaine use at 23% of visits (277/1160) with a cocaine positive UDT. Patients disclosed opioid use at 47% of visits (113/248) with an opioid positive UDT (after excluding the 2% (6/254)) of visits when the patient had an opioid prescription within 30 days.

Conclusions: Primary care patients treated with bpn/nlx had cocaine and opioid positive UDTs less than 10% of the time, but disclosed use less than half of the time. Further study of drug testing protocols is warranted to determine the optimal use of both urine drug testing and self-report of substance use, as well as, how best to incorporate them into the chronic care of patients with opioid use disorders in primary care.

Financial Support: ASAM-Millennium Research Institute Research Fellowship Award
LONGITUDINAL HEALTH SERVICE PATTERNS OF PATIENTS WITH ALCOHOL, CANNABIS, AND OPIOD USE DISORDERS. Amber I. Balasuriya, Derek Satre, Andrea H Kline-Simon, Kelly C Young-Wolf, Constance Weisner, Cynthia Campbell; 2Psychiatry, University of California, San Francisco, San Francisco, 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 disorder (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 ps < .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 ps < .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 ps < .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.

Financial Support: Sidney R. Garfield Memorial Fund; T32DA007250.

SMOKING CESSATION ASSISTANCE PRE- AND POST-IMPLEMENTATION OF STAGE 1 MEANINGFUL USE. Steffani R Bailey, Megan J Hoopes, Jon Puro, Jennifer E DeVoe, Timothy Burdick, Deborah J Cohen, John Heinrzwtf, Miguel Marino, Jessica Irvine, Dennis McCarty, Stephen P Fortmann; 2CB 669 PHPM, Oregon Health & Science Univ, Portland, OR, 2Family Medicine, Oregon Health & Science University, Portland, OR, 2Research, OCHIN, Portland, OR, 2Family Medicine, OHSU, Portland, OR, 2Center 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 in place before January 2008. Analysis 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 Baladi, Lawrence P Carter, Jed Black, Jack Bergman; 2McLean Hospital/Harvard Medical School, Belmont, MA, 2Jazz Pharmaceuticals, Palo Alto, CA, 2University 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 in rats, and fully substituted for cocaine in both rats (ED50 = 37.4 mg/kg) and monkeys (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 different from that of most other stimulants that may differ from those of the traditional stimulants.

Financial Support: Sponsored by Jazz Pharmaceuticals.

LONGITUDINAL EXAMINATION OF THE IMPACT OF CHILDHOOD EMOTIONAL ABUSE ON CANNABIS USE TRAJECTORIES AMONG COMMUNITY YOUTH. Anne Nicole Banducci, J W Felton, Marcel O Bonn-Miller, C W Lejuez, L MacPherson; VA 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 (M CU baseline=13, SD=0.5) self-reported substance use (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=.00—.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.

Financial Support: R01DA018647, PI: Lejuez.
BASELINE PREDICTORS OF OUTPATIENT INDUCTION ONTO EXTENDED-RELEASE NALTREXONE.

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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 participants (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=0.001) and RX users (p=0.002) were more likely to be induced onto XR-NTX (p < .001). Participants with a baseline cannabis toxilogicaly were more likely to receive the 1st injection (p=0.006). 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 likelihood of outpatient induction, contrasting findings of inpatient predictors.

Financial Support: NIDA (DA 010746-09A1)

39

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

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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 performed on fMRI data. Self-report measures and functional connectivity of the DMN were compared between placebo and psilocybin groups.

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 to be in the top 10 most meaningful experiences of their life. Participants who received psilocybin also showed lower functional connectivity between hippocampal and posterior DMN regions and greater functional connectivity among DMN regions than those who received placebo.

Conclusions: Participants attributed substantial meaning to their high-dose psilocybin experience, and showed changes in 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.

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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 photographs 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’ of 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 PRELIMIC GLUTAMATERGIC SIGNALING IN FREELY-MOVING RATS.

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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 food within subject.

Results: The average amplitude of prefrontal 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 prefrontal cortex.

Financial Support: DA033573
MULTIPLE SOURCES OF PAYMENT AND RISKY OPIOID THERAPY AMONG MILITARY/VA.

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Aims: 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 intra-system 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 with 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 ≥ 100: 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 and Cochran 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.

Financial Support: VA HSR&D: CIN 13-047, CDA 08-276, PEC-244 and Prescription Behavior Surveillance System

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

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Aims: Persons with substance use disorders are at higher risk for HIV and HCV infection. Because many substance use disorder (SUD) treatment programs do not offer HIV or HCV testing to their clients. Inadequate 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 HIV/HC testing, 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, R01DA034634, P30DA040500, R34DA038530.

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

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Aims: Behavioral activation (BA) treatment for substance use and depression is designed to improve outcomes via enhancement in environmental reward. To examine neurologic response to financial 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) ANOVAexamined neural activation profiles unique to the BID.

Results: During the BID RA phase, OU displayed activations in the ACC and left prefrontal 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 frontolateral 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
Conclusions: service utilization. not predict barriers to care, and PTSD diagnosis did not predict barriers or MH support was associated with less service utilization (p<.05). Social support did more depressive symptoms was associated with more barriers (<.05) was associated with fewer perceived barriers to care, and scores (p<.01), and perceived social support (p<.01). A greater number of mari-

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 reinstate 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 (βs = .12-.30; ps < .05), but did not predict abstinence-induced changes in positive affect states or motivation to reinstate 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.


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

Madeline Baldwin Benz1, Brian Borsari1,2, Jane Metrik1,2, 1Center for Alcohol and Addiction Studies, Brown University, Providence, RI, 2San Francisco VAMC, San Francisco, CA, 3Providence VAMC, Providence, RI

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/OEF/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 (DDRI), perceived barriers to treatment (Hoge Scale), and MH service utilization in a sample of OIF/OEF/OND Veterans [N=180, mean age=32.6 (SD=9.5); 94% male].

Results: Sixty five % of the sample had a diagnosed MH disorder, but only 37% were accessing MH services. Significant differences existed between those veterans accessing MH services and those who were not on: MPS (p<.01), CES-D scores (p<.01), and perceived social support (p<.01). A greater number of marijuana problems (p<.05) was associated with fewer perceived barriers to care, and more depressive symptoms was associated with more barriers (p<.05). More marijuana problems (p<.05) and more depressive symptoms (p<.05) associated with greater use of VA/non-VA treatment (p<.01), while more social support was associated with less service utilization (p<.05). Social support did not predict barriers to care, and PTSD diagnosis did not predict barriers or MH service utilization.

Conclusions: Findings suggest that increasing reintegration resources and supports to Veterans post-deployment may help reduce MH symptomatology and decrease service utilization, ultimately saving costs at the VA. Results have implications for addressing barriers to engagement in MH services, especially with veterans reporting depressive symptoms.

Financial Support: R01DA036754

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

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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 level). If pregnant women engage in compensatory smoking, they may expose themselves and their offspring to the same level of toxicants despite reporting reductions in CPD. To our knowledge, no studies have examined whether pregnant smokers engage in compensatory smoking.

Methods: Pregnant and non-pregnant female smokers provided samples for biochemical analyses of tobacco use and answered questions about their medical history and tobacco use at the screening session. Pregnant smokers reported reducing their smoking by 55% (25.3 to 11.3 CPD) after learning of pregnancy. All participants had to present to the experimental session with a >50% reduction in urges to smoke, nicotine withdrawal, and several negative affect states (scores while abstinent vs. non-abstinent) were analyzed for each outcome variable.

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 39% 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 POOE.

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

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

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

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 POOEs. 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 39% 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 POOE.

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.

Madeline Baldwin Benz1, Brian Borsari1,2, Jane Metrik1,2, 1Center for Alcohol and Addiction Studies, Brown University, Providence, RI, 2San Francisco VAMC, San Francisco, CA, 3Providence VAMC, Providence, RI

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/OEF/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 (DDRI), perceived barriers to treatment (Hoge Scale), and MH service utilization in a sample of OIF/OEF/OND Veterans [N=180, mean age=32.6 (SD=9.5); 94% male].

Results: Sixty five % of the sample had a diagnosed MH disorder, but only 37% were accessing MH services. Significant differences existed between those veterans accessing MH services and those who were not on: MPS (p<.01), CES-D scores (p<.01), and perceived social support (p<.01). A greater number of marijuana problems (p<.05) was associated with fewer perceived barriers to care, and more depressive symptoms was associated with more barriers (p<.05). More marijuana problems (p<.05) and more depressive symptoms (p<.05) associated with greater use of VA/non-VA treatment (p<.01), while more social support was associated with less service utilization (p<.05). Social support did not predict barriers to care, and PTSD diagnosis did not predict barriers or MH service utilization.

Conclusions: Findings suggest that increasing reintegration resources and supports to Veterans post-deployment may help reduce MH symptomatology and decrease service utilization, ultimately saving costs at the VA. Results have implications for addressing barriers to engagement in MH services, especially with veterans reporting depressive symptoms.

Financial Support: R01DA0363425 (Metrik/Borsari)
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, what seems to be mediated by METH-induced nigrostriatal and mesolimbic dopaminergic (DA) overactivity. 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, 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.

Financial Support: USPHS grants DA010344, DA031246, and ODPS1OD11152, AFIP, CNPq.

THE SOCIAL INTERACTOME OF RECOVERY: NETWORK TOPOLOGY INFLUENCES SOCIAL MEDIA ENGAGEMENT.

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Aims: The aim of the current study, part of a longer exploration of social network in substance use 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 redundant connections facilitated more social network activity among participants. These findings may have implications for recovery maintenance and adoption of health behavior.

Financial Support: R01DA039456

MEASURING CIRCADIAN ENTRAINMENT DURING OUTPATIENT OPIOID AGONIST MAINTENANCE.

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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 outpatient patients. 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 (Daymetse) 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 Dayimeter 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, 49) = 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.

Financial Support: NIDA IRP, NIDA U01DA03282; NIA R01AG034157
THE ROLE OF GENETIC POLYMORPHISMS ON PATIENT RESPONSE TO OPIOID USE DISORDER THERAPY WITH NALTREXONE AND GUANIFACINE.

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Aims: The study was designed to evaluate the moderation of opioid receptor and dopamine system 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+P); placebo + guanfacine (NP+G); and double placebo (NP+GP). All participants provided a blood sample for genetic analysis of polymorphisms in the mu- (OPRM1) and kappa-opioid (OPRK1) receptors, dopamine type 2 (DRD2) and 4 (DRD4) receptors, and dopamine-beta-hydroxylase (DBH) genes.

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 C957T (rs6277) C allele (p=0.05; HR(60.34-95.39); as well as a combination of genotypes: DRD2 C957T (TT) + OPRM1 (rs1074267) (CC), p=0.025; DRD2 -141C (II) + OPRM1 (rs510769) (AA), p=0.065; DBH 1021C/T (rs1611115) (CC) + OPRM1 (rs1074267) (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.

Financial Support: R01DA018863-04

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

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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.

Methods: 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 in recovery, 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 5R21DA32670

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

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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 24-item 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) = 40.49, 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.

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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 educational control 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, 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=.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<.05) in self-efficacy between baseline and post-intervention (mean increase of 2.52 in intervention and 2.52 in control, no difference between groups).

Conclusions: This study establishes the feasibility and acceptability of this intervention as well as a comparison condition. Future research will examine behavioral outcomes and health status after treatment.

Financial Support: NIH R34 DA035531
57

PROPERTIES OF THE MARIJUANA MOTIVES QUESTIONNAIRE AMONG MEDICAL CANNABIS PATIENTS.

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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=1,191). 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 (Availabilty); 0.82 (Sleep); .84 (Relative Low Risk); 0.85 (Social Anxiety); 0.84 (Boredom); 0.88 (Altered Perception); 0.89 (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

58

EFFECT OF A DOPAMINE D3 RECEPTOR PARTIAL AGONIST ON COCAINE-INDUCED LOCOMOTION AND SELF-ADMINISTRATION.

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Aims: Compounds selective for dopamine D3 receptors (D3R) may have therapeutic 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

59

ETHICAL ISSUES IN USING TEXT MESSAGE ASSESSMENTS FOR SENSITIVE BEHAVIORS: A PROSPECTIVE STUDY OF YOUNG ADULTS’ DRUG USE AND RISKY SEXUAL BEHAVIORS.

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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=p=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 unintended disclosure of the TMc: 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 TMc: 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

60

SEXUAL VIOLENCE AMONG PATIENTS WITH SUBSTANCE USE DISORDERS IN FQHCS.

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

Methods: Adult women in the waiting rooms of four FQHCs 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 estimate prevalence of SV among women in FQHCS 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%) reportedSV 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 function because of their physical health (OR 0.57)

Conclusions: These data suggest that 49% of patients with SUDs in FQHCs experience SV and 27% may suffer repetitive SV. These estimated levels of SV are far greater than estimates in the general population. Such trauma may be emotionally debilitating in other ways as well. Women given general underreporting of SV, providers caring for patients with SUDs in FQHCs should remain vigilant in regards to SV history and consider 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.

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Aims: The FDA’s Botanical Drug Development (2015) describes the pathway for a drug of botanical origin 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 FD&CAct. 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 street drug 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 psilocybin and psilocyn (Sch. I hallucinogen), cocaine (Sch. II stimulant), cathinone (Sch. I stimulant), and caffeine (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

CANNABIS USE DATA COLLECTED VIA SOCIAL MEDIA: A METHODOLOGICAL COMPARISON.

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Aims: Social media provides an expedient and low cost method for substance use data collection, yet evaluation of its validity and generalizability is lacking. This study compared cannabis use data collected via Facebook (FB) with data from the National Survey on Drug Use and Health (NSDUH).

Methods: Cannabis use data from a sample (N=2932) of lifetime cannabis users who responded to FB ads to take a cannabis use survey were compared with 2013 NSDUH data from lifetime cannabis users (N=22177). After stratifying by age group (18-25) and (26+) to account for oversampling, past month cannabis use, frequency of use, age of cannabis initiation, lifetime tobacco use, race, gender, and education were compared.

Results: Among lifetime cannabis users, past month use was more common among FB than NSDUH respondents (18-25: 88% vs 35%; 26+: 76% vs 14%), and age of initiation was younger (18-25: 15.0 vs 16.2; 26+: 16.1 vs 17.9). Among past month users, daily use was more common among FB respondents (18-25: 49% vs 21%; 26+: 48% vs 23%), and age of initiation was younger in the 18-25 group (15.0 vs 15.4). Lifetime tobacco use was less common among FB respondents (18-25: 79% vs 87%; 26+: 84% vs 94%), African Americans were under represented (18-25: 7% vs 16%; 26+: 8% vs 17%), and males were over-represented (18-25: 85% vs 59%; 26+: 83% vs 60%) in the FB data. FB users in the 18-25 group were less educated. (68% vs 56%, HS degree or lower).

Conclusions: The FB survey yielded a sample of heavier cannabis users with different demographics than the NSDUH. The FB sampling strategy might account for the cannabis use discrepancies. FB has targeting mechanisms that can yield samples with specific demographic patterns. Altering target parameters to match the demographics of comparator surveys such as the NSDUH might provide a better test of the validity of social media survey methods.

Financial Support: T32DA0537202

SYRINGE-SHARING AMONG A PROSPECTIVE COHORT OF STREET-INVOLVED YOUTH IN VANCOUVER, CANADA: IMPLICATIONS FOR STRUCTURAL INTERVENTIONS.

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Aims: Syringe sharing is a risky practice that is associated with the transmission of hepatitis C and HIV. This study examines the prevalence and correlates of syringe sharing within a prospective cohort of street-involved youth in a Canadian city with well-established harm reduction programs.

Methods: From May 2017 to May 2019, 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 needle(s) (AOR = 1.52, 95% CI: 1.14-2.04), attempting and being unable to access addiction treatment (AOR = 1.71, 95% CI: 1.05-2.15), sex work (AOR = 1.67, 95% CI: 1.17-2.38), and bingeing 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.

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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 (P<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.

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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 (2013=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 use cannabis, marijuana or hash for medical purposes. Rates of treatment-seeking problem gamblers were examined using a structured and standardized interview (PSG; Gambling Attitudes and Beliefs Survey; ADHD: Wender Utah Rating Scale (childhood), Adult ADHD self-report scale; comorbidities: Mini International Neuropsychiatric Interview).

Conclusions: 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. Bivariate statistics were used to investigate differences on demographic and other factors.

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

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Aims: 1) Examining the frequency of childhood ADHD and ADHD persistence 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 by time interaction trend for alcohol use (χ²=9.25, p=0.055), where SBIRT+ participants reduced their use more than SBIRT participants. 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.

Results: Participants in both conditions reported significant reductions in alcohol use (χ²=77.08, p<.0001), illicit drug use (χ²=77.08, p<.0001), and primary problem substance use (χ²=132.38, p<.0001) from baseline. There was also a significant interaction effect for primary substance use (χ²=9.68, p=0.046), where SBIRT+ participants reduced their use more than SBIRT participants at 12 months. There were no differences between groups in illicit drug use. Rates of treatment entry were low (52.4%), 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.

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: In both conditions, participants reported significant reductions in alcohol use (χ²=77.08, p<.0001), illicit drug use (χ²=77.08, p<.0001), and primary problem substance use (χ²=132.38, p<.0001) from baseline. There was a group by time interaction trend for alcohol use (χ²=9.25, p=0.055), where SBIRT+ participants reduced their drinking more than SBIRT participants at 12 months. There were no differences between groups in illicit drug use. Rates of treatment entry were low (52.4%), 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.

Primary Care: PA DOH SAP 4100005578

Expanded Brief Intervention for Substance Use in Primary Care.
PSYCHOLOGICAL INTERVENTION WITH WORKING MEMORY TRAINING INCREASES BASAL GANGLIA VOLUME: A VBM STUDY OF INPATIENT TREATMENT FOR METHAMPHETAMINE DEPENDENCE.
Samantha Jane Brown1, Jane Stein, Lara Van Nunen; Psychiatry and Mental Health, University of Cape Town, Cape Town, South Africa
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 DA049492- US PI: Professor Steve Shoptaw; South African PI: Dr Samantha Brooks

TRENDS IN MARIJUANA USE AMONG REPRODUCTIVE AGE WOMEN: 2002-2013.
Qianna Brown1, Dvora Shmulewitz2, Silvia S Martins1, Deborah Hasin1,2; 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, and 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-<p<0.001). 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 effort to prevent poor maternal and child health outcomes among pregnant women and those 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.
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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 teledmedicine. All care is performed onsite. During weekly teledmedicine 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 direct-ly observed therapy. The teledmedicine 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: Teledmedicine-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 Bughee1, Kimberly M Caldeira2, K E O Grady3, Kathryn B Vincent1, Amelia M Aria4; 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 (cohabitants, 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 (37%, 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.

Financial Support: NIH R01DA014845, Maryland DHMH BHA


Aims: Oversead 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 naloxone and to specify needs for evaluation research.

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," "opiate 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.

Financial Support: No financial disclosures are reported by the authors of this paper.
CHARACTERISTICS OF PAIN PATIENTS RELATED TO RISK OF ABERRANT OPIOID MEDICATION BEHAVIORS. 
Stephen F. Butler, Ryan A Black, Theresa A Cassidy, Kevin L Zachareff, Simon H Budnitz; Inflexion, Inc., Newton, MA

Aims: Examine characteristics of patients evaluated for pain treatment related to scores on the SOAP, 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 SOAP scores against age, gender, race, body area(s) affected by pain, validated measures of functioning and 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/24 arm, (41%), 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 SOAP, of which 25% were positive for opioid risk. Regression analysis revealed a significant R² = .29 (p < .001) demonstrating higher SOAP scores associated with greater psychiatric problems (standardized beta = .52), giving higher “least-pain” rating (beta = .12), and male gender (beta = -.08). 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

COMMUTING DISTANCE TO MIAMI'S CLUB SCENE AND BINGE SUBSTANCE USE AND RELATED PROBLEMS AMONG YOUNG ADULTS.
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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 recent (past 90 days) and regular use of club drugs (cocaïne, ecstasy, LSD, GHB, ketamine, or methamphetamine) and prescription drug misuse. Hierarchical 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 DA019048 from the National Institute on Drug Abuse.

MARIJUANA USE PROBLEMS PREDICT POST-COLLEGE EMPLOYMENT OUTCOMES. 
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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 regular use of club drugs (cocaine, ecstasy, LSD, GHB, ketamine, or methamphetamine) and prescription drug misuse. These findings and elucidate the underlying mechanisms. Employment outcomes might be an important consideration in legislative decisions affecting access to and availability of marijuana.

Financial Support: NIH HDA014845

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&C) 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
RELEASE FROM DRINKING-AGE RESTRICTIONS IS ASSOCIATED WITH INCREASES IN ALCOHOL-RELATED MOTOR VEHICLE COLLISIONS AMONG YOUNG DRIVERS IN CANADA.

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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 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 = 0.04)) 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.

Financial Support: Support from a CIHR research grant MOP 13 3699.

CLINICIAN INVOLVEMENT WITH INTERNET-DELIVERED TREATMENT AND ASSOCIATION TO OUTCOMES.

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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=6.97, 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.

Financial Support: NIDA UG1DA013035

LONGITUDINAL PATTERNS OF E-CIGARETTE AND CIGARETTE DUAL USE IN ADOLESCENTS.

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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, M̄age 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.

Financial Support: P50DA009241, P50DA036151, K12DA035012

USE OF A PRESCRIPTION OPIOID REGISTRY TO EXAMINE OPIOID MISUSE AND OVERDOSE.

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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 comorbidity ICD-9 diagnoses, and overdose ICD-9 diagnoses from the electronic health record (EHR). Cox Hazard models were used to examine misuse and opioid overdose, with time-invariant socio-demographic variables and time-varying psychiatric diagnoses and pharmacological characteristics over the follow-up duration time period up to 2014.

Results: Approximately 18% of adult patients had at least one opioid prescription fill in 2011 (n=455,693). Among those patients, 25% were long-term users and 76% of the long term users used sedative/hypnotics. Approximately 3% of the sample was identified with misuse. The youngest age had the highest risk of being identified with misuse (HR: 3.76 p<.05). A chronic condition (HR: 1.16, p<.05) a mental health comorbidity (HR: 1.76, p<.05), other substance use (HR: 3.52, p<.05), and high dosage (HR: 39.31, p<.05) were all related to higher risk of misuse. Sedative hypnotics (HR: 2.54, p<.05), high daily dose (HR: 4.42 p<.05), younger age, and living in deprived neighborhoods (HR: 1.28, p<.05) were associated with higher likelihood of opioid overdose.

Conclusions: This study established a registry that can be used to address important questions about prescription opioid misuse and overdose using EHR data. Important socio-demographic and clinical characteristics were identified that can be used in identification and management of high risk patients.

Financial Support: NIDA contract: HHSN271201400028C
DEFINING PROBLEMATIC PHARMACEUTICAL OPIOID USE AMONG PEOPLE PRESCRIBED OPIOIDS FOR CHRONIC NON-CANCER PAIN: DIFFERENT MEASURES, SAME PATIENTS? Gabrielle Cannella1, Steven Merkel1,2, Roshanak Razmpour1, Christopher S Tallarida3, Scott Rawls2,3, Servio Ramirez1,2,4; 1Pathology, TUSM, Philadelphia, PA, 2Shiriner’s, Philadelphia, PA, 3TUSM, Philadelphia, PA, 4Milton’s, Philadelphia, PA

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.

Participants meeting criteria for addiction were only likely to be older and have less risk factors such as, engagement in non-adherent behaviours, psychological distress and a history of substance use problems.

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.

Financial Support: This study received funding from the Australian National Health and Medical Research Council (NHMRC, #1022522).

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 (AHCGFAA) in Guadalajara, Mexico.

Results: Our program is a combined medical & CBT program with part-time doctors, nurses and psychologists that opened in 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 addictions 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.

Mild TBI increases susceptibility to rewarding effects of a subthreshold dose of cocaine in mice.

Lee Anne Cannella1, Steven Merkel1,2, Roshanak Razmpour1, Christopher S Tallarida3, Scott Rawls2,3, Servio Ramirez1,2,4; 1Pathology, TUSM, Philadelphia, PA, 2Shiriner’s, Philadelphia, PA, 3TUSM, Philadelphia, PA, 4Milton’s, 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 for a subthreshold dose of 5 mg/kg cocaine. The EFA indicated three factors with eigenvalues >1. The 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-R’s factor structure. Logistic regression examined the relationship between baseline motivation and drug use 60 days, 3 months and 6 months post baseline.

Conclusions: Results suggest that baseline intrinsic and extrinsic motivation can be used to predict treatment outcome in a sample of HIV+ drug users. University of New York, NY, 3Psychiatry, 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 used 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-R’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 ≥.50. The revised TMQ-R was administered to 145 HIV+ drug users entering treatment to reduce drug use. Exploratory factor analysis (EFA) was used to determine the TMQ-R’s factor structure. Logistic regression examined the relationship between baseline motivation and drug use 60 days, 3 months and 6 months post baseline.

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
COMPARISON OF ANOMALOUS EXPERIENCES AFTER INGESTING PSILOCYBIN MUSHROOMS IN RESEARCH AND NON-RESEARCH SETTINGS.

Theresa M Carlini1, Matthew W Johnson, Roland R Griffiths; Johns Hopkins University, Baltimore, MD

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 incidence of other anomalous experiences associated with psilocybin when ingested in both research and non-research settings.

Methods: Three data sets were examined: 1. internet-based survey of mysti-cal-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 (30 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 set-tings, 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

89 IMPULSIVITY, SENSATION SEEKING AND SUBSTANCE USE AMONG ADOLESCENTS: A LONGITUDINAL RESEARCH.

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Aims: Previous literature has demonstrated the relationship between impulsivity, sensation seeking and adolescent substance use. However, studies that determine the direction of such influence are scarce. The aim of this study was to analyze the prospective association between impulsivity and sensation seeking (measured before participants started using drugs) and their consumption after two years.

Methods: A total of 352 adolescents (M=12.89 years) from 15 secondary schools (Northern Spain) were surveyed to assess their levels of impulsivity and sensation seeking, using the Barrat Impulsivity Scale 11-A (BIS-11-A) and the two subscales of ImpSS (Impulsive Sensation Seeking Scale), namely Impulsivity (Imp) and Sensation Seeking (SS). After two years participants were re-assessed to analyze their substance use. Comparisons of scores between participants were performed using Student’s t tests. Logistic regression analyses explored the prospective effect of such variables on drug use.

Results: There were significantly higher scores in the SS subscale (p<0.05) for those who consumed alcohol, tobacco and cannabis, as well as higher scores in BIS-11-A for those who used tobacco and cannabis (p<0.05). Imp subscale scores were significant predictors (p<0.05; CI 95%) of smoking (o.r.: 0.681) and canna-bis use (o.r.: 0.595). SS subscale scores predicted alcohol (o.r.: 1.118), tobacco (o.r.: 1.251) and cannabis (o.r.: 1.561) use, as well as binge drinking (o.r.: 1.366) and substance use disorder (o.r.: 1.12). BIS-11-A scores predicted smoking (o.r.: 1.051) and cannabis (o.r.: 1.063) use.

Conclusions: This study adds evidence about the association between impulsiv-ity and sensation seeking (measured when adolescents still do not use drugs) and substance use. These are crucial variables to keep in mind when designing early intervention programs and prevention strategies.

Financial Support: Work supported by the Council for Economy and Work (GRUPIN14-047).

90 NEW GENERATION TAMOXIFEN ANALOGS AS POTENTIAL TREATMENTS FOR AMPHETAMINE ABUSE.

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Aims: The reinforcing properties of amphetamine (AMPH) stem from its rever-sal of the dopamine transporter (DAT) which greatly increases extracellular dopamine (DA) in the brain. Inhibition of protein kinase C (PKC) reduces AMPH effects. The CNS-permeant estrogen receptor (ER) modulator, tamoxifen, inhibits PKC and reduces AMPH effects. We aim to utilize structure-activity relationships to create CNS-permeant tamoxifen analog with increased selectiv-ity for PKC inhibition and reduced ER affinity.

Methods: Here we evaluate the extent to which our lead compound, CCG-215103, reduces AMPH-stimulated neurochemical, behavioral and reinforcing effects in rats.

Results: CCG-215103 inhibits PKC activity (IC50 0.2 µM) but does not bind to ERs at ≤ 5 µM. Suprafusion of rat striatal synaptosomes with 0.3 µM CCG-215103 robustly reduces DA efflux stimulated by 10 µM AMPH. Injection of 1 µM CCG-215103 into the nucleus accumbens reduces both DA release and locomotion induced by 2 mg/kg ip. AMPH by ~40%, measured with microdialysis in freely-moving rats. Administration of 6 mg/kg sc. CCG-215103 reduces i.v. AMPH self-administration (0.032 mg/kg AMPH/ μl) but does not bind to ERs at ≤ 5 µM. Suprafusion of rat striatal synaptosomes with 0.3 µM CCG-215103 significantly inhibits [3H]DA uptake in striatal synaptosomes. Yet, unlike classical DA transporter inhibitors, e.g. cocaine, CCG-215103 does not increase basal DA or locomotion in vivo, suggesting it will not have an abuse potential. Interestingly, CCG-215103 does not displace [3H]WIN 35428 binding at DAT showing that it does not bind near the active site.

Conclusions: These results show that CCG-215103 reduces AMPH action in vitro and in vivo. CCG-215103’s effects on AMPH action could be due to allosteric modulation of the transporter and/or its interaction with a modulator of DAT functioning, such as PKC.
A FULLY AUTOMATED ALGORITHM FOR IDENTIFYING PATIENTS WITH PROBLEM PRESCRIPTION OPIOID USE USING ELECTRONIC HEALTH RECORD DATA
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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 1,453 (9.4%) patients had POU. In the validation set the algorithm achieved 56% sensitivity and 76% precision.
Conclusions: Because POU is a phenomenon with complex behavioral, psychosocial and clinical antecedents EHRs are unlikely to contain all relevant information needed to identify it. Nevertheless, EHR data appear useful for identifying with modest precision many patients experiencing POU. Improved modeling of 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.
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Aims: This randomized, double-blind, placebo (PBO)-controlled crossover study evaluated abuse potential of JZP-110 relative to the Schedule IV stimulant methylphenidate (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 polydrug 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 first after 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<.001) and significantly less than PTN 90 mg (p<.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<.02). Ratings of willingness to Take the Drug Again for all doses of JZP-110 were significantly lower than both doses of PTN (p<.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.
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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 multivariable 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 that HIV infection is independently associated with severe or serious overdose. The impact on overdose is not seen in the CD4 count, may not be a significant contributing factor. In addition, exposure 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 Research Chairs program through a Tier 1 Canada Research Chair in Inner City Medicine which supports Dr. Evan Wood. This research is supported by the Research in Addiction Medicine Scholars (RAMS) Program.

PEER NETWORKS, MARRITAL SATISFACTION AND NONMEDICAL USE OF PRESCRIPTION DRUGS AMONG RESERVE SOLDIERS AND PARTNERS.
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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.
Financial Support: R01-DA034072 to GGH

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

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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 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 understudied. 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.

Financial Support: PCORI IHS-1306-03482

FAIR HEARING OUTCOMES FOR PATIENTS RECOMMENDED DISCHARGE FROM METHADONE MAINTENANCE.

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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.


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

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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: We transferred the files, de-identified, and analyzed the program’s 73 FH reports from a MT between 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.

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

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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 to 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.
Aims: Stimulants, such as tobacco (TOB) and methamphetamine (METH), use by pregnant women may lead to abnormal brain development in their offspring, but limited. The aim is to evaluate whether development of microscopic 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 neurological 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 MRSStudio.

Results: Mothers who used TOB or METH+TOB during pregnancy had lower education (p=0.0001) and lower socioeconomic status (p=0.0001) compared to the non-user mothers. TOB mothers smoked 271±407 cigarettes in addition to 96.6±19.8 grams of METH, primarily during the first two trimesters. Despite similar neurological assessments, in the superior corona radiata, compared to unexposed infants, the stimulant-exposed infants showed lower fractional anisotropy (FA) and higher diffusivities, 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 radiatae 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.

Financial Support: NIH Grants: U54-NS56883; K24-DA16170; R01-HD065955; G12-MD007601.

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

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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 was a randomized, open-label, comparative effectiveness trial evaluating 24 weeks of XR-NTX vs. O-NTX as alcohol use disorder treatment in primary care in a public hospital in New York City. N=234 adults (>18yo) 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, Costs, savings, and relative value will be estimated and compared.

Results: Following initiation in June 2014, 80 participants have been randomized to date, Of which, 51(63.8%) were male, 15(16.3%) Hispanic, 37(46.3%) Black or African American, and 64(80%) reported other lifetime substance use. Our study population has a mean AUDIT (alcohol use disorder identification test) score of 24.6, which indicates hazardous and harmful alcohol use. Treatment retention has been strong with 31(77.5%) and 33(82.5%) receiving 2 or more doses of O-NTX or XR-NTX, respectively, during the treatment period.

Conclusions: Medications for alcohol disorders, including XR- and O-NTX, remain underutilized by prescribers. Data supporting their effectiveness in primary care remains lacking, as is a comparative effectiveness ‘laddies’ differentiating the two forms. This is the first and largest head to head comparative effectivenessRCT of XR- vs. O-NTX to date and seeks to further characterize and define the expected value of the medications in a general adult alcohol use disorder population.

Financial Support: NIH, NIAAA; R01AA020836-01A
SMARTPHONE ENHANCED BEHAVIORAL ACTIVATION TREATMENT FOR SUBSTANCE USE AND DEPRESSION.
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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 (% female: % 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-base application with high rates of treatment engagement in the experimental group. Further, treatment engagement was associated with 1-month post treatment abstinence 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

CHANGES IN NONMEDICAL USE OF OXYCONTIN AFTER REFORMULATION WITH ABUSE DETERRENT PROPERTIES.
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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 pre-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, 2012, 2013, 2014) for population-adjusted rates (-18%, -37%, -26%, and -49%, respectively) and OxyContin prescription-adjusted rates (-14%, -19%, -21%, and -36%, respectively) but changes vary 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%).
Conclusion: 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.
Financial Support: Funded by Purdue Pharma, L.P.

MALE-FEMALE DIFFERENCES OF ANTECEDENT CANNABIS USE AMONG NEWLY INCIDENT YOUNG ALCOHOL DRINKERS: DOES AGE MATTER?
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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; (2) Will the proportion decrease in mid-adolescence, before age 21? Methods: The 2002-2013 US National Surveys on Drug Use and Health identified 32,876 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. Thereafter, males and females have similar proportions. Evaluated using an epidemiological mutoscope 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.

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.
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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 2<t<5) in two outcome subgroups: GOOD (≥30% cocaine urinary pos/missing across 12 outpt. weeks; n=9); vs. POOR (<90% cocaine urinary 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 a “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 and predict clinical outcome; 2) cue paradigms may be useful for screening anti-relapse 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.
**THE COMPUTER-BASED DRUG AND ALCOHOL TRAINING ASSESSMENT IN KENYA.**

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Aims: NextGenU.org, the Annenberg Physician Training Program in Addiction Medicine (AFTPM), and Africa Mental Health Foundation (AMHF) assessed the impact of online training on urban and rural Kenyan healthcare workers’ (HW) delivery of substance use disorders (SUD) services; using the NextGenU.org model based on expert created competencies, free available learning objects, meta-analysis. Populations worldwide would benefit from access to HW trained on SUD interventions in on-going practice.

Methods: 1) pilot study: 2) pre and post training knowledge, attitudes and skills (KAS) of HW in practice: 3) a RCT comparing alcohol brief interventions (BI) versus screening and information leaflet with 6 months follow-up (f/u); and 4) an implementation science study using a delayed control group. 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

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**BUPRENORPHINE DURING PREGNANCY: CLEARANCE AND FETAL EXPOSURE.**

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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 likelihood of required 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: Dr. McLeod’s research support from UAMS NIDA T32 Translational Research Grant
TRAJECTORY OF MENTAL HEALTH AMONG LOW-INCOME SMOKERS ACROSS PREGNANCY AND POSTPARTUM.

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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 EPDS, PSS, internalizing disorder screeners, and sources of stress screeners) 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; IDScr 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外部izing 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 (R01DA032683).

115

REGULATION OF GENE EXPRESSION OF THE DELTA OPIOID RECEPTOR, CORTICOTROPIN-RELEASING HORMONE, AND CRH-1 RECEPTOR DURING WITHDRAWAL FROM CHRONIC COCAINE.

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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 SN680 to normalize increases in CRH expression during withdrawal was studied.

Methods: Male Sprague Dawley rats were injected with saline or cocaine (15 mg/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 SN680 (10 mg/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 SN680 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. SN680 reduces levels 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

3.4-METHYLENEDIOXYPROVALERONE MAINTAINS DIFFERENTIAL PATTERNS OF RESPONDING IN MALE SPRAGUE-DAWLEY RATS.

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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/mg 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 ~3 infusions by the end of the 10 day acquisition period. Upon increasing the FR to 5, two distinct patterns of responding emerging, 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 (0.0032-0.3 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, higher-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 UHSA grant R01DA039146 (GTC) and the NIDA/NIAAA-IRP (KCR).

116

NOVEL ENVIRONMENT RESPONSE AS A PREDICTOR OF MIDAZOLAM SELF-ADMINISTRATION IN RATS.

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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.
TIMING OF SEXUAL ABUSE, SEXUAL RISK BEHAVIORS AND SUBSTANCE USE AMONG U.S. WOMEN.
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Aims: Sexual abuse affects approximately 18% of US women and is associated with risky sexual behaviors and substance use. Although theorized, it is unclear whether women who have had previous consensual sex prior to being sexually abused exhibit fewer sexual risk behaviors and less substance use. The aims of this study are (1) to assess whether there are differences in sexual risk behaviors based on sexual abuse history and (2) the association between sexual abuse and substance use.

Methods: I used the National Survey of Family Growth 2006-2010 to assess sexual behaviors and substance use of non-abused women (N= 7674) compared to women sexually abused at first sexual experience, (FS-First; N= 559), abused after consensual first sex (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 partners 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=2.0, 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.

Financial Support: 5T32DA00727223

NEURAL ACTIVITY IN CHILDHOOD PREDICTS ADOLESCENT SUBSTANCE USE INITIATION.
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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 investigate 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 functional 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 problems—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=0.046), whereas failed inhibitory control components 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 development, both reward responsivity and inhibitory control components are predictive of SUD in young adults.

Financial Support: R01DA027261, R01AA12217, R01AA07065, T32DA007267, T32DA007268, U1LTR000433

OPIOID MODULATION OF CANNABIS-INDUCED ANALGESIA AND SUBJECTIVE EFFECTS IN CANNABIS SMOKERS.
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Aims: Preclinically, opioid agonists enhance cannabinoid effects, including antinociception. Clinically, patients with pain report greater pain relief when cannabis 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 naltrexone (NTX; 25 mg, PO) and oxycodone (OXY; 2.5 & 5.0 mg, PO) on cannabis-induced analgesia and subjective 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 analog 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 tolerance (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 opioids enhance cannabis analgesia without increasing 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.
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Aims: The current study was a randomised controlled trial aimed at testing the effectiveness of Grassemont, a short online intervention for cannabis users that provides individualised feedback from questions surrounding their use and motivations 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 feedback 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 cannabis 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 group and past-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 Grassemont can reduce cannabis use and related harms, however no additional benefit was found with extended feedback when compared 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.
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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 reported drug or sex-related HIV risk behaviors in the past 6 months were administered 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 56.8% 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.

Financial Support: R01-DA022122; K02DA033139

WHAT’S IN YOUR MEDICINE CABINET?: GENDER DIFFERENCES.
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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 Cottler). 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 “When 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 dependence was determined via self-report using DSM-IV criteria with dependence vs abuse/no dependence. Chi-square tests and logistic regression described the findings.

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 content 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.
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Aims: Background The impact of opioid analgesics 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 96% (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 prescribed ER morphine, 16% (-51%, 179%) for ER Opana, -7% (-24%, 14%) for IR oxycodeone 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.

Financial Support: Funded by Purdue Pharma L.P.
PREVALENCE AND CORRELATES OF RECOVERY FROM DRUG DEPENDENCE.
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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 who participated in the NESARC 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 (PYP) and past-year (PY) for 10 drug classes. Among participants meeting criteria for PYP, drug dependence we examined PYP recovery status based on DSM definitions of recovering from a drug use disorder in the past year.

Results: The prevalence of any PYP drug dependence was 2.3%. Among those with PYP drug dependence, the prevalence of PYP 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.

Conclusions: This is the first national study to examine stressful life events and recovery from drug dependence. Although the majority of those who reported prior-to-past-year drug dependence transitioned to abstinence or asymptomatic use, a sizeable percentage were either still DUD or in partial remission. In addition to demographic factors, stressful life events appear to be markers of poor recovery status.

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

COMPARATIVE ANALYSIS OF TRANSCRIPTOMICS AND PROTEOMICS OF ENVIRONMENTAL ENRICHMENT AND COCAINE.

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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 additive effect 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.

Financial Support: R01 DA29091, T32 DA007287

127

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-d 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: Hannah is supported by NIDA (T32DA035167). We acknowledge the Clinical and Translational Science Institute, funded in part by the National Institutes of Health National Center for Advancing Translational Sciences, UL1 TR000064, to the University of Florida.

128

EFFECTS OF MIXED AMPHETAMINE SALTS DOSE AND BELIEF ABOUT DRUG ASSIGNMENT ON COGNITIVE PERFORMANCE IN COLLEGE STUDENTS.

Karen Cropsy, 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: WATAR, Digit Span, COWAT, CVLT-II, CPT-II, Trails A&B, and the Stroop 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; κ=-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 subscales 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: R01 DA029091, T32 DA007287

127

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Karen Cropsy, Morgan Froelich, Peter Hendricks, Rachel Fargason; University of Alabama at Birmingham, Birmingham, AL

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FINDING A NEEDLE IN THE HAYSTACK: USING MACHINE LEARNING TO PREDICT OVERDOSE IN OPIOID USERS.

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Aims: To accurately predict overdose frequency using machine learning and identify key predictive features.

Methods: A sample of opioid users (N=260) was contacted and reported on 1,016 variables including demographics, social network info, and drug history. We then used the machine learning technique *random forests* to 1) attempt to accurately predict a participant's lifetime opioid overdose status, and 2) the number of times they overdosed. The Gini index was used for feature selection to identify meaningful predictors.

Results: Participants were M=24.28 (SD=3.11) years old and 66% male. 80% identified as Caucasian. We ran two random forests. The first performed a binary classification to predict lifetime overdose status, with an error rate of 30.25%. The most predictive feature was identified as whether or not that person had ever been arrested. The second model identified the predictors of overdose frequency. This model explained 8% of variance in overdose. The most predictive feature was the number of overdoses in a person’s social network.

Conclusions: Two random forests provided a solution to a “needle in the haystack” problem, identifying variables most related to overdose, and predicted overdose with an accuracy much greater than chance. Arrest history and the number of overdoses in a person’s network emerged as the most important predictors of overdose. This information can be used to guide future research, and informs the design of screening tools. Questions asking someone if they have ever been arrested or how many people they have seen overdose could greatly help on-the-ground practitioners by quickly identifying those that are at risk. Machine learning is becoming increasingly important when working with datasets that contain a great number of predictor variables and serve as a powerful non-theoretical method to identify important factors related to substance abuse and other behavioral health problems.

Financial Support: NIDA R01DA035146

SELF-REPORTED IMPULSIVITY IS RELATED TO AGE AT FIRST METHAMPHETAMINE USE.

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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 thus 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=−0.21, t=2.09, p=0.008; Motor: ΔR²=0.05, β=−0.27, 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.


ALCOHOL USE AMONG NATIVE AMERICANS COMPARED TO WHITES: EXAMINING THE VERACITY OF THE 'NATIVE AMERICAN ELEVATED ALCOHOL CONSUMPTION' BELIEF.

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Aims: This study uses national survey data to examine the veracity of the long-standing belief that, compared to whites, Native Americans (NA) have elevated alcohol consumption.

Methods: The primary data source was the National Survey on Drug Use and Health (NSDUH) from 2009-2013: whites (n=171,858) and NA (n=4,201). Analyses using logistic regression with demographic covariate adjustment were conducted to assess differences in the odds of NA and whites being alcohol abstinent, light/moderate drinkers (no binge/heavy consumption), binge drinkers (5+ drinks on an occasion 1-4 days), or heavy drinkers (5+ drinks on an occasion 5+ days) in the past month. Complementary alcohol abstinence, light/moderate drinking and excessive drinking analyses were conducted using Behavioral Risk Factor Surveillance System (BRFSS) data from 2011-2013: whites (n=1,130,658) and NA (n=21,589).

Results: In the NSDUH analyses, the majority of NA, 59.9% (95% CI: 56.7-63.1), abstained, whereas a minority of whites, 43.1% (CI: 42.6-43.6), abstained—adjusted odds ratio (AOR): 0.64 (CI: 0.56-0.73). Approximately 14.5% (CI: 12.0-17.4) of NA were light/moderate-only drinkers, versus 32.7% (CI: 32.2-33.3) of whites (AOR: 1.90; CI: 1.51-2.39). NA and white binge drinking estimates were similar—17.3% (CI: 15.0-19.8) and 16.7% (CI: 16.4-17.0), respectively (AOR: 1.00; CI: 0.83-1.20). The two populations’ heavy drinking estimates were also similar—8.3% (CI: 6.7-10.2) and 7.5% (CI: 7.3-7.7), respectively (AOR: 1.06; CI: 0.85-1.32). Results from the BRFSS analyses generally corroborated those from NSDUH.

Conclusions: In contrast to the ‘Native American elevated alcohol consumption’ belief, Native Americans compared to whites had lower or comparable rates across the range of alcohol measures examined.

Financial Support: None.
PRESOSIAL EFFECTS AND NEUROTOXICITY OF
(–)-3,4-METHYLENEDIOXYMETHAMPHETAMINE IN MICE.
Daniel Curry, Andie Belkoff, Leonard Howell; 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 in 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 pregogatiousness. 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 prososial mechanisms of MDMA from the neurotoxic and abuse related effects. We investigated the hypothesis that (–)-MDMA may retain the prososial 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 glitosis 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 glitosis or decreased brain dopamine content. Also, unlike racemic MDMA, (–)-MDMA did not increase spontaneous locomotor behavior in mice.

Conclusions: These results indicate that the prososial effects of MDMA are separable from the neurotoxic and locomotor stimulant effects. (–)-MDMA has prososial effects similar to racemic MDMA but does not increase locomotor behavior or induce markers of neurotoxicity in mice. Further evaluation of (–)-MDMA is needed in other species, but these results suggest that it may be a more viable therapeutic than racemic MDMA.

Financial Support: P51 OD11132

PATTERNS OF ELECTRONIC CIGARETTES REGARDING CONSUMER PERCEPTION, HEALTH, AND USE PATTERNS OF ELECTRONIC CIGARETTES.

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 pregogatiousness. 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 prososial mechanisms of MDMA from the neurotoxic and abuse related effects. We investigated the hypothesis that (–)-MDMA may retain the prososial effects of racemic MDMA but lack neurotoxicity.

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Financial Support: P51 OD11132

ALTERED RESTING STATE FMRI RESPONSE IN YOUNG ADULT MARIJUANA USERS AND HEAVY DRINKERS.
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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 nonusing controls.

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 (+ 4077 µl, pc<0.5 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 fMRI 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.

Financial Support: Supported by NIAAA (AA016599 & AA19036; Pearlson) and NIDA (DA038207; Dager)

DEVELOPMENT OF A CONCEPTUAL FRAMEWORK REGARDING CONSUMER PERCEPTION, HEALTH, AND USE PATTERNS OF ELECTRONIC CIGARETTES.
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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. A similarity matrix was generated from these data, from which dendrograms and a 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.

Financial Support: Inflexion, Inc., Altria Client Services LLC

Richard C Dart1, Becki Bucher Bartelson1, Steven G Severson1, Gabrielle Bau1, Jody L Green4, 1RADARS System, Denver Health, Denver, CO, 2RMPC, 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 Poison 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 rate for fourth quarter 2014 was 0.0618 per 100,000 population a 4.3 fold increase. Using Poison regression model was used to determine the percent change per quarter in the intentional abuse population rates.

Conclusions: Population based rates of intentional gabapentin and pregabalin abuse have increased since 2006. A high proportion of cases had an outcome that involved only a single substance. The rate in first quarter 2006 was 0.0144 per 100,000 population while the rate for fourth quarter 2014 was 0.0618 per 100,000 population a 4.3 fold increase. Using Poison regression model was used to determine the percent change per quarter in the intentional abuse population rates.
A REVIEW OF RECENT DEVELOPMENTS (2012-15) ON THE USE OF FINANCIAL INCENTIVES WITH PREGNANT SMOKERS.

Danielle Rose Davis, Laura J Solomon, Stephen Higgins; 1Psychology, University of Vermont; 2Psychiatry, University of Vermont; Burlington, VT

Aims: Smoking during pregnancy is a leading preventable cause of poor pregnancy outcomes and immediate and long-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.

Financial Support: This research was supported by Research Grants R01HD075669 and R01HD078332 from the National Institute of Child Health and Human Development and Center of Biomedical Research Excellence P20GM103644 from the National Institute of General Medical Sciences.

ROLE OF ACCUMBENS NICOTINIC ACETYLCOLINE RECEPTORS IN CUE-INDUCED NICOTINE SEEKING AND SYNAPTIC PLASTICITY.

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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-β-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 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 α7 nAChRs but not α4β2. 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.

Financial Support: NIDA R00DA036569

ARE DSM-5 CRITERIA FOR SUD TRANSFERABLE TO FOOD ADDICTION? IRT ANALYSIS FOR ALCOHOL, TOBACCO, CANNABIS, OPIATE AND FOOD ADDICTION IN A CLINICAL SAMPLE.

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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.

Financial Support: PHRC 2006, CSF, CNPq, CAPES

ASSOCIATIONS BETWEEN EDUCATIONAL ATTAINMENT, SMOKING HISTORY, QUIT ATTEMPTS AND INTEREST IN QUITTING.

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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 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.

Financial Support: U54DA031659
THE TRANSITION TO RECOVERY: KEY PREDICTORS AND HOW THEY RELATE TO AGING.
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Aims: To 1) Identify predictors of transition from substance use to abstinence in the community one year later; and 2) Examine how these predictors of the transition are related to aging.
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 may be sufficient and should be considered.
Financial Support: NIDA grant DA015523

MONITORING INTERNET POSTINGS FOR MENTIONS OF AN EXTENDED-RELEASE HYDROCODONE FORMULATION WITH ABUSE-DETERRENT PROPERTIES.
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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 were searched 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, overdose, death, route of administration, and source of drug acquisition. Add/develop, 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 1,293 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 (149 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 with few posts mentioning abuse/misuse.
Financial Support: Purdue Pharma LP

BORDERLINE PERSONALITY DISORDER AND BRIEF INTERVENTION FOR DRUG USE IN HIV PRIMARY CARE.
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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 “triple diagnosed.” Because BPD is associated with substance use, medication non-adherence, and poor interpersonal 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 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 briefer and more cost-efficient treatments may be sufficient and should be considered.
Financial Support: R01DA024606, NYS Psychiatric Institute

NEURAL EFFECTS OF TREATMENT IN A TRIAL OF BEHAVIORAL THERAPIES AND DISULFIRAM FOR COCAINE DEPENDENCE.
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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 inhibition (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, precenral, postcenral, and lingual gyri and culmen regions (pFWE<0.05), 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, precenral and postcenral gyr; ‘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 gyr; 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 neural circuitry, possibly indicating increased efficiency of cognitive-control-related neurocircuitry as one treatment mechanism.
Financial Support: R01 DA019078, R01 DA020908, R01 DA035058, P50 DA00241 K12 DA00167, K01 DA027750 from NIDA; MIRECC; K12 DA031050 from NIDA, ORWH, NIAAA and NIH-OD; 31371023 from NSF of China.
**Research**: Peter F. McManus Charitable Trust

**Financial Support**: cocaine SA +/- PIO. Immunoblot of dissected WM tracts in rats which have undergone FA from interest occurs in a region-specific manner. Preliminary results suggest that PIO containing EGFR or PPAR response element4. Important to WM integrity Quanti-mine the impact of reducing nicotine content on estimated cigarette consumption of usual-brand cigarettes. Results: reducing the content of nicotine within cigarettes results in a reduction in the reinforcing efficacy of those cigarettes 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 (PPARγ) agonist pioglitazone (PIO, Actos®) administration reduces nicotine self-administration (SA) and this was reversed by the PPARγ antagonist GW9662. Thus, we hypothesized that PPARγ 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 previous research, Sequence Searcher® gene analysis software, and the NCB/ENCODE databases, we identified proteins which met the following criteria:1. Modulated by cocaine2. Modulated by PPAR/ERK3. Contain ERK or PPAR response element. Important to WM integrity. Quantitative immunoblot was used to measure the proteins’ expression.

**Results**: In ongoing studies we are finding that regulation of our proteins of interest occur in a region-specific manner. Preliminary results suggest that PIO may increase the expression of GFAP in the hippocampus of rats which underwent SA from cocaine SA and interestingly, it may also increase the expression of non-nuclear ERK in the caudate/putamen.

**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.

**Financial Support**: NIEHS T32ES007254/UTMB Center for Addiction ResearchPeter F. McManus Charitable Trust

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

**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 a normal nicotine content (15.8 mg/g) or with a reduced nicotine content (0.4-5.2 mg/g) to smoke for six weeks. Participants completed the CPT at baseline, weeks 2 and 6, and following a period of 24-hour abstinence at Week 6. Smokers completed two versions of the CPT: one for their assigned study cigarette and one for their usual brand cigarette.

**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 lower nicotine content groups (p<0.0125), the maximum amount of money participants would spend on study cigarettes was lower in lower nicotine content groups (p<0.0125). 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 author and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

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**OPSON: AGONISM TO TREAT WHITE MATTER DAMAGE IN COCAINE USE DISORDER.**

**Aims**: Cocaine use disorder elicits behavioral and structural changes in human subjects and rodent models. 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 (PPARγ) agonist pioglitazone (PIO, Actos®) administration reduces nicotine self-administration (SA) and this was reversed by the PPARγ antagonist GW9662. Thus, we hypothesized that PPARγ 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 previous research, Sequence Searcher® gene analysis software, and the NCB/ENCODE databases, we identified proteins which met the following criteria:1. Modulated by cocaine2. Modulated by PPAR/ERK3. Contain ERK or PPAR response element. Important to WM integrity. Quantitative immunoblot was used to measure the proteins’ expression.

**Results**: In ongoing studies we are finding that regulation of our proteins of interest occur in a region-specific manner. Preliminary results suggest that PIO may increase the expression of GFAP in the hippocampus of rats which underwent SA from cocaine SA and interestingly, it may also increase the expression of non-nuclear ERK in the caudate/putamen.

**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.

**Financial Support**: NIEHS T32ES007254/UTMB Center for Addiction ResearchPeter F. McManus Charitable Trust

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

**Aims**: 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 author and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

**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 author and does not necessarily represent the official views of the NIH or the Food and Drug Administration.
149

**BEHAVIORAL IMPULSIVITY AS A PREDICTOR OF SUCCESS IN A SMOKING CESSATION IN ADOLESCENTS.**

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**Aims:** The thrust of the present work was to determine if baseline behavioral impulsivity predicts successful completion of a 10-week smoking cessation program and consequent reduction in carbon-monoxide levels in adolescents.

**Methods:** This work is a sub-analysis of a larger investigation examining behavioral factors related to successful completion of a smoking cessation program for adolescents. To investigate whether baseline impulsivity predicts treatment outcomes, data from the Experiential Discounting Task (EDT; a real-time assessment of discounting) was used to predict post-smoking status determined by breath carbon-monoxide (CO) levels. 145 adolescents participated in the Not on Tobacco (N-O-T), 10-week, 1 session per week smoking cessation program. Participants completed the EDT prior to the start of the program; CO data were collected before the start and after the final session of the program.

**Results:** Participant data was grouped by “treatment outcome” at the completion of the program. A “reducer” group (n=34) included participants whose CO levels were reduced by at least 200 ppm. A “non-reducer” group (n=74) included participants who did not fulfill this criterion. A “dropout” group (n=37) included participants who did not complete the program. A one-way ANOVA found that baseline measures on the EDT differed across groups (F2,142)=3.563, p=.031. A Tukey HSD post hoc analysis indicated significant differences only between the mean score for the “reducer” group (M=.731, SD=.100) and the mean score for the “non-reducer” group (M=.672, SD=.126), p=.028.

**Conclusions:** The results indicate that impulsivity, as measured by the EDT, is a significant predictor of subsequent smoking behaviors in adolescents who complete a smoking-cessation program. Specifically, adolescents who successfully and significantly reduce their smoking behaviors after completing the program exhibited less impulsive discounting prior to beginning the program than adolescents who completed the program but did not significantly decrease smoking behaviors.

**Financial Support:** This project was supported by NIDA R01 DA023087-01A2

150

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

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**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 MPFC and left DLFPC. 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 (bilateral 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 DLFPC 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.

**Financial Support:** R01DA036617 (Hanlon)P50DA015369 (Kalivas)T32DA007288 (McGinty)

151

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

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**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 were court-mandated to outpatient (OP) substance abuse treatment.

**Methods:** Participants were 61 admissions to an OP program. All were between the ages of 14-18 and court-mandated to treatment. Participants received a 3-session computerized HIV-prevention intervention or a 3-session attention control procedure delivered approximately 2 weeks apart. The HIV intervention addressed condom use, testing, risk behaviors, and substance use. Clients completed assessments at baseline and week 8. Outcomes included HIV testing rates, knowledge, and condom use self-efficacy.

**Results:** Adolescents who received the HIV intervention tended to report greater rates of testing than those in the attention control group (25% vs. 8%; p = .10, f = .23). HIV knowledge quiz scores were significantly higher among adolescents that received the HIV intervention than those that did not (p = .01; d = 1.03). Finally, those who received the HIV intervention tended to have higher self-efficacy in communicating about condom use (p = .06, d = .75) and buying and using condoms (p = .06, d = .77).

**Conclusions:** This pilot study supports the utility of using a computerized HIV-risk reduction intervention with court-mandated adolescents. The intervention used in this study may provide a cost-effective way to deliver HIV risk reduction services to at-risk youth. The findings support the need for fully-powered test of this novel intervention.

**Financial Support:** Administrative supplement to NIDA grant #R01-DA-030257.

152

**RANDOMIZED CONTROLLED EVALUATION OF TRAMADOL FOR OPIOID DETOXIFICATION.**

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**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 being 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, SC) in a double-blind, double-dummy manner. Study drug doses were tapered to zero over 7 days. Self-reported and observed 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.

**Financial Support:** NIDA R01DA018125 (Strain)

38

CPDD 78th Annual Meeting • La Quinta Resort and Club, Palm Springs, California
153

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

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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<.001), 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<.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 (T32DA053167), Eugene M. Dunne is a predoctoral fellow on the training grant, Linda B. Cottler is Director and Principle Investigator, and Catherine W. Striley 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.

154

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

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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<.001 for all comparisons): 91% (n=228) female with current known HIV+ male partner; 84% (n=211) female with unknown HIV status; 86% (n=216) male with a current known HIV+ female partner; 89% (n=225) male who had unprotected sex with high-risk male partners with unknown HIV status; 91% (n=228) male with a current known HIV+ male partner and 88% (n=219) male who had sex with multiple male partners and 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<.05).

Conclusions: Over 25% of providers reported low willingness to prescribe PrEP to PWID. Providers were least 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: K12DA033312-03; UL1TR000142

155

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

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Aims: Egdalet Corporation developed Guardian™ technology, based on manufacturing using 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 vitro 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 the dissolution rates and Cmax (in vivo PK).

Results: Cat 1 data were consistent with robust AD features. SEM images documented low porosity of the tablets. Linear correlation was observed for the log polymer viscosity (cP), the dissolution rate (r²=0.9883), and for the dissolution and PK profiles (%PEcat = -8.12; %PEcmax = -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 Egdalet Corporation

156

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

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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
Aims: The Informed Consent (IC) process is essential to ensure autonomous research participation. We had the opportunity to examine understudied preferences in the IC process and to consider any differences in opinion by drug use status.

Methods: Participants in the NIDA-funded study, the Transformative Approach to Reduce Disparities Towards Drug Users, were recruited through the HealthStreet community engagement model. At baseline they were asked eight “yes” or “no” questions about their IC preferences from the ESRA (Ethics in Sensitive Research Attitude Assessment). Because we were looking for definitive endorsements, “Don’t Know” responses were recoded as “No.” Chi-square tests were used to analyze differences between users of drugs (n=313) and non-users (n=301).

Results: Chi-square tests indicated no differences by drug use status on the eight questions. Regardless of status, a preponderance of participants (69%) wanted to be reminded of what they had agreed to do at every study visit and 22% preferred giving their consent verbally, rather than signing a consent form. When asked whether they would want someone to be with them at the time of consent, 32% said yes to a third-party advocate being with them compared to 15% wanting a family member and 14% wanting a friend. Almost all participants wanted researchers to ask them questions to make sure they understood the study before asking for IC and also wanted researchers to ensure people were sober before signing.

Conclusions: Users of drugs did not differ from non-users in IC preferences. Changes to the current consent process such as including third-party advocates and reminding of what their involvement included at each visit in a longitudinal study would be appreciated regardless of drug use status.

ELEVATED COTININE LEVELS IN RECENTLY ACTIVE CANNABIS USERS ABSENT RECENT CIGARETTE OR OTHER TOBACCO EXPOSURE: UNMEASURED BLUNT OR ENVIRONMENTAL SOURCES?  

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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) cutoffs. 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; 95CI=1.9, 4.8) of detectable and tobacco-smoker-discerning cotinine levels (OR=1.2; 95CI=1.5, 8.25) 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.  

Financial Support: Dr. Fairman is supported by NIH T32DA007292. Dr. Alaharaway is supported by T32DA01129.

INTERACTIONS BETWEEN ALCOHOL AND MEPHEDRONE IN HUMANS.  

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Aims: Mephedrone is a synthetic cathinone derivative included in the class of “New-Novel Psychostimutive 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. Results: The combination produced a 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.  

Financial Support: Supported by grants from Instituto de Salud Carlos III (ISCIII, FIS-FEDER, FIS PI11/01961), ISCIII-Red de Trastornos Adictivos (RTA RD12/0028/0009), Clara Pérez-Mañá and Esther Papasie are Rio Hortega-Juan Rodes fellowship (ISCIII, CM12/000085, CM13/00016, JR15/00005).

EATING DISORDER, FOOD ADDICTION AND ASSOCIATED FACTORS IN OBSESE PATIENTS.  

M Fatsas1, Maud Henry,2 Marco Aurélio Camargo da Rosa3, Julie Collombat1,4, A Gregoire2, C Kervran1, B Cherti1,5, Marc Auricchio1,6  

Aim: 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 who were 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 set of 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.  

ILLICIT DRUG USE AMONG YOUNG ADULT MARIJUANA USERS IN LOS ANGELES: IMPLICATIONS FOR MEDICAL USE.
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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 and 166 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.

Financial Support: NIDA R01 DA034667

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: (1) to determine 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 addiction.

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

ATTITUDES AND PRACTICES ON THE USE OF EXTENDED-RELEASE NALTREXONE IN CRIMINAL JUSTICE SETTINGS.
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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. Our aims are to determine whether TAAR1-specific compounds have recently been investigated in rodent models to examine their potential 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.

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.
**BUPROPION THERAPY DURING PREGNANCY: CONCENTRATIONS OF THE DRUG AND ITS MAJOR METABOLITES IN UMBILICAL CORD PLASMA AND ANNIOTIC FLUID.**

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**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 (OHBUP) and threohydrobupropion (TB). The aim of this study is to investigate the \textit{in vivo} steady state transplacental 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, 1.11±1.37; OHBUP, 0.22±0.90; 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 those 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-HD74891 to TN.

**I71**

**THE INTERACTION OF MASCLINE GENDER NORM CONFORMITY AND DEPRESSION PREDICT ALCOHOL USE IN AFRICAN AMERICAN YOUNG ADULT MEN.**

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**Aims:** Endorsement of playboy norms (i.e., seeking sexual adventure, having multiple sexual partners, and noncommittal 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 \([N(\text{S.D.})=22(2)]\) completed self-report assessments of playboy norms, depression, and alcohol use. Participants were taking part in a larger study in race-based stress as a unique context of social learning theory.

**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 \((\text{unstd. beta} = .03, p = .048)\). The interview 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 \((\text{* all } p < .02)\) 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.

**Financial Support:** NIDA R03 DA035878

**I72**

**PATTERNS OF PRESCRIPTION DRUG USE IN SPAIN: THE EUROPEAN OPIOID TREATMENT PATIENT SURVEY.**

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**Aims:** The present study aims to systematically obtain data on the use of prescription drug misuse in European Countries.

**Methods:** Launched in October 2014, the study uses patient self-report data collected at treatment program intake, during the past 90-day use for European-market prescription opioids, stimulants, cannabinoids, heroin, and other prescription drugs as well as demographic information and treatment history.

**Results:** A total of 76 surveys have been collected in Spain (70% males, 42±11 years). The main drug was heroin (46%), cocaine (30%), cannabis (9%), benzodiazepines (4%), amphetamines (4%), prescription opioids (3%) and other (4%). The main route of administration was snorted (32%), smoked (32%), injected (25%), oral (10%), and one subject used skin patches (1%). The 58% of subjects abused more than one substance: benzodiazepines (36%), cannabis (32%), prescription opioids (21%), illicit amphetamines (5%), methylenediate (4%) and gabapentin (1%).

**Conclusions:** Initial data show that, in Spain, there is a concomitant abuse of prescription drugs, mainly benzodiazepines, prescription opioids and cannabis. The knowledge of drug use patterns can provide useful information to develop effective prevention and treatment.

**Financial Support:** Associazione per l’Utilezio delle Conoscenze Neuroscientifiche a fine Sociali (AU-CNS) and Denver Health Rocky Mountain Poison & Drug Center (RMPPDC).

**I73**

**INCREASING MEDICATION USE FOR ALCOHOL AND OPIOID DISORDERS THROUGH ORGANIZATIONAL CHANGE.**

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**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 < .4) 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.

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

Financial Support: Supported by NIH N01DA-13-8908.
A CAREFUL ASSESSMENT OF COGNITIVE FUNCTIONING IN INDIVIDUALS WITH COCAINE USE DISORDER.

Kirsten Michelle Frazer1, Jennifer J Manly2, Geraldine Downey1,3,4, Carl L. Hart1,2,5 and protracted time-frame. Findings will be discussed in the context of an IFG frontal node of the IC network may present a risk for lapse/relapse over an acute excitatory action from pre-SMA to STN, resulting in STN inhibition of M1.

Methods: Design and Setting: This one-session, outpatient study was conducted at Duke, Durham, NC.

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

RIGHT INFERIORFRONTAL GYRUS STRUCTURE AND FUNCTION PREDICT SMOKE(ING RE)LAPSE IN REAL-WORLD AND LABORATORY CONTEXTS.

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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: 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.

Methods: Study 1: Smokers were scanned prior to quitting, followed for 10-weeks and classified as Abstinent (n=41) or Relapsed (7-10 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 <.05).

Conclusions: Prior work has shown that increased activity in IFG modulates excitatory action from pre-SMA to STN, resulting in STN inhibition of M1. 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.

Financial Support: R01DA025876 (FJM); R01DA0033459 (BF)

GENDER DIFFERENCES IN METHADONE DOSE PATTERNS AND LENGTH OF TREATMENT IN OUTPATIENT METHADONE MAINTENANCE TREATMENT PROGRAMS.

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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.

Financial Support: R34DA038530, R01DA034634, T32-DA037801

EXPRESSION OF THE CANNABINOID CB1 RECEPTOR IN CHINESE HAMSTER OVARY CELLS: A SPECIFIC CELLULAR MODEL TO INVESTIGATE THE ACUTE AND CHRONIC EFFECTS OF SYNTHETIC CANNABINOIDS.

Masahiko 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 Flu-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 naphthylindoles) 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.

Financial Support: This research was supported by a Research Grant for Regulatory Science of Pharmaceuticals and Medical Devices, Health and Labour Sciences Research Grants from the Ministry of Health, Labour and Welfare of Japan (to M.F.).

Financial Support: This research was supported by a Research Grant for Regulatory Science of Pharmaceuticals and Medical Devices, Health and Labour Sciences Research Grants from the Ministry of Health, Labour and Welfare of Japan (to M.F.).
ULTRASOUND CORRELATES OF LIVER DISEASE IN PATIENTS SEEKING TREATMENT FOR ALCOHOL USE DISORDER.

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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 (LtOT) for pain.

Methods: We included patients with AUD admitted for detoxification since 2003. None had overt ALD and all underwent an abdominal ultrasound. We collected clinical characteristics and laboratory parameters. Laboratory abnormalities suggestive of ALD were defined as ≥2 of AST ≥340 U/L, ALT ≥340 U/L, total bilirubin ≥1.2 mg/dL. Liver fibrosis was assessed with Fib-4.

Results: We included 301 patients (80% males), median age 46 years (IQR: 39-51). Prevalence of HCV and HIV infection was 20% and 9%, respectively. Patients drank a median of 180 grams of alcohol/day and had a median of 10 years of AUD (IQR:5-12); median ALT and AST were 42 and 35 U/L (IQR: 23-79 and 18-60), 25% had <150,000 platelets, 16% had abnormalities suggestive of ALD and 24% had advanced fibrosis. Ultrasound findings: 49.5% had hepatomegaly, 11% splenomegaly, 17% heterogeneous liver and 2% liver cirrhosis. Liver steatosis was mild in 23%, moderate in 25% and severe in 10%. Patients with AUD and HC had a higher frequency of heterogenous liver (25% vs. 14%, p = 0.04). Advanced liver fibrosis was associated with higher prevalence of heterogeneous liver (p<0.01), hepatomegaly (p<0.01) and steatosis (p<0.01). Those with abnormalities suggestive of ALD had higher prevalence of hepatomegaly (p<0.01), enlarged portal vein (p<0.01), steatosis (p<0.01) and liver cirrhosis (p<0.01).

Conclusions: Ultrasound findings of ALD are frequent in patients with AUD, especially in those with HC, underscoring the importance of liver injury in this population.

A SYSTEMATIC REVIEW OF BARRIERS AND FACILITATORS TO IMPLEMENTING A PRESCRIPTION DRUG MONITORING PROGRAM.
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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: 198 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.


187

ENTACTOGENIC EFFECTS OF SYNTHETIC CATHINONES.
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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, flephedrine, 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 effects may not be entirely dissociable.

Financial Support: Supported by NIH N01DA-13-8908.

188

COMPARATIVE HAZARDS OF ACUTE MYOCARDIAL INFARCTION AMONG HOSPITALIZED PATIENTS WITH METHAMPHETAMINE- OR COCAINE-USE DISORDERS: A RETROSPECTIVE COHORT STUDY.
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Aims: Case-series and case-study approaches have suggested that meth use can trigger acute myocardial infarction (AMI) events, but few systematic studies have estimated the longitudinal hazards of AMI among individuals with meth-use disorders. The current study aims to address this gap.

Methods: The current study had a retrospective cohort design. Competing-risks analysis was used to estimate comparative similarity-AMI patterns in meth versus matched appendicitis (population-proxy) and matched cocaine (drug-control) groups. Cohorts were individuals with no prior or concurrent history of AMI hospitalized with meth- (n=73,056), cocaine- (n=47,726), or appendicitis-related (n=330,109) in California, 1990-2005. Cohorts were propensity-score-matched using demographic and clinical variables. Subgroups who presented with chest pain (cancer use disorders, n=3096; meth-use disorders, n=1954, were also examined.

Results: Patients in the meth cohort were significantly more likely to develop a subsequent AMI in comparison to those in the matched appendicitis cohort [Hazard ratio (HR): 1.41; 95% CI, 1.23-1.62, p<0.0001] and matched cocaine group (HR: 1.19; 95% CI, 1.02-1.39, p=0.029). In addition, individuals in the cocaine cohort were significantly more likely to experience an AMI outcome, in comparison to the matched appendicitis cohort (HR: 1.25; 95% CI, 1.08-1.45, p=0.0023). Among patients presenting to a hospital with chest pain, individuals with meth-use disorders showed evidence of increased hazard of subsequent AMI in comparison to matched counterparts with cocaine-use diagnoses (HR: 1.26; 95% CI, 0.73-2.17, p=0.40).

Conclusions: Patients with meth-use disorders appear to have a significantly greater likelihood than population-proxy controls of developing a subsequent AMI; but only a modestly increased risk in comparison to individuals with cocaine-use disorders.

Financial Support: Internal support from the Northern Medical Program.

PSYCHEDELIC-ASSOCIATED ADDICTION REMISSION: AN ONLINE SURVEY.
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Aims: To examine instances in which psychedelic use may have led to reduced drug use.

Methods: An anonymous online survey assessed demographics, drug use history, addiction/withdrawal severity, and data on participants’ psychedelic-occasioned experience and perceived effects on substance use.

Results: Participants (N=301) were predominantly White (87%), males (67%), in the US (60%), mean age 32 yrs. Participants reported reductions in alcohol (53% of participants), cannabis (19%), opioid (17%), and stimulant (11%) use after taking a psychedelic. 61% reported continued substance use reduction lasting 21 yr. since their reference psychedelic experience. Psilocybin (37%) and LSD (38%) were most commonly associated with reduced substance use. 90% of participants met DSM 5 criteria for a substance use disorder (SUD) before their reference psychedelic experience, with 64% having a severe SUD. Afterward, 19% met criteria for a SUD, with 4% meeting severe SUD criteria.

Conclusions: Psychedelic use may sometimes lead to persisting reductions in alcohol and drug use, consistent with prior research suggesting efficacy of psychedelic-facilitated addiction treatment. Further controlled research in this area is indicated.

Financial Support: Heffter Research Institute, Beckley Foundation, R01DA003889
EVALUATION OF CERC-501, A SELECTIVE KAPPA OPIOID ANTAGONIST IN PRECLINICAL MODELS OF ALCOHOLISM. Donald R. Gehlert1,2, Linda Borick-Kehn1, Annika Thorsell3, Blake Paterson1, Markus Hellig1, C. Cecere, Baltimore, MD, *Matrix Pharma Consulting, Boulder, CO, 1Lilly Research Laboratories, Indianapolis, IN, 2Linkoping University, Linkoping, Sweden

Aims: Withdrawal from chronic alcohol consumption results in depressed mood and elevated anxiety. While the negative emotional states resolve within 3-6 weeks, relapse risk persists well beyond this time period. In rats, the dynorphin (DYN), a kappa opioid receptor (KOR)-system antagonist, attenuates the neuroadaptations following chronic alcohol exposure that promote excessive operant self-administration and negative affective-like states. Accordingly, alcohol consumption was decreased in mice with genetic deletion of KOR.

Methods: In the present studies, we used CERC-501 (previously LY2456302, ((S)-3-fluoro-4-(4-((2-(3, 5-dimethylphenyl)pyrrolidin-1 yl)methyl)phenoxy)-02S2 benzamide), a highly selective and centrally penetrant canonical KOR antagonist with favorable pharmacokinetic and pharmacodynamic properties to evaluate the role of KOR in preclinical models of alcoholism. CERC-501 or naltrexone was administered acutely or for 4 days to alcohol preferring (P) rats assess its activity in ethanol self-administration. Subsequently, CERC-501 was assessed in alcohol-withdrawal induced anxiety and alcohol self-administration in dependent rats.

Results: CERC-501 reduced ethanol self-administration in P rats acutely at doses that selectively occupied KORs in vivo. Unlike naltrexone, daily administration of 10 mg/kg CERC-501 reduced ethanol consumption on four consecutive test days indicating that it did not produce significant tolerance. CERC-501 did not affect food or water consumption acutely or after 4 days of administration and had no effect on locomotion. In subsequent studies, CERC-501 was evaluated in alcohol-withdrawal induced anxiety-like behaviors as well as alcohol self-administration in alcohol-dependent rats.

Conclusions: These results illustrate an important role for the KOR system in regulating alcohol consumption in rats.

Financial Support: Studies were supported by funding from Cerecor and Eli Lilly and Company.

EFFECTS OF LORCASERIN ON COCAINE AND METHAMPHETAMINE SELF-ADMINISTRATION AND ON REINSTATEMENT OF EXTINGUISHED RESPONDING IN RHESUS MONKEYS. Lisa R Geral1, Gregory T Collins2, C P France1, 3, 4, 5 & 6, 7, 8, *Pharmacology, University of Texas Health Science Center, San Antonio, TX, 9South Texas Veterans Health Care System, San Antonio, TX, 7Psychiatry, University of Texas Health Science Center, San Antonio, TX, TX

Aims: Stimulant abuse is a serious public health issue for which there is no effective pharmacotherapy. The serotonin2C receptor agonist lorcaserin can reduce some of the abuse-related effects of cocaine in nonhuman primates and might be useful as a therapeutic agent. The current study investigated the effectiveness of lorcaserin to reduce the self-administration of either cocaine or methamphetamine and, based on these results, to alter cocaine-withdrawal induced reinstatement of extinguished responding.

Methods: Four rhesus monkeys responded under a progressive ratio (PR) schedule in which the response requirement increased after each cocaine infusion (0.032-0.32 mg/kg/infusion). A separate group of 4 monkeys responded under a fixed-ratio (FR) schedule for cocaine self-administration, and reinstatement of extinguished responding was examined following administration of a noncontingent infusion of cocaine that was combined with response-contingent presentations of the drug-associative stimuli. Finally, 3 monkeys responded under a FR schedule for methamphetamine (0.0032-0.32 mg/kg/infusion).

Results: Acute administration of 3.2 mg/kg lorcaserin decreased the final ratio completed (i.e. decreased break point) in monkeys responding under the PR schedule as well as the reinstatement of responding for drug-associated stimuli following the noncontingent administration of cocaine (0.1-1 mg/kg). The same dose of lorcaserin did not alter methamphetamine self-administration, although larger doses given acutely (10-17.8 mg/kg) decreased responding for methamphetamine; that effect was not sustained during daily lorcaserin administration.

Conclusions: Together, these results indicate that lorcaserin might be effective in reducing cocaine abuse and relapse, although these promising results with cocaine might not predict similarly positive results with other stimulants, such as methamphetamine.

Financial Support: Supported by USPHS grants U01 DA034992 and K05 DA017918.
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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 the Virginia Department of Health (VDH) program to improve linkages to win a gift card. In addition, a PN incentive program was implemented, with monthly opportunities to win a gift card.

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. While VDH PN program fidelity monitoring efforts have yielded promising results, site differences affirm the need for tailoring of these often time-intensive translation efforts.

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<0.05)). 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).
INTRANOVENOUS AND SMOKED METHAMPHETAMINE PRODUCE DIFFERENT SUBJECTIVE AND PHYSIOLOGICAL EFFECTS IN WOMEN.
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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 distinction—guishable 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, Toxicology & Neuroscience.

ASSOCIATIONS BETWEEN NON-TRADITIONAL TOBACCO PRODUCT USE AND ADHD SYMPTOMS IN ADOLESCENTS.
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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, 1.01-1.5]; p<.05). 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, 1.11-1.5]; p<.001). Among current users, the odds of reporting continued use increased by 18% (OR, 1.18 [1.01-1.4]; p<.02) and 26% (OR, 1.26 [1.11-1.4]; 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.

Financial Support: Research supported by NIH R01-DA033296.
EXECUTIVE FUNCTIONING AND OUTPATIENT TREATMENT ADHERENCE AFTER INTENSIVE INPATIENT CARE IN COCAINE DEPENDENCE: A SIX-MONTH FOLLOW-UP STUDY.

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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. Futures studies should investigate whether and how cognitive training during inpatient treatment could increase the adherence rates after discharge.


THE PATHWAY TO SUBSTANCE MISUSE FOR YOUNG PEOPLE WITH ADHD AND CONDUCT DISORDER.

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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 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.

HAS NICOTINE DEPENDENCE INCREASED AMONG SMOKERS IN THE UNITED STATES: A NEW TEST OF THE HARDENING HYPOTHESIS.

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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 evaluates 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 ages 12 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 among 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 demographic 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 2003-2013. 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 #DA20892 (Goodwin).

A PHASE III, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY OF THE SAFETY AND EFFICACY OF LOFEXIDINE FOR RELIEF OF SYMPTOMS IN ADULTS UNDERGOING INPATIENT OPiate DETOXIFICATION.

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Aims: This study investigated the safety and efficacy of LFX, an α-2 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 (p=0.0122) and without (p=0.0316) 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=0.0034). The proportion of subjects who completed the 5-day detoxification was higher when on LFX (49%) than when on PBO (35%) (p=0.0087). 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 RESTATEMENT OF COCAINE-REINFORCED BEHAVIOR IN RAT LINES SELECTED FOR LOW AND HIGH LEVELS OF INTRAVENTRICAL DRUG SELF-ADMINISTRATION.

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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 intra-peritoneally.

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 S89-KG-0012 (VA).

ALCOHOL USE AND INTIMATE PARTNER VIOLENCE AMONG WOMEN AND THEIR PARTNERS IN SUB-SAHARAN AFRICA.

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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 collects 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.

Financial Support: This research was supported by a grant from the National Institute on Drug Abuse (T-32DA007292 P.I.C. Debra M Furr-Holden).

FEASIBILITY AND SATISFACTION OF THE WOMEN’S RECOVERY GROUP FOR PATIENTS WITH CO-OCCURRING SUBSTANCE USE AND EATING DISORDERS.

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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) is an evidence-based, gender-specific group therapy for women with SUDs. 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-occurring SUD. Craving to use substances and exhibit higher 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.

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 age of drinking onset was 14, 73.6% were moderately satisfied with the WRG (SD=1.5; range 0-6). Those who completed follow-up (n=13, range 14-56; Craving for substances (t=5.6, df=13, p<.001) and to engage in ED behaviors (t=3.3, df=13, p<.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?” were rated as most helpful. Participants wanted more information on EDs (92.9%), self-esteem/self-image (92.9%), skills building (64.3%), and PTSD symptoms (64.3%).

Conclusions: Participants reported moderate satisfaction and helpfulness with the WRG in its current form. Women expressed the importance of targeting both SUDs and EDs, and provided suggestions for future topics, thus supporting the need for modifications to the WRG to better integrate treatment for women with SUDs and EDs.

Financial Support: NIDA K24 DA019855; Women’s Mental Health Initiative, McLean Hospital

RECENT COCAINE USE BEHAVIOR DIFFERS BY GLT1 GENOTYPE: A PILOT STUDY.

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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, Cociaine 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 past-year cocaine use (total $10 units: Ms= 38.6, 43.8, 15.3; F2,55=3.59, p=.034), less binge use (total $10 units + number of cocaine-use days: Ms= 6.85, 5.49, 1.98; F2,55=8.55, p=.001), less cocaine-use variability (average SDs= 30.4, 24.1, 25.7; F2,55=3.40, p=.041), and less cocaine craving (CSSA: Ms= 4.35, 5.37, 3.27; F2,55=7.05, p=.002). In contrast, SLTCA1A1 rs301435 TT-homozygotes exhibit a less-severe recent cocaine use profile than C (common)-allele carriers. These pilot study findings further suggest a role of GLT1 in modulating cocaine use, and could complement efforts to develop GLU-normalizing medications.

Financial Support: NIH R01 DA026861 (to MKG), Lycaki/Young Funds (State of Michigan) and Detroit Wayne Mental Health Authority.
210

PERFORMANCE OF THE TAPS-I BRIEF SCREENING TOOL IN PRIMARY CARE.

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Aims: Primary care practices have limited time to identify substance use problems among patients. The Tobacco, Alcohol, Prescription Medications, and other Substances (TAPS) tool is a 2-part screening and brief assessment instrument developed for primary care settings. We examined the properties of the Tood’s screening component (henceforth, TAPS-I), which consists of 4 items that ask about past 12 month use of four substance categories, with response categories of never, less than monthly, monthly, weekly, and daily or almost daily.

Methods: 2,000 adult patients at 5 primary care sites (part of the NIDA Clinical Trials Network) completed self- and interviewer-administered versions of the TAPS Tool, in random order. The TAPS-I was evaluated against DSM-5 substance use disorder (SUD) criteria gathered by the modified Composite International Diagnostic Interview, to determine optimal cut points and evaluate its diagnostic accuracy.

Results: Optimal frequency of use cut-points on the interviewer-administered TAPS-I for identifying a SUD were ≤ monthly use for tobacco and alcohol (respectively, sensitivity= .95 and .68; Specificity=. 80 and .87; AUC=. .88 and .77), and any reported use for illicit drugs and prescription medication misuse (respectively, sensitivity=. .93 and .90; Specificity=. .86 and .95; AUC=. .89 and .93). The self-administered version of the TAPS-I had similar performance.

Conclusions: The TAPS-I, which is the lead-in screening component of the TAPS Tool, had a relatively high level of accuracy in identifying substance use disorders in both interviewer and self-administered formats. The brevity and performance of the TAPS-I suggests it may have utility in the primary care setting for rapid triage.

Financial Support: NIDA ZUG1DA013034

211

PARTIAL KAPPA OPIOID RECEPTOR AGONIST EFFECTS IN VIVO IN MICE: BIASED VERSUS UNBIASED.

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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 rotorod assays, are likely mediated via arrestin mediated signaling. Here, we aim to test biased and unbiased KOR partial agonists in animal models.

Methods: In vivo & IV GTPγS studies were done using KOR-expressing HEK cells, and arrestin resistance was done using the DiscoverRX U205 KOR cell line and assay. In vivo motoric rotorod experiments were carried out over 300 seconds, ramping from 3-300p.

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-[(Cyclobutylmethyl)phenethyl]aminoethylphenol (HS665), has partial KOR agonism in both GTPγS (14%) and arrestin assays (33%). In the rotorod assay, we found nalmefene (10 mg/kg) to have no effect, whereas HS665, at 30 mg/kg (but not 10 or 10 mg/kg), caused a decrease in rotorod time. The maximal effect at 30 minutes post-injection was 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 therapy use and diseases of addiction or mood-related psychiatric conditions.

Financial Support: The authors have no conflicts of interest. These studies were supported by the Robertson Development Fund and the Miriam and Sheldon Adelson Medical Research Foundation.

212

THE ROLE OF ADVERSE CHILDHOOD EXPERIENCES IN INITIATION OF SUBSTANCE USE AND SEXUAL BEHAVIORS AMONG OPIOID-USING YOUNG ADULTS.

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Aims: To assess associations between childhood trauma and ages of first substance use and sexual behaviors among young adult opioid users.

Methods: 459 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). Childtrauma 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<.001); age when began drinking regularly (>3 times/week; r= -0.14, p<.05); age at first marijuana use (r= -0.22, p<.001); age when began using marijuana regularly (>1 times/week; 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 (>1 times/week; r= -0.15, p<.01); age when first snorted POs (r= -0.16, 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.

Financial Support: Supported by NIDA R01DA035146
RACIAL, ETHNIC AND GENDER DISPARITIES IN SUBSTANCE USE AT DISCHARGE.
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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 tested 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.

Financial Support: This study was funded by the National Institute on Drug Abuse (R01DA038608-01).

ANXIETY SENSITIVITY AS A PREDICTOR OF ACUTE SUBJECTIVE EFFECTS OF SMOKING IN AFRICAN AMERICANS.
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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 (β = −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.

Financial Support: ACS Grant RSG-13-163-01 and NCI Grant T32-CA009492

ANXIOLYTIC-LIKE AND DISCRIMINATIVE STIMULUS EFFECTS OF BENZODIAZEPINE-NEUROACTIVE STEROID COMBINATIONS IN RATS.
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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 interactive effects of a clonazepam-ganaxolone combination raises the possibility of enhanced abuse-related effects under some conditions.

Financial Support: Supported by NIH grants DA011792, DA033795, and AA016179.

SWITCHING GEARS: SHIFTS IN REWARD FUNCTION ASSOCIATED WITH AGE OF ONSET OF MJ USE.
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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; ≥16 years old; n=27). To determine specificity, comparisons with sexual and averse 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. Averse 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 averse 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 FENOFIBRATE ATTENUATES ALCOHOL SELF-ADMINISTRATION IN RATS.

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Aims: Fibrates are indicted 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 PPARα agonist, fenofibrate (25, 50 and 100mg/kg), to alter alcohol (10%, w/v) and sucrose (2%, w/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.

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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 demographic 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.


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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 less likely than continuing benzodiazepine users to cease using heroin and marijuana (ps < .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 benzodiazepine 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

MODAFINIL REDUCES COCAINE SELF-ADMINISTRATION IN HUMANS: EFFECTS VARY AS A FUNCTION OF COCAINE ‘PRIMING’ AND COST.

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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.
REDUCED PRECUNEU CE ACTIVATION IN ADOLESCENTS AT RISK FOR FOOD ADDICTION.
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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 fMRI study. Ten participants had an elevated score (≥2) on the Yale Food Addiction Scale for Children (YFAS group; mean age=14.2; years; mean symptom score=2.4; 2 females). Individuals in the Control group had a symptom score of 0 and were age- and gender-matched to the YFAS group (n=10; mean age=14.7; ± 2). 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 percent hits, hit reaction times, or number of errors, (%) Results: Fulfill response inhibition (i.e., correct rejection trials versus correct go trials). The precuneus is a core region of the default network, and deactivation during cognitive tasks, particularly when tasks become more difficult. The significant disengagement of the precuneus during successful inhibitory control in the YFAS group suggests 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.
Financial Support: DA027261; NIAAA:12217, 07065, 007477; UL1TR000435

DIF FE RENCES IN CL INICAL PRESENTATION BETWEEN HIG H AND LOW IMPULSIVE METHAMPHETAMINE USERS.
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Aims: Previous work has shown interesting associations between impulsivity and clinically meaningful variables in methamphetamine (MA) users (Tzioritzis 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 (p=0.01), total number of MA symptoms of abuse and dependence (p=0.001), MAWQ (p=0.001), BDI (p=0.001), and BAI (p=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: DA21 DA029831, T32 DA072722

E-CIGARETTE EXPECTANCIES: INITIAL QUALITATIVE ASSESSMENT FOR MEASURE DEVELOPMENT.
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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 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. Average BDI score was 7.0 (SD=1.7). 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.
Financial Support: Support for this submission was provided by R03CA191524 (PH Harrell) from National Cancer Institute and FDA Center for Tobacco Products (CTP). 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.

DIFFERENCES IN CLINICAL PRESENTATION BETWEEN HIGH AND LOW IMPULSIVE METHAMPHETAMINE USERS.
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Aims: Previous work has shown interesting associations between impulsivity and clinically meaningful variables in methamphetamine (MA) users (Tzioritzis 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 (p=0.01), total number of MA symptoms of abuse and dependence (p=0.001), MAWQ (p=0.001), BDI (p=0.001), and BAI (p=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: DA21 DA029831, T32 DA072722

SINGLE ADMINISTRATION OF OXYTOCIN ATTENUATES CRAVING TO SMOKE CANNABIS.
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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 administration of oxytocin or placebo and a session of motivational enhancement (ME).
Methods: Fifteen non-treatment seeking cannabis dependent adults were administered intranasal oxytocin (40IU) or placebo in a double-blind fashion prior to a single session ME intervention. Repeated measures of craving were obtained at baseline, following administration of study drug, and following ME. Participants returned one week later to assess cannabis use outcomes. Craving responses to oxytocin compared to placebo were tested utilizing a linear mixed model effect. Pair-wise comparison of change with administration of oxytocin and again following ME were analyzed with using model based means and standard errors adjusting for outcome levels at screening.
Results: No significant baseline differences between demographics or measures of cannabis use were found between the groups. A significant decline in the total score of the Marijuana Craving Questionnaire was found in the oxytocin (p=0.05) but not in the placebo group (p=0.61) between the pre- and post-study drug administration and pre-post ME (p=0.04, p=0.42, respectively). However, there was a significant difference in the differential decline between groups comparing pre- and post- study drug (p=0.23) and pre- and post- ME (p=0.4). No significant differences were found at the one week follow-up in number of days of use (p=0.6) nor amount used per using day (p=0.53).
Conclusions: Administration of oxytocin resulted in a significant decline in craving; however, there was not a significant difference between groups. No differences in cannabis use were found between groups in the following week. Additional research is needed to further investigate the possible therapeutically benefits of oxytocin in this population.
Financial Support: R24DA038240 (AMC)
DOMESTIC PREVALENCE OF SUBSTANCE USE DISORDERS IN HIV CARE SETTINGS:
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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 ≥18 years were 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 abstinence. 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 abstinence. 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 abstinence. 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 abstinence.
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.
Financial Support: P01DA034244, NY State Psychiatric Institute

PREDICTING CONTINGENCY MANAGEMENT TREATMENT EFFICACY AMONG ADOLESCENTS BY USING MEASURES OF IMPULSIVITY.
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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.
Financial Support: NIDA grant R01 DA023476-01A2 and NCI grant R01 CA144744-01

DSM-5 CANNABIS USE DISORDERS IN THE UNITED STATES, 2012-2013.
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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 ≥18 years were 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 abstinence. 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 abstinence. 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 abstinence. 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 abstinence.
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.
Financial Support: P01DA034244, NY State Psychiatric Institute

ATTITUDES AND PRACTICES OF CANNABIS DISPENSARY STAFF.
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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, headache, 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.
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-, 43.1% 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.

Financial Support: NIH/NIDA R01DA024598 and R01DA033862.
**233**

**EFFECT OF VASOPRESSIN AND OXYTOCIN ON ACTH SECRETION IN COCAINE-DEPENDENT PATIENTS.**

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**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 alone, pretreatment with IN OT at study entry increased ACTH secretion induced by IN DDAVP (t=2.12;p=0.047) as well. 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=1.05;p=0.3286).

**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

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**234**

**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 Cropsy1; 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; for hallucinogen use) with positive urine drug screening 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 [.25, .84]), amphetamine (HR = .69 [.54, .88]), cannabis (HR = .69 [.50, .82]), cocaine (HR = .62 [.51, .74]), opiate (HR = .54 [.45, .66]), and sedative (HR = .64 [.51, .81]) 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 [.65, .98]) and opiate (aHR = .78 [.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.

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**235**

**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, Gllinder Bedi, Divya Ramesh, Stephanie Collins Reed, Sandra D Comer, Richard Foltin, Meg Haney; New York State Psychiatric Institute, 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 pharmacotherapy for CUD is a public health priority. This placebo-controlled laboratory study examined the effects of zolpidem alone and in combination with nabilone 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 nabilone (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 nabilone decreased withdrawal-related disruptions in mood and food intake. Zolpidem in combination with nabilone, but not zolpidem alone, decreased self-administration of active cannabis. Zolpidem in combination with nabilone reduced minor 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 nabilone are consistent with those of an earlier study examining the effects of nabilone alone. Clinical testing of nabilone, either alone, or in combination with zolpidem is warranted.

**Financial Support:** P50 DA090236 and T32 DA07294 from NIDA.

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**236**

**SUBSTANCE USE DISORDER AND HOME NEIGHBORHOOD DISORDER DO NOT PREDICT POSTTRAUMATIC STRESS SYMPTOMS.**

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**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 (NBET) 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 defined 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 bivariates, 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 venting of emotions (OR 1.2; 95 CI 1.1, 1.4: p ≤ 0.05). Neighborhood disorder did not predict PTSS in the multivariate regression, and the greater prevalence of PTSS in drug users than non-drug users did not remain significant.

**Conclusions:** Higher rates of lifetime trauma exposure and having a heightened awareness and need to express emotions are risk factors for developing PTSS regardless of substance use. Home address does not appear to be a sufficient indicator of neighborhood disorder in relation to PTSS; perhaps an activity-space measure would be more sensitive.

**Financial Support:** This work was supported by the Intramural Research Program, NIDA, NIH.
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). The study aimed to examine a modified integrated treatment for PTSD and SUD outcomes. (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 (AMCG).

Methods: Participants (n=110) met DSM-IV TR criteria for PTSD and SUD 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 difference= -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<.01) 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.

Financial Support: NIDA R01DA10843

THEORETICAL IMPLICATIONS OF GENDER, POWER, AND SEXUAL SCRIPTS FOR HIV PREVENTION PROGRAMS AIMED AT YOUNG, SUBSTANCE-USING AFRICAN AMERICAN WOMEN

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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 (TGP) 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 adapt 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).

TOWARD A PATIENT REGISTRY FOR CANNABIS USE: AN EXPLORATORY STUDY

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Aims: Movement toward legalization of cannabis grows in the US yet little is known about long term use effects. This study was an initial step in construction of a patient registry of cannabis users. Qualitative interviews (n =22) completed in a Federally Qualified Health Center explored use of cannabis in patients, motivations for and methods of use, and perceptions of risks and benefits.

Methods: Cannabis using patients (12 female, 10 male) aged 20 to 64, sampled from a Portland Oregon health center completed semi-structured qualitative interviews describing how and why they used cannabis. Qualitative analysis used a content analysis approach to assess and extract salient themes.

Results: Patients smoked, inhaled, ingested and applied a wide variety of cannabis products; a total of 8 different product types were described. Though less than half held a medical marijuana card, 21 of 22 reported using cannabis for perceived physiological or psychological pain and several used cannabis to alleviate cravings for opioid medications. Other motivations included relief from suicidal thoughts and depression, anxiety, eating disorders, ADHD/ADD, migraines, musculoskeletal and neuropathic pain. Relatively few perceived risks as compared to benefits were reported.

Conclusions: This study provides relevant insight into how and why they used cannabis. Qualitative analysis used a content analysis approach to assess and extract salient themes.

Financial Support: Proposal conceptualization was supported by a career development award from the American Psychological Association (R25MH83635).

RESTING STATE FUNCTIONAL CONNECTIVITY AMONG COCAINE USERS.

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Aims: Cocaine use may alter functional connectivity in mesocorticolimbic neural networks involved in reward processing, which in turn may influence treatment outcomes and decision-making. Previous research, however, has shown inconsistencies in the direction of these changes and most studies assess specific brain regions in seed-based analyses without assessing connectivity in the entire network. The current study aimed to examine differences in functional connectivity among cocaine users and non-drug users through whole-brain and network-specific analyses.

Methods: The sample consisted of 37 current cocaine users and 35 non-drug users recruited from the community. Participants used cocaine on average for 17 years and 11 days out of the past 30, and 95% met criteria for dependence. Participants completed a resting state fMRI scan. Independent Component Analysis was used to identify functional connectivity networks that were correlated with two reward-related processing networks located in the bilateral basal ganglia and thalamus (BG) and anterior cingulate cortex and orbitofrontal cortex (ACC/OCF). Connectivity strength within the reward networks were used in dual regression and randomise analyses to determine group differences and associations with cocaine use characteristics.

Results: Analyses revealed increased connectivity within the BG network for cocaine users compared to non-drug users, specifically in the bilateral thalamus, caudate, and putamen, which remained significant after controlling for motion, dopamine, and polysubstance use. There were no significant findings in the whole-brain analyses, and no significant associations with cocaine use characteristics.

Conclusions: The findings have implications for understanding the neurobiological pathways through which cocaine use may alter reward processing and decision making.

Financial Support: This research was supported by K23 DA028660, R21 DA036450, and F32 DA038519.
A MODIFIED SINGLE PROLONGED STRESS EPISODE DELAYS ACQUISITION OF COCAINE SELF-ADEMINISTRATION. 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 jugular catheter implantation, 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.

Financial Support: DA036291, DA012964, DA005312

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 Heavy1, Julia Devonish1, Jack Cornelius2, Gregory G Homish3, 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 month 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 cluster.

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.

Financial Support: Supported by R01-DA034072 (GGH)

241

242

RATES OF HOMELESSNESS AND FACTORS THAT PREDICT THEM AMONG HOMELESS, ALCOHOL-DEPENDENT ADULTS IN A THERAPEUTIC WORKPLACE CLINICAL TRIAL. August Holroyd1, Emily Carlson1, Bradley 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 at 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

243

244

DRIVING IMPAIRMENT OF CNS PRESCRIPTION AND NON-PRESCRIPTION DRUGS. Talar Hopany1, Robert Mann1,2, Christine Wickens1,3; 1Center for Addiction & Mental Health, Toronto, ON, Canada, 2INC Research, Toronto, ON, Canada, 3University of Toronto, Toronto, ON, Canada

Aims: The objectives of this poster are to: 1) discuss the impact of driving impairment due to use of prescription and non-prescription drugs; 2) provide a critical review of the FDA guidance and highlight the impact on CNS drug trials; and 3) outline the type of CNS drugs that will be required to perform cognitive and driving assessments and summarize the type of studies, patient populations and CNS function assessments that are relevant for evaluating drug effects on driving; and 4) discuss driving simulator studies for investigating prescription and non-prescription drug effects on operating a motor vehicle.

Conclusions: Motor vehicle accidents are a major public safety concern, particularly in the context of prescription as well as non-prescription drugs. Driving consists of a complex array of psychomotor and perceptual skills, and higher cognition. Drug developers of CNS drugs are now faced with a new set of criteria to evaluate the potential risk of driving impairment in light of the new FDA draft guidance (January 2015) regarding the investigation of drug effects on CNS functions necessary for the ability to operate a motor vehicle. Until recently, these types of evaluations were typically reserved for sedating drugs. However, the FDA draft guidance recommends evaluating all psychoactive drugs given the significance of the use of prescription drugs in the context operating a motor vehicle. In addition to psychoactive drugs, the guidance also addresses the evaluation of non-psychoactive drugs for potential secondary or unexpected effects that may impair driving, which are guided by specific drug effects.

Financial Support: Not applicable
ASSOCIATIONS BETWEEN INTEGRATION AND DRUG USE AMONG DEPORTED MIGRANTS IN TIJUANA, MEXICO.
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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.

Financial Support: NIDA K01DA025504, NHMRC 1092077, NIMH K01MH095680, University of California GloCal Health Fellowship

CHRONIC ADMINISTRATION OF NANDROLONE INCREASES THE LIABILITY TO MORPHINE DEPENDENCE WITH NO CORRELATION WITH LVV-HEMORPHIN 7 IN RATS.
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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-opioid agonist and an inhibitor of insulin-regulated aminopeptidase. In clinics, subchronic administration of anabolic androgenic steroids (AAS) induced the synthesis of erythrocytes and 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 dopaminergic pathway by LVV-H7.

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 assay 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.

FOOD INSECURITY AND HIV PROGRESSION AMONG RUSSIANS WITH HEAVY ALCOHOL CONSUMPTION.  
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**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-using 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 FI levels.  
**Results:** Food insecurity was 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-using population merits further examination.  
**Financial Support:** U01AA020780; U24AA020779; U24AA020778; U01AA021989; NIDA INVEST.

VARIABLE AVAILABILITY AS A DETERMINANT OF COCAINE CHOICE IN RHESUS MONKEYS.  
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**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 pharmaceutical interventions.  
**Financial Support:** NIH grants DA037619 to SLH, DA027666 to KBF, DA033795 and DA011792 to JKR.
PUCHIL: KETAMINE EXPOSURE ALTERS SENSITIVITY TO REWARD-RELATED STIMULI IN ADULTHOOD.
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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 NMDA (N-Methyl-D-aspartate) 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 reactivity 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.

Financial Support: NIGMS (SC2GM109811)

RATES AND CORRELATES OF SYPHILIS REINFECTION AMONG MEN WHO HAVE SEX WITH MEN IN SAN FRANCISCO.
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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 as 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 DeFurlo, Annie Umbricht, M Fingerhood, George Bigelow, Kenneth Silverman; 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. Here we analyze effects on opiate use with larger N’s by combining data from all three studies. Recently detoxified, heroin-dependent employed heroin users, employment-based reinforcement increased opiate abstinence.

Results: Analyses showed that Contingency group participants had significantly higher rates of naltrexone adherence than Prescription group participants (78.0% vs. 35.0%) and significantly higher rates of thrice-weekly opiate-negative urine samples (missing-missing: 87.4% vs. 75.6%; missing-positive: 68.9% vs. 55.9%).

Conclusions: Employment-based contingencies for adherence to naltrexone are effective and can increase opiate abstinence among unemployed heroin-dependent adults.

Financial Support: R01DA019386, R01DA019497, T32DA07209, Alkermes, Inc., supplied Vivitrol at no cost.
CHARACTERIZATION OF THE BEHAVIORAL PHENOTYPES UNDERLYING THE REINFORCING EFFECTS OF CANNABINOID RECEPTOR AGONISTS IN RHESUS MONKEYS.

William S. John, Michael Nader; Wake Forest School of Medicine, Winston-Salem, NC

Aims: The lack of a widespread method to establish Δ⁹-tetrahydrocannabinol (THC) self-administration (SA) remains an impediment for developing treatments for human marijuana abuse. Therefore, the major objective of this study was to establish the experimental conditions necessary for demonstrating intravenous SA of THC as well as the cannabinoid receptor (CBR) agonist CP 55,940 in threus monkeys. In addition, behavioral phenotypes underlying the individual differences in CBR agonist SA were characterized in order to determine critical variables that could be modified to optimize the procedure.

Methods: Rhesus monkeys (n=8), implanted with indwelling intravenous catheters, served as subjects and were trained to respond under a fixed-ratio 10 schedule of food presentation, with a 60-second timeout after each reinforcer. Once responding was stable, CP 55,940 (0.005-1.0 μg/kg), THC (0.03-10 μg/kg), and saline were substituted for food pellets, with each dose available for at least 5 sessions and until responding was deemed stable. There was a return to food-maintained responding between different CBR agonist doses.

Results: CP 55,940 functioned as a reinforcer in three of eight threus monkeys at doses lower than previously tested. In those three monkeys, non-contingent administration of CP 55,940 was least potent in decreasing food-maintained responding indicating an inverse relationship between the rate-decreasing effects and reinforcing effects (r=0.81, p<0.05). No relationship was found between the reinforcing effects and CP 55,940-induced hypothermia nor the unconditioned behavioral effects of the dopamine D₂/D₃ receptor agonist quinpirole. THC did not maintain responding higher than vehicle in any monkey.

Conclusions: These data indicate a potentially critical behavioral determinant of CBR agonist SA. Future experiments will determine if tolerance to the rate-decreasing effects of THC will enhance the reinforcing effects of THC. Such an outcome would suggest that preclinical models require a period of repeated drug treatment before assessing THC SA.

Financial Support: DA06634 (MAN) and T32 AA007565 (WSJ)

GENDER AND AGE BIAS IN DRUG AND ALCOHOL SCREENING.

J Aaron Johnson¹, Rebecca Howell¹, Paul Seale²; ¹Navicent Health, Macon, GA, ²Augusta University, Augusta, GA

Aims: Patient gender and age can affect the likelihood of a patient/provider discussion about alcohol and drug use. Drug and alcohol screening and brief intervention (SBI) should eliminate screening biases since screening is to be universally administered at predetermined intervals. This project uses chart review data from a multi-site alcohol and drug SBI residency training project to examine pre- and post-implemention screening rates by gender and age.

Methods: Chart review data are from 4 primary care residency clinics. Alcohol and drug SBI training and implementation occurred in phases. Alcohol SBI was implemented first with drug SBI implementation 12 months later. A random sample of patient charts were reviewed before alcohol SBI implementation (n=811), 12 months after alcohol SBI and immediately before drug SBI implementation (n=820), and 12 months after drug SBI implementation (24 months after alcohol SBI) (n=669). For this analysis we focus on the presence of a validated drug use screening instrument within the chart. Chi-square analyses identify potential gender and age screening biases.

Results: Prior to drug SBI implementation, 3.1% of patient charts contained evidence of screening with a validated drug screening instrument. There were no statistically significant differences in drug screening by gender or age. Twelve months after drug SBI implementation, 63.2% percent of charts contained a validated drug screening instrument but gender and age biases were evident. Validated drug screens were present in a significantly higher percentage of male charts than female charts (71.0% vs. 59.3%; p<.01). The 18 to 29 year old patients were least likely to receive a validated drug screen (38.5%) while older groups had higher screening rates (30 to 49 years, 65.0%; 50 to 64 years, 74.3%; 65 and older, 63.5%; p<.01).

Conclusions: While screening rates increased sharply with training and implementation, it does appear that some screening biases persist despite what should be universal and unbiased screening.

Financial Support: Substance Abuse and Mental Health Services Administration (Grant# T020278)
1-YEAR POST TREATMENT OUTCOMES FROM A RCT OF A BEHAVIORAL ACTIVATION TREATMENT FOR SUBSTANCE USE AND DEPRESSION.

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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 = .11, p = .02, CI: .036, .473). A serial multiple mediator model demonstrated that the effect of LETS ACT on increasing environmental reward (b = 1.75, p < .01) translated into a reduction in depressive symptoms (a₁ = -1.24, p < .001), which in turn led to a greater likelihood of abstinence (b₂ = .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.

Financial Support: R01 DA026624

COCAINE DECREASES PREFERENCE FOR CONDOM USE AS FUNCTION OF DELAYED CONDOM AVAILABILITY AND STI RISK.

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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.

Financial Support: R01DA032363 (MWT), T32DA007209

DIFFERENT TRAJECTORIES OF SMOKING BEHAVIORS ACROSS RACIAL GROUPS.

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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.

Financial Support: The authors declare that there is no conflict of interest regarding the publication of this abstract. Ms. Johnson was supported by the Washington University MD/PhD program. The NIH and other funding sources did not have a role in study design, data collection, or analysis.

ABUSE LIABILITY OF BUPRENORPHINE VS. BUPRENORPHINE/NALOXONE: IMPORTANCE OF ABSOLUTE AMOUNT.

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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 administrated 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.
ADOLESCENT CANNABIS USE DISORDER: ADAPTIVE TREATMENT FOR POOR RESPONDERS TO INITIAL TREATMENT.

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Aims: Examine retention and abstinence rates to a randomized continued care intervention of either 10 weeks of enhanced individual CBT or ACRA for adolescents with cannabis use disorders (CLUD) whowerepoor responders to initial common MET/CBT-7 intervention.

Methods: A total of 172 adolescents, 13-18 years of age, diagnosed with DSM-IV cannabis use disorder (CLUD), enrolled in this intent-to-treat design, randomized, outpatient study. The initial treatment phase was composed of weekly MET/CBT-7 manualized intervention (Webb et al. 2002). Poor responders to initial treatment (defined as drop outs or positive to drug urinalysis at last session of attended) were randomized into 10 weekly sessions of either enhanced individual CBT or Adolescent community reinforcement approach (ACRA). All study participants regardless of response to treatment participated in periodic follow-ups comprised of objective and subjective assessments starting at week 17.

Results: One hundred and sixty one subjects engaged in at least one session of the MET/CBT-7 treatment. Retention rate was 83% and abstinence at the end of treatment was 50%. Eighty subjects met criteria for poor responders including the 17% dropouts. 75% of treatment completers who had positive urines for cannabis engaged in the continued care (phase II). Thirty seven percent completers of phase II, had positive urines for cannabis, 27% of completers in phase II had reported positive urines for cannabis in the continued care (phase II). Abstinence rate was 40% for dropouts and 33% for completers of phase II. Thirty three percent completers of phase II had positive urines for cannabis.

Conclusions: Continued care for poor responders to initial treatment remains a therapeutic necessity and a clinical research challenge. In order to improve retention and abstinence rates various innovative adaptive treatment algorithms should be explored. One logical step may involve integrating incentives for improved retention and abstinence according to efficacious contingency management design and schedule.

Financial Support: Funded by the Connecticut Health Foundation.

PREVALENCE AND CORRELATES OF HAZARDOUS ALCOHOL USE AND CO-OCcurring MENTAL HEALTH PROBLEMS IN NEPAL FOLLOWING THE 2015 EARTHQUAKES.

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Aims: The risk for harmful alcohol use increases following traumatic events and hazardous drinking is thought to be a negative coping mechanism for mental health symptoms associated with the event. Few studies have investigated alcohol use problems following disasters in low- and middle-income countries. This study assessed the prevalence of hazardous alcohol use and rates of comorbidity with depression, anxiety, and post-traumatic stress disorder (PTSD), among 513 adults affected by the 2015 earthquakes in Nepal.

Methods: A three-stage cluster sampling design was used to randomly select 513 adults from three of the most heavily earthquake-affected districts in Nepal. The Alcohol Use Disorders Identification Test-Consumption was used to measure hazardous alcohol use. The Hopkins Symptom Checklist-25 and Post-traumatic Stress Disorder Checklist were used to assess depression/anxiety and PTSD, respectively.

Results: Prevalence of hazardous alcohol use in the overall sample was 20.4%. Among those who reported ever drinking (36.1% of the sample), 56.6% drank at hazardous levels. Among those who met criteria for hazardous alcohol use, 37.8% met criteria for depression, 35.3% for anxiety, and 5.2% for PTSD.

Conclusions: Overall prevalence of alcohol use was low but rates of hazardous use were high among those who reported ever drinking. Hazardous use also commonly co-occurred with depression and anxiety symptoms. Interventions that address both mental health and alcohol use problems are warranted.

Financial Support: The study was supported by a grant from the International Medical Corps. Dr. Kane and Ms. Greene are supported by a NIDA training grant in Drug Dependence Epidemiology (PI: Furr-Holden; T32DA007292).
HISTORIES OF ALCOHOL DEPENDENCE, PERCEIVED STRESS, AND DEPRESSION AMONG PEOPLE LIVING WITH HIV.
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Aims: To examine how histories of alcohol abuse and dependence are associated with stress and depression among people living with HIV.

Methods: Participants were paid $15 per hour ($75 for the week) and received $50 for completing the study. All participants completed a battery of questionnaires, including the Beck Depression Inventory (BDI) and 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 association 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.

Financial Support: Supported by R01MH53791, R01MH066697 (G. Ironson, P.I.), NIAAA Center grant P50 AA005595, and T32 AA007240.

DIFFERENCES IN DELAY DISCOUNTING BETWEEN HEROIN AND PRESCRIPTION OPIOID USERS.
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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 completed 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.

HOUSEHOLD SMOKING RULES AMONG PREGNANT AND NEWLY POSTPARTUM SmOKERS.
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Aims: Cigarette smoking during pregnancy is the leading preventable cause of poor birth outcomes in the U.S. Despite this, even the most efficacious interventions leave the majority of women smoking, leading to further secondhand smoke exposure for their children. Most interventions for pregnant smokers do not aim to reduce maternal tobacco smoke (ETS) exposure. To begin assessing the need for such an intervention, we examined rules about smoking in the home among pregnant and newly postpartum women enrolled in smoking cessation and relapse prevention trials.

Methods: Participants (N = 370) were current or recent smokers at the start of prenatal care who participated in controlled trials on smoking cessation or relapse prevention during/after pregnancy. Participants were followed from the start of prenatal care through 24 weeks postpartum. Participants were asked, “How is cigarette smoking handled in your home?” and could respond: 1: No one is allowed to smoke, 2: only special guests are allowed to smoke, 3: People are allowed to smoke in certain areas, and 4: People are allowed to smoke anywhere.

Results: The majority of women (75%) continued to smoke at 24 weeks postpartum. Approx. half (52%) of those who continued to smoke reported that they allowed smoking somewhere in the home, with 30% reporting that smoking was allowed anywhere. Abstainers were significantly less likely to allow smoking in the home (p<0.0001), with 28% reporting that they allowed smoking in some areas, and 9% reporting that they allowed smoking anywhere. In addition to smoking status, other significant predictors of smoking in the home included younger age, lower education, being single, fewer quit attempts, and heavier smoking.

Conclusions: Lax rules about smoking in the home are highly prevalent, especially in those who are not able to quit. Those providing smoking cessation interventions for pregnant women may want to consider adding ETS avoidance counseling.

Financial Support: NICHD R01HD070669

WHO SAYS YES? SAMPLE REPRESENTATIVENESS IN A CLINICAL TRIAL OF SBIRT.
Sydney Shane Kelpin1, Steven J Ondersma2, Dace Svikis1; 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 demographic, 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.

Financial Support: Research supported by R01 DA026091 (Svikis PI)

METHADONE PATIENTS IN PATIENT-CENTERED TREATMENT: ONE-YEAR ARREST DATA.
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Aims: To examine time to arrest for 295 opioid-dependent individuals enrolled in a study of patient-centered methadone treatment in Baltimore, MD.

Methods: This is a secondary analysis from a randomized trial comparing patient-centered methadone (PCM) to treatment-as-usual (TAU). PCM modified the methadone treatment program’s (MTP) rules (e.g., counseling was optional) and staff roles (e.g., counselors were not enforcers of MTP rules) to increase treatment retention and improve outcomes. Participants were 295 newly-admitted patients in two Baltimore MTPs randomly assigned to PCM (n=146) or TAU (n=149). Arrest data for one year following study enrollment were obtained from the Maryland Judiciary Case Search website. Cox proportional hazards regression was used to examine time to first arrest by study condition.

Results: Of 295 participants (59% male, 58% African American), 103 (34.9%) participants were arrested in the year following study enrollment – 50 (34.2%) PCM participants were arrested 70 times, and 53 (35.6%) TAU participants were arrested 83 times. The mean (SD) number of arrests (range 0-5) was 0.48 (0.78) for PCM and 0.56 (0.93) for TAU participants (p=0.44). Cox proportional hazards regression showed no difference in time to arrest between PCM and TAU (OR = 0.78, 95% CI = 0.66–1.43, p=0.87).

Conclusions: Patients required to attend group and individual counseling (TAU) did not have fewer arrests or a greater number of days to their first arrest than patients for whom counseling attendance was optional (PCM).

Financial Support: 2 R01DA015842
INTERNALIZING SYMPTOMS AND CONDUCT PROBLEMS: REDUNDANT, INCREMENTAL, 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. Differences were observed in perceived social support between drinking groups of both age groups. Differences were observed in perceived social support between drinking groups of both age groups.

Results: Results indicated a significant association between the number of MMLs and the prevalence of NMUPO. The prevalence of NMUPO was significantly lower in states with MMLs (p < 0.05). The prevalence of NMUPO was significantly lower in states with MMLs (p < 0.05). The prevalence of NMUPO was significantly lower in states with MMLs (p < 0.05). The prevalence of NMUPO was significantly lower in states with MMLs (p < 0.05).

Conclusions: The current study suggests that MMLs are associated with NMUPO in the context of conditional place preference.

NONMEDICAL USE OF PRESCRIPTION OPIOIDS AND MEDICAL MARIJUANA LAWS IN THE U.S. FROM 2004-2013
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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. 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 decreases 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 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 criterion 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.

FINANCIAL SUPPORT: This research was supported by National Institutes of Health Grants R01-DA033296, and F31-DA039708; the funding agency had no role in the design or execution of the study.

CXCR4 ANTAGONIST PLERIXAFO attenuates cue and cue/drug induced relapse to cocaine seeking and expression and development of cocaine-induced conditioned place preference
Jane K Kim1, Scott Rawlins2; 1Pharmacology, 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 decreases 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 drug-induced reinstatement to cocaine, on cocaine induced conditioned place preference, and identify a role for the CXCR4 system in cocaine reinforcement.

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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.

FINANCIAL SUPPORT: This research was supported by National Institutes of Health Grants R01-DA033296, and F31-DA039708; the funding agency had no role in the design or execution of the study.

SOCIAL NETWORKS, SUPPORT, AND ALCOHOL USE AMONG LATE MIDDLE-AGED AND OLDER ADULTS
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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 (OR= 0.80, 95% CI: 0.71—0.89). Significant differences were found in social network size between drinking groups in the 65+ group. Heavy drinkers in the 50-64 group showed less diverse social networks compared to light (OR= 0.16, 95% CI: 0.10—0.16), and moderate drinkers (OR= 1.11, 95% CI: 1.07–1.15). When comparing light drinkers, heavy drinkers had less diverse networks in the 65+ group (OR= 0.99, 95% CI: 0.56–1.75). No significant differences were observed in perceived social support between drinking groups of both age groups.

Conclusions: The association between social networks and alcohol use differ between late middle-aged and older adults, based on social network size and diversity.

FINANCIAL SUPPORT: T32DA07277-22
FAR-ELICITING ANTIMOKING ADS UNINTENTIONALLY MOTIVATE SMOKERS TO CONSIDER AN E-CIGARETTE: THE BOOMERANG EFFECT.

Sunny Jung Kim, Lisa A. Marsh; 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 33.7 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 modeling showed that antismoking ads indirectly increased intention to vape an e-cigarette due to an increased intention to quit smoking (B = .17, p < .05), whereas the anti-vaping materials did not have such effects (B >.08, p > .05). Final models included age, sex, race/ethnicity, sex, race/ethnicity, employment status, smoking status, and smoking status (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.

Financial Support: NIH/NIDA R01DA029926

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 Patts, Timothy Heeren, Richard Saitz; 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. A systematic 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 <.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.

Financial Support: U01AA020784, U24AA020779, U24AA020778

AN ANALYSIS OF THE REWARDING AND AVERSIVE ASSOCIATIVE EFFECTS OF NICOTINE IN THE NEONATAL QUINPIROLE MODEL OF SCHIZOPHRENIA: UNDERLYING MECHANISMS AND THE EFFECTS OF ANTIPSYCHOTICS.

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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 antipsychotics 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 P41-42, 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<.05), and 3) neonatal quinpirole significantly decreased accumal 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.

Financial Support: NIH 1R15DA 034912-01 to RWB

MEDICAL MARIJUANA DISPENSARIES IN LOS ANGELES: ACCESS AND SERVICE AMONG YOUNG ADULTS.

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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 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 result 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.

Financial Support: NIDA R01 DA034667
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.

Financial Support: Supported by NIDA R01-DA033296 (Leventhal).

ADDICTION-LIKE AND COGNITIVE EFFECTS OF ADOLESCENT CANNABINOID SELF-ADMINISTRATION IN RATS.
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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—cannabis 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>0.7). In 6hr rats, 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=0.7).

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.

Financial Support: K01DA071345; Pennsylvania Department of Health

SOCIAL FACILITATION OF ALCOHOL EFFECTS PREDICTS SELF-REPORTED PROGRESSION OF USE IN ADOLESCENTS.
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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 in 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 “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 (β=0.23; 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.

Financial Support: Supported by NIDA R01-DA033296 (Leventhal).

PARTICIPATION OF CC-CHEMOKINE LIGANDS IN REWARD SYSTEM ON METHAMPHETAMINE-INDUCED PSYCHOLOGICAL DEPENDENCE IN MICE.
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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 neuroinflammation. In this study, we examined the possibility of CCL involvement in METH-induced psychological dependence.

Methods: Male C57Bl6 mice were used. METH-induced gene expression was evaluated 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 (CC2R), 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 pTH in VTA were also observed by recombinant CCL2 and CCL7 (i.c.v.). The METH-induced increase in pTH was attenuated by CC2R antagonist (RS504393). In CPP test, METH (0.3 – 3 mg/kg) induced 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 D, 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.

Financial Support: Supported by KAKENHI 26860357.
Kappa Opioid Receptor Agonist 16-Ethynyln Salvinorin A Attenuates the Rewarding Effects of Cocaine in the Progressive Ratio Model in Rats With Fewer Side-Effects.

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Aims: Acute activation of kappa opioid receptors (KOPs) is known to suppress the effects of cocaine and other drugs of abuse. However, side-effects such as aversion, sedation, and depression limit their clinical use. 16-ethynyln salvinorin A (Ethy-SalA), is a more potent analogue of salvinorin A (SalA) that has recently 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.

Financial Support: Neurological Foundation of New Zealand (BK)

Reduction in Cigarettes Per Day Prospectively Predicts Quit Attempts and Cessation in Smokers Who Are Not Ready to Quit.

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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 to either reduce CPD, increase motivation, or provide brief advice to prompt a quit attempt (QA). Self-reported CPD was measured at baseline and a 1-month follow up. Participants reported 24 hour CPDs via monthly surveys and 7-day point prevalence abstinence at a 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: Of the 258 participants who did not reduce or increased CPD, 25% made a QA and 6% were abstinent at 12 months. Of the 302 participants who did not reduce any CPD, 51% made a QA and 9% were abstinent at 12 months. Of the 258 participants who reduced any CPD, 11% increase in the odds of abstinence at month 12. Of the 258 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 7-day point prevalence abstinence at a 12 month follow up. Treatment to either reduce CPD, increase motivation, or provide brief advice to prompt a quit attempt (QA). Self-reported CPD was measured at baseline and a 1-month follow up. Participants reported 24 hour CPDs via monthly surveys and 7-day point prevalence abstinence at a 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.

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 FCV+ injectors to enhance identification and access to efficacious HCV treatment.

Financial Support: This study was supported by NIH/NIDA R1 R24 DA019798

HCV Incidence and Treatment in Aging Latino Injectors.

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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 population.

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 to recruit injection. Chi-squared 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.

Conclusions: 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).

Financial Support: The ELEVATE grant: Irish Research Council International Career Development Fellowship – co-funded by Marie Curie Actions (ELEVATEPD/2014/6); and the Health Research Board of Ireland grant (HRA-HSR-2012-14) supports Dr. Jan Klimas. Dr. Kanna Hayashi is supported by the Canadian Institutes of Health Research Board of Ireland grant (HRA-HSR-2012-14) supports Dr. Jan Klimas. Dr. Evan Wood. Dr. Milloy is supported in part by the National Institutes of Health (R01-DA021525). The ELEVATE grant: Irish Research Council International Career Development Fellowship – co-funded by Marie Curie Actions (ELEVATEPD/2014/6); and the Health Research Board of Ireland grant (HRA-HSR-2012-14) supports Dr. Jan Klimas. Dr. Kanna Hayashi is supported by the Canadian Institutes of Health Research New Investigator Award (MSSH-141971).

The Impact of Enrollment in Methadone Maintenance Therapy on Initiation of Heavy Drinking Among People Who Use Heroin.

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Aims: There is equivocal evidence regarding whether people who use heroin substitute heroin for alcohol upon entry to methadone maintenance therapy (MMT). We aimed to examine the impact of MMT enrolment on the onset of heavy drinking among people who use heroin.

Methods: We derived data from prospective, community-based cohorts of people who inject drugs in Vancouver, Canada, between December 1, 2005 and May 31, 2014. Multivariable extended Cox regression analysis examined the effect of MMT enrolment on the onset of heavy drinking among people who used heroin at baseline.

Results: In total, 357 people who used heroin were included in this study. Of these, 208 (58%) enrolled in MMT at some point during follow-up, and 115 (32%) reported initiating heavy drinking during follow-up for an incidence density of 7.8 events [95% confidence interval (CI) = 6.4–9.5] per 100 person-years. MMT enrolment was not significantly associated with time to initiation of heavy drinking (adjusted relative hazard = 0.79; 95% CI = 0.54–1.16) after adjustment for relevant demographic and substance-use characteristics.

Conclusions: These findings could help inform ongoing discussions about the effects of opioid agonist therapy on alcohol consumption among people who use heroin.

Financial Support: US National Institutes of Health supported the study (R01DA021525, U01DA038886). This research was also undertaken, in part, by funding from the Canada Research Chairs program through a Tier I Canada Research Chair in Inner City Medicine, and by the US National Institutes of Health (R25DA037756) that supports Dr. Evan Wood. Dr. Milloy is supported in part by the National Institutes of Health (R01-DA021525). The ELEVATE grant: Irish Research Council International Career Development Fellowship – co-funded by Marie Curie Actions (ELEVATEPD/2014/6); and the Health Research Board of Ireland grant (HRA-HSR-2012-14) supports Dr. Jan Klimas. Dr. Kanna Hayashi is supported by the Canadian Institutes of Health Research New Investigator Award (MSSH-141971).
A SUMMARY OF ADDICTION SERVICES IN A CANADIAN CITY: PRELIMINARY RESULTS FROM AN INTERNET-BASED SCOPING STUDY.
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Aims: The aim of this study was to identify and classify 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.
Financial Support: None

CIGARILLO USE PATTERNS AMONG ADOLESCENTS.
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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=2059, 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 smoking.
Results: 9.1% of students had tried a cigarillo and smoked it 2.95 days (SD=7.57) in the past 30 days. Relative to never cigarillo smokers, ever cigarillo smokers were more likely to be male (53.1% vs. 45.5%), White (66% vs. 47%), and older. Top reasons for trying a cigarillo were curiosity (47.5%), appealing flavors (36.0%), and use by friends (31.1%). Adjusted logistic regression analyses showed that low cost (p=0.004), parental/familial use of cigarillos (p=0.008), a perception that cigarillos are “cool” (p=0.018), and the ability to change the wrapper (p=0.004) and the amount of tobacco (p=0.002) were associated with greater cigarillo smoking days. Trying cigarillo because of “curiosity” was associated with fewer cigarillo smoking days. Trying cigarillo because of “curiosity” was associated with fewer cigarillo smoking days. Trying cigarillo because of “curiosity” was associated with fewer cigarillo smoking days. Trying cigarillo because of “curiosity” was associated with fewer cigarillo smoking days.
Conclusions: Preventing the manipulation of cigarillos, increasing the monetary cost, and parental prevention efforts may deter more frequent use. Restricting appealing flavors may prevent new initiates.
Financial Support: P50DA036151, P50DA009241

EFFECTS OF CHRONIC NICOTINE TREATMENT AND DISCONTINUATION ON NICOTINE SELF-ADMINISTRATION.
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Aims: Although nicotine replacement therapy is commonly utilized in clinical practice, there is little information regarding the modulation of nicotine self-administration in laboratory animals by chronic nicotine exposure. The present study was conducted to address this question by characterizing the effects of continuous nicotine dosing on the reinforcing effects of intravenous (IV) nicotine in non-human primates.
Methods: Adult rhesus macaques (N=3) first were trained to respond for food pellets and, in a separate component of the daily 100 min session, IV injections of nicotine (0.01 mg/kg) under a fixed ratio (FR) 1 schedule of reinforcement. After self-administration of nicotine became stable, subjects were implanted with an osmotic mini-pump containing a nicotine solution; the daily dose of nicotine (1.0 – 3.2 mg/kg/day) increased in ascending order every 7-14 days. Finally, the effects of removing minipumps (i.e., discontinuation) on nicotine self-administration was evaluated.
Results: Results indicate that baseline self-administration of 0.01 mg/kg/inj ranged between about 35 – 59 inj/90 min in the three subjects. Averaged results show that chronic nicotine treatment decreased self-administration of 0.01 mg/kg nicotine in a dosage-dependent and sustained manner. The highest dosage (3.2 mg/kg/day) decreased daily nicotine intake to approximately 50% of control values. Following the discontinuation of nicotine treatment, IV nicotine self-administration first increased to approximately 150% of previous control values, then gradually (over the course of a week) returned toward baseline levels. No effects on food-maintained responding were observed at any point during or after chronic nicotine treatment.
Conclusions: These data show that chronic nicotine treatment dose-dependently and selectively decreases the reinforcing effects of nicotine, and that the discontinuation of treatment may lead to a sharp increase in nicotine intake.
Financial Support: Supported by NIH DA039306 and DA026892.
CHRONIC FRUCTOSE CONSUMPTION ENHANCES CUE-TRIGGERED COCAINE- AND FOOD-SEEKING.
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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-naive 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.
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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. Predicting behavior 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 visible neighborhood disorder (NIJET)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 .52-.64, Cocaine Craving .36-.55, Stress .38-.45, r: Positive Mood .71-.78, Negative Mood .52-.63) 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

IMPACT OF A STRENGTHS-BASED CASE MANAGEMENT INTERVENTION ON HIV VIRAL LOAD AMONG PEOPLE WHO USE DRUGS IN OAKLAND, CALIFORNIA.
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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 compared to PWID or PWSC 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 case 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 transgender. 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-site RCT and may be useful for management of other infectious diseases like viral hepatitis.

Financial Support: National Institute on Mental Health grant R01MH094090

THE QUEST TO EXTEND HEALTH SERVICES TO VULNERABLE SUBSTANCE USERS IN RIO DE JANEIRO, BRAZIL IN THE CONTEXT OF AN UNFOLDING ECONOMIC CRISIS.
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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.

Methods: This paper aims to document the current deficiencies marginalizing the population of poor and largely stigmatized drug users in Brazil and how they are changing 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.

Financial Support: There was no particular funding support for this paper.
COMPOSITION OF THE N-METHYL-D-ASPARTATE RECEPTOR PROTEIN COMPLEX IN THE MEDIAL PREFRONTAL CORTEX ASSOCIATES WITH INDIVIDUAL DIFFERENCES IN MOTOR IMPULSIVITY.

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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 membrane of the prefrontal glutamate receptor activity 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. Nose-pokes before presentation of the visual stimulus (i.e., premature responses) indexed motor impulsivity. The upper and lower quartile of animals were identified as HI or LI rats, respectively. Following phototypic identification, 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 over 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.

Financial Support: R00 DA033574, T32 DA007287

THE EFFECT OF TREATMENT FOR OPIOID USE DISORDERS ON THE COSTS OF CRIME.

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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 (~$147-$157,$157) 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 RO1DA031727, R01 DA032551, P30DA016383

303

EXTENDED VS. BRIEF INTERMITTENT ACCESS TO PALATABLE FOOD DIFFERENTLY PROMOTE BINGE-LIKE INTAKE AND REJECTION OF LESS PREFERRED FOOD IN FEMALE RATS.

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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 intermit tency of access to palatable food analogously influence the development of binge-like intake of palatable food and of the underacceptance of alternative, less preferred food.

Methods: Female rats (n = 32) were given intermittent (MW, from dark onset) or continuous (ADLIB-choc) access to a sucrose-rich, palatable, chocolate-flavored diet for 6-7 weeks. Intermittent rats were subdivided into extended (24h/day, MW-24h) or brief access groups (30min/day, MW-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, MW-24h rats significantly overate on palatable diets (~80-90 kcal/day) and underate on chow diets (~20-30 kcal/day) vs. ADLIB rats (~60 kcal/day). In contrast, ADLIB-choc and ADLIB-chow groups did not differ in total daily intake. In MW-30m rats, 30-min intake (23-28 kcal, ~40% daily intake) exceeded that of MW-24h (15-20 kcal, ~19% daily intake), ADLIB-choc (2.5 kcal, ~6% daily intake) and ADLIB-chow (1.3 kcal, ~3% daily intake) groups. However, unlike MW-24h rats, the MW-30m group did not develop cyclic daily caloric intake, showed 24h intake comparable to that of ADLIB rats, and did not underate on palatable food.

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.

Financial Support: Supported by NIAAA T32 AA07456-33

304

NALOXONE-PRECIPITATED WITHDRAWAL FOLLOWING SUCROSE SELF-ADMINISTRATION IN C57BL/6 MICE.

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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
PREGABALIN FOR OPIOID DETOXIFICATION: INTERIM RESULTS.
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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 anxiolytic and hypnotic that modulates GABA-ergic 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, loperamide, naphazoline and phenazepam. 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 AE’s, 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
FINANCIAL SUPPORT: RO1DA026336-02
SOME CONTEXT FOR UNDERSTANDING THE PLACE OF THE GED IN THE RELATIONSHIP BETWEEN EDUCATIONAL ATTAINMENT AND SMOKING PREVALENCE.
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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 risk 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.
BNZODIAZEPINE DEPENDENCE AMONG YOUNG ADULTS IN THE CLUB SCENE: DATA FROM A SECOND COHORT.
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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 (recruitment 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-R 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.
Conclusion: 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.
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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.
Conclusion: 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.
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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 and 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=23.90) 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%) 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=.54, 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 INTENSITY AFTER PPAR-GAMMA AGONIST TREATMENT FOR COCAINE USE DISORDER.
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Aims: Research indicates reduced white matter (WM) integrity in cocaine users. Peroxisome proliferator-activated receptor gamma (PPARγ) agonists may have neuroprotective potential in CNS disorders. In a study examining PPARγ agonist pioglitazone (PIO) in individuals with cocaine and alcohol use disorder (CUD + AUD), we tested the hypothesis that PIO (vs PLC) would improve WM integrity from pre- to post-treatment.

Methods: Subjects received PIO 45 mg or PLC and behavioral therapy for 12 weeks of treatment. Before (week 0) and after (week 12) medication treatment, all participants were scanned under MRI and DTI protocols. Eighteen participants (8 PIO, 10 PLC) completed all 12 weeks of treatment and provided both week 0 and week 12 scans.

Results: PIO and PLC subjects were not significantly different in demographics. DTI results showed group differences in week 0 to week 12 change (FA value) in the corpus callosum and the posterior thalamic radiation, with increases in the PIO-group and decreases in PLC. T1-weighted MRI results similar group differences for cortical volume (CV) in the superior frontal cortex, orbitofrontal cortex, and posterior cingulate, with increases in the PIO-group and decreases in PLC.

Conclusions: PIO-treated subjects showed improvements in WM integrity and cortical volume. FA and CV are indicators of CNS integrity and brain injury, so these preliminary results suggest a neuroprotective effect of PIO in CUD+AUD subjects. The DTI findings map onto WM brain regions previously identified in CUD.

Financial Support: NIDA Grants P50 DA009262; U54 DA038999; S10 RR019186-01, P50 DA033935, P20 DA024157

311

ASSESSMENT OF THE ABUSE POTENTIAL AND BENEFITS OF KRATOM AND ITS MITRAGYNNINE ALKALOIDS:
IMPLICATIONS FOR REGULATION.
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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 opiate alkaloids and cannot be converted to an opiate derivative. MG and 7-OH-MG are µ agonists, but with a low maximal effective 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 prescription and over-the-counter drugs, as well as coffee and tea.

Financial Support: RL is an employee of US Nationals, which markets products containing kratom, and provided funding for this study. RF, EC, and JH have provided paid consulting services to US Nationals.

312

BECOMING A (MEDICINAL) MARIJUANA USER.
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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 via 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
MARIJUANA USE IN YOUNG ADULT WOMEN & MEN ATTENDING PRIMARY CARE: RESULTS FROM A PILOT STUDY INTEGRATING BEHAVIORAL HEALTH CARE INTO PRIMARY CARE.

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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 harms. 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 annual 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 (3UG1DA040314-01S1) & AHRQ (R18 HS023173)

LIFE CHAOS AMONG DRUG USERS AND NON-DRUG USERS.
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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 who endorsed 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 instrument assessing life chaos into domains (perceived life chaos, home, monetary, legal, unpredictability, interpersonal, violence, illness, control). Chi-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, UL1 RR029890, D 43-TW009120

SYSTEMATIC REVIEW AND META-ANALYSIS OF INJECTING RELATED INJURY AND DISEASE IN PEOPLE WHO INJECT DRUGS.
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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.

JUICE HERON IN USE AND METHADONE MAINTENANCE TREATMENT OUTCOMES.
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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<.05). Injector groups did not differ in days retained or proportion of opioid positive UDS over the initial 3 months of treatment (p=.05). Injectors provided a higher proportion of cocaine (p=.022) and a lower proportion of benzodiazepine positive UDS (p=.006), 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.

Financial Support: R01DA034537, R01DA015462, Joe Young St./Helene Lycaki Funds (Michigan), and Detroit Wayne Mental Health Authority
UNOBSERVED HOME INDUCTION ONTO BUPRENOPHINE: OUTCOMES AT YEAR 7.
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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 for the first time for BUP maintenance treatment from 2006-2013. Unobserved induction consisted of a 1-week buprenorphine written prescriptions, 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 17%. Induction-related AE were 12%: serious adverse events, 0%; precipitated withdrawal, 3%; prolonged withdrawal, 4%. Overall treatment retention was 17%. Induction-related AE were 12%: serious adverse events, 0%; precipitated withdrawal, 3%; prolonged withdrawal, 4%. Overall treatment retention was 17%.

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 POTENTIALLY AND SELECTIVELY INHIBIT VESICULAR MONOAMINE TRANSPORTER-2 FUNCTION AND METHAMPHETAMINE-STIMULATED LOCOMOTOR ACTIVITY.
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Aims: Despite that methamphetamine (METH) abuse remains a serious problem, there are no pharmacological treatments for METH abuse that are approved by 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 analogs 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 (K. = 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 potently and selectively inhibited VMAT2 and attenuated METH-stimulated locomotor activity.

Financial Support: Supported by NIH U01 DA013519

WITHDRAWN

318

OXYTOCIN REDUCED MOTIVATION TO TAKE COCAINE IN FEMALE RATS AND REDUCED REINSTATED DRUG SEEKING IN MALE AND FEMALES.
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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)=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 reinstated cocaine seeking to cues and drug prime, and this reinstated responding was reduced by oxytocin potentially through an mGluR2/3 mechanism.

Financial Support: NIDA DA016511; NIDA T32 DA72888

319

WITHDRAWN
ILLEGAL DRUG USE AND CRIMINAL BEHAVIOR AMONG KENTUCKY JUVENILE OFFENDERS.

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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 more 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 have property (34.8% vs. 13.6%) 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. 2.0%). Logistic regression found that age (p<0.001), having a property charge (p<0.002) and having a drug-related charge (.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.

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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.

Financial Support: This work was funded by the Canadian Institute of Health Research grant #20748. Elise Roy holds the Chair in Addiction Research funded by the Charles Lemoyne Hospital Foundation and the University of Sherbrooke Foundation in Quebec, Canada.

HEALTH CHARACTERISTICS AND SEXUAL RISK BEHAVIORS AMONG YOUNG ADULT PRESCRIPTION OPIOID MISUSERS IN THE CLUB SCENE: EXAMINING THE ROLE OF GENDER.

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Aims: Prescription opioids (PO) are the second most popular drug among young adult substance use initiates 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.

Financial Support: This research was supported by grant number DA0196048 from the National Institute on Drug Abuse.
ASSOCIATION BETWEEN WORKING MEMORY, IMPULSIVITY AND PROBLEMATIC TECHNOLOGY USE.

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Aims: This study examined whether trait impulsivity and working memory, known predictors of problem use, also influence problematic technology use (i.e., ‘smart’ phone and video game 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 = 0.06), F(3,636) = 12.9, p < .05), while working memory accounted for 2.5% 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 15.4% of the variance in problematic smart phone use (p < .05), while working memory accounted for 4.3% of the variance (p < .05).

Conclusions: The study 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.

SUBJECTIVE HAPPINESS MODERATES THE EFFECTS OF NICOTINE DEPENDENCE ON ACUTE TOBACCO WITHDRAWAL IN AFRICAN-AMERICAN SMOKERS.

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Aims: Prior research shows that both highly dependent tobacco smokers and African-Americans (AAs) may be at increased risk for tobacco withdrawal symptomatology and poor cessation outcomes. Happiness may be a buffer against dependence and other determinates of withdrawal-related distress, yet this prospect has not previously been investigated. This lab study examined subjective happiness (e.g., one’s own sense of whether one is generally a happy or unhappy person) as a moderator of the relation between nicotine dependence and acute negative subjective withdrawal symptoms in AA smokers.

Methods: AA smokers (N = 221) attended a baseline session involving self-report measures of nicotine dependence and subjective happiness. Self-report withdrawal symptoms were then assessed during two counterbalanced experimental sessions (non-abstinent vs. 16-hr. abstinence).

Results: After controlling for age, sex, depression, and non-abstinent withdrawal levels, happiness significantly moderated the relationship between nicotine dependence and abstinence-induced withdrawal symptoms (β = -.18, p < .01), such that the predictive effect of dependence on withdrawal was weakened with increasing levels of happiness. The relation of dependence and abstinence-induced withdrawal was 2.24 (p < .001) for individuals 1 SD below the mean level of happiness, 1.37 (p < .001) for individuals at the mean level of happiness, and 0.49 (p = .25) for individuals 1 SD above the mean level of happiness.

Conclusions: These results suggest that happiness may buffer against the adverse effects of nicotine dependence on withdrawal during abstinence, thus highlighting that heavily dependent AA smokers may benefit from smoking cessation treatments that target subjective well-being. Beyond clarifying this possibility, future translational research in this vein could be a productive step towards bridging tobacco-related disparities faced by AA smokers.

Financial Support: Supported by ACS RSG-13-163-01 and NIDA K01 DA040043

REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION OF THE DORSAL LATERAL PREFRONTAL CORTEX INHIBITS MEDIAL ORBITOFRONTAL ACTIVITY IN SMOKERS.

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Aims: Several studies have shown that repetitive transcranial magnetic stimulation (rTMS) can reduce cue-elicited craving and decrease cigarette consumption in smokers. However, the mechanism of TMS is unclear. Functional magnetic resonance imaging (fMRI) has been used in nicotine dependence. We hypothesize that rTMS of the left DLPFC would modulate the top-down prefrontal-striatal brain networks to reduce cue-induced craving in nicotine dependence.

Methods: The participants randomly received two different types of brain stimulation: real rTMS or sham rTMS over the left DLPFC with a 1 week interval between treatments. Smoking cue-elicited craving fMRI scans were completed pre and post rTMS session. The rTMS protocol was used in a previous study (10 Hz, 5 second on, 10 second off, 100% motor threshold, total 3000 pulses).

Results: Eleven non-treatment-seeking nicotine-dependent cigarette smokers were enrolled for the study, 5 males and 6 females, average age of 39.7 (SD=13.2), average cigarettes per day of 17.3 (SD=5.9), average FTND score of 5.2 (SD=1.8). Functional MRI demonstrated that a single session of 3000 pulse rTMS inhibits brain activity in contralateral medial orbitofrontal cortex (mOFC) and ipsilateral nucleus accumbens (Nac). Subjective craving ratings with hand-pad in scanner positively correlated with brain activity of mOFC in sham rTMS, but not in real rTMS.

Conclusions: The preliminary data suggest that one session of 3000 pulses at 10 Hz rTMS can modulate the top-down control prefrontal-striatal neural networks in smokers with decreased brain activity in Nac and orbital frontal cortex.

Financial Support: Funding was provided by MUSC Psychiatry Chair Fund (Li) with additional support from R21DA036752-01A1 (Li).

PSYCHOPATHOLOGICAL SYMPTOMS, IMPULSIVITY AND DECISION MAKING IN HIV PATIENTS WITH AND WITHOUT TOBACCO SMOKING.

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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 psychopathology 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, GDT, and Wisconsin Card Sorting Test, WCST), and 7 neurocognitive domains.

Results: SCL-90: HIV+ and tobacco-smokers both had higher symptom scores (all p<0.05), with additive effects in HIV+ Smokers on all subscales. CES-D: Both HIV subjects and smokers (both p<0.01) had higher scores. BIS: Both HIV and smoking participants had higher Total Impulsiveness scores (both p<0.05), and Attention Impulsiveness scores (both p<0.05). HIV subjects scored higher on Non-Planning Impulsiveness (p<0.04). GDT: Although HIV and smokers did not differ, HIV+ smokers lost more money (p<0.009) and made more disadvantageous choices (p<0.02) than SN. WCST: HIV+ and smokers (both p<0.05) both made more errors on WCST. Neurocognitive z-scores: HIV+ subjects scored lower on both global (p<0.007) and memory (p<0.02) 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 premonitory. 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.

Financial Support: R24-DK016170 to LC.
IMPACT OF THE OPIOID SAFETY INITIATIVE ON OPIOID PRESCRIBING PRACTICES IN THE VETERANS HEALTHCARE ADMINISTRATION.

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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.

Financial Support: Supported by VA QUERI Grant # RRP 13-251.
COCAINE SELF-ADMINISTRATION AND SINGLE PROLONGED STRESS PRODUCE HYPERAROUSAL-LIKE, BUT NOT ANXIETY-LIKE, BEHAVIOR IN RATS.

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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 extinction 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.

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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.

Financial Support: NIH R01 DA034537 and R01 DA015462, Joe Young, Sr./Helene Lycaki Funds (State of MI), Detroit Wayne Mental Health Authority.

EVALUATION OF TAILORED THERAPEUTIC RECOMMENDATIONS TO IMPROVE USE OF AN AUTOMATED TELEPHONE-BASED TREATMENT FOR METHADONE.

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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.

Financial Support: NIDA R01034678

CRIMINAL JUSTICE INVOLVEMENT AND VIOLENCE IN CIVILIANS WITH SUBSTANCE USE DISORDERS AND POSTTRAUMATIC STRESS DISORDER.

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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.).
337

MALE-FEMALE DIFFERENCES IN CANNABIS USE ONSET AMONG U.S. ADOLESCENTS AND YOUNG ADULTS IN THE 21ST CENTURY.

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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.

Financial Support: NIDA K05DA0157999(JCA), T32DA021129 (CLQ) & MSU.

338

PAY FOR PERFORMANCE AND TREATMENT OUTCOME IN MEDICATION ASSISTED TREATMENT.

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Aims: Pay for Performance (P4P) models, which offer fiscal incentives to healthcare 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 (Brucker & 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%, x² = 6.4, p > .05), cocaine (61.1%, x² = .03, p > .05), or benzodiazepines (57.4%, x² = .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 (x² = 6.11, p < .05) and benzodiazepines (x² = 4.86, p < .06) 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.

Financial Support: None

339

PARALLEL CHANGES IN BRAIN GABA LEVELS, SLEEP AND MOOD STATE DURING ACUTE COCAINE WITHDRAWAL: PREDICTORS OF “READINESS FOR TREATMENT”?

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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 GABA alterations during cocaine withdrawal and subsequent abstinence are unknown and clinical studies indicate that this approach needs refinement with unknown and clinical studies indicate that this approach needs refinement with smaller (x² = 4.86, p < .06) at six month follow-up than those who did not.

Results: Brain GABA/NAA levels in healthy control subjects remained stable throughout weekly assessments. In contrast, GABA levels in cocaine subjects were 7% lower at baseline. After abrupt withdrawal, GABA levels in all subjects significantly increased by 20% on day 3 but then returned to baseline by Day 7; values on Day 21 remained variable. The changes during the first week of abstinence were paralleled by a 5% increase in cocaine craving and 15.9% increase in total sleep time.

Conclusions: These data confirm that fundamental brain chemical changes occur in prefrontal cortex during the initial phase of cocaine withdrawal and that these metrics may be helpful in 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.

Financial Support: NIDA R21DA03647 (SEL)

340

MARIJUANA USE FREQUENCY IS ASSOCIATED WITH VIRAL LOAD SUPPRESSION AND BIOBEHAVIORAL OUTCOMES IN HIV+ PATIENTS.

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Aims: People living with HIV/AIDS (PLWHAs) are among the heaviest users of medical marijuana (MJ), but little is known about MJ effects on viral load suppression, physical and mental health symptoms, acute care utilization, and other substance use in PLWHAs. This study assesses the impact of MJ use on biobehavioral health outcomes in PLWHAs.

Methods: Consententing patients attending a large, urban HIV clinic completed standardized questionnaires and clinician interviews, and agreed to electronic health record data retrieval, to measure MJ use, other substance use, physical/mental health symptoms, and health care utilization.

Results: Of 217 patients assessed, 29 reported never having used MJ lifetime, and during the past 3 months (i.e. recently) 89 reported no MJ use, 57 reported regular nondaily use, and 42 reported daily use. Compared to nondaily and daily current users, never-users and recent nonusers were older and more likely to show viral load suppression. Daily users reported greater memory loss, fatigue and pain compared to never-users. Daily users also reported more emergency-department utilization, more severe health symptoms including poor appetite, nausea, and weakness, but less alcohol use, compared to never-users and recent non-users. Nondaily users were more likely to report problems with appetite and sleep than never-users.

Conclusions: MJ use in these HIV+ patients is common and current use is associated with more severe health complaints. Whereas MJ use may be a risk factor for viral load non-suppression, stopping MJ use for 90 days may mitigate that risk. It is unclear whether unhealthier patients may self-select MJ use, or if heavier MJ use may lead to poorer health outcomes.

Financial Support: NIH R01 DA032678, Joe Young Sr./Helene Lycaki Funds (State of Michigan), and Detroit Wayne Mental Health Authority.
EXERCISE DURING EARLY, BUT NOT LATE ABSTINENCE, ATTENUATES SUBSEQUENT RELAPSE VULNERABILITY IN A RAT MODEL.

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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 depend on when exercise is first initiated, during early versus late abstinence.

Methods: One 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 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.

Financial Support: NIDA grants R01DA024716 and R01DA024716-S1 (WJL)

TRENDS IN RECEIPT OF MEDICATION-ASSISTED TREATMENT FOR PREGNANT WOMEN WITH OPIOID USE DISORDER IN THE UNITED STATES.

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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 women pregnant 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.

Financial Support: None

A DYNAMIC CAUSAL MODELING STUDY OF THE REWARD SYSTEM IN MARIJUANA USERS.

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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.

Financial Support: NIDA Grants # R01 DA034131 (LM), U54 DA038999 (FGM/JLS)

ASSESSING NATURALISTIC RISK-TAKING IN NONDAILY SMOKERS USING A NOVEL MENTAL BALLOON ANALOGUE RISK TASK.

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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 subspecific 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 mental 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 (TTFc). 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 TTFc 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.

Financial Support: Funding provided by American Psychological Foundation through the F.J. McGuigan Dissertation Award (RRM) and the National Institute on Drug Abuse (SJW; R03DA035929).
CRACK/COCAINA CONSUMPTION AND URBAN VIOLENCE IN BRAZIL: DATA FROM THE BRAZILIAN NATIONAL ALCOHOL AND DRUGS SURVEY.
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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%). Stata 13 and Process for SPSS 22 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 2.0%, whilst being a perpetrator was reported by 6.1% of the population. Crack cocaine users were 4.2 (CI:0.2-17.2) times more likely to perpetrate urban violence. They also were also 11.5 times more likely to have alcohol dependence disorder (CI:4.0-32.64). 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 (index:0.01, 0.003-0.005). binge drinking significantly moderates this mediation (effect:0.02, 0.004-0.05).

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.

Financial Support: CNPq Grant No 55.0024/2011-5

ALCOHOL AND COCAINE USE AND DRUG DISTRIBUTION AMONG FORMERLY INCARCERATED BLACK MEN.
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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 his 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=0.02) to sell drugs. Men who used alcohol in the last 30 days were 4.2 (Exp B=4.23, p=0.03) 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=0.03) 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<0.01) to sell drugs than men that 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.


META-ANALYSIS AS A FORM OF EVIDENCE: AN EXAMINATION OF THE COCHRANE REVIEWS FOR BEHAVIORAL HEALTH.
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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 ranked each review by consensus on the analytic dimensions.

Results: 25 of the reviews were formal meta-analyses; seven were reduced to systematic reviews due to lack of poolable 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): I^2 = 43% (range = 0% - 91%, sd = 36%); but I^2 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.

KETAMINE-INDUCED CHANGES IN RESTING STATE FUNCTIONAL CONNECTIVITY IN CONSCIOUS NONHUMAN PRIMATES: IMPLICATIONS FOR DRUG ABUSE.

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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.

Financial Support: This research was supported by P51OD11132 (Yerkes sub-anesthetic ketamine infusion on cocaine self-administration).

IMPACT OF LISDEXAMFETAMINE ON RETENTION OF METHAMPHETAMINE-DEPENDENT PATIENTS IN A RESIDENTIAL FACILITY.

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Aims: Determine whether baseline characteristics predict retention and whether retention differed between placebo (PLA) vs. lisdamphetamine (LDEX) (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 treatment.

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 vitals 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 (4.85 vs. 3.92 vs. 0.74 +/- 0.75 weeks: p=0.08).

Conclusions: These very 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.

Financial Support: Supported by grants DA034824-02, P30 GM110702.

PARALLEL GROWTH MODELING TO BETTER UNDERSTAND CO-ADDICTION: A RANDOMIZED CLINICAL TRIAL OF TOBACCO SMOKING AND STIMULANT USE.

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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=328) 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; >5ppm indicated CO2), and SU was measured using biochemical urinalysis (UA).

Results: The parallel LCGM showed that 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=.523: p<0.05) in CO levels, but no significant effect on change SU, where those in the treatment group had 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.


“The Devil I Know is Better than the Devil I Don’t Know”: Enrollment in a Pilot Trial of Opioid Dose Escalation Versus Buprenorphine/Naloxone for Pain.

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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 for ≥3 months, and had pain score ≥4/10 on numeric scale or ≥28/70 on Brief Pain Inventory. A physician with expertise in pain and addiction discussed the trial 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 45.7]) 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.

Financial Support: Supported by Research in Addiction Medicine Scholars Program.
PHYSICAL HEALTH OF WOMEN RECOVERING FROM PRESCRIPTION OPIOID ABUSE.
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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 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. Bivariate analyses examined whether physical health and access to health services is associated with behavioral change.
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 (t = 2.3-4.3, p < .05). However, self-reported access to physicians and having health insurance did not differ between groups (χ² = 0.0-3.7, 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

WORKING MEMORY IS IMPAIRED FOR BOTH MALE AND FEMALE HIV+ SUBSTANCE USERS.
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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 within 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+ SUDs may benefit from multimodal cognitive training.
Financial Support: National Institute on Drug Abuse 1R01 DA12828.

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.
Brett N. Tallent, Nanhui Hu; 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 police, 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.
Financial Support: Financial support for this study was provided by a T-32 NIDA training grant #1T32DA037801-01.

THE EFFECTS OF NICOTINE ADMINISTRATION AND DRUG CUE ON IMPULSIVITY.
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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 (IM/TDM) 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 IM/TDM measure of impulsivity to a degree that approached significance (p<.10) vs. placebo administration the preceding week of nicotine use increased the IM/TDM measure of impulsivity to a degree that approached significance (p<.10) vs. placebo administration the preceding week of nicotine use increased the IM/TDM measure of impulsivity to a degree that approached significance (p<.10) vs. placebo administration the preceding week of nicotine use increased the IM/TDM measure of impulsivity to a degree that approached significance (p<.10). Exposure to drug cues increased impulsivity as measured by the DMT to a degree that approached significance (p<.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.
Financial Support: NIDA grant DA031022 to SDC and AB.
**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-pyrrolidinopentiophenone (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 timeframe 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, vapor, which was unexpected. This indicates that degradants of METH and alpha-PVP are 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.

_**Financial Support:**_ RTI International internal research and development funds.

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**KEY INGREDIENTS FOR CONDUCTING DAILY OR WEEKLY IVR/SMS SURVEYS.**

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_**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 FYI 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 cohort. Cohort 1 (n=87) was paid $1 per daily survey or $7 per weekly survey. Cohort 2 (n=192) were paid $4 per daily survey and $28 per weekly survey.

_**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<.05), with post-hoc tests indicating that IVR weekly reported greater compliance (mean = 67.0) than IVR daily (mean = 48.0); 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<.001). When examining cohort differences by experimental groups, Cohort 2 had significantly better compliance than cohort 1 for the IVR-weekly (p<.01) and the SMS daily (p<.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 improving 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.

_**Financial Support:**_ NIDA# RO1 DA 035183

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**EARLY AGE OF CIGARETTE SMOKING ONSET IS ASSOCIATED WITH GREATER P300 SMOKING CUE REACTIVITY.**

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_**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 presentations 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 bnc 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.

_**Financial Support:**_ K01DA034028 (YM)
PARTICIPANT TREATMENT ASSIGNMENT PERCEPTIONS IN THE NIDA CTN COCAINE USE REDUCTION WITH BUPRENORPHINE STUDY.
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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.
Financial Support: Supported by NIDA-IRP

THE ROMANTIC RELATIONSHIP CONTEXT OF ADOLESCENT MARIJUANA USE.
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Aims: Adolescents have heterogeneous patterns of marijuana use, the most common pattern being intermittent or occasional use. Youths who use marijuana are at risk of developing and problem use. 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.
BARRIERS TO LONG-ACTING REVERSIBLE CONTRACEPTIVE USE AMONG OPIOID-MAINTAINED WOMEN.
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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 who 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 LARC 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?
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Aims: Previous work showed an increase in marijuana use (MU) after passage of medical marijuana laws (MML) in those aged 26-64, 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=1.4 [1.1, 1.7]); 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 are warranted.

Pia M Mauro, Dvora Shmulewitz, Deborah Hasin, Aaron L Sarver, 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+ 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 in 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 6.0 million ages 65 and older. In 2002, 2.0% of adults ages 18-25, 4.9% of 26-34, 4.9% of 35-49, 5.7% of 50-64, and 6.6% 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, 1R01DA037866, R01DA034244, New York State Psychiatric Institute

DEVELOPMENT OF A COMBINATION HEROIN-HIV VACCINE.
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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 heroin receptor and also prevents HIV-1 transmission. The HIV portion of the vaccine utilized a cyclic V2 (cV2) peptide identified as a correlate 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 α4β7 integrin. Mice were challenged at week 10 with 1 mg/kg heroin, s.c. and efficacy was assessed by aninocepsion 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 α4β7 integrin by 65%.

Conclusions: The heroin-HIV vaccine induced protection against heroin challenge and very high titer cV2 antibodies, that blocked α4β7 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.

Financial Support: Support provided by a Cooperative Agreement (W81XWH-07-2-067) between the HJF and the US Army MRMC; NIDA Avant Garde award (1DP1DA034787-01); and the Intramural Research Programs of NIDA and NIAAA.
METHAMPHETAMINE DEPENDENCE LINKED TO INTEROCEPTIVE 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 interoceptive 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 interoceptive 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 interoceptive 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 interoceptive 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.

Financial Support: NIDA 5P20DA027843-04

PAIN AS A PREDICTOR AND CONSEQUENCE OF TOBACCO WITHDRAWAL AMONG AFRICAN AMERICAN SMOKERS.
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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-abstinent 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 (abstinent vs. non-abstinent) 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.
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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 SAMHSA SM-60927.
NEUROPHARMACOLOGICAL INVESTIGATION OF WITHDRAWAL-INDUCED INHIBITORY CONTROL DEFICITS AMONG SMOKERS WITH ADHD.

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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 (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).

375 INTEGRATING OPIOID OVERDOSE PREVENTION IN THE EMERGENCY DEPARTMENT.

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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, and pharmacy student volunteers. 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. Our objective was to pilot and assess the feasibility of an ED-based OEND program using undergraduate, post-baccalaureate, or pharmacy student volunteers.

Financial Support: This initiative was supported by the NYU School of Medicine Department of Emergency Medicine.

376 CONDOM BARRIERS AMONG AFRICAN AMERICAN SUBSTANCE USERS: AGE AND GENDER DIFFERENCES.

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Aims: Specific attitudes act as barriers to condom use. Substance using men report more sexual experience barriers than women (Calsyn, 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 abusers.

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(271) = 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 = 1.45, t (6) = .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

WITHDRAWN
SYSTEMATIC REVIEW: DO TAKE-HOME NALOXONE PROGRAMS EFFECTIVELY REDUCE OPIOID OVERDOSE DEATHS? A BRADFORD HILL ANALYSIS.

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Aims: The aim of the present study was to carry out a systematic review to assess the effectiveness and safety of take-home naloxone. Naloxone is a potent antagonist that rapidly reverses opioid-induced respiratory depression and prevents fatal outcome of opioid overdose, if administered in a timely manner. Take-home naloxone provision directly to opioid users for emergency use has been proposed and recently implemented in communities in Europe, Asia, North America and Australia, albeit mostly as pilot schemes and without formal evaluation. No evidence from randomized controlled trials has been published to date.

Methods: Replicating the search strategy previously reported by Clark et al. (2014), we searched PubMed, MEDLINE, and PsychINFO for English-language peer-reviewed articles using the Boolean search query: opioid OR opiate) AND overdose AND prevention. Evidence was evaluated using the Bradford Hill criteria, a set of nine criteria to assess the causal effect of public health interventions when only observational data are available.

Results: A total 1,397 records (1,187 after removal of duplicates) were retrieved, with 22 studies meeting the search criteria for analysis. Due to variability in study quality, meta-analysis was dismissed in favor of narrative synthesis. From eligible studies, we find take-home naloxone meets at least seven of the nine Bradford Hill criteria (most strongly with ‘Experimental Evidence’). Across all nine studies with systematic follow-up, one death was reported per 122 successful overdose reversals (0.8%; 95% CI: 0.4, 1.2).

Conclusions: Take-home naloxone programs fulfill the Bradford Hill criteria for causation. The evidence from non-randomized studies finds that take-home naloxone programs have a low rate of adverse events and lead to reduced overdose mortality among program participants and in the community. Take-home naloxone provision should be the standard of care for the community-based prevention of heroin overdose.

Financial Support: No financial support was provided for the current study.

TREATMENT FOR ALCOHOL USE DISORDERS IN SERIOUSLY MENTALLY ILL ADULTS USING THE ETHYL GLUCURONIDE BIOMARKER.

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Aims: Contingency management (CM) is a behavioral intervention in which participants receive reinforcers for engaging in a desired behavior. CM has been shown to reduce substance use in individuals with serious mental illness. The aim of this study was to determine if individuals suffering from co-occurring serious mental illness and alcohol dependence who were randomized to CM for alcohol-abstinence as assessed by the ethyl glucuronide (EtG) biomarker were more likely to attain at least 4-weeks of continuous alcohol abstinence, relative to those participating in a non-contingent control condition.

Methods: 79 adults were randomized to receive treatment-as-usual and either 12-weeks of CM (n=40) or a control condition (n=39). Utilizing the variable magnitude of reinforcement approach, tangible reinforcers were delivered to CM participants for providing urine samples negative for EtG, an alcohol biomarker detectable in urine for up to 5 days. Control participants were provided with reinforcers for providing urine samples, regardless of their EtG result. Descriptive and chi-square analyses were conducted to examine and compare the duration of alcohol abstinence in weeks by group over the 12-week treatment period.

Results: In the CM group, 25.0% of the participants were abstinent for four weeks compared to 7.7% (z=4.30, p=0.04) in the non-contingent group.

Conclusions: Participants with co-occurring serious mental illness who received an EtG-based CM intervention were 3.3 times more likely to achieve a period of clinically significant abstinence (4 weeks), relative to those receiving the control condition. These results indicate that an EtG-based CM intervention can be used to promote alcohol abstinence in this difficult to treat population.

Financial Support: This research was supported by NIAAA, Grant R01AA02024901A1.

OXYTOCIN DECREASES METHAMPHETAMINE-SEEKING AND GENE EXPRESSION CHANGES IN RATS AFTER TRAUMATIC STRESS.

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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 daily for 5 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, H3ac5, 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.

REGIONAL- AND SEX-DEPENDENT EFFECTS OF CHRONIC ETHANOL AND COCAINE CO-ADMINISTRATION ON ADULT NEURAL STEM CELL SURVIVAL AND DIFFERENTIATION.

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Aims: To examine sex differences in behavior and regional changes in NSCs survival/differentiation using a fate tracing mouse model.

Methods: Adult mice were individually housed and given free access to water and complete nutrient calorie-controlled liquid diet (LD). Mice were randomly divided into 1 of 4 groups: control, cocaine, ethanol, or combination. Control and cocaine groups received regular LD. Ethanol and combination groups received ethanol LD. Cocaine and combination group received daily L.P. injections of cocaine. Behavioral experiments were performed during light cycle. Brain tissue analyzed for markers of NSC survival and differentiation. The subventricular zone of lateral ventricle (SVZ) subgranular zone of dentate gyrus (SGZ) and tanyocyte layer of third ventricle (TL) were evaluated

Results: Elevated zero maze and context discrimination showed differences between males and females, as well as other drug groups. Females had decreased neural stem cell (NSC) survival in SVZ compared to males. SGZ neurogenesis was significantly reduced in combination group. Sholl analysis revealed sex differences in NSC and astrocyte morphology

Conclusions: This is the first study to evaluate sex differences in behavior and NSCs in a chronic ethanol and cocaine model. We conclude chronic ethanol and cocaine co-administration yields unique behavioral and morphological results compared to either drug alone and differences are sex and region dependent.

Financial Support: UTMB GSBS Program, John S. Dunn Foundation, NIDA T32 Administrative Supplement Award
DEVELOPMENT AND PILOT TEST OF INTEGRATED COGNITIVE BEHAVIORAL THERAPY FOR ANXIETY AND OPIOID USE DISORDER.
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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 1A 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

382

POLYDRUG USE AMONG A COHORT OF ADOLESCENT LIGHT SMOKERS.
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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=.97) drugs (alcohol, tobacco, or other drugs (ATOD)) in addition to cigarettes. A two-class model fit the data best (LMR p<.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; 1.16,3.88); using more drugs (t(174)=.93; p<.01); more depressive symptoms (t(164)=2.12; p<.04); and feeling nervous, restless, or anxious when they couldn’t smoke (x2=21; p<.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<.05) and 36 months (t(26)=2.18; p<.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 CA162216 (Rubinstein); abstract & analysis: K23 DA035278 (Ramo) & R25 CA113710 (McKevey)

383

HIV-1 TAT-PROTEIN ELEVATES FOREBRAIN GLUTATHIONE LEVELS AND INCREASES MORPHINE DRUG-SEEKING AND DEPRESSION-LIKE BEHAVIORS IN MICE.
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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 intracellular 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 exposure 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 sulfonyl 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

384

FOUNDATIONAL DEVELOPMENT OF A POSTMARKET SURVEILLANCE PROGRAM FOR E-VAPOR PRODUCTS USING INTERNET FORUM DATA.
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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. Quantitative 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., Alltria 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.

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Aims: The TAPS Tool was developed to provide a substance use screening and assessment approach that is brief, accurate, and sufficiently detailed to inform clinical care in medical settings. Through a series of questions 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.

Financial Support: SU01DA013634; U10DA013727; UG1DA040317; 3UG1DA013635

LATENT CLASSES OF POLYDRUG USE AND ASSOCIATIONS WITH HIV RISK BEHAVIORS AND OVERDOSE AMONG PEOPLE WHO INJECT DRUGS IN TIJUANA, MEXICO.

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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 injection 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’.

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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/STD, 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=0.005), and education partially mediated this relationship (β=0.39, 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 2011/01469-7 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.

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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 (site-led) supervision model. 24 patients who met diagnostic criteria for both substance use and posttraumatic stress disorders (PTSD) received Integrated Cognitive Behavioral Therapy (ICBT). Therapist characteristics were assessed at baseline, while therapist adherence and competence ratings were assessed for ICBT sessions 1 and 4. Patient substance use and PTSD outcomes were measured at baseline and 6-month follow-up. Data on therapist and patient retention were also obtained.

Results: 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).

Conclusions: Therapists effectively delivered ICBT in both centralized and localized models of supervision. Patients engaged in treatment and improved in PTSD and addiction symptom severity regardless of supervision format. These results provide promise for localized formats of supervision in the implementation and sustainment of psychosocial therapies for drug abuse, but more rigorous research is needed to verify these findings.

Financial Support: This research was supported by the National Institute on Drug Abuse (NIDA) R01 DA027650 (McGovern, PI).
CONTRACEPTIVE USE AMONG FEMALE SMOKERS.
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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 < 0.01) as was any condom use (41%, 40%, 39%, and 24% condom use among non-smokers and women smoking 1-4 CPD, 5-14 CPD, 15-24 CPD, and ≥ 25 CPD, respectively; p = 0.01). Estimation was significantly positively associated with smoking rate (22%, 25%, 27%, 39%, and 61% condom use for non-smokers and women smoking 1-4 CPD, 5-14 CPD, 15-24 CPD, and ≥ 25 CPD, respectively; p < 0.02).

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.

Financial Support: NIDA R01 DA036670 and T32 DA007242

AGE-RELATED DIFFERENCES IN LICKING MICROSTRUCTURAL INDICES OF INCENTIVE MOTIVATION AND HEDONIC IMPACT IN RATS.
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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 discern incentive properties from the hedonic impact of food rewards. To this 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.

Financial Support: NIH Grant #: AG065380

CLASSIFYING YOUTH SUBSTANCE USE WITH NON-INVASIVE QUESTIONS.
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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 youth 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.

Financial Support: VTCRI

INITIAL SUBJECTIVE FAVORABILITY MODERATES THE RELATIONSHIP BETWEEN FALSE HARM BELIEFS AND DAILY CONSUMPTION OF REDUCED NICOTINE CONTENT CIGARETTES.
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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 (R = 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 use future questions of RNC cigarette use; such efforts may need to account for subjective product responses to fully evaluate the impact of disseminating this information.

Financial Support: This work was supported by the National Institutes of Health (NIH) and FDA Center for Tobacco Products (R01 CA120594; P50 CA179546). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or FDA.
EARLY LIFE TRAUMA, NEOCOGNITIVE FUNCTIONING, AND SUBSTANCE USE. 

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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 later age. Associations 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.

Financial Support: NIDA:K01DA037914 (PI: Meyers); NIAAA/NIDA: 5U10AA00801 & 3U10AA008401 (PI: Porjesz)
USE OF CONTINGENCY MANAGEMENT FOR CRACK COCAINE
DEPENDENCE IN SOUTH AMERICA: PRELIMINARY RESULTS
FROM A RANDOMIZED CLINICAL TRIAL.
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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); (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.
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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 (15M / 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, mood, and plasma HPA axis markers were assessed. Participants were grouped by high or low pregnanolone level and dependent variables compared between pregnanolone 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.
Financial Support: P50-DA016556; 5T32DA007238-24

ASSOCIATION BETWEEN PRESCRIPTION OPIOID USE AND FREQUENT EMERGENCY DEPARTMENT USE.
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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.
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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 (256 mg) 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: 89% 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.
Financial Support: NIDA (DA 010746-09A1)
EMOTION DYSREGULATION IN ADULT SMOKERS WITH AND WITHOUT ADHD: BASELINE DIFFERENCES AND ABSTINENCE-INDUCED EFFECTS.
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Aims: Cigarette smoking is robustly associated with ADHD and emotion dysregulation 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 (<20) and without (>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 Delphi in Executive Functioning Scale (RE). Experimental sessions also included the modified 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) × 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.
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Aims: To apply system dynamics (SD) modeling to better understand the influence of different intervention 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 troubleshooting 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 (BIs; N=49). Decreasing PFR to twice per year (Bi-annual) 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 60.1% 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.

Financial Support: National Institute on Drug Abuse grant R01DA094258-04

EFFECTIVE CONNECTIVITY OF ATTENTIONAL BIAS IN COCAINE DEPENDENCE.
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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.

Financial Support: NIDA Grants # U54 DA038999 (FGM), U54 DA033880 (SM), R01 DA043131 (LM), P50 DA009262 (JLS/SDL/FGM), 1 S10 RR019186-01 (PAN), P50 DA018197 (TRK), K05 DA020087 (KAC), P50DA033935 (KAC), P20 DA024157 (KAC) T32 DA07287 (KAC).

INCREASING NICOTINE EXPOSURE DECREASES SENSITIVITY TO THE NICOTINE-LIKE EFFECTS OF ACHE INHIBITORS IN MONKEYS DISCRIMINATING NICOTINE.
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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.

Financial Support: USPHS Grant DA25267
PATIENT PERSPECTIVES OF TRANSITIONING FROM PRESCRIPTION OPIOIDS TO HEROIN AND THE ROLE OF ROUTE OF ADMINISTRATION.
Laura Monico, 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 blunts 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, "Addiction 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 patterns, 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.

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 delay discounting similar to those observed in substance use.

Results: In the alcohol group, participants showed a greater preference for immediate rewards (i.e., money now, commodity later) compared to immediate rewards (i.e., money now, money later). In the food group, participants showed a greater preference for immediate rewards (i.e., commodity now, money later) compared to immediate rewards (i.e., commodity now, commodity later).

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 drinking was also associated with greater discounting of food now, money later, and with regard 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; Psychology, Graduate Center, City University of New York, New York, NY, "Center 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 (≥2 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 (CDSIS) 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 impuls. 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.

Financial Support: R01-MH087714, PI: Parsons.
CUE-INDUCED COCAINE CRAVING INCREASES WITH ARIPIPRAZOLE TREATMENT IN METHADONE-MAINTENANCE PATIENTS.

Landhing Moran1, Delia Brown1, Nate Baker2, Aimee McRae-Clark2, LGBT1A11,8.2 vs. 38.3 ± 9.2 (41.6 ± 13.1 vs. 45.1 ± 7.0; t115 = 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 and 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.

Financial Support: This study was supported by grant 5K12DA031794-03 to support the first author, as well as by NIH grants P50DA016511, R01DA021690, and K24DA038240 to support work by the last author. 410

ALEXITHYMIA AND ADDICTION: A REVIEW AND PRELIMINARY DATA SUGGESTING NEUROBIOLOGICAL LINKS TO REWARD/LOSS PROCESSING.

Kristen Paula Morie1, Sarah W Yip1, Charla Nich1, Karen Hunkele3, Kathleen Carroll2, Marc N Potenza2; 1Diagnostic Radiology, Yale University, New Haven, CT, 2Psychiatry, Yale University, New Haven, CT, 3Connecticut Mental Health Center, 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 correlation 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-DA02941. Clinicaltrials.gov ID number NCT00350610.
GENDER DIFFERENCES IN THE EFFECTS OF CONCURRENT DRUG USE ON THE RISK OF HEROIN RELAPSE.

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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.

Methods: The study sample was originally sampled from methadone maintenance treatment programs in California in the 1980s. A follow-up was conducted in 2005-09 of 343 participants (44.3% female; 76.6% of those not deceased in the original cohort). Average age at follow-up was 58.3 (SD=4.9) for men 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 examining 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.

Results: There was a significant interaction between gender and use of marijuana on heroin use (b=.599, 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 < .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 < .0001) and women (HR=7.10, p < .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=.86, p < .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.

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.

Financial Support: NIDA grants no. R01-DA015390 and T32-DA007272

FACTORS ASSOCIATED WITH COCAINE USE IN PREGNANCY.

Regina Melendez Najaraj, Xiaoxuan Cai, Cristina Hine, Brian Merry, Kimberly Ann Yonkers; Psychiatry, Yale University, New Haven, CT

Aims: To identify correlates of heavy and ongoing cocaine use in pregnancy.

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.

Results: The strongest correlate of ongoing cocaine use in pregnancy was the frequency of use six 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 2.74 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=0.001).

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.

Financial Support: Grants from the US National Institute on Drug Abuse (R21-DA029914, P50-DA09241, and K12-DA001167) 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 Nanovsky1, Valentina M Fokin2, Holly West3, Cheryl Oncken3, Mahmoud S Ahmed2, Gary Hankins1; 1OB/GYN Maternal Fetal Medicine, University of Texas Medical Branch, Galveston, TX, 2UTMB, Galveston, TX, 3University of Connecticut Health Center, Farmington, CT

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.

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.

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.

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.

Financial Support: The study was supported by R01 DA030998 to TN and GH.
**USED SYRINGES ANALYSIS: A NEW APPROACH TO BETTER-KNOW WHAT IS INFECTED.**

Thomas Nefzger1, Sara Karolak2, Yves Levi1, Vincent Thibault3, Catherine Duplachy-Gautrec4, Jean-Louis Bara, 3SAFE association, Paris, France, 2Univ Paris Sud, Châtenay-Malabry, France, 3Virology Laboratory, Hôpital Pitié-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 toxins.

**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:** In 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 analyzes 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.

**Financial Support:** Ville de Paris, Regional council of Ile-de-France, Interministerial Mission for Combating Drugs and Addictive Behaviours of Seine-Saint-Denis (93), French Directorate-general for Health

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**PHYSIOLOGICAL AND PHARMACOKINETIC EFFECTS OF E-CIGARETTE TYPE EXPOSURE TO DELTA9-TETRAHYDROCANNABINOL IN RATS.**

Jacques D Nguyen1, Shannen M Azarnia1, Sophia VanVander2, Yanabel Grant1, David G Stouffer1, Maury Cole1, Loren Parsons2, 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 Delta9-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.

**Financial Support:** R01 DA024105 and DA035482

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**NALOXONE ACCESS LAWS AND IMPLEMENTATION OF OVERDOSE PREVENTION PROGRAMS AT VETERAN AFFAIRS HOSPITALS.**

Maria Elisabeta Niculete1,2, Alyssa Peckham3, Douglas Boggs1, Howard Steinberg2,1; 1Psychiatry, Yale University, New Haven, CT, 2Psychology, VA Connecticut Healthcare System, West Haven, CT, 3Pharmacy, VA Connecticut Healthcare System, West Haven, CT

**Aims:** The Veterans Health Administration issued a directive in May 2014 urging all facilities to offer overdose education and naloxone distribution (OEND) to at-risk veterans. Issuing naloxone rescue kits to people who may be able to respond during an overdose is one of the most publicized strategies to reduce overdose deaths. However, ideological and legal concerns impact the implementation of naloxone distribution programs; consequently, states vary widely in the availability of these programs. The authors were interested whether state legislation regarding naloxone distribution programs affected the implementation of OEND at VA hospitals. Specifically, we hypothesized that compared to hospitals in states with a naloxone access law, those in states without a law would take longer to initiate the OEND program.

**Methods:** We analyzed OEND implementation data from the VA’s Office of Mental Health Operations (OMHO) collected from VA hospitals (N = 139) represented by all 50 states and the District of Columbia. State naloxone policy data collected from Law Atlas was coded to indicate whether states had a naloxone access law in May 2014. The number of months until implementation was the dependent variable.

**Results:** Results indicate that hospitals implemented the OEND program on average 8.4 months following the May 2014 directive (range = 0 – 18 months). Among hospitals located in states with a naloxone access law (n = 66) the average time to implementation was 6.9 months. Hospitals located in states without a naloxone access law (n = 73) implemented OEND on average 4 months later (M = 10.9 months). This difference was statistically significant (t = 13.14, p < .001, Wilcoxon test statistic).

**Conclusions:** It is likely that hospitals in states with naloxone access laws had more community resources available as models for implementation. Additionally, in states without access laws, logistical barriers or unfavorable attitudes towards naloxone may delay implementation.

**Financial Support:** No external funding.
A SYSTEMATIC REVIEW OF OPiOId AGONiST TREATMENTS FOR PHARMACOEpiCOL OpIODE DEPENDENCE. Suzanne Nielsen1,2, Brony Larance3, Louisa Degenhardt1, Linda Gowing1, Nicola Lintern4,5, 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 pharmaceutical opioid dependence. Methods: The search was conducted using the CENTRAL, PubMed, EMBASE, LIS 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) Analysis: Tests of quality, effect comparisons and meta-analysis were used. Results: We identified 6 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 - 1.16) 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 pharmaceutical 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.

MARIJUANA DOESN’T COUNT: IS OBJECTIVE SCREENING IN OBSTETRICS CLINICS NEEDED TO IDENTIFY AND ASSIST PREGNANT MARIJUANA USERS? T Northrup1, Michelle R Klawans1, Yolanda Villarreal1, Pamela Berens2, Angela Stotts1; Family and Community Medicine, University of Texas Health Science Center at Houston, Houston, TX; 1OB/GYN, 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.

NALTREXONE REDUCEs ADPcITIVE AND CONSUMMATORY RESPONSES TO ALCOHOL IN A SEX-DEPENDENT MANNER IN RATS. Steven J Nieto, Kevin J Winoske, Therese 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 (ORs 1.3-3.9) 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 PI: Novak
**WITHIN-SUBJECT EVALUATION OF INTERIM BUPRENORPHINE VS. WAITLIST ON ILLICIT OPIOID USE.**

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**Aims:** Despite the effectiveness of agonist maintenance for opioid dependence, patients can remain on waitlists for months before treatment is available. We are currently conducting a randomized 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 were not entered 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.

**Financial Support:** R34 DA373085-01, T32 DA007242.

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**THE RESEARCH IN ADDICTION MEDICINE SCHOLARS PROGRAM – DEVELOPING RESEARCHERS IN ADDICTION FELLOWSHIPS.**

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**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 RAMS 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.

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**NICOTINE WITHDRAWAL INDUCES NEURAL AND BEHAVIORAL DEFICITS IN REWARD PROCESSING.**

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**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 (13PRE14660076), a student scholarship from the American Psychological Foundation.

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**IMPROVING BUPRENORPHINE TREATMENT OUTCOMES WITH THE L-TYPE CALCIUM CHANNEL BLOCKER ISISPINE.**

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**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% Caucausian, mean age 31.3 y) were 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 trended 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 by 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.

**Financial Support:** Supported by grant R21DA035325. The authors have no disclosures.
HARM REDUCTION SERVICE UTILIZATION AND HIV INCIDENCE AMONG PEOPLE WHO INJECT DRUGS IN UKRAINE

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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 (15.3%) 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 obstetrical 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).

RISK FACTORS FOR PRESCRIPTION OPIOID MISUSE BY DURATION OF MISUSE.

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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 matrices 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 >3 months for 39.4%. Adults who misused opioids for less than 1 month were more likely to be younger (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 ≥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, stimulant 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, sedative misuse and stimulant misuse. In particular, being employed appears to be a preventative factor for longer duration of opioid misuse.

Financial Support: Supported by R01-DA02791, Cottler (PI)
CRACK COCAINE USERS WITH HIGH FAMILY/SOCIAL PROBLEMS SHOW MORE PSYCHIATRIC SYMPTOMS AND VIOLENT BEHAVIORS.

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Aims: To evaluate family/social problems within 30 days prior treatment seeking and its association to psychiatric symptoms and behavioral consequences of crack cocaine use.

Methods: A cross-sectional sample of 783 current adult crack users from Brazilian clinics were evaluated with the Addiction Severity Index (ASIb) and a profile of crack cocaine use. Participants were divided into two groups: individuals who presented moderate family/social problems (n= 248) and high family/social problems (n= 535). Data were compared by Chi-square test and Student’s t-test.

Results: Significant associations were found between having high family/social problems and psychiatric symptoms, as well as behavioral consequences of crack cocaine use such as: irritability (71.5%, p = 0.007); panic attacks (72.6%, p = 0.023); paranoia (70.4%, p = 0.038); depression (72.6%, p = 0.001); anxiety (71%, p = 0.01); anger attacks (72.4%, p = 0.016). They also reported to have become more aggressive (75%, p < 0.001) and an increase of violent impulses (77.4%, p < 0.001). Interpersonal relationships were also affected by crack cocaine use: partner threat to leave or expel the user from home (71.3%, p = 0.004); marital separation (72.2%, p = 0.005); isolation (71.1%, p = 0.001) and loss of interest in other people (72.8%, p = 0.001). There were no significant differences regarding age, pattern of consumption and years of crack cocaine use.

Conclusions: Users reported many psychiatric symptoms and an increase of violent behavior after starting using crack cocaine and they were significantly associated with high family/social problems. Therefore, it is important to address issues regarding the interpersonal relationships of crack cocaine users in order to obtain better treatment outcomes. These findings support the need to implement psychosocial, family and anger management interventions.


CD8+ LYMPPHOCYTES AND CD14lowCD16neg MONOCYTES IN CHRONIC MARIJUANA USING HIV PATIENTS.

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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 CD14hiCD16neg monocytes). Although MJ has immunosuppressive effects, few studies 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 CD14hiCD16neg 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 CD14hiCD16neg monocyte/CD14loCD16neg monocyte (P = 0.022) and lower numbers of CD14hiCD16neg monocyte (P = 0.002) were observed in the HIV-positive groups, regardless of their MJ status. The numbers of CD14hiCD16neg monocytes 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.

Financial Support: NIH grants K24DA16170, U54NS56885, U54MD007584

EMERGING ROLE OF MICRORNAS IN REGULATION OF NICOTINE DEPENDENCE: A CAENORHABDITIS ELEGANS MODEL.

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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 dose with 6.17 and 61.7 uM of L-nicotine. Locomotion behavior of worms were tracked 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-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” nAChRs 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.

PREMENSTRUAL SYMPTOM SEVERITY AND TOBACCO WITHDRAWAL, CRAVING, AND MOOD AFTER OVERNIGHT TOBACCO ABSTINENCE.

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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<0.02], which remained significant after controlling for depressive symptoms [F(1,36)=4.41-5.98, p<0.05]. 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
ASSOCIATION BETWEEN ANY MAJOR DISCRIMINATION AND CURRENT CIGARETTE SMOKING AMONG AFRICAN AMERICAN MEN.  
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Aims: Cigarette smoking is proposed to be an externalizing coping mechanism used to alleviate discrimination. At the national level, 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 odds 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 suggest 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), NIMH PD06MD00214 (Thorpe).
CONFLICTS BETWEEN YOUTHS AND THEIR PARENTS IN RELATION TO FUTURE NIDA PREVENTION RESEARCH.
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**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.

**Financial Support:** NIDA K01DA036747 (RP); K05DA015799 (JCA); Michigan State University.

WITHDRAWN

CODEINE MISUSE/DEPENDENCE: BEST PRACTICE AND FUTURE INNOVATIONS IN ADDRESSING RISK, HARM AND SUCCESSFUL TREATMENT.
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**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.

**Financial Support:** European Community’s Seventh Framework Programme FP7/2007-2013 (Grant Agreement# 611736)

INHIBITORY PROCESSING PREDICTS INCREASES IN BINGE DRINKING BEHAVIOR: A SIX-MONTH LONGITUDINAL DESIGN.
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**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 no go errors derived from Go-No Go task; and Simon effect derived from Simon Task.

**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.

**Financial Support:** Puente Family Foundation Inc: Dissertation Research Project, 2013-2015
SAME-DAY USE OF OPIOIDS AND DEPRESSANTS: A RETROSPECTIVE DIARY STUDY.
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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?
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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-weight-control behavior. Masculine identity should be considered a possible risk factor for these behaviors and considered when designing prevention and intervention strategies.

Financial Support: Supported by NIDAR25DA030310 (R.L. Peralta); K05DA015799 (J.C. Anthony, sponsor).

INSULA REACTIVITY TO NEGATIVE STIMULI IS ASSOCIATED WITH DAILY CIGARETTE USE: A PRELIMINARY INVESTIGATION USING THE HUMAN CONNECTOME DATABASE.
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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. Smoking-related negative mood is one factor thought to motivate drug use.

Results: Individuals who smoked more daily cigarettes showed greater right insula reactivity to negative stimuli (t=2.86, 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 addictive regulation may be particularly beneficial to heavier smokers.

Financial Support: Amy Janes: K01 DA0296455cott Lukas: T32 DA019036David Van Essen & Kamil Uguribil (HCP): 1U54MH091657

THE HIGHLY SELECTIVE 5-HT1C RECEPTOR AGONIST WAY163909 REDUCES COMPULSIVE BEHAVIOR AND FOOD INTAKE IN FEMALE RHESUS MONKEYS.
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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 reinforcing substances, 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-HT1C 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-HT1C 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-HT1c receptors in play 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 abstinence 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 P50DA011512 (Yerkes National Primate Research Center).

112
VALIDATION OF A PURCHASE TASK AS A MEASURE OF THE RELATIVE REINFORCING EFFICACY OF E-CIGARETTES.

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Aims: Introduction. Relative Reinforcing Efficacy (RRE) is a central feature within behavioral economic theories of addiction which refers to the behavior-strengthening or behavior-maintaining aspects of drugs. Extensive research has been carried out on the RRE for conventional cigarettes, demonstrating that cigarette consumption decreases as a function of increasing price. These studies have also shown that demand indices for cigarettes are related to craving and nicotine dependence. However, little is known about the relative economic value of e-cigarettes. This study is aimed at validating an e-cigarette purchase task (ECPT) for the assessment of RRE of e-cigarettes and at examining the relationship between demand indices and both craving and nicotine dependence-related measures.

Methods: Participants were 42 (78% male, age M = 40.90) who had smoked at least 3 months (M = 223.71 puffs per day) and completed a single laboratory session. Assessments included craving, nicotine dependence-related measures and demand indices of e-cigarettes generated from the ECPT.

Results: Data from the ECPT evidenced the predicted inverse association between price and consumption. Results demonstrated the convergent validity of ECPT as a measure of RRE. Intensity of demand showed significant positive relationships with craving (r = 0.57, p = 0.014), nicotine dependence (r = 0.47, p = 0.002) and puffs per day (r = 0.74, p = 0.000).

Conclusions: These findings provide support of the validity of the ECPT as a measure of the RRE of e-cigarettes, and its utility to distinguish among individuals as a function of their nicotine dependence. The ECPT is a cost-efficient method for assessing e-cigarettes reinforcement that may be useful in clinical settings. Future studies with larger samples are necessary to confirm the present findings.

Financial Support: Supported by the BBVA foundation (SV-14-FBBVA-1)

COMMUNITY BASED DRUG TREATMENT IN THAILAND.

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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 along 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 health center, 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

HYPERACTIVITY, BUT NOT ANXIETY-LIKE, BEHAVIOR IS OBSERVED IN RATS RECEIVING CHRONIC COCAINE FOLLOWED BY EXPOSURE TO SINGLE PROLONGED STRESS.

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Aims: Individuals with cocaine use disorder are at heightened risk for posttraumatic stress disorder (PTSD). In this study we investigated how prior cocaine exposure affects anxiety-like behaviors and behavioral arousal following later exposure to traumatic stress.

Methods: Male Sprague Dawley rats were treated for 14 days with cocaine HCl (15 mg/kg/day in saline) or saline in a binge pattern (3 IP-injections per day). Seven days later, rats were exposed to Single Prolonged Stress (SPS; 2 h restraint, 20 min forced group swim, and exposure to ether vapor) or a control procedure (handling). Several days after SPS, anxiety-like and arousal-like behaviors were measured using open field, grooming and elevated plus maze (EPM) analyses. Data were analyzed both by comparing group means and by using a behavioral cutoff criterion approach.

Results: We found that cocaine alone or with SPS increased the time spent in the open arms of the EPM, that cocaine alone increased locomotor behavior in the open field and EPM, and that SPS alone increased the rate of transition through grooming sequences; however, neither cocaine nor SPS (given alone or sequentially) affected thigmotaxis in the open field, time spent grooming, or proportion of incorrect transitions during grooming. These data suggest that the common behavioral phenotype generated following cocaine and SPS exposure is one of hyperarousal rather than anxiety-like behavior. This was confirmed in the behavioral cutoff criterion analysis, which showed that previous cocaine exposure caused a large proportion of animals to stably express hyperactive behavior across multiple tests.

Conclusions: This study is the first to determine the effects of subsequent exposure to cocaine and traumatic stressors on trauma-related outcomes. Future studies will determine the brain’s contribution to the persistent hyperactivity-like behavior observed in the comorbid condition.

Financial Support: Support provided by Wayne State University School of Medicine.

PHYSICAL ACTIVITY ENJOYMENT PREDICTS SENSITIVITY TO THE ACUTE SUBJECTIVE EFFECTS OF AMPHETAMINE IN HEALTHY VOLUNTEERS.

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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 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 pharmaco-phenotypic indicator of exercise likelihood, and sources of risk for abuse liability.

Financial Support: Supported by NIDA K08-DA025041 (Leventhal)
HEALTH KNOWLEDGE AND SOCIODEMOGRAPHIC PREDICTORS OF RISKY BEHAVIORS.
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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=1.18; p=.00), IDU (OR=1.09; p=.00), and sex exchange (OR=1.08; 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=0.95; 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.

Financial Support: Research reported in this manuscript was supported by the National Institute on Drug Abuse of the National Institutes of Health under Awards R01DA033866 and R01DA033866-04S1.

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.
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Aims: Aim 1: Analyze the role 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 dihydro-β-erythroidine (DHβE; 1 or 3 mg/kg). Brain tissue was taken either 1 hr or 24 hr 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 and mTOR response to nicotine, but resulted in a decrease of accumbal and 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 strength.

Financial Support: NIH grant ID 1R15DA034912-01A1

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.
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Aims: The importance of social support in addiction treatment outcomes and relapse prevention is well known. Yet, sex differences have been found 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 469 women and 1,379 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 both 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.

CURRENT DRUG USERS AND WOMEN HAVE HIGHER RATES OF RISKY SEXUAL BEHAVIORS.
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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 disor- ders’ exposure in a cohort of current drug users (CDU) and women (CDU). The CMU, COSU, and OTH groups were collapsed into one group, CDUs, which was compared to NDUs. After controlling for age, race, gender, marital status, and NIfETy score, ordinal logistic regression demonstrated that CDUs had significantly more sexual partners than NDUs (coefficient 0.165, 95%CI 0.025, 0.305, z=2.21, p=0.021). Condom use, regardless of partner type was not different between the CDU and NDU groups (p=n.s.) 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.

Financial Support: This research was supported by NIDA-IRP, NIH.
**PREDICTORS OF SKIN INFECTIONS AMONG HOSPITALIZED INJECTION DRUG USERS IN BOSTON.**

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**Aims:** Injection drug use is associated with a host of medical complications, including viral (e.g., HIV) and bacterial infections. There is limited research on skin infections, which are common problems that can result in serious morbidity and costly emergency room and hospital utilization. The goal of the current study was to examine risk practices that contribute to skin infections in a sample of hospitalized injection drug users (IDUs).

**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 cleanliness.

**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.

**Financial Support:** Supported by R01DA034957 from the National Institute on Drug Abuse (NIDA)

**S-MEPHEDRONE: PRECLINICAL INVESTIGATION AGAINST BEHAVIORAL EFFECTS OF THE SYNTHETIC CATHINONE MDPV.**

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**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.

**Financial Support:** T32 DA007237/01DA0391392R21DA032718

**MDMA INCREASES AFFILIATIVE BEHAVIORS AND VOCALIZATIONS IN NONHUMAN PRIMATES IN A 5-HT2A RECEPTOR-DEPENDENT MANNER.**

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**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 dissimilar 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 DA03124-2, R01 DA12514, and P51OD11132

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**EVENT-LEVEL SUBSTANCE USE DURING EPISODES OF INTIMATE PARTNER VIOLENCE.**

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**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 fault 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.

**Conclusions:** Chi-square tests revealed that injury severity during episodes of physical and sexual abuse (p=.20) and PTSD status (PTSD+/−; p=.29) did not differ as a function of event-level SU (no use, partner only, both). Kruskal-Wallis tests revealed significant differences for peritraumatic control (χ2(2)=6.45, p=.04), responsibility (χ2(2)=8.17, p=.04), and DAST (χ2(2)=24.25, p<.001), such that perceived control was lowest, and responsibility and DAST highest, among women who used during violent episodes. Partner only use was marginally associated with higher peritraumatic danger (p=.07). No other relationships were significant (p>.20).

**Financial Support:** Mons Chair of Excellence endowment.
MAJOR DEPRESSIVE DISORDER AND FAMILY HISTORY OF ALCOHOLISM IN TWO TREATMENT SAMPLES: DOES GENDER MATTER?
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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 < .006). 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.

POTENTIAL OPIOID MISUSE IN THE SOCIAL SECURITY HEALTHCARE SYSTEM OF PERU.
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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

Financial Support: n/a

HOUSING STATUS, PSYCHIATRIC DISTRESS, AND SUBSTANCE USE AMONG SOBER LIVING HOUSE RESIDENTS.
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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 use 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.

Financial Support: NIDA DA035175

HISTORY OF COCAINE SENSITIZATION IN HUMANS IS ASSOCIATED WITH LIPIDOMIC CHANGES SIMILAR TO THOSE IN COCAINE-SENSITIZED RATS.
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Aims: To test whether a rodent biomarker for cocaine sensitization is also present in humans. Using rats, two of us (JWW 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 partial-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 closest 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 Voxel-BASED MORPHOMETRY STUDY.

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Aims: Individuals with cocaine use disorders (iCUD) show grey matter concentration (GM) 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, scientific research has focused on men. Here we explored 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 Skya), providing T1-weighted anatomical images acquired with a 3D MPRACE sequence. Baseline craving was assessed with the Cocaine Craving Questionnaire. Independent and interactive effects of diagnosis and sex on GM 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-corrected <0.05 search 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 control women. (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 interaction with iCUD women having lower GM in subcortical limbic regions compared to controls. Sexually dimorphic neuro-morphological alterations contribute to addiction severity; however, research has focused on men. Here we explored whether sex modulates the grey matter concentration reductions commonly observed in iCUD.

INTEROCEPTIVE AWARENESS TRAINING FOR WOMEN IN SUD TREATMENT.

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Aims: This NIDA-funded RCT tests the efficacy of Mindful Awareness in Body-oriented Therapy (MABT) as an adjunct to intensive outpatient treatment for women with MABT individuals explicitly learn interoceptive awareness skills for regulation. Brain imaging studies suggest the importance of interoception for addiction recovery. We hypothesize that interoceptive awareness training will improve addiction treatment outcomes in women.

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 psychophysiological indicator of regulation. To date 145 women have enrolled; 94 completed the post-intervention assessment. Analyses include RM ANOVA and regression analysis.

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, and Emotional Awareness (p=0.001), Self-regulation (p=0.002), Attentional Awareness (p=0.001), Emotional Awareness (p=0.001). These differences persisted as late as 18 months. Maia scores improved for WHE at 1 month. Compared to WHE and TAU, change in MAIA total scores predicted 3-month RSA in MABT (B=.40, p=.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.
METHADONE MAINTENANCE THERAPY AND COMORBID SUBSTANCE USE: A BRIEF QUALITATIVE REPORT.
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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.

Financial Support: This study was supported by the US National Institutes of Health (R01DA035147, R01DA011591, and R01DA021525). This research was undertaken, in part, thanks to funding from the Canada Research Chairs program through a Tier 1 Canada Research Chair in Inner City Medicine, and by the Michael Smith Foundation for Health Research.

THE EXPERIMENTAL TOBACCO MARKETPLACE II: SUBSTITUTABILITY IN DUAL E-CIGARETTE AND CIGARETTE USERS.
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Aims: The aim of the current study was to evaluate tobacco product purchasing in the Experimental Tobacco Marketplace (ETM) among smokers who also use e-cigarettes. We hypothesized a high rate of e-cigarette purchases at all cigarette prices and that e-cigarettes would function as a substitute at high cigarette prices.

Methods: The ETM is an online market used in clinical abuse liability research to mimic real world purchasing typography. Tobacco products, including each participant’s usual choice of conventional and e-cigarettes, were presented along with a price and description of nicotine content. Participants were endowed with an account balance based on the number of cigarettes and e-cigarettes used per week. Each participant was exposed to four ETM sessions in random order during which the price of conventional cigarettes was manipulated.

Results: Cigarette demand was fit to a modified exponential demand equation. Demand for cigarettes decreased as price increased (Q = 218.2 mg; α = .00124). Pmax, the price that evoked the greatest expenditure, was $0.33 and Omax, the amount of money spent at Pmax, was $25.52. A repeated measures two way ANOVA revealed a significant main effect of price (F(3, 60) = 7.89, p < .001) and product (F(4, 80) = 5.80, p < .001) and a significant interaction (p < .05). Multiple comparisons indicated that more products were purchased at the highest cigarette price and that more e-cigarettes were purchased than snus, lozenges, and gum (p < .01). Though not significant, dip was purchased at a high rate during the highest price condition.

Conclusions: In an online marketplace, e-cigarettes substitute for cigarettes in dual conventional and e-cigarette smokers. E-cigarettes and Snus have been shown to substitute in smokers. E-cigarettes substitute in both populations, but substitution of other products may depend on what products are regularly used.

Financial Support: F00CA138389
ARE GENDER DIFFERENCES IN THE PREVALENCE OF PAST-YEAR MARIJUANA USE AND RISK PERCEPTION IN THE U.S. NARROWING FROM 2002-2013?

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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 regular 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<.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 (7.9-13.5%), but trends in use did not differ by gender (p=.77). Perception of great risk of regular marijuana use decreased in both men (p<.01) and women (p<.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 marijuna, 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 productivi- ty. Studies are needed to explore gender differences in consequences of marijuana use as Americans increasingly become more permissve about its use, and its legal environment increasingly resembles that of alcohol.


EFFECT OF A GLUCOCORTICOID RECEPTOR ANTAGONIST - MIFEPRISTONE - ON RELAPSE RISK IN COCAINE-DEPENDENT MEN.

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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 relat- ed 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 abstin- ence 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 uEtx and Time-Line-Follow-Back. Outcomes were: 1) days to relapse after abstinence induction in phase 1; 2) proportion of days of use in week per phase 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=1.4856, P=0.2229, df=1) or Phase 2+3 (X2=1.4224, 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 56), 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 medica- tion intake produced good compliance. MIF may reduce relapse risk. Verification with a larger sample is required.

Financial Support: NIDA K23DA027044-01
THE TOBACCO STATUS PROJECT: THREE MONTH OUTCOMES FOR A RANDOMIZED CONTROLLED TRIAL OF A FACEBOOK SMOCKING CESSATION INTERVENTION FOR YOUNG ADULTS.

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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 18-34) 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=12.4, 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<.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=.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.

Financial Support: K23 DA032578, P50 DA09253

479 GENE VARIANTS OF THE DOPAMINERGIC SYSTEM ARE ASSOCIATED WITH NON-DEPENDENT HEROIN USE AND HEROIN DEPENDENCE.

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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 dependent, 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 an Illumina (HAT) [n=196]; and healthy controls (HC) with no history of heroin use [n=204]; opioid-dependent (OD) patients in methadone maintenance treatment (MMT) [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 an Illumina's GoldenGate array. To establish the role of the dopamine genes in (a) non-dependent heroin use, and (b) heroin dependence, the following groups were compared: (a) HC vs NOD; (b1) HC vs OD and (b2) NOD vs OD.

Results: Eleven SNPs in 7 genes showed nominally significant association (p < 0.05) with non-dependent heroin use and dependence. In the comparison of healthy controls vs opioid dependent subjects, the association of SNP rs2073837, located in the dopamine beta-hydroxylase gene (DBH), with heroin dependence was experiment-wise significant (OR=4.27; P_experim = 0.0388). DBH converts dopamine to norepinephrine. SNP rs2073837 has previously been shown to be associated with attention deficit hyperactivity disorder (ADHD).

Conclusions: This study contributes to our understanding of the role of genetic variation in the dopaminergic system with heroin dependence. Further studies are warranted to confirm and elucidate the role of these variants in the vulnerability to illicit drug use and drug addiction.

Financial Support: Supported by grants from the Adelson Medical Research Foundation, NIDA grant P50 DA092530 (MJK), a special supplement to R01-DA120748 (MJK) and a grant from the Netherlands Ministry of Health, Welfare and Sports.

480 VULNERABILITY TO GLUTAMATE EXCITOTOXICITY IS SEXUALLY DIMORPHIC IN RATS EXPOSED TO CHRONIC SOCIAL DEFEAT STRESS: RELEVANCE TO ASTROCYTIC GLUTAMATE-GLUTAMINE CYCLE.

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Aims: Functional role of astrocytes has been implicated in behavioral consequences of stress such as drug reinstatement in rodents. Astrocytic transporters eliminates 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), a brain area associated with drug reinforcement.

Methods: Adult male and female Long-Evans rats were randomly assigned to a 21-day chronic social defeat stress (CSDS) or non-CSDS groups. Glu concentration 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 sexes (n=6/group).

Conclusions: These observations indicate that effects of CSDS on glutamate elimination may be sexually dimorphic, possibly due to astrocytes.


PRE-CLINICAL ABUSE TESTING APPLICATIONS IN DRUG DEVELOPMENT.

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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 drug receptor functioning activity asayed on neurotransmitter systems associated with abuse potential. This information is collected early in drug development. The determination of 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 a 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 pre-clinical 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.
DISTRESS TOLERANCE AMONG SUBSTANCE USERS ASSOCIATED WITH CONNECTIVITY BETWEEN THE MFG AND VMPC/SGACC DURING A DISTRESS TOLERANCE TASK.
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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/sgACC 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/sgACC 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 DA02922, NIDA Intramural Research Program (IRP)

483

STRUCTURAL ANALYSIS OF THE LIMBIC SYSTEM IN SUBSTANCE DEPENDENCE.
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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 psycholog-ic questionnaires. Controls were recruited to be age- and sex-similar to SDI. Of the SDI 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/sgACC 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/sgACC 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 DA02922, NIDA Intramural Research Program (IRP)

484

THE "LITTLE BRAIN" STEPS UP: CEREBELLAR ACTIVITY DURING SUCCESSFUL INHIBITION PREDICTS TREATMENT OUTCOME IN COCAINE PATIENTS.
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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). Focusing on NoGo trials, we compared brain activity during successful inhibition ("Stops") vs. Errors (of commission).

Results: In the overall group (N=34), successful inhibition elicited activity in multiple regions (e.g., striatum, insula, SMA). There was a main effect of group, and two-sample t-tests revealed that the "Good" outcome group exhibited more activity than the "Poor" outcome (but not the "In Between") group, in the cerebellum and insula. Examining cocaine-urine screens as a covariate on the overall group, we found that increased cerebellar activity predicted better outcome (R = 0.47, p = 0.005).

Conclusions: The results are the first to find greater cerebellar activity as a predictor of outcome in cocaine-dependent patients. Our findings are consistent with the idea that the cerebellum may act as a compensatory brain regulatory region for individuals with compromised top-down control. Intervention studies targeting the "little brain" may offer a novel support for addiction recovery.

Financial Support: Commonwealth of Pennsylvania; NIH/NIDA

482

THE INFLUENCE OF BUSPIRONE MAINTENANCE ON THE PHARMACODYNAMIC EFFECTS OF METHAMPHETAMINE.
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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 intrana- sal 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 com- plete 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 stimulant-like subjective and cardiovascular effects (e.g., increased ratings of good effects; elevated systolic blood pressure). Maintenance doses of buspirone were well tolerated and gener- ally devoid of effects. Buspirone maintenance failed to reduce methamphetamine self-administration or systematically alter the subjective and physiological effects of intranasal methamphetamine.

Conclusions: These outcomes suggest that buspirone is unlikely to be an effec- tive pharmacotherapy for methamphetamine use disorder.

Financial Support: Supported by grant R21 DA 0354810 to CRR.
Cocaine-Cue Memory Extinction is Associated with Depotentiation at Amygdala Synapses.

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Aims: Extinction of memories associated with cocaine use may help reduce relapse. We’ve shown that inhibiting CaMKII in the BLA enhances extinction of cocaine-cue memories, resulting in decreased relapse-like behavior. Depotentiation of excitatory synapses in the BLA has been proposed as a cellular mechanism for fear extinction, but it has not been investigated for the extinction of drug-associated memories. We tested if chronic cocaine self-administration potentiates excitatory synapses in the BLA, and if cocaine-cue memory extinction causes depotentiation.

Methods: Rats self-administered cocaine or saline, paired with an auditory cue (CS), for ≥10 days. 24 hours after the last training day, rats either remained in their home cages (conditioning group) or were returned to operant chambers for a 1 hour cue extinction session, in which rats received passive presentations of CS in the absence of reinforcement (extinction group). The next day, rats were euthanized and brains processed to perform whole-cell recordings of principal neurons in the BLA. Neurons were voltage-clamped at -70 mV. Thalamic afferents were stimulated at various intensities (10-35 μA) using a concentric bipolar electrode, and the evoked excitatory postsynaptic currents (EPSCs) were recorded.

Results: Conditioning potentiated EPSCs, as shown by an increased slope of the input-output curve relative to cocaine naïve controls. Cocaine-cue memory extinction caused a depotentiation of EPSCs; the slope of the input-output curve was similar to that of naïve animals. Importantly, depotentiation appears specific to cue extinction, as cocaine-trained animals that were re-exposed to the training context in the absence of CS presentation did not exhibit a reduction in EPSC amplitude.

Conclusions: Similar to fear-conditioning, chronic cocaine self-administration potentiates thalamic synapses in the BLA and this potentiation can be reversed (depotentiated) by cocaine-cue extinction. Ongoing studies are assessing if CaMKII inhibition following extinction causes a further depotentiation in the BLA.

Financial Support: PA Department of Health, K01DA031745, T32DA031111

Healed Injury Sites Can Hurt Again during Opioid Withdrawal: A Descriptive Case Series.

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Aims: Clinically some individuals withdrawing from opioids report a temporary recurrence of pain at previously-healed injury sites. We sought to characterize this phenomenon that we have named Withdrawal-associated Injury Site Pain (WISP).

Methods: We conducted a mixed-methods descriptive case series using a web-based survey and in-person interviews with adults recruited from outpatient treatment and research settings. We included individuals who self-reported a past significant injury that was healed and pain-free (when off pain medications) prior to the initiation of opioids, which then became temporarily painful upon opioid cessation.

Results: Screening questions identified WISP in 47 people, among whom 34 (72%) completed the full survey describing their experience. Recalled pain severity scores for WISP were typically high (on a 0-10 scale, median 8.0; IQR 2.0), and similar to the pain of their original injury (median 10.0; IQR 3.0). Most participants (22/34, 65%) rated WISP as more painful than other generalized withdrawal symptoms. WISP lasted on average two weeks (median 14 days; IQR 24), similar to the time for opioid withdrawal (median 13 days; IQR 25). Twenty-seven (79%) reported WISP made it harder to discontinue opioids, and 29 (86%) reported WISP made them want to resume opioid use.

Conclusions: This research represents the first known documentation that previously healed and pain-free injury sites can temporarily become painful again during opioid withdrawal, an experience which may be a barrier to opioid cessation, and a contributor to opioid relapse.

Financial Support: Dr. Rieb: Clinical Scholar’s Program, Dept. of Family Practice, UBC; NIDA sponsored Canadian Addiction Medicine Research Fellowship. Dr. Wood: Tier 1 Canada Research Chair in Inner-City Medicine. Dr. Milloy: United States National Institutes of Health (R01-DA051525); UBC through an unstructured gift from NG Biomed.
RACIAL DISCRIMINATION AND RISK TAKING PROPENSITY AMONG AFRICAN AMERICAN YOUNG ADULTS.

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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 risk-taking propensity. 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 risk-taking propensity.

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 (b = -.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.

Financial Support: NIDA R03 DA035878

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Aims: The fact that cocaine increased the permeability of the BBB in a manner similar to that seen in food intake and obesity. 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.

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.

Financial Support: This work was supported by a grant from the Mellon Foundation to ALR.

MOdelling heroin careers over 40 years: Social costs.

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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 abstention), 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 parametric 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.

Financial Support: Supported by: NHMRC project grant APP1042923
THE EFFECTS OF SOCIAL CONTACT ON “BINGE” COCAINE SELF-ADMINISTRATION.
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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.

Results: 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 DA01725.

SCREENING FOR ORAL CANCER IN TOBACCO AND/OR ALCOHOL ADDICTS: A COMPARISON OF DIFFERENT ORGANIZATIONS.
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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 addictology 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 structure). 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.
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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 dependents has been recently reported in the literature. Further 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.
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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 partnering.

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.

Financial Support: Supported by VADEA2014-27 (ACB), R21 DA039038 (ACB), R34 AT08318(MIR), IHX00693 (MIR), and VISN1 MIRECC.
SENSITIVITY ANALYSIS OF A COMPARATIVE TRIAL OF 6 MONTH BUPRENORPHINE IMPLANTS (PROPUDINE) AND SUBLINGUAL BUPRENORPHINE IN STABLE OPIOID-DEPENDENT PATIENTS.

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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 multi-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 used 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.

Financial Support: Supported by Braeburn Pharmaceuticals

ASSESSING CIGARETTES SMOKED PER DAY: USE OF SMOKING MEASURES DURING AN OBSERVATIONAL BASELINE STUDY PERIOD VERSUS SELF-REPORTED CIGARETTES SMOKED PER DAY.

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Aims: To examine digit bias among measures of cigarettes smoked per day (CPD) taken at various times 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 low-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.

Financial Support: Research supported by R01 CA179546 (NIH and FDA Center for Tobacco Products). 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.

THE INTERACTIVE EFFECTS OF RACE, COMMUNITY SUPPORT, AND NEIGHBORHOOD ENVIRONMENT IN PREDICTING ADOLESCENT MARIJUANA USE TRAJECTORIES.

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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, Mean(SD) =14.98 (3.92)] taking part in a larger, prospective study of maladaptive behavior. 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 (β=0.2, p=0.019). 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.

Financial Support: NIDA R01 DA018647-09

WHERE THERE’S SMOKE: PSYCHOSOCIAL AND MENTAL HEALTH CORRELATES OF PRENATAL MARIJUANA USE.

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Aims: Prenatal marijuana (MJ) use is prevalent and has been associated with impaired fetal growth and neurobehavorial deficits (Fried, 2002). Screening is critical and provides an opportunity for patient education and 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<0.03); lifetime depression (86.8% and 74.2%; p=0.03) and recent thoughts of suicide (7.4% and 1.6%; p=0.02). They were also more likely than MJ- women to report recent emotional abuse (39.7% and 22.6%; p<0.007) and recent physical abuse (13.2% vs 3.2%; p<0.003).

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 prenatal MJ use among pregnant women present for care with a variety of comorbid conditions. 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 NIMHD P60 Center Grant (Strauss)
HIGH IMPULSIVITY CORRELATES WITH CANNABIS CUE-INDUCED CRAVING IN A NON-TREATMENT SEEKING COHORT OF HEAVY CANNABIS USERS.

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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 no-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 (x) time interaction p=0.027].

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.


TAURINE’S EFFECTS ON COCAINE–INDUCED BEHAVIORAL SENSITIZATION IN MALE AND FEMALE RATS.

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Aims: Cocaine is a psychostimulant that produces long lasting effects on locomotor activity defined as behavioral sensitization, which correlates to cocaine’s addictive properties. Females are known to have increased sensitization when compared to males. 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 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.

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 exposure does not increase locomotor activity. Cocaine exposure, independent of pre- or co-administration of taurine, resulted in increased activity. 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.

Financial Support: NIH/NCI U54CA137788/U54CA132378 (MRM); NIDA R25DA03010 (KSR)
IMPACT OF GROUP MOTIVATIONAL INTERVIEWING ON ENHANCING TREATMENT ENGAGEMENT FOR HOMELESS VETERANS WITH NICOTINE DEPENDENCE AND OTHER SUBSTANCE USE DISORDERS.

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Aims: We evaluated whether a motivational interviewing component targeting smoking behaviors combined with an existing manualized Group Motivational 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 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.

Financial Support: R01DA032082

REDUCTIONS IN TRAFFIC FATALITIES RATES ACROSS STATES WITH OPERATIONAL DISPENSARIES OF MARIJUANA.

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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: -10.64, -4.08), 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.
Olga Josefinas Santos1, Cameron Edwards2, Alex Greenblatt2, James C. Anthony3, and D. Matthias Morgan4; 1Epidemiology and Biostatistics, Michigan State University, East Lansing, MI
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 understudied. 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 (HDTTP) 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
Results: Among 620 newly incident heroin users in the sample, males outnumbered females (322:288), but no male excess in HDTTP is seen. Soon after 1st heroin use, the HDTTP estimate for males is 2.7% (95% CI: 1.9, 3.7); 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 HDTTP, especially for females, but no robust gender gap.
Conclusions: Drawing strength from 9 nationally representative samples we made three main discoveries. First, males outnumber females among newly incident heroin users. Second, within relatively short intervals after starting heroin use, roughly 1 in 3 or 1 in 4 heroin users have become heroin dependent. Third, heroin is apparently an ‘equal opportunity’ drug in this respect, showing no HDTTP male excess. Forecasts from our cumulative meta-analyses suggest an emerging female excess male HDTTP risk. This possibility deserves attention in future epidemiological studies.
Financial Support: NIDA K05DA015790(JCA), T32DA021129 (OSR) & MSU.

PREDICTORS OF INTERNET-DELIVERED DRUG TREATMENT OUTCOMES AND ACCEPTABILITY AMONG WOMEN.
Tanya Saraj1, Aimee Campbell2, Mei-Chen Hu2; 1Adelphi University, New York, NY, 2Dept of Psychiatry, Columbia University, New York, NY
Aims: Women access substance abuse treatment at lower rates compared to men, but once in treatment remain at the same rates as men. Technology-based treatment shows promise for improving accessibility and acceptability of addiction treatment. This study explores baseline predictors of treatment outcome and acceptability of an Internet-delivered intervention among women in drug treatment.
Methods: Female participants (N=192) from 10 outpatient addiction programs within the National Drug Abuse Treatment Clinical Trials Network received either 12 weeks of treatment-as-usual (TAU) or TAU and Therapeutic Education System (TES), comprised of 62 web-delivered multimedia modules grounded in the Community Reinforcement Approach plus motivational incentives. Generalized linear mixed effect models explored the association between predictors (primary drug, employment, social functioning, psychological distress, and baseline abstinence defined as negative urine drug and breath alcohol screens) and two outcome variables: acceptability of TES and abstinence at end of treatment.
Results: Significant predictors of abstinence were lower psychological distress (F=0.10, p=.02); baseline abstinence (F=10.73, p=.001); and stimulant use compared to marijuana use (t=-1.97, p=.05) or opioid use (t=-2.02, p=.04). There was not an association between treatment type and abstinence rate after controlling covariates (p=.09). The only significant predictor of TES acceptability was baseline abstinence (F=7.30, p=.01).
Conclusions: Among women, factors associated with treatment outcome and acceptability of technology-based interventions can assist in the refinement of innovative interventions. Female patients with concomitant risk factors—primary opioids or marijuana use, higher psychological distress, or greater substance use severity—appear to have worse treatment outcomes. More research on characteristics associated with acceptability of tech-based treatment for women is needed.
Financial Support: NIDA UG1 DA013035, R25 DA035161

FEASIBILITY, ACCEPTABILITY, TOLERABILITY OF TARGETED NALTREXONE FOR NON-DEPENDENT METHAMPHETAMINE- USING AND BINGE-DRINKING MEN WHO HAVE SEX WITH MEN.
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Aims: There are no effective pharmacologic strategies for non-dependent methamphetamine (meth)-using and binge-drinking MSM. We determined the feasibility of enrolling and retaining this population in a trial; acceptability of trial procedures; and the tolerability of naltrexone.
Methods: 30 MSM were randomized 1:1 to 50mg naltrexone or placebo for 8 weeks for targeted use (i.e. during craving/in anticipation of meth/alcohol use). Substance counseling and assessments were conducted every two weeks. Medication use was measured with WisePill dispensers.
Results: Trial completion was 93%; visit completion rate was 95%. Mean weekly number of medication pills used was 2.2 and was similar by arm. Trial satisfaction rate was 96%. There were no serious adverse events nor differences in adverse event rates by arm. In exploratory analyses, there were no differences in meth use and drinking. Naltrexone was associated with greater reductions in serodiscordant receptive anal intercourse (IRR=0.15;95%CI=[0.05-0.42]) and serodiscordant condomless receptive anal intercourse (0.11;[0.03-0.37]), compared to placebo. In subgroup analyses among frequent meth-users, naltrexone was associated with reductions in meth-using days (0.78;[0.62-0.99]). In as-treated analyses, frequent study medication users in the naltrexone arm had greater reductions in binge drinking days (0.72;[0.54-0.97]).
Conclusions: Targeted naltrexone is a feasible, acceptable and tolerable intervention strategy for non-dependent meth-using and binge-drinking MSM. Naltrexone was associated with significant sexual risk reductions; and for some individuals, it was associated with meth and binge-drinking reductions.
Financial Support: NIDA R36DA035109

PREDICTORS OF INTERNET-DELIVERED DRUG TREATMENT OUTCOMES AND ACCEPTABILITY AMONG WOMEN.
Tanya Saraj1, Aimee Campbell2, Mei-Chen Hu2; 1Adelphi University, New York, NY, 2Dept of Psychiatry, Columbia University, New York, NY
Aims: Women access substance abuse treatment at lower rates compared to men, but once in treatment remain at the same rates as men. Technology-based treatment shows promise for improving accessibility and acceptability of addiction treatment. This study explores baseline predictors of treatment outcome and acceptability of an Internet-delivered intervention among women in drug treatment.
Methods: Female participants (N=192) from 10 outpatient addiction programs within the National Drug Abuse Treatment Clinical Trials Network received either 12 weeks of treatment-as-usual (TAU) or TAU and Therapeutic Education System (TES), comprised of 62 web-delivered multimedia modules grounded in the Community Reinforcement Approach plus motivational incentives. Generalized linear mixed effect models explored the association between predictors (primary drug, employment, social functioning, psychological distress, and baseline abstinence defined as negative urine drug and breath alcohol screens) and two outcome variables: acceptability of TES and abstinence at end of treatment.
Results: Significant predictors of abstinence were lower psychological distress (F=0.10, p=.02); baseline abstinence (F=10.73, p=.001); and stimulant use compared to marijuana use (t=-1.97, p=.05) or opioid use (t=-2.02, p=.04). There was not an association between treatment type and abstinence rate after controlling covariates (p=.09). The only significant predictor of TES acceptability was baseline abstinence (F=7.30, p=.01).
Conclusions: Among women, factors associated with treatment outcome and acceptability of technology-based interventions can assist in the refinement of innovative interventions. Female patients with concomitant risk factors—primary opioids or marijuana use, higher psychological distress, or greater substance use severity—appear to have worse treatment outcomes. More research on characteristics associated with acceptability of tech-based treatment for women is needed.
Financial Support: NIDA UG1 DA013035, R25 DA035161

PERCEIVED HARMFULNESS OF MARIJUANA AND RISK FOR ADOLESCENT USE: INDIVIDUAL AND COLLECTIVE BELIEFS.
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Aims: Adolescent perceptions of the harmfulness of marijuana are related to marijuana use. Less is known about the impact that collective beliefs about harmfulness have on individual patterns of marijuana use. We explore the relationship of collective school-level beliefs about marijuana harmfulness to individual marijuana use.
Methods: Participants were 8th (N=313,054), 10th (N=304,827) and 12th (N=242,653) graders in Monitoring the Future annual surveys (1991-2014). Marijuana use (MU) was defined as any past 30-day use. Individual perceived harmfulness of occasional MU was dichotomized as little/no risk of harm vs. moderate/great risk. Collective beliefs were measured at the school level by aggregating students’ beliefs within schools, and then dichotomized at the median. Logistic regression models adjusted for individual, school and state variables, time, and the MTF complex design. Effect modification was tested with interaction terms.
Results: Among 8th, 10th and 12th graders, those who perceived marijuana as having little or no risk were more likely to use marijuana (adjusted risk ratio [aRR]=5.4-6.5; p<.01). Adjusting for individual beliefs, students in schools that collectively believed MU to pose little or no risk were also more likely to use marijuana (aRR=1.1-1.2; p<.01). Individuals’ beliefs were stronger predictors of MU when their classmates collectively believed MU to be more harmful (p_interactions<.01). The effects of individual and collective beliefs on MU, and the interaction between these beliefs, were strongest among 8th grade students.
Conclusions: Collective beliefs in the form of school-level perceptions of marijuana influenced individuals’ risks of MU beyond their own beliefs. Results suggest that group-based approaches to substance use prevention are important, and in particular, that increasing a school’s collective beliefs that MU poses harm can make interventions on an individual’s beliefs more effective.
Financial Support: R01DA034244, NY State Psychiatric Institute
THE IMPACT OF ADDICTION MEDICATIONS ON OUTCOMES FOR PERSONS WITH CO-OCCURRING PTSD AND OPIOID USE DISORDERS.
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Aims: Previous research has been inconclusive about whether adding psychoсо-
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 hypothe-
sized 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 asso-
ciations 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=0.07, 95% CI=0.01, 0.81, p<0.05). For PTSD symptoms, a significant MAT by psychiatric treatment condition interaction (F(2, 88)=4.74, p<0.01) showed that MAT patients had comparable declines in PTSD symptoms regardless of psychosocial treatment type. Non-MAT patients in ICBT had signifi-
cantly larger reductions in PTSD than non-MAT patients receiving IAC (p=0.02) or TAU (p=0.02).

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.

Financial Support: NIDA grant R01 DA027650.

PHARMACOLOGICAL MECHANISMS UNDERLYING CARDIOVASCULAR EFFECTS OF 3,4-METHYLENEDIOXYPYROVALERONE.
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Aims: MDPV is a synthetic stimulant whose mechanism of action involves blockade of monoamine transporters similar to cocaine. Like cocaine, MDPV has potent cardiovascular effects that can lead to untoward medical complica-
tions and even death. The aim of the current study was to examine the pharma-
cological mechanisms leading to MDPV's cardiovascular effects.

Methods: Male Sprague-Dawley rats received surgically-implanted telemetry transmitters for the measurement of blood pressure (BP) and heart rate (HR). Rats were injected with s.c. drug or vehicle and placed in an isolation cubicle on top of a telemetry receiver which detected cardiovascular parameters for 3 h sessions.

Results: Racemic MDPV produced dose-dependent (0.3 – 3.0 mg/kg) increases in BP and HR. Over the same dose range, the (+) isomer of MDPV produced effects that were similar to the racemate, while the (-) isomer did not. Neither of the hydroxylated phase I metabolites of MDPV produced increases in BP or HR. Pretreatment with the ganglionic blocker chlorisondamine (1 – 3 mg/kg) antagonized the increases in both BP and HR. The alpha-adrenergic antagonist prazosin (0.3 mg/kg) antagonized BP responses following MDPV while the beta-ad-
renergic antagonist propranolol (1 mg/kg) antagonized the HR responses.

Conclusions: The cardiovascular effects of MDPV seem to mediated by the (+) isomer, and the metabolites of MDPV do not appear to contribute to its cardiovascular effects. MDPV produces increases in BP and HR as a result of increases in central sympathetic outflow. Treatment with adrenergic antago-
nists, particularly mixed-action alpha/beta receptor antagonists, may be useful in counteracting the adverse cardiovascular effects of MDPV in emergency situations.

Financial Support: Supported by NIDA, NIH, DHHS.

A BEHAVIORAL AND NEUROPHYSIOLOGICAL EXAMINATION OF THE IMPACT OF SMOKING ABSTINENCE ON DRUG AND NON-DRUG REINFORCEMENT.
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Aims: Prominent models of drug addiction suggest that abstinence increases the value of drug reinforcement and decreases the value of non-drug reinforcement. To address gaps in the literature, the present study provided independent tests of both hypotheses using behavioral and neurophysiological outcomes in the context of a cognitive task.

Methods: Adult smokers (n=36; ≥ 10 cigarettes per day) attended two laboratory visits, one following overnight abstinence and during regular smoking. In each visit, participants completed a flanker task in three reinforcement conditions: cigarette, money, and no reinforcement (control). Speeded accuracy and the error-related negativity (ERN) were analyzed with separate repeated measures ANOVA.

Results: Compared to no reinforcement, cigarette and money reinforcement each increased accuracy and ERN amplitude (all ps ≤ 0.10). Smoking abstinence reduced speeded accuracy and ERN amplitude only among participants tested with a more challenging RT deadline (ps < .05). Most importantly, the impact of drug reinforcement was enhanced during abstinence for accuracy (p < .10) but not the ERN; there was no evidence that non-drug reinforcement (money) was diminished during abstinence (all ps > .20).

Conclusions: The present study extended prior work suggesting abstinence increases drug reinforcement to a cognitively demanding context and to a neurophysiological index of performance monitoring (the ERN). We conclude that the reinforcing effects of money are not attenuated by abstinence, but recognize that abstinence may affect other non-drug reinforcers differently.

Financial Support: The University at Buffalo's Mark Diamond Research Fund and Research Institute on Addictions.

A RANDOMIZED TRIAL OF PATIENT-CENTERED METHADONE TREATMENT WITH OPTIONAL COUNSELING.
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Aims: To compared methadone treatment-as-usual with patient-centered meth-
adone in which some 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. There were no significant differences between conditions in the number of indi-
cidual counseling sessions attended, although PCM attended significantly fewer group counseling sessions than TAU (P<0.001).

Conclusions: The hypothesis that PMC would be superior to TAU was not confirmed. However, neither did TAU lead to any significant improvement in the measured outcome variables compared to PCM. Patient-centered changes in typical U.S. MTP policies could be made without reducing its effectiveness.

Financial Support: 2 R01DA015842 (PI Schwartz)
A PILOT STUDY OF THE FEASIBILITY AND POTENTIAL EFFECTIVENESS OF USING SMARTPHONES TO PROVIDE RECOVERY SUPPORT.
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Aims: Smartphone applications can potentially provide recovery monitoring and support in real-time, real-life contexts. Study aims included determining feasibility using smartphones to: a) teach self-monitoring through ecological momentary assessments (EMA), b) provide recovery support through phone-based ecological momentary interventions (EMI); and c) use EMA and EMI data to predict substance use in the subsequent week.
Methods: Data are from 52 adolescents (40%) and adults (60%) recruited at or after discharge (54% within 3 months) who were 65% African American, and 52% Male. During the 6-week pilot, participants were prompted to complete an EMA at 6 random times per day and were provided continuous access to the Addiction Comprehensive Health Enhancement Support System (ACHESS) suite of recovery support EMA. Over 90% of the targeted EMA were completed and EMI were accessed an average of 23.2 times per day. Using 5892 EMA observations with a week or more of additional observations after them, we used survival analysis to predict the time to first use. These observations were categorized based on whether they included a report of current use (6%), past week use (27%), or no past week use (67%) and based on whether the participant used the EMI within the hour (17%) or not (83%). These are true repeated measure with all participants being in multiple groups.
Results: When compared to current use observations, the rate of use in the next week was significantly lower for those who had only used in the past week (98% vs. 89%, OR=20) or who had not used (98% vs. 22%, OR=0.1), as well as for those who used EMI (vs not) within the hour (45% vs. 33%, OR=0.67). There was an interaction with the largest effect being for use of EMI within the no past week group (24% vs. 14%, OR=0.63).
Conclusions: Results demonstrate the feasibility and promise of using smartphones for recovery monitoring and support.
Financial Support: NIH grant DA035879, DA11323 & R01 DA021174

GREATER PSYCHIATRIC MORBIDITY AMONG YOUTH WITH SYNTHETIC CANNABINOID USE IN RESIDENTIAL TREATMENT.
Victoria L. Selby1, Carla Storr2, Marc Fishman1; 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 psychotropic 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 (X^2 = 6.23, p < 0.01). The number of psychotropic medications prescribed upon discharge (OR=1.25, 95% CI = 1.06, 1.47) 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.

GREATER CURIOSITY ABOUT SMOKING CIGARETTES AMONG 6TH AND 12TH GRADE STUDENTS USING ALTERNATIVE TOBACCO-SMOKING PRODUCTS. 
Luiz Esteban Segura1, Antonio A. Cintron1, Carla Storr2, Silvia S Martins1; 1Epidemiology, Columbia University, New York, NY, 2University of Maryland School of Nursing, Baltimore, MD
Aims: We estimated the likelihood of endorsing a higher curiosity about trying cigarette smoking by adolescents, who were past-month ATP users and cigarette-naive.
Methods: We used data from the 2014 U.S. National Youth Tobacco Survey. Our analyses were limited to students aged 9 to 19 that never used or experienced with cigarettes but that could have used ATP (n=15,543). We used weighted ordinal logistic regression to estimate the likelihood of: 1) endorsing greater curiosity to smoke cigarettes among past month users of ATP (e-cigarette, hookah, pipe, smokeless tobacco products, and cigar), and 2) endorsing greater curiosity to smoke cigarettes among current users of ATP that require or do not require burning tobacco. All analyses were adjusted for gender, ethnicity, and exposure to cigarette advertisement.
Results: The prevalence of past-month use of any tobacco product by youth was 10.65%. Among naïve cigarette youth, those using e-cigarettes (3%) endorsed greater curiosity about trying cigarettes in the future compared to non-users (97%) (OR: 2.57, 95%CI: 1.96-3.31). Users of other ATP had similar curiosity levels compared to non-users. Users of nontobacco-burning products (i.e. smokeless tobacco) reported greater curiosity about trying regular cigarettes (OR: 1.94, 95%CI: 1.54-2.44). Hispanic and Asian students (vs. Whites), those exposed to cigarette advertisement in television and store/supermarkets/gas stations (OR: 1.36, 95%CI: 1.24-1.49; OR: 1.43, 95%CI: 1.17-1.73; aOR: 1.08, 95%CI: 1.04-1.12; aOR: 1.10, 95%CI: 1.04-1.16; aOR: respectively) were more likely to show greater curiosity about trying cigarettes.
Conclusions: Our findings show that use of ATP products (particularly nontobacco burning products) may increase youth’s curiosity about trying cigarette-land could be a gateway to future cigarette smoking. Smoking prevention resources provided to youth already experimenting with ATP could reduce their risk of future smoking habits.
Financial Support: CONACYT and Colciencias doctoral scholarships, and R01DA035866

SEX DIFFERENCES IN HIGH FAT DIET-INDUCED ENHANCEMENT OF SENSITIVITY TO THE BEHAVIORAL EFFECTS OF THE DOPAMINE D2/D3 RECEPTOR AGONIST QUINPIROLE IN ADOLESCENT RATS.
Katherine Marie Serafine, Caroline Hernandez-Casner, Jeremiah Ramos; Psychology, University of Texas at El Paso, El paso, TX
Aims: Eating a diet high in fat increases sensitivity of rats to drugs acting indirectly on dopamine receptors (e.g., cocaine). This effect is greater among adolescent females as compared to adolescent males, and adults of both sexes. It is not known if sensitivity to the behavioral effects of direct-acting dopamine receptor agonists (e.g., the dopamine D2/D3 receptor selective agonist quinpirole) is also different between male and female adolescent rats.
Methods: To test the hypothesis that females are more sensitive than males to diet-induced enhancement of sensitivity to the behavioral effects of quinpirole, the present experiment examined once weekly tests with cumulative doses of quinpirole (0.003-0.32 mg/kg) in adolescent (postnatal day 25) Sprague-Dawley rats eating standard laboratory chow (17% kcal from fat; n = 4 females; n = 4 males) or high fat chow (60% kcal from fat; n = 4 females; n = 4 males) over the course of 8 weeks.
Results: Eating high fat chow enhanced sensitivity of male rats to the behavioral effects (e.g., yawning) of quinpirole. That is, the ED50 values for yawning dose-response curves from rats eating high fat chow were significantly smaller than standard chow fed controls. Female rats yawned significantly less than male rats, and eating high fat chow did not increase frequency (e.g., maximal effect) of yawning.
Conclusions: These results suggest that the directly observable behavior previously used to examine dopamine D2/D3 receptor sensitivity in male rats is not an ideal assay for studying female rats. Other behavior (e.g., locomotion and rearing) induced by quinpirole might provide a more sensitive measure for examining sex differences in females using direct and indirect dopamine receptor agonists. These data add to a growing literature demonstrating the complex relationship between diet and drug abuse, and the importance of studying both males and females in research using drugs acting on reward pathways.
Financial Support: none
GENDER DIFFERENCES IN PATTERNS OF PRESCRIPTION OPIOID USE AND BINGE DRINKING AMONG MIDDLE AGED FLORIDIANS.
Mirasada Serdarevic, Linda Cotter; 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, Oxycodeone, 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 3,977 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<0.001).

Conclusions: The community setting in Northeast Florida had rates of binge drinking comparable to the nation. However, the rate of opioid use was higher than 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.

Financial Support: M Serdarevic is supported by DA-T32-055167, Cotter (PI), UL1TR001427 Nelson (PI); Cotter (PI) of subproject.

GENDER DIFFERENCES IN PATTERNS OF PRESCRIPTION OPIOID USE AND BINGE DRINKING AMONG MIDDLE AGED FLORIDIANS.

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.
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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 opiate (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 mood 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.


GAME TYPE AS A MODERATOR OF THE RELATIONSHIP BETWEEN PATHOLOGICAL VIDEO GAME USE, IMPULSIVITY, AGGRESSION, AND GENERAL PSYCHOPATHOLOGY.
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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 the aforementioned 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. Moderator regression analyses were used to assess the moderating role of video game genre on the relationships previously identified.

Results: ANCOVA indicated those preferring MMORPGs reported more symptoms of PVGU (F(1,718) = 22.43, p = .000), while those preferring FPS reported higher levels of sensation seeking (F(1, 720) = 9.80, p = .002). Interestingly, although several expected statistically significant relationships were identified between PVGU and other outcome variables, genre preference did not serve as a moderator for any of these relationships.

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.

Financial Support: No outside financial support was used for this study.

CONCORDANCE BETWEEN URINE DRUG SCREEN AND SELF-REPORTED COCAINE USE.
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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), NCT01104805 (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 = 0.136, p=0.001). However, including Day 0 in the 5-day look back period does not improve concordance between TLFB and UDS (% agreement average = 0.136, p=0.001). Including Day 0 in the 3-day look back period was the most significant predictor of UDS (OR>50, p-value<.01). Agreement across studies ranged from 83% to 97%. Agreement was higher when one day prior to urine collection (Day-1) being the most significant predictor of UDS (OR>50, p-value<.01). Agreement across studies ranged from 83% to 97%. Agreement was higher when one day prior to urine collection (Day-1) being the most significant predictor of UDS (OR>50, p-value<.01). Agreement across studies ranged from 83% to 97%. Agreement was higher when one day prior to urine collection (Day-1) being the most significant predictor of UDS (OR>50, p-value<.01). Agreement across studies ranged from 83% to 97%.
TOBACCO CESSION AMONG POOR AND UNDERSERVED: EXPANDING ALTERNATIVES THROUGH COMMUNITY-BASED PARTICIPATORY RESEARCH.
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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 three 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.


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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.
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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 SORATES- 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.

Financial Support: NIDA:T32DA007288 (PI McGinty)R01DA026782, K24DA038240 (PI McRae-Clark)

PATTERNS OF SUBSTANCE USE AND ARREST AMONG HOSPITALIZED PEOPLE LIVING WITH HIV: A LATENT CLASS ANALYSIS.
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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” (34%), “substantial cocaine & heroin use” (15%), and “dependent alcohol & substantial cocaine 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 cocaine 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.

Financial Support: U10DA13720
INTERIM BUPRENORPHINE TREATMENT FOR REDUCING ILLICIT OPIOID USE DURING TREATMENT DELAYS.

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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. While IMT significantly reduces illicit opioid use during treatment delays, it is limited to licensed clinics, requires daily visits, prohibited take-homes and cannot exceed 120 days. These features have constrained its widespread use. We are developing and evaluating a novel Interim Buprenorphine Treatment (IBT) for waitlisted individuals that includes buprenorphine (BUP) dispensing via computerized device (Med-O-Wheel Secure, Addco, Finland), daily monitoring and random call-backs via Interactive Voice Response (IVR) system.

Methods: Thus far, 46 opioid-dependent adults have been randomized to one of two 12-week experimental conditions: IBT (n=23) participants receive BUP maintenance with bi-monthly visits and the remaining doses dispensed via Med-O-Wheel Secure, Addco, Finland), daily monitoring and random call-backs via IVR. Waitlist Control (WLC, n=23) participants remain local clinics’ WL. All complete follow-ups at 4, 8, and 12 weeks. We hypothesize that illicit opioid abstinence will be greater during treatment delays.

Results: 86%, 89% and 72% of IBT participants are abstinent from illicit opioids at 4, 8 and 12-week assessments vs. 0%, 0% and 0% of WLC participants. IBT participants are complying with 95% of daily calls and 94.5% of random call-backs. The completed trial (n=70) will be presented at the June 2016 conference.

Conclusions: Providing Interim Buprenorphine Treatment with minimal other support to waitlisted individuals may significantly reduce illicit opioid use during treatment delays.

Financial Support: NIDA Grants: R01-DA022122; K02-DA033139
LOW SOCIOECONOMIC STATUS IS ASSOCIATED WITH E-CIGARETTE AND TOBACCO PRODUCT USE: LONG-TERM BLOCKADE OF COCAINE USE AND REINSTATEMENT IN RATS BY A VECOR-DELIVERED COCAINE HYDROLASE.

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 2019. 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, cigar, 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%), with increased odds of e-cigarettes use (OR 1.8; 95% CI 1.4, 2.3) and cigarette (OR 1.5; 95% CI 1.1, 2.0) 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.

Financial Support: P50DA036151; P50DA009241

FORGING A NEW PATH: URBAN INDIAN APPROACHES TO SERVICE IMPROVEMENT IN RAMSEY COUNTY, MINNESOTA.

Aims: In this time of mandated practices and tight financial constraints, the Urban Indian Community of Ramsey County has expressed the need for a holistic model of care. Elders and Native American (NA) service providers emphasize a person-centered, inclusive system that heals the whole person through reconnection to community and spiritual traditions that humanize and aid NAs in maintaining sobriety. NAs receiving Evidenced Based Practices (EBPs) are not viewed within the context of spirituality, trauma history (personal, historical), and larger social context (poverty, intergenerational substance abuse, violence). Without addressing the person in context and incorporating spiritual traditions, many Native American return to unhealthy environments and relapse. EBPs were neither developed nor validated within NA communities and are not necessarily a good fit.

Methods: Our Community Based Participatory Research (CBPR) project conducted focus groups with: 1) Non-native providers serving Native(s) 2) Native providers serving Native(s) 3) Elders 4) NA Community and Native providers serving Native(Participants were asked about barriers to service, unmet needs, cultural sensitivity, and for recommendations for improved services.

Results: The themes included: relationship building, valuing cultural experience, increased awareness of historical trauma, support for NA community programming, as well as a holistic care model.

Conclusions: Utilizing a culturally informed approach builds trust, shows respect, and ultimately can help NAs achieve lasting health benefits.

Financial Support: This project was funded by a 2014 MN County Grant Funding Request

LONG-TERM BLOCKADE OF COCAINE USE AND LOCOMOTOR ACTIVATION IN RATS BY A ADENOVIRAL VECTOR-DELIVERED COCAINE HYDROLASE.

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Aims: A promising approach to treating cocaine abuse is to metabolize cocaine in the blood using a modified butyrylcholinesterase (BChE) that functions as a cocaine hydrolase (CocH). In rats, a helper-dependent adenoviral (hAd) 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 hAd-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.

Financial Support: Supported by a grant from the Minnesota Partnership for Biotechnology and Medical Genomics (SB & MEC) and a NIDA training grant T32 DA00797 (JRS; PI: Dr. Sabita Roy).

SELECT CHARACTERISTICS OF RECREATIONAL USE OF OPIOID USERS UNDERGOING A HUMAN ABUSE POTENTIAL STUDY.

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Aims: Human abuse potential (HAP) studies are conducted to determine the potential abuse of a drug with rewarding properties. Subject selection is an important step in the process to ensure subjects have the ability to detect liking with the drug under investigation. Eligible subjects are those who prefer to use drugs that are in the same class of drug to be studied and who can differentiate active control from placebo. This is called the discrimination phase. This study was conducted to assess whether there were common characteristics of subjects who passed or failed the discrimination phase of a HAP study.

Methods: The study surveyed 301 subjects across 5 opioid HAP studies. Each subject was randomized to the discrimination phase of the study. Eligible subjects were those who provided consent, failed discrimination, and were no longer in the study and subjects who had passed discrimination but completed the study and then discharged from the study. Qualifying subjects completed a demographic survey, where opioids were obtained and questions about the “high” characteristics associated with the recreational use of various and preferred opioids.

Results: There were 122 subjects who failed (F) and 179 passed (P) discrimination. The active control varied in dose and opioid type across the studies. Selected results are: average age was 28 F & 27 P, female 26 F & 49 P, male 96 F & 130 P, unemployed 52 F & 64 P, criminal history 87 F & 112 P, alcohol use less than once a month 8 F & 9 P, most common opioid used is hydrocodone/APAP 43 F & 57 P. Opioids were obtained: given by friends 79% F 74% P, bought from a dealer 51% F & 55% P, faked illness to acquire prescription 3% F & 2% P. Characteristics of the high: happy or pleasant 66% F & 78% P, relaxed or mellow 60% F & 79% P, calm or less nervous 54% F & 58% P.

Conclusions: Demographic data and response to rewarding properties of opioids were similar in subjects who failed and passed the discrimination phase of HAP studies. Subjects obtained most of their drugs from friends or bought from dealers.

Financial Support: The study was funded through and Investigator Initiated Grant from Pfizer.
OPIOID THERAPY MISUSE FACTORS: A SYSTEMATIC REVIEW
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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 participants, all of whom were exposed to non-cancer opioid therapy. This review included 33 articles published between January 2000 and December 2014 with sample sizes ranging between 346 and 3,000,000 participants. Results: Opioid misuse was strongly associated with depression, substance use, non-analgesic 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. Financial Support: USAF Grant FA865015C658 (JSP)

DISRUPTION OF THE SEROTONIN 5-HT2C RECEPTOR INTERACTION WITH PROTEIN PHOSPHATASE AND TENSIN HOMOLOGUE REGULATES THE BEHAVIORAL EFFECTS OF THE SELECTIVE 5-HT2C R AGONIST WAY163909.
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Aims: Agonist stimulation of the 5-HT2C R leads to activation of phospholipase C β (PLCβ) through G protein-dependent mechanisms. Disruption of the 5-HT2C R:PTEN complex by 3L4F, a peptide fragment of the third intracellular loop of the 5-HT2C R, augmented 5-HT2C R-mediated signaling in live cells and regulated the effects of the selective 5-HT2C R 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-HT2C R:PTEN complex may shift 5-HT2C R 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. Financial Support: DA030977, DA020087, DA033374, DA07287

THE WORSE GET BETTER: INSTRUCTION FOLLOWING IMPROVES AMONG THE ALCOHOL DEPENDENT RATE DEPENDENTLY.
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Aims: Chronic alcohol users exhibit deficits in working memory (WM) and executive function, which may exacerbate the frequency of other delinquent behaviors including impulsive decision-making. We aim to strengthen executive function by training WM in two types of alcohol dependents, current and recovering users. Importantly, heterogeneous responses to an intervention due to baseline differences can potentially obscure a treatment effect. Instead, we consider change scores using rate dependence analyses. That is, individuals can respond differentially to any intervention as a function of their baseline values. We hypothesize that alcohol dependents will differentially improve in WM capability based on their initial scores. Methods: Twenty-one currently using and 21 recovering alcohol dependents were allocated to either 20 (high dose) or 0 (no dose) active WM training sessions using the Cogmed® WM training program. Participants also completed a novel following instructions WM task before and after training. The following instructions task required participants to listen to and then carry out a list of verbal cues in a computerized task. Results: As determined by Oldham’s correlation (r = 0.4), improvements in following instructions scores occurred rate dependently in both current (r = 0.31) and recovering (r = 0.40) alcohol dependents following high dose WM training. Following instructions scores increased proportionally more in participants who began training at lower baseline scores, whereas high baseline scores did not change. Group main effect analyses would have hidden the intricacies of the effect of WM training within this dataset. Conclusions: Thus, specifically observing performance as a function of initial scores could help better recognize potentially therapeutic interventions and the individuals they would most benefit. Financial Support: Research supported by NIH R01 AA021529.
THE RELATIONSHIP OF AGE TO CANNABIS USE AND MOTIVES FOR USE AMONG MEDICAL CANNABIS DISPENSARY PATIENTS.

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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 significantly higher among younger users relative to middle-aged and older users 51-72).

Conclusions: Considering that negative consequences of cannabis use were highest 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).

EVALUATING PRESCRIPTION DRUG ABUSE SURVEY QUESTIONS.

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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 ziprasidone 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.

ALCOHOL USE DURING AN N-ACETYLCYSTEINE CANNABIS CESSION TRAIL IN ADOLESCENTS.

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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 glutathione 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>0.05). 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>0.1). There was no correlation between weekly quantitative or qualitative cannabinoid levels with co-occurring alcohol use (p=0.2).

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: R12 DA031794 (Squeglia), R01DA026777 (Gray), UL1TR000662 (Brady)

COMPARING PREDICTORS OF TREATMENT COMPLETION AND LENGTH OF STAY FOR OUTPATIENT TREATMENT.

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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. Exploratory 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 independent 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.

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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 are 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<.10), as well as reductions in engaging in sex with an injection drug user (41.8% vs. 51.6%, p<.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 (R01DA038366).

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?

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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 ≥ 18 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 unexposed population (Risk Ratio 1.76 95%CI 1.7-1.8). In the first month the risk of mortality was 5.67 per 100 prison releases for the unexposed population vs 0.93 per 100 prison releases for people released on OST – an unadjusted HR (hazard ratio) of 0.25 (95%CI 0.10-0.64). After adjustment for treatment in the community, age and drug use confounders the HR was 0.3 (95%CI 0.1-0.9).

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.
THE ROLE OF DOPAMINERGIC SYSTEM ON CRACK-COCAIN ADDICTION: DRD2 AND DRD4 GENES AND THEIR INDIVIDUAL AND INTERACTION EFFECTS. Anderson Ravazzolo,1,2,3 Jaqueline Bolet,1,2,3 Schuch1, Diana Muller1, Glauca Chiyoko Akutagava-Martins1, Claudia Szobot1, Flavio Pechansky Pechansky1, Felix Henrique P Kessler1, 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, HCMA/UFRGS, Porto Alegre, Brazil, 3Child and Adolescent Psychiatric Service / Hospital de 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 established the association of both DRD2 and DRD4 genes in alcoholism and other drug addiction.

Methods: A cross-sectional study of 237 current adult crack abusers or dependent persons (DSM-IV TR criteria) from in- and outpatient clinics and 209 community adult controls was conducted in Brazil. Subjects were evaluated with ASRS, ASI, and MINI-Short. DNA samples extracted from whole blood were genotyped for the DRD4 exon 3 48bp VNTR and DRD2 2283265 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=0.535; 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 as 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.

SAFETY AND TOLERABILITY OF COCAINE DURING PHENDIMETRAZINE MAINTENANCE. William W. Swoope1,2,3, Joshua A. Liel1,3, Lon R. Hays1, Abner O. Rayapati1, 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: Phendimetrazine, 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 phendimetrazine, preventing further work to examine the efficacy of phendimetrazine for cocaine use disorder. The aim of this study is to determine the cardiovascular and behavioral effects of acute intranasal cocaine doses during chronic phendimetrazine treatment. We hypothesized that cocaine use would be well tolerated during phendimetrazine maintenance.

Methods: Ten human cocaine users will complete the study, with 9 completing to date. Subjects are maintained on ascending oral phendimetrazine 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. Phendimetrazine 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. Phendimetrazine 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 phendimetrazine doses. Given this safety profile, the reduced abuse potential of phendimetrazine and promising preclinical research, future human laboratory studies and clinical trials should evaluate the efficacy of phendimetrazine for reducing cocaine use.

Financial Support: R01 DA036553

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 Satre3; 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).

IMPROVEMENT IN PSYCHIATRIC SYMPTOMS DURING INTERIM BUPRENORPHINE TREATMENT. Joanna Mayers Strech1, Taylor A. Ochalek1, Bryce Hruska1, Jacob D. Pusey1, Stacey C. Sigmon2; 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 waitlisted 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 a 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 psychopathological 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, and 12 vs. WLC participants (F (3,69)=6.22, 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 waitlisted OD adults. For the 2016 meeting, we will present data from the completed randomized trial of 70 participants.

Financial Support: NIDA R34DA037385 T32 DA007242
INFLUENCE OF COCAINE CUES ON MONETARY CHOICE IN COCAINE USERS.

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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-samples t-tests, bivariate correlations, and effect sizes calculated as Cohen’s ds 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; df = 0.66). A significant attentional bias for cocaine cues was also observed, replicating previous work (t = 3.14; df = 0.64). Choice and attentional bias were modestly correlated (r = 0.35). 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.

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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 interconnected 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.

Financial Support: NIDA T32 DA015035

AGE AND WORKING MEMORY PREDICT DELAY DISCOUNTING IN ADOLESCENTS IN TREATMENT FOR CANNABIS USE DISORDERS.

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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.

Financial Support: NIDA R21DA034942, R01DA053277, T32DA007299
CANNABIDIOL ATTENUATES A SPATIAL WORKING MEMORY IMPAIRMENT CAUSED BY THC IN MONKEY.

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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 Δ⁡₂-tetrahydrocannabinol (THC) delivery, in human users. Unfortunately, the inability to control self-selection of different marijuana strains complicates making a clear 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.

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Aims: To investigate whether four-weekly XR-NTX injections are more effective than daily BP-NLX in supporting abstinence from opioid/Secondary aims included abstinence from other illicit drugs, preventing injected drug use, preventing drug craving, improving mental 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 week 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

ADDICTIVE BEHAVIORS AND PSYCHIATRIC COMORBIDITIES OF INCARCERATED WOMEN IN A FRENCH OVERSEAS TERRITORY.

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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 severity ratings 2-4), 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 any time during 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.

THE BALTIMORE REPRODUCTIVE HEALTH INITIATIVE: BRINGING FAMILY PLANNING TO WOMEN IN TREATMENT.

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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

Financial Support: Supported by internal funds.
ALEXITHMIA IN ALCOHOL-DEPENDENT PATIENTS IS MEDIATED BY STRESS, ANXIETY AND LOSS OF SELF-CONTROL OVER DRINKING.
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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 V.S. HIGH EDUCATIONAL ATTAINMENT.
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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<0.01).

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 U54DA031659.

COMPARISON OF RISK BEHAVIOR, ADDICTION SEVERITY, AND HISTORY OF OVERDOSE BETWEEN ACTIVE AND AGONIST-MAINTAINED HEROIN USERS.
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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 an ANOVA between our groups with a series of drug use variables as our out-

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

TECHNOLOGY-BASED INTERVENTION PREFERENCES TO ENHANCE SELF-MANAGEMENT OF SUBSTANCE USE DISORDERS, HIV, AND HEPATITIS C AMONG PATIENTS IN INPATIENT DETOXIFICATION.
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Aims: To assess: 1) technology use patterns; 2) privacy concerns to adopting technology based interventions (TBI); 3) acceptability of adopting TBI to enhance self-management of substance use disorders (SUD), HIV, and Hepatitis C (HCV)

Methods: The 36-item baseline survey was comprised of closed-ended (Likert scale, binary yes/no, multiple choice) and open-end items. Interviews took approximately 30 minutes and survey domains included: 1) demographic characteristics; 2) clinical characteristics; 3) technology use patterns; 4) privacy concerns pertaining to TBI; 5) and acceptability of TBI to enhance self-management of SUD, HIV, and HCV.

Results: Respondents (n=85) were predominately African-American (42%), unemployed (68%), and lacked permanent housing (52%). Most reported alcohol use (63%), followed by heroin use (51%). There was high turnover of mobile phones, mobile phone numbers, and mobile phone content. Preferred technologies were smartphones (44%) and mobile phone apps (20%). A majority of participants owned smartphones; 28% owned a personal computer in their home; 34% reported daily internet use while 13% had no access. Nearly 40% expressed concern regarding the privacy of TBI content. Preferred technologies to support self-management of HCV included telephone (39%), text messaging (TM) (39%), and smartphone apps (12%); technologies to support HIV care included telemedicine (57%), TM (41%), and smartphone applications (14%); and preferred TBI to support the management of SUD included telephone (59%), TM (55%), and smartphone apps (18%). Social media, online forums, and web-based modules were reported less frequently for all three categories (<10%).

Conclusions: High turnover of mobile phones, mobile phone numbers, and limited access to personal computers are important obstacles to implementation of TBI in this vulnerable population.

Financial Support: None
ANALGESIA AND ABUSE LIABILITY OF HIGH-DOSE INTRAVENOUS OPiOIDS IN PATIENTS ON METHADONE OR BUPRENORPHINE

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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 maintenance 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.

PRENATAL CANNABIS EXPOSURE AND COGNITIVE FUNCTIONING: A CRITICAL REVIEW.
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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 order to better understand possible mechanisms of action.
Results: Statistically significant differences between prenatally exposed individuals and control participants have been observed on a minority of measures (12 out of 180). More importantly, however, the clinical significance of these findings may be limited because cognitive functioning overwhelmingly falls within the normal range when compared against normative data.
Conclusions: In spite of these observations, the prevailing view is that prenatal cannabis exposure causes widespread cognitive disruptions. The scientific and policy implications of this perspective are discussed.
Financial Support: T32-DA037801

ACUTE TRYPTOPHAN DEPLETION IN COCAINE DEPENDENT SUBJECTS WITH COMORBID DEPRESSION.
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Aims: The aim of the study was to assess the ATD response in five groups: (1) cocaine-dependent patients (CDP) 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 an one non-ATD), the sessions were randomized, and double-blind. A total of 54 subjects participated: 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 (HRSD) 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.

EFFECTS OF HIV INFECTION AND COCAINE DEPENDENCE ON LABORATORY-BASED DECISION MAKING TASK PERFORMANCE.
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Aims: Drug dependence 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 included 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=.021) and the BART (p=.026), 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=.001), 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.

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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.

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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 a 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.

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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.

Methods: 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.

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, 61.1% 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?

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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 NDU, 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 misconception about stereotypical views about drug users.

UNBIASED GENE PROFILING OF THE Rhesus Macaque Mesolimbic System Following Long-Term Cocaine Self-Administration.
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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 transcriptional 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 NanoExpress 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 was 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.
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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-
tion. After this, animals were tested for CPP using d-amphetamine.

Results: For operant responding, a 2x2ANOVA revealed a significant main effect for trial type (p<0.05) and sex (p<0.01), as well as an interaction effect [F (1, 28)=10.03, p<0.05]. For amphetamine CPP, a 2x2ANOVA revealed a significant effect for drug (p<0.0001), (p<0.001) and an interaction effect [F(1.20)=22.09, p<0.01]. Posthoc tests revealed that female rats increased their response following unexpected reward omission (p<0.01) and showed greater preference for amphetamine. In contrast, males did not show an increase in response rate following reward omission, but did develop preference for d-amphetamine, although it was less than that observed in females.

Conclusions: The current results indicate that female rats, but not males, show “NU” as modeled by a reward omission task. In addition, females showed greater amphetamine CPP compared to males. These results suggest that mood-based impulsivity may be a predictor for stimulant abuse in females, but not in males.

Financial Support: Supported by: NIH grants P50 DA05312 and R01 DA12564.

MORTALITY RATES AMONG SUBSTANCE USE DISORDER PARTICIPANTS IN CLINICAL TRIALS: POOLED ANALYSIS OF 22 NIDA CTN STUDIES.
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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: 665-2080) and 1672 (95% CI: 869-2738) per 100,000 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=3.39, 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.

EARLY EXPOSURE TO PRESCRIPTION DRUGS AND SUBSTANCE USE DISORDER SYMPTOMS IN ADULTHOOD.
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Aims: There have been significant increases in the medical use of prescription opioids, sedatives, stimulants, and tranquilizers among U.S. adolescents. The purpose of this study is to examine context of early prescription drug exposure (medical and/or nonmedical use of stimulants, sedatives, tranquilizers, and opioids) in adolescence with the subsequent risk of nonmedical use of prescription drugs (NUPD) and substance use disorder (SUD) symptoms during adulthood.

Methods: Panel data from the Monitoring the Future study was used. Twenty-one cohorts of nationally representative samples of 9,420 high school seniors in the United States were followed longitudinally from adolescence (age 18) to adulthood (age 35).

Results: 60% of respondents did not use any prescription drugs at baseline, while 16% of indicated medical use only, 14% indicated both medical and nonmedical use, and 11% indicated only nonmedical use of prescription drugs at baseline. Logistic regression analyses found that respondents who indicated both medical and nonmedical use, and nonmedical use only at baseline, had higher odds of having two or more SUD symptoms at age 35 and indicating NUPD during the past year at age 35 when compared to respondents who did not use prescription drugs at baseline. For instance, respondents who indicated nonmedical use only had higher odds of having two or more alcohol use disorder symptoms (AOR 2.07,95%CI 1.69,2.54) at age 35 when compared to respon-
dents who indicated no prescription drug use at baseline. Respondents who engaged in medical use only at baseline were not at an elevated risk of SUDs or NUPD at age 35 when compared to respondents who did not use prescription drugs at baseline.

Conclusions: The findings indicate medical use of prescription drugs without nonmedical use only had higher odds of having two or more alcohol use disorder symptoms (AOR 2.07,95%CI 1.69,2.54) at age 35 when compared to respon-
dents who indicated no prescription drug use at baseline. Respondents who engaged in medical use only at baseline were not at an elevated risk of SUDs or NUPD at age 35 when compared to respondents who did not use prescription drugs at baseline.

Financial Support: The project is supported by research grant R01DA031160 from the NIH.
REAL-TIME, CONTINUOUS ELECTROCHEMICAL MONITORING OF DRUGS IN VIVO.

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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 pharmacokinetic profile of drugs of abuse, we have developed an electrochemical aptamer-based indwelling sensor that achieves continuous, real-time pharmacokinetic measurements of drugs in living animals.

Methods: Male, adult Sprague Dawley rats are anesthetized and maintained under isoflurane anesthesia during the entire procedure. Both jugular veins are surgically exposed, catheterized, and the catheter allows the infusion of a 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 aminoglycocides (kanamycin, tobramycin) and the anti-tumor drug doxorubicin.

Results: Our probes are sensitive to micromolar changes in concentration of our drug targets, including aminoglycocides 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 measurement 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 pharmacokinetics 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 neupeptide Y.

Financial Support: NIH and W.M. Keck Foundation

FACETS OF MINDFULNESS MEDIATE THE RELATIONSHIP BETWEEN DEPRESSIVE SYMPTOMS AND SMOKING EXPECTANCIES.

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Aims: Cigarette smokers commonly endorse symptoms of depression. Dispositional mindfulness has been associated with lower depressive symptoms, less smoking, and higher odds of smoking cessation. Given that mindfulness is multi-faceted, this study examined which facets of mindfulness mediated the relationship between depressive symptoms and smoking expectancies.

Methods: Participants completed the Smoking Consequences Questionnaire (SCQ), Center for Epidemiologic Studies Depression Scale (CESD), and Kentucky Inventory of Mindfulness Skills (subscales-Observe, Describe, Acting with Awareness, Accepting without Judgment), and indicated numbers of cigarettes per day (CPD). Simple mediation models (followed by multiple mediation when more than one facet was significant) tested whether mindfulness facets mediated the relationship between depressive symptoms and smoking expectancies.

Results: Participants (n=72) were 75% female; the average age was 21.44 (SD = 4.87). First, depressive symptoms were associated with higher scores on Observe, which predicted greater Positive Reinforcement expectancies. Second, depressive symptoms were associated with higher scores on Observe, which was associated with greater Negative Consequences expectancies; lower depressive symptoms were associated with increased Describe and Accepting without Judgment, which were each associated with lower Negative Consequences expectancies. Third, lower depressive symptoms were associated with higher Accepting without Judgment, which predicted lower Negative Reinforcement expectancies.

Conclusions: Mindfulness facets uniquely mediated the relationship between depressive symptoms and smoking expectancies. Results suggest that Observing skills may need to be combined with other mindfulness facets to be useful. Accepting without Judgment, on the other hand, may serve as a protective factor in the relationship of depression and smoking.

Financial Support: NCI CA016672; NCCIH K23AT084442

LIFE IN THE BARrio: STRESS, DEPRESSION AND DRUG USE.

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Aims: Residing in Mexican American barrio may place individuals at heightened risk for chronic and acute stress which are associated with adverse mental health outcomes such as depression. Stressors may be exacerbated for individuals dealing with multiple stressors such as stress resulting from generational poverty, immigration, family death, divorce, illness, etc. and depression.

Methods: The study sample (n=227) is drawn from a federally funded study of Mexican-American heroin and other drug using men. Cross-sectional research design and field intensive outreach methodology were utilized. “Depressed” and “non-depressed” groups were formed using scores on the CESD. Data were analyzed using chi-squared tests and logistic regression.

Results: Depressed and non-depressed groups were significantly different on poverty level and number of acute stressors. Heroin users whose household income was above poverty were 60% less likely to suffer from depression, compared to the respondents whose household income was below (B = - .93, OR = 0.69, 95% CI = 0.31, 0.98, p < .05). Interestingly, number of acute stress events was negatively related to depression, (B = - .38, OR = 0.69, 95% CI = 0.56, 0.84, p < .001).

Conclusions: Findings revealed that stressors were related to depression among Latino drug users but these relations are complex. Poverty is the central indicator of social disorder in neighborhoods and was related to depression in our sample. Results highlight the need for macro- and micro-level interventions not only to reduce drug use but to also manage acute/chronic stress and depression. Addressing stressors may improve mental health among Latino drug-using populations living in challenging communities.

Financial Support: This research was supported by NIH/NIDA, 1 R24 DA019798.


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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.

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 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

ACCEPTING WITHOUT JUDGMENT Facets of Mindfulness Mediate the Relationship between Depressive Symptoms and Smoking Expectancies.

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Aims: Mindfulness facets uniquely mediated the relationship between depressive symptoms and smoking expectancies. Results suggest that Observing skills may need to be combined with other mindfulness facets to be useful. Accepting without Judgment, on the other hand, may serve as a protective factor in the relationship of depression and smoking.

Financial Support: NCI CA016672; NCCIH K23AT084442

Financial Support: This research was supported by NIH/NIDA, 1 R24 DA019798.
DEALING WITH ZERO-NOMERATORS IN ESTIMATING DRUG-DEPENDENCE CHANCES: A BAYESIAN APPROACH.
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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 dependence case is an observed point 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 chances of developing drug dependence very soon after onset of drug use.

Results: 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

"SEX AND THE NEW KANDEL-KANDEL NICOTINE GATEWAY EVIDENCE": INITIAL STEPPING-STONES.
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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 hypthesized effects require repetitive nicotine exposure ‘in close conjunction’ with cocaine exposure onsets. Using human epidemiological month-by-month data for onset/offset 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/offset 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.

Financial Support: FW,KA,OV,JCA (NIDA T32DA021129, K05DA015799).
FW (NMHD R24002803). No COI otherwise.
A NOVEL APPROACH TO NALTREXONE INJECTIONS MAY REDUCE COMPLICATIONS AND INCREASE ADHERENCE.

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Aims: Complexity of naltrexone injections (Vivitrol®) may limit treatment uptake and adherence. Therefore, 4 mL microsphere suspension may result in clots 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 men 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 clot, with a total of 20 clots. Ninety-five injections (34%) resulted in a total of 162 AEs among 59 participants (pain [87], tenderness [32], bruising [6], pruritus [11]), with 96 classified as mild. There was no relationship between clots and AEs or adherence.

Conclusions: Our modified injection technique was associated with few clots 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 5R01DA031678-04.

HELP-SEEKING AMONG COMMUNITY RESPONDERS TRAINED IN OVERDOSE PREVENTION AND NALOXONE ADMINISTRATION.

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Aims: To determine individual and community factors associated with help-seeking, among community responders trained in overdose prevention and naloxone administration.

Methods: Between 2007 and 2014, community responders enrolled in the MA Dept of Public Health Opioid Overdose Prevention Pilot Program reported overdose rescue attempts during which naloxone was administered. We used logistic regression to assess the associations of help-seeking (yes vs. no) using categorical (and/or EMS present) and factors, including time for naloxone to work, relationship to overdose rescuer, responder race/ethnicity, polysubstance use by victim, public vs. private setting, police or fire dept naloxone, community overdose prevention coalition, and year of rescue. Adjusted models also included responder age, gender, and drug using status.

Results: Among 2782 reported rescue attempts, help was sought at 41% (1136/2782). This rate increased from 30% in 2007 to 47% in 2014 (AOR 1.10 per year 95%CI 1.04,1.17). Help-seeking increased with the time for naloxone to work (>5 min versus <1 min: AOR 2.21 95%CI 1.64-2.97) and when the naloxone did not work (AOR 16.3 95%CI 8.34-32.0). Help seeking was more likely when the victim was a stranger (AOR 2.27 95%CI 1.70-3.09) or client (AOR 8.46 95%CI 3.24-22.1) compared to a friend, relative or partner and when the overdose occurred in a public setting (AOR 1.53 95%CI 1.23-1.89).

Help-seeking was not associated with race/ethnicity, polysubstance use, police or fire dept naloxone, or presence of community overdose prevention coalition.

Conclusions: Help-seeking by community responders increased over time. Help-seeking was more likely when naloxone took longer or naloxone did not work, when the overdose occurred in public, and when the victim was less familiar to the responder. Interventions to further increase help-seeking are warranted, particularly as the lethality of the heroin supply increases.

Financial Support: Massachusetts Department of Public Health

INCREASED DRUG USE AND THE TIMING OF SOCIAL ASSISTANCE RECEIPT AMONG PEOPLE WHO USE ILLICIT DRUGS.

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Aims: The monthly synchronization of social assistance (SA) payments for people who use illicit drugs (PWUD) has been associated with increases in adverse health outcomes, including drug overdose. Yet, the temporal association of SA disbursement with drug use intensity has not been established. We examined this relationship among PWUD in Vancouver, Canada.

Methods: Data were derived from prospective cohorts of HIV-positive and HIV-negative PWUD. Participants were asked at semi-annual follow-ups (FU) about their illicit drug use during the last 6 months and the last week. We assessed whether individuals reported receipt of SA and whether the follow-up was conducted within 7 days of the monthly disbursement of SA. We employed generalized estimating equations controlling for confounders to examine the relationship between SA disbursement and intensified drug use, defined as past week use characterized by a) increase of 40% in the frequency of use; b) change from non-daily use to daily use; or c) increase in the number of drugs used daily, when compared to the last 6 months. Lastly, we conducted stratified analyses by primary drug type: stimulants, illicit opioids or polydrug use.

Results: Between 2005 and 2013, our study included 2,661 individuals (median age 35, 32% female) with 1,242 completing at least one FU within the 7-day window of SA disbursement. SA disbursement was independently associated with intensified drug use (aOR:61.95%CI[1.41,1.84]), and remained significant when stratified by primary stimulant use (1.76[1.49,2.07]) and illicit opioids use (1.54[1.07,2.21]) as opposed to polydrug use (1.31[0.98,1.74]).

Conclusions: Using longitudinal data on PWUD, we found a significant association between SA disbursement and immediate intensified drug use. These findings reinforce a growing body of evidence pointing to the inadvertent harm produced by the synchronization of SA payments and suggest that alternative disbursement approaches better able to mitigate this harm, such as desynchronized disbursement, should be explored.

Financial Support: CIHR MOP142732;MOP156827
SEARCH FOR NOVEL TLR4 ANTAGONISTS FOR THE TREATMENT OF NEUROPATHIC PAIN AND DRUG ABUSE.

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Aims: Activation of TLR4 signaling through the homodimerization of TLR4-MD-2-ligand complexes can result in cytokine and chemokine production and a profound proinflammatory 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 (+)-naltraxone, 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 (+)-naltraxone analogs.

Results: The design and synthesis of six novel (+)-naltraxone analogs, and more than ten intermediates will be discussed, e.g., to modify a specific molecular area, sinonemine was converted to the N-p-chlorophenethyl bulky and electron-withdrawing analog in 8 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.

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Aims: Recent evidence implicates toll-like receptor 4 (TLR4) in drug reward/reinforcement. Previous work in our laboratory showed that the opioid inactive isomers (+)-naltraxone 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 (+)-naltraxone 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: (+)-Naltraxone 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, (+)-naltraxone and (+)-naloxone each inhibited LPS-induced reactive oxygen species (ROS) and LPS-induced increase in microglial phagocytosis. However, (+)-naltraxone and (+)-naloxone did not directly inhibit LPS-induced interleukin-1β (IL-1β) production. The drug interaction of (+)-naltraxone and (+)-naloxone is additive. (+)-Naltraxone and (+)-naloxone each inhibited LPS-induced interferon regulatory factor 3 (IRF3) activation and interferon-β (IFN-β) produced increase. 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 (+)-naltraxone 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 (+)-naltraxone and (+)-naloxone.

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.

MEASURING SIGN-TRACKING IN HUMANS: THE PROMISE AND PITFALLS OF TRANSLATION.

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Aims: Some laboratory animals appear compulsively attracted to cues that have been associated with reward, a behavior called “sign-tracking”. These animals are “at risk” in animal models of addiction, and exhibit underlying differences in dopamine functioning, a key neural substrate of addiction. This has prompted widespread interest in measuring “sign-tracking” in humans as a possible indicator of addiction risk. The aims of this study were: 1. Develop a measure of human sign-tracking using a translational paradigm 2. Conduct initial convergent validation of this measure with traits associated with dopamine functioning 3. Correlate the measure with other measures of cue attraction.

Methods: In 90 healthy young adults, we repeatedly paired neutral pictures with a preferred food to create conditioned reward cues. We then examined attraction to these cues using subjective, psychophysiological and behavioral measures. We also measured action impulsivity, current risky substance use and family history of substance use disorders.

Results: Subjective and psychophysiological (although not behavioral) measures of attraction to cues were responsive to conditioning, as hypothesized. However, individual differences in these measures of cue attraction did not correlate strongly, and collectively did not consistently predict action impulsivity, risky alcohol or drug use, or family history of substance use disorders.

Conclusions: These findings suggest that this translational sign-tracking paradigm in humans either does not reflect the same individual differences captured by sign-tracking in laboratory animals, or the correlates of sign-tracking in humans differ. Issues related to creating and validating translational paradigms and alternate approaches to measuring this construct in humans will be discussed.

Financial Support: R03DA036669 and P50DA009262 from the National Institute on Drug Abuse

PREVALENCE OF PRENATAL CIGARETTE SMOKING AND MARIJUANA USE IN NORTH DELAWARE STATE.

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Aims: Cigarette smoking is the most common substance used during pregnancy, and pregnant smokers are also at risk for other substance and alcohol use, including marijuana. We examined the proportion of self-reported tobacco, marijuana, alcohol, cocaine, and other illicit substance use among pregnant women enrolled in 2014 at Christiana Care Health Services, the largest health system for obstetric care in the Delaware state.

Methods: Secondary data analyses were conducted of an ongoing obstetrical registry. The proportion of self-reported tobacco and other substance use among pregnant women enrolled in 2014 (N = 11276) was examined first. Then, the proportions of substance use among pregnant smokers and marijuana users were examined in logistic regression analysis, controlling for each substance, age, race/ethnicity, and Medicaid status.

Results: The self-reported tobacco use rate among pregnant women enrolled at Christiana Care Health System in 2014 was 8.9%. Other substance use rates were 3.1% for marijuana, 2.5% for alcohol, 0.7% for cocaine, and 1.4% for other drug use. Younger age (OR=0.98/year; 95%CI[0.97,0.99]), Medicaid status (OR=5.60;95%CI[4.74,6.61]), White race (OR=2.23;95%CI[1.91,2.61]), Non-Hispanic ethnicity (OR=0.27; 95%CI[0.20,0.35]), and any substance use (OR=13.08; 95%CI[10.87,15.75]) were significantly correlated with prenatal smoking. Younger age (OR=0.92; 95%CI[0.90,0.95]), Medicaid status (OR=1.81;95%CI[1.40,2.36]), Non-White race (OR=0.50;95%CI[0.40,0.64]), Non-Hispanic ethnicity (OR=0.46; 95%CI[0.39,0.72]), and any substance use (OR=24.41; 95%CI[18.69,31.3]) were significantly correlated with prenatal marijuana use.

Conclusions: The findings were consistent with the literature in which the prevalence of tobacco use during pregnancy was the highest among all substances. Race was inversely correlated with use between tobacco and marijuana use. Higher odds of being Medicaid eligible were observed for prenatal tobacco use, while high odds of using other substances for prenatal marijuana use.

Financial Support: Christiana Care Health System Department of Obstetrics and Gynecology
REDDON IN ALCOHOL, TOBACCO, AND ILLICIT DRUG USE DURING CHILDBEARING 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, ’Department 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 designs 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)).

REDDON OF ALCOHOL SELF-ADMINISTRATION BY 3-ISO-PBC. E M Weerts1, V.V.N.P.B Tiruvendhaland2, J M Cook1; 1Psychiatry and Behavioral Sciences, Johns Hopkins University, Baltimore, MD, 2Department of Chemistry & Biochemistry, University of Wisconsin Milwaukee, Milwaukee, WI

Aims: The major inhibitory neurotransmitter gamma-aminobutyric acid (GABA) modulates many of the behavioral effects of alcohol including motor incoordination, sedation, tolerance, and withdrawal. The alpha-1 subunit of the GABA receptor modulates many of the behavioral effects of alcohol including motor incoordination, sedation, tolerance, and withdrawal. The alpha-1 subunit of the GABA receptor is of particular interest as it is the most positive control.

Results: When compared to vehicle, sub-chronic administration of 3-ISO-PBC significantly more likely to use drugs in the past year across all drug classes compared to other drug-involved offenders. In the past year, drug users were significantly more likely to have been a passenger of another impaired driver (78.6% vs. 53.9%), to have injected drugs (70.6% vs. 41.1%), traded sex for drugs or money (31.2% vs. 15.6%), and had more sex partners (6.2 vs. 2.8).

Conclusions: Findings indicate high rates of self-reported drugged driving among rural drug-involved female offenders, and drugged driving is related to higher rates of other high-risk behaviors, suggesting that drugged driving may serve as a possible indicator.

Financial Support: Supported by the BBVA foundation (SV-14-FBBVA-1) and by the Council for Economy and Work (GRUPIN14-047).

DEPLOYING DRIVING AND OTHER HIGH-RISK BEHAVIOR AMONG RURAL DRUG-INVOLVED FEMALE OFFENDERS. Matthew Webster, Megan F Dickson, Michele Staton-Tindall, Carrie B Oser, Carl Leukefeld; Center on Drug and Alcohol Research, University of Kentucky, Lexington, KY

Aims: Drugged driving is a high-risk behavior that is on the rise and may serve as an indicator for other high-risk behaviors; however, limited information exists on rural female drugged drivers. The present study compares the high-risk behaviors of rural female self-reported drugged drivers to other drug-involved female offenders to examine the utility of drugged driving as an indicator of other high-risk behavior.

Methods: As part of a study on drug use and high-risk behavior, 400 women from three rural jails were randomly selected, consented, and screened. During a baseline face-to-face interview, past year drug driving, drug use, injection and sex risk behavior data were collected. T-tests and chi-square analyses were used to compare groups.

Results: Almost two-thirds (64.6%) of participants reported drugged driving in the past year with drug drivers being significantly (p < .05) younger than other drug-involved offenders (31.9 vs. 34.5 years). Drugged drivers were significantly more likely to use drugs in the past year across all drug classes compared to other drug-involved offenders. In the past year, drug users were significantly more likely to have been a passenger of another impaired driver (78.6% vs. 53.9%), to have injected drugs (70.6% vs. 41.1%), traded sex for drugs or money (31.2% vs. 15.6%), and had more sex partners (6.2 vs. 2.8).

Conclusions: Findings indicate high rates of self-reported drugged driving among rural drug-involved female offenders, and drugged driving is related to higher rates of other high-risk behaviors, suggesting that drugged driving may serve as a possible indicator. These data also highlight the need for careful assessment of women who drive drug-impaired to identify other areas for intervention.

The consistent pattern of more high-risk behavior among drugged drivers may suggest an underlying cause, which future research could target.

Financial Support: R01DA033866

DELAY DISCOUNTING AMONG SMOKERS, E-CIGARETTE USERS AND NON-DEPENDENT CONTROLS. Sara Eva Weidberg, Alba González-Roz, Víctor Martínez-Loredo, Carla López-Núñez, Irene Pericot-Valverde, Roberto Secades-Villa; Department of Psychology, University of Oviedo, Oviedo, Spain

Aims: Despite robust associations between delay discounting and smoking, no work examined delay discounting levels in e-cigarette users. This is the first study that compares delay discounting in three groups: current e-cigarette users who were ex-smokers, current smokers, and non-dependent controls. We hypothesized that both e-cigarette users and smokers would exhibit greater delay discounting than controls.

Methods: 108 participants were previously recruited for two studies, one aimed at assessing e-cigarette patterns of use and another that assessed the effectiveness of a Contingency Management procedure combined with cognitive-behavioral treatment among smokers. Controls were recruited throughout the community. Participants’ sociodemographic and smoking characteristics were assessed during a single assessment. They completed a computerized version of a delay discounting task. A one-way between-groups ANOVA was conducted to determine if delay discounting [using log k and the area under the curve (AUC)] differed between groups.

Results: There was a statistically significant difference in delay discounting for the three groups of participants, F(2, 105) = 4.784, p = .010, η2 = .084; F(2, 105) = 3.204, p = .045, η2 = .058. Smokers discounted significantly more by delay than control participants (p < .001; p(2) = .049). E-cigarette users showed an intermediate discounting that did not significantly differ from smokers (p < .564; p(2) = .947) or control participants (p(2) = .188; p(2) = .160).

Conclusions: This study makes a novel contribution to the e-cigarette literature showing that e-cigarette users exhibit an intermediate delay discounting performance that is between the ones displayed by conventional smokers and controls. Future research should explore which neurobiological and psychological factors explain the association between e-cigarette use and delay discounting.

Financial Support: Supported by the BBVA foundation (SV-14-FBBVA-1) and by the Council for Economy and Work (GRUPIN14-047).
IS CANNABIS USE ASSOCIATED WITH AN INCREASED RISK OF ONSET AND PERSISTENCE OF ALCOHOL USE DISORDERS: A THREE-YEAR PROSPECTIVE STUDY AMONG ADULTS IN THE UNITED STATES.

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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 disenrollment at an OBOT Program from 1/2002 to 2/2014. The primary outcome was early disenrollment (within 6 months) from OBOT. The secondary outcome was time to disenrollment 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 disenrollment (logistic regression) or time to disenrollment (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 [0.95, 1.74]) at enrollment were not significantly associated with early disenrollment. In multi-variable Cox models, the presence of any PAM (adjusted hazards ratio [AHR] 1.16 [1.00 - 1.36]) was not significantly associated with risk of disenrollment; however, gabapentin (AHR 1.30 [1.05 - 1.62]) and clonidine (AHR 1.33 [1.01 - 1.75]) were associated with increased risk of disenrollment.

Conclusions: PAMs at OBOT entry were not significantly associated with early disenrollment. However, gabapentin and clonidine specifically were associated with increased risk of disenrollment. Further work is needed to evaluate the effect of PAMs on buprenorphine treatment outcomes.

Financial Support: Supported by NIDA Grants UG1DA015831, K24DA022288, and K23DA035297

THE IMPACT OF PSYCHOPHARMACOTHERAPY ON DISENROLLMENT 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 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.

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.

Financial Support: Supported by NIDA Grants UG1DA015831, K24DA022288, and K23DA035297

A BRAIN IMAGING STUDY OF Dopamine Receptor D2 availability in cannabis dependence: a comparison with healthy control subjects.

Aviv M Weinstein1,2, Hedva Lerman2, Mazal Greemland2, Omri Frisch3, Einat Even-Sapir1; 1Behavioral Sciences, University of Ariel, Ariel, Israel, 2Nuclear Medicine, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, 3Kfar Izun Treatment Center, Cezarea, Israel

Aims: The aim of this study was to evaluate dopamine receptor D2 availability in cannabis dependent patients and with healthy control subjects. They showed lower dopamine D2 receptor availability in the putamen compared with cannabis dependent users without history of psychotic episodes and with healthy control participants.

Conclusions: Recovery from cannabis induced psychosis is marked by dopamine D2 receptor availability measures in the caudate that is comparable to control participants. The lower measures of D2 receptor availability measures in the putamen may be residual effect of anti-psychotic medication. The results will be discussed in view of current studies on recovery from cannabis dependence and cannabis-induced psychosis.

Financial Support: A grant from the Israeli Anti Drug Authority in Israel Dr. Aviv Weinstein

PAIN SEVERITY AND SUBSEQUENT OPIATE USE DURING BUPRENORPHINE-NALOXONE TREATMENT OF PRESCRIPTION OPIOID-DEPENDENT PATIENTS WITH CHRONIC PAIN.

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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 outcome.

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.

Financial Support: Supported by NIDA Grants UG1DA015831, K24DA022288, and K23DA035297
SOCIAL REINSTATEMENT: A RAT MODEL OF PEER-INDUCED RELAPSE.

Methods: Availability and reinstatement. 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.

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). 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/inj); 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.

Financial Support: NIH P50 DA05312 & NIDA T32 DA016176

PREEXPOSURE ATTENUATES METHYLPHENIDATE-INDUCED TASTE AVOIDANCE, BUT ENHANCES BDNF/TRKB ACTIVITY IN THE INSULAR CORTEX OF THE RAT.

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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's 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.

SIMULTANEOUS PET/MRI OF STATIC AND DYNAMIC FUNCTIONAL CONNECTIVITY TO OPIOIDS.

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Aims: To investigate pharmacological modulations of static and dynamic functional connectivity (FC) to opioid drugs using simultaneous PET/MRI.

Methods: PET/MRI scans were acquired from 2 male macaques (isoflurane anesthetized) using a μ-opioid radiotracer, [11C]Carfentanil, and oxycodone for cerebral blood volume (CBV) MRI. Five doses of naloxone (opioid antagonist) were given i.v during scan. PET data was analyzed for receptor binding potentials (BPND). Drug-induced CBV changes were quantified. Fourteen regions were selected based on high-to-low BPND. Static FC, MRI data was broken into three 20-min (pre-, post-, and during drug) sections. A voxel-wise, seed-based correlation analysis were calculated. For dynamic FC, a sliding window technique was applied on the truncated time-series data (60 sec windows with 50% overlap). ROI-to-ROI correlation coefficient within each window was calculated. A k-mean clustering approach was used to group the dynamic FC to different functional states and the number of state transitions was calculated.

Results: Naloxone induced dose-dependent μ-opioid receptor BPND and CBV changes. The largest BPND reductions were observed in the thalamus and caudate and the largest CBV changes were observed in the putamen. Among all regions analyzed, an increase in local (within putamen) and distal (motor cortex and supplementary motor area) FC with putamen was found after naloxone challenge. Cerebellum, an area devoid of μ-opioid receptors, showed an increase in FC with thalamus during the drug injection. Dynamic FC patterns were also modulated with naloxone, which show weaker pairwise correlations between ROI pairs and larger number of dynamic state transitions. Studies are ongoing to investigate the connectivity pattern of each functional state and to further evaluate the effects of μ-opioid agonists on FC.

Conclusions: We showed opioid modulates both static and dynamic FC, and PET/MRI has great potential to further our understanding of the neurochemical mechanisms underlying large-scale brain networks.

Financial Support: Supported by CDART (P50 DA005312) and CCTS (UL1TR000117)
SILENCING GIANT CHOLINERGIC INTERNEURONS IN THE NUCLEUS ACCUMBENS WITH DREADDS REDUCES NICOTINE SELF-ADMINISTRATION IN RATS.

Emily A. Williams, Curtis A. Beall, Matthew Ian Palmatier; Psychology, East Tennessee State University, Johnson City, TN

Aims: Cholinergic interneurons in the accumbens have been implicated in the regulation of DA release during self-administration in preclinical models. The present studies used a genetically modified rat strain expressing Cre-recombinase co-localized with choline acetyltransferase (ChAT-Cre rats) to target cholinergic neurons with designer receptors exclusively activated by designer drugs (DREADDs) to silence cholinergic interneurons during nicotine self-administration.

Methods: Heterozygous ChAT-Cre male rats were bred with wild-type females. Offspring were genotyped with real-time PCR and only Cre-positive rats were included in this experiment. As adults 12 males and 14 females were shaped to lever press for sucrose and were then instrumented for nicotine self-administration and injected with the DREADD receptor (HM4 Di) at AP+1.6, M/L±1.3, and D/V-7.1 mm. After recovery from surgery all rats were allowed to self-administer nicotine (30 µg/kg/infusion, dose calculated as base) on an escalating fixed-ratio (FR) schedule of reinforcement from FR1 to FR5. After responding stabilized on FR5, rats were tested in an ABA design with placebo and the designer drug clozapine N-oxide (CNO) injected to the intraperitoneal cavity (3 mg/kg) 15 min before test sessions.

Results: There were no differences between males and females during nicotine self-administration testing on any schedule of reinforcement (p=0.05). After CNO treatment there were significantly fewer active lever presses and reinforcers earned relative to placebo (p=0.05). However, this reduction in nicotine self-administration was reversed 48 h later in a second placebo test, indicating that the effects of CNO were non-specific or long-lasting. Histological verification indicated that the DREADD was co-localized with cholinergic neurons in the accumbens.

Conclusions: These findings suggest that cholinergic interneurons robustly modulate DA release by nicotine during self-administration and influence nicotine reinforcement.

Financial Support: ETSU Office of Research and Sponsored Programs

ORAL JPC-077, A VESICULAR MONOAMINE TRANSPORTER-2 INHIBITOR, REDUCES METHAMPHETAMINE SELF-ADMINISTRATION ACROSS REPEATED TREATMENTS.

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Aims: The vesicular monoamine transporter-2 (VMAT-2) inhibitor lobeline (a chemically defunctionalized derivative of the alkaloid lobeline) is a potential methamphetamine (METH) addiction treatment, but rats developed tolerance to lobeline. 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 was no difference in NIDA m-ASSIST scores for prescription stimulants (t = -1.57, p=0.13), sedatives (t = 0.23, p=0.98) and opioids (t=0.46, p=0.65) from baseline to one month.

Conclusions: Initiating a longitudinal collaborative care intervention for patients with PDM from the ED is feasible and holds promise as an intervention strategy for this complex population.

Financial Support: Grants to LW from the UW ADAO and the NIH (K23DA039974)

INDIVIDUAL DIFFERENCES IN HEROIN REWARD PERCEPTION IN C57BL/6 MICE.

Charlotte Wincott, Brian Reed, Vadim Yuferov, Mary Jeanne Kreek; Laboratory of the Biology of Addictive Diseases, The Rockefeller University, New York, NY

Aims: Genetic, epigenetic, and environmental factors are hypothesized to have interacting roles in individual differences in reward perception. Here we examined individual differences in heroin-induced conditioned place preference (CPP) in an inbred strain of mice, C57BL/6.

Methods: Male mice were exposed to heroin (1 mg/kg) or saline during 8 conditioning sessions. On test day, animals were allowed access to both chambers; 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±33.9 s) and heroin (n=22, mean=174±26.7 s) groups (t(18.28)=3.902, p<0.005). Cort levels between the heroin and saline groups were not significantly different (heroin group: n=9, 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 D/V -7.1 mm. In the absence of CNO CPP (defined as above; 0.8±38.4 s, n=5, t(6.23)=5.208, p<0.005). Cort levels between animals that exhibited CPP n=17, mean=97.12±21.39, ng/mL versus those that exhibited no CPP (n=5, mean=71.55±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.

Financial Support: Authors have no conflicts of interest. This work was supported by a David Novick Postdoctoral Fellowship (CW) and the Dr. Miriam and Sheldon G. Adelson Medical Research Foundation (MJK).

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EXAMINING PROBLEMATIC MARIJUANA USE AMONG MARIJUANA-USING YOUNG ADULTS.

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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-reported medical use 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 with types of use-users is needed in order to appropriately identify and intervene with different user-types.

Financial Support: NIDA R01 DA034067 S1

REGIONAL AND NETWORK-BASED ALTERATIONS IN D2/D3 RECEPTOR AVAILABILITY IN COCAINE USE DISORDER.

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Aims: Individuals with cocaine use disorder (CUD) exhibit downregulation of D2 receptors in the dorsal striatum and upregulation of D3 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 consistent dopaminergic pathways. Concurrently upregulated and downregulated mesolimbic regions and increased availability in the D3-related substantia nigra, associated with pallidonigral network intensity.

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 with types of use-users is needed in order to appropriately identify and intervene with different user-types.

Financial Support: NIDA R01 DA034067 S1

RECEPTOR AVAILABILITY IN COCAINE USE DISORDER.

Methods: D2/D3 receptor availability and explore networks of D2/D3 receptor systems consistent dopaminergic pathways. Concurrently upregulated and downregulated mesolimbic regions and increased availability in the D3-related substantia nigra, associated with pallidonigral network intensity.

Conclusions: The current study is the first to demonstrate reductions in striatal D3/D2 receptors in CUD using the D3-preferring agonist [11C]PHNO and identify network-based dopamine receptor systems consistent dopaminergic mesolimbic pathways. Concurrently upregulated and downregulated mesolimibic dopamine systems in CUD may contribute to the complexities of pharmacotherapy for cocaine addiction.

Financial Support: Supported by: DA022975, DA027844, DA027456, CASA Columbia, CT Department of Mental Health and Addiction Services

MEDIATIONAL PATHWAYS AMONG TRAIT IMPULSIVITY, USE CONSEQUENCES, AND QUIT ATTEMPTS IN COCAINE USERS.

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Aims: Cocaine-using 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-using 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 ± 43.2 cocaine quit attempts. Bivariate correlations indicated trait impulsivity subscales, 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 subscales and consequences.

Conclusions: These results clarify the mechanistic influence of trait impulsivity on cocaine use consequences and abstinence attempts in chronic cocaine users.

Financial Support: NIH R01 DA026861, Lycaid/Young Funds (State of MI) and Detroit Wayne Mental Health Authority.

USING ELECTRONIC HEALTH RECORDS DATA FOR CLINICAL RESEARCH.

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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.

Financial Support: U10DA013727; UG1DA040317; 1C1CMS331018; NIH R01 DA034067 S1
RESPONSES TO SOCIAL STRESS IN REGULAR CANNABIS SMOKERS.
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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 (2x2/day; ±2x4 week), 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, saliva cortisol were measured at baseline and repeatedly after the stressor. Data were compared with mixed within-between ANOVAs.

Results: To date, 13 cannabis smokers (12M and 9F) have completed the TSST. Cannabis smokers (10 black; 2 white; 1 mixed; 28.9±5 years old) and HC (6 black; 2 white; 1 Hispanic; 27.7±4.3 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 smokers were regular smokers. 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 (DA034877 and DA035161)

613

HEMISPHERIC ASSOCIATIONS OF BEHAVIORAL INHIBITION AND APPROACH IN SUBSTANCE DEPENDENCE.
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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

614

POORER WORKING MEMORY PERFORMANCE AMONG COCAINE USERS ACCOUNTED FOR BY INCREASED ACTIVATION IN THE MIDDLE FRONTAL GYRUS.
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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 lobule, 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 (SGF), right anterior or cingulate gyrus, right inferior parietal lobe (IPL), and left cerebellum among HC compared to CU. Activation of the middle frontal gyrus (MFG) mediated the relationship between group and WM performance (69.5% 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 DA029222, NIDA Intramural Research Program (IRP)

615

INTRA-INDIVIDUAL CHANGES IN STROOP-RELATED NEURAL ACTIVATIONS LINKED TO CIGARETTE ABSTINENCE IN ADOLESCENT SMOKERS.
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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. However, no prior studies have compared pre- versus post-treatment fMRI in adolescents to address this question. Given the ongoing development of prefrontal cortical inhibitory control mechanisms during adolescence, we compared neural responses to a cognitive control (Stroop) task before and after smoking cessation treatment.

Methods: Adolescent smokers participated in fMRI scanning before (n=21) and after (n=14) participation in a five-week smoking-cessation RCT 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 treatment 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-corr<0.05) and these did not differ between time points. Intratreatment reductions in Stroop-related activity within cognitive control regions (anterior cingulate and insula) were positively associated with measures of smoking abstinence during treatment (pFWE-corr<0.05).

Conclusions: Optimal responses to smoking cessation treatment among adolescents are associated with reductions in neural activity within brain regions involved in cognitive control. This is the first study to compare fMRI data before and after substance-use treatment in an adolescent sample. Findings suggest that increased cognitive efficiency may underlie successful treatment outcomes in this population.

Financial Support: P50 DA009241; CASA

616
PHARMACOLOGICAL MECHANISMS OF MDMA'S FACILITATIVE EFFECT ON FEAR EXTINCTION.
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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: 5K12GM00680-15 (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.
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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 [C.I.]: 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% C.I. 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 Zadzieldski, 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. Obstetrical 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 project 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 BUPRENOPHINE.
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Aims: There are no previous studies demonstrating length of treatment (LOT) in opioid dependence. The objective was to identify an adequate minimum 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. (p<0.001). 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=0.006).
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.
ALTERED INTRINSIC BRAIN CONNECTIVITY IN PRENATALLY COCAINE-EXPOSED ADOLESCENTS.

Yasmin Zakineita ez, Sarah W Yip, I Baldis, Cheryl Lacadie, Linda C Meyers, Rajita Sinha; 1Marc 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 measures intrinsic brain activity.

Methods: Twenty-two PCE and 22 non-prenatally drug exposed (NDE) age, sex, IQ and BMI-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 angular 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.

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Aims: To demonstrate that HCV core antigen can be a reliable means of diagnosing HCV infection in populations that are difficult to engage.

Methods: Twenty-two and 22 non-prenatally drug exposed (NDE) age, sex, IQ and BMI-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 angular 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

DEVELOPING HOME-BASED CONTINUING CARE: EXPLORING FEASIBILITY AND ACCEPTANCE WITH PARENTS AND YOUNG ADULTS.

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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 3-5 skill-focused telephone sessions with a therapist, followed by weekly relapse-risk check-ins with the YA and parent-implemented urine testing and reinforcer 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 were it 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 INFLUENCE.

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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 paternal 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 P50DA05605, NIDA T32 DA019426
CRABP2 AND FABP5 MEDIATED RETINOIC ACID SIGNALING IS A NOVEL MECHANISM CONTROLLING DEPRESSION- AND ADDICTION-RELATED BEHAVIOR.
Yafang Zhang, Elizabeth Crofton, 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 15min and 16hr 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.
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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.

Financial Support: NIH 1R01DA029147 (YZ) and the Dr. Miriam and Sheldon G. Adelson Medical Research Foundation (MJK).

TYROSINE470 AND 88 OF HUMAN DOPAMINE TRANSPORTER ARE RESPONSIBLE FOR THE ALLOSTERIC MODULATORY EFFECT OF SRI-30827, SRI-20041 AND HIV-1 TAT PROTEIN ON DOPAMINE TRANSPORTER.
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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 TAJIKISTAN.

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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, 3.51), 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 models.

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.

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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 advertisement 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.

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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 ± 9.69, 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.

Financial Support: Supported by R01HD075669, T32DA007242, P20GM103644