2020 ASAM Virtual Poster Abstracts

A Novel Approach to Increase Accessibility to Medication-Based Treatment for OUD

Presenter(s) Are:
Eric Weintraub, MD
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Introduction: In 2018, 46,802 Americans suffered fatal opioid overdoses, and 1,985 of the overdose deaths were in Maryland, ranking in the top five states for opioid-related overdose death rates1,2. Individuals living in rural areas have significantly less access to medication-based treatment (MBT) than in urban areas, resulting in higher mortality rates3. We present data from an ongoing project designed to test feasibility of a novel approach in reaching underserved rural populations, with the overarching goal of reducing opioid use in the population and create an evidence-based knowledgebase to further our understanding of management and treatment of OUD.

Methods: Based upon our existing office-based telemedicine capabilities, we conceptualized utilizing a mobile treatment unit (MTU) for providing MBT services to individuals with an OUD, in rural Caroline County, in the Eastern Shore of Maryland. The MTU is a recreational vehicle (RV) equipped with medical supplies and telecommunication devices where patients can teleconference via a monitor screen that links the patient with a physician specialized in addiction medicine/psychiatry at UMSOM in Baltimore, who will provide point-of-care diagnosis at the initial visit and consultations during subsequent follow-up visits. Patients are enrolled into the treatment program by various efforts including local advertisements, scheduling through appointments, referrals from Emergency Departments and local jails, and walk-ins to the MTU. Patients coming on the MTU for their first appointment are greeted by the Addictions Counselor who will administer questionnaires, urine drug screens and vital signs before being ''seen'' by a Physician. The Program Coordinator then enrolls consenting patients into an optional research study gathering prospective data on global improvement of mental and physical health and demographic characteristics to be added to the OUD knowledgebase.

Results: Since the onset of study in January 2019 until February 2020, we have enrolled 115 patients to receive MBT in the MTU. A 38.9% of patients seen on MTU reported that they would not have sought treatment for OUD, had the MTU was not available. Another 13.9% and 22.2% reported some or moderate likelihood of seeking treatment at the nearest available treatment center, respectively. Thirty-five of the 115 patients also consented to the optional research study (2:1 male: female). Their baseline characteristics included (mean + 95% CI), 9.46 + 1.56 total score on PHQ-9 depression severity, 9.96 + 1.23 on GAD-7 anxiety severity, and 9.46 + 1.56 on DUDIT (Drug Use Disorders Identification Test) scales. Furthermore, on average, patients have saved 9.93 travel miles (St.Dev. = 6.21miles) by receiving MBT on the MTU rather than in their nearest clinic.

Conclusion: Via the MTU, MBT services are now brought to areas that did not have any prior treatment clinics. This project is ongoing and will continue to expand to surrounding counties to meet the growing demand. By project's end, in collaboration with Health Resources and Services Administration (HRSA), the collected data will be made available to addiction researchers, health care providers, patients, and other interested parties.

Abuse Potential Study to Evaluate the Subjective and Physiological Effects of Cannabidiol

Presenter(s) Are:
Shwe M. Gyaw, MD, FACP

The study's primary objective was to evaluate abuse-related subjective responses of CBD 500 mg and 1000 mg in comparison with the positive controls (THC 30 mg and alprazolam 1.5 mg) and placebo. Secondary objectives were to determine the safety, tolerability, physiological response, and pharmacokinetics of CBD, THC, and alprazolam.

Methods: This study was a single-dose, randomized, double-blind, placebo- and active- controlled crossover study. Forty-three healthy, adult (18–55 years; mean age 30 ± 7 years), recreational drug users, who were not dependent on alcohol or drugs (excluding nicotine) served as subjects. Subjects had to have a history of 10 or more lifetime non-therapeutic experiences with CNS depressants (e.g., benzodiazepines or barbiturates) and cannabinoids (e.g., cannabis or hashish) and at least 3 non-therapeutic uses of a CNS depressant and a cannabinoid within the 3 months prior to Screening. Subjects participated in an 18-day inpatient Treatment Phase after passing a Qualification Phase confirming they could differentiate 1.5 mg alprazolam and 30 mg Δ9-THC from placebo. There was a 2-day washout phase between all study treatments. The treatments were administered orally and assessments were conducted over 24 hours.

Results:

1. Positive control drugs (THC 30 mg, alprazolam 1.5 mg) produced statistically significant increases on the positive VAS measures (reliable abuse-related responses) compared to placebo, which validates the study.
2. On the primary study endpoint of Drug Liking VAS (maximum value; Emax), CBD 500 mg and 1000 mg produced responses that were not statistically significantly different from placebo.
3. CBD 500 mg and 1000 mg produced responses on all other VAS measures that were statistically significantly lower than the positive controls.
4. Acute administration of CBD 500 mg and 1000 mg was well tolerated without any significant adverse events (AEs).

ACEs High: Sexual Orientation, Adverse Childhood Experiences and DSM-5 Alcohol Use Disorder

Presenter(s) Are:
Sean E. McCabe, PhD, MSW

Introduction: Approximately 68 million U.S. adults meet criteria for a lifetime DSM-5 alcohol use disorder (AUD) - the majority never receive treatment. AUD carries a large socio-economic and health burden, especially among lesbian, gay and bisexual individuals (also referred to as sexual minorities). There is growing evidence that adverse childhood experiences (ACEs) are more prevalent among U.S. sexual minorities than heterosexuals. Yet, despite this increased risk for ACEs, there are limited studies using nationally representative samples of sexual minorities that examine the relationship between ACEs and severity of a DSM-5 AUD. Therefore, the objective of this study was to assess the relationship between ACEs and past-year DSM-5 AUD (moderate/severe) among U.S. men and women across sexual orientation subgroups (i.e., lesbian, gay, bisexual, not sure, heterosexual with same-sex attraction or behavior, and exclusively heterosexual).

Methods: The 2012–2013 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC-III) conducted in-person interviews with a nationally representative sample of U.S. adults (n = 36,309). An estimated 2.8% self-identified as lesbian, gay or bisexual, 3.1% had at least one past-year same-sex sexual partner, and 8.3% reported same-sex sexual attraction.

All questions about ACEs related to the first 17 years of life and were assessed with 35 questions across multiple domains (e.g., physical abuse, sexual abuse, neglect). DSM-5 AUD was assessed using the AUDADIS-5 and a moderate/severe alcohol use disorder diagnosis was based on the presence of at least 4 of the 11 DSM-5 criteria. Multivariable analyses were conducted overall and for sexual minority men and women separately to examine the relationships of ACEs with severity of DSM-5 alcohol use disorder (focusing on moderate/severe disorders) for the sexual orientation subgroups.

Results: Higher levels of ACEs were associated with moderate/severe DSM-5 alcohol use disorder among sexual minority and heterosexual adults. This was particularly true for women: bisexual women (43.8%) and women unsure of their sexual identity (46.0%) reported four or more ACEs compared to 22.6% of exclusively heterosexual women. Multivariable logistic regression analyses (for both males and females) confirmed the bivariate results and revealed a robust ACEs-moderate/severe DSM-5 alcohol use disorder relationship, where more ACEs increased the probability of having a moderate/severe AUD. Design-adjusted goodness-of-fit tests suggested that the final models had excellent fits to the observed data.

Conclusions: We found a robust relationship between ACEs-moderate/severe DSM-5 alcohol use disorder. Sexual minority women had a higher prevalence of ACEs compared to other groups. This may partially explain why alcohol use disorders are consistently more prevalent for sexual minority women. Moreover, we found compelling evidence that sexual minority women are at higher risk of moderate/severe DSM-5 alcohol use disorder compared to their heterosexual counterparts. This is especially true for bisexual women, and those men and women who are unsure of their sexual identities. The findings of this study highlight the importance of reducing exposure to ACEs among sexual minority youth and training clinicians to develop trauma-informed substance use screening and interventions that are sensitive to sexual minorities exposed to high levels of ACEs.

Adverse Childhood Experiences and Efficacy of Substance Use Disorders Treatment

Presenter(s) Are:
Jason Hunt, MD

Introduction: Exposure to adverse events during childhood increases risk for early initiation of substance use, and places individuals at greater risk of developing a substance use disorder (SUD) later in life. There has been little published comparing SUD treatment outcomes among individuals who report varying levels of childhood trauma. Better understanding the relative effectiveness of intensive psychosocial treatment for SUDs among these groups may help to identify targets for improved or adjunctive treatment efforts.

Methods: A cohort of 170 individuals (62% male), consecutively admitted to a partial-hospitalization addictions treatment center in the southeast United States, completed patient-reported assessment measures at admission and again at discharge. Measures included the Adverse Childhood Experiences (ACE) questionnaire, Patient Health Questionnaire-9 (depression), Generalized Anxiety Disorder scale, Alcohol Abstinence Self-Efficacy scale, and PTSD Checklist for DSM-5. A Random Effects Model was used to test the overall change in symptoms of depression, anxiety, alcohol abstinence self-efficacy, and PTSD symptoms based on trauma exposure (determined by ACE score), controlling for length of stay in treatment.

Results: Participants were categorized according to scores on the ACE measure: 0 (22.9%), 1 (16.5%), 2 (16.5%), 3 (15.3%), or 4 + (28.8%). The average length of stay in treatment was 78 days. The average score for participants in the 4+ ACE was in the clinically significant range on all four measures (PHQ-9, GAD-7, AASE, and PCL-5) at admission; whereas, average scores for the other groups were not. Differences between the 4+ ACE group and the 0 ACE group were statistically significant for the PHQ-9 ($P = 0.002$), GAD-7 ($P < 0.001$), AASE ($P = 0.03$), and PCL-5 ($p < 0.001$). All groups demonstrated improvement on all measures; however, results indicated a negatively graded relationship between ACE category and each outcomes measure. Specifically, controlling for length of stay in treatment, participants with increased ACE exposure showed differential patterns in treatment response than those with fewer ACE events, and did not improve to the same level at time of discharge. In fact, the adjusted average discharge scores for the 4+ ACE group were worse than the adjusted average baseline scores for the 0 ACE group on the GAD-7, AASE, and PCL-5.

Conclusions: Poorer scores on patient-reported assessment measures, particularly at time of discharge from treatment, may be predictive of worse post-treatment outcomes. This study, in tandem with previous research, points to differences in treatment outcomes among individuals with a history of ACEs. The results suggest that patients with significant ACE exposure may need more time in treatment to achieve the same symptom reduction as their peers without such exposure. Assessing ACE exposure early in SUD treatment may provide information vital to individualized treatment planning. Future research should examine how trauma-informed care and other patient-centered therapies may improve long-term outcomes and reduce the risk of relapse for this population.

Always Jumping Through Hoops: Mapping Opioid Use Disorder-Associated Endocarditis Care

Presenter(s) Are:
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Background: Infectious complications of opioid use disorder (OUD), including endocarditis, are rising in the U.S. Individuals with OUD-associated endocarditis have poor clinical outcomes and their care is not well understood. Our objective was to perform journey mapping, a qualitative tool that represents individuals' movement through a complex system that has traditionally been used in consumer analysis and now increasingly in health research, to capture common trajectories and patterns of care for people with OUD-associated endocarditis.

Methods: This was an exploratory analysis of qualitative data collected through interviews of individuals who received care at a single health system for OUD-associated endocarditis. We extracted details of participants' care experience. These details were displayed and modified in an iterative journey mapping process. We then used a grounded theory approach when reviewing the maps to help highlight patterns in participants' care and identify emerging themes.

Results: We reviewed ten patient care experiences using a novel patient journey mapping approach to characterize common trajectories and patterns of care. No participants described a simple or linear episode of care from hospitalization to post-acute care and home. A more typical episode included multiple interactions with the health care system before hospitalization, prolonged stays in the hospital and post-acute care, leaving care settings by choice and frequent rehospitalizations and return to substance use.

Similar care patterns of care were identified, including early addiction treatment and intensive outpatient care preceding periods with no rehospitalization, while a return to substance use often directly preceded rehospitalization. Participants frequently left care by choice, often in response to stigmatizing care experiences, and proactively reengaged with care during periods of substance use. Falling out of intensive outpatient care and returning to substance use were observed to often directly precede rehospitalization.

Conclusions: Journey mapping is a novel, patient-centered approach to capturing the care experiences and trajectories of a stigmatized patient population who commonly engage with the healthcare system in unexpected and challenging ways. For patients with OUD-associated endocarditis, we identified critical moments before a return to substance use as opportunities to support and engage patients in early addiction and intensive outpatient care to prevent rehospitalization. Participants identified family members, social workers, patient navigators and recovery coaches as frequently providing much needed support in these critical times. Healthcare providers should engage with these sources of support in order to keep patients engaged in care, provide continuity, and help prevent a return to drug use and rehospitalization.

An Observation of Treatment Retention and Peer Recovery Support in OUD Patients

Presenter(s) Are:
Sara L. Mills Huffnagle, MS
Sarah Kawasaki, MD

Introduction: Opioid addiction continues to be a national crisis, with more than 35,000 opioid related overdose deaths taking place in the United States in 2017 (CDC, 2018). Despite available evidence-based medication assisted treatment (MAT) options, as well as MAT-adjunctive psychosocial counseling treatments, treatment retention in this population continues to be problematic (see Veilleux et al., 2010). One service that may help mitigate this problem includes the use of peer recovery support services (PRSS; Gagne et al., 2018).

Methods: This observational study reviews the treatment retention rates in individuals with Opioid Use Disorder (OUD). A total of 66 subjects who started OUD treatment within our clinic between November 2017 and January 2019, and also received PRSS, were identified through medical chart reviews. Treatment retention rates were calculated and then averaged. Bivariate correlations were conducted to determine any significant relationships between the total number of PRSS appointments attended and total number of medical, individual therapy, and group therapy appointments attended. Multiple regression analyses were also conducted to determine significant predictors of length in time in treatment.

Results: For the entire sample ($N = 66$), our observational study demonstrated significant correlational trends between PRSS appointments and medical appointments attended ($r = 0.686$, $P < 0.01$), as well as PRSS appointments and individual therapy appointments attended ($r = 0.441$, $P < 0.01$), but not for group therapy appointments attended. PRSS appointments attended also significantly correlated with length of time in treatment (in months) ($r = 0.684$, $P < .01$). When evaluating a subset sample consisting of patients who remained in treatment for 6 months or longer ($N = 28$), significant correlations presented between PRSS appointments and medical appointments attended ($r = 0.578$, $P < 0.01$), as well as PRSS appointments and individual therapy appointments attended ($r = 0.484$, $P < 0.01$), but not for group therapy appointments attended. PRSS appointments attended was also significant with length of time in treatment (in months) ($r = 0.555$, $P < 0.01$). Multiple regression analysis indicated that all three predictors explained 58% of the variance ($R2 = 0.56$, $F(3, 62) = 28.72$, $P < 0.001$) for the full sample; however, further analyses for the subset sample demonstrated that only one predictor (medical appointments attended) explained 73% of the variance ($R2 = 0.53$, $F(3,24) = 8.99$, $P < 0.001$).

Conclusion: With concerning treatment retention rates in individuals with OUD during one of the largest substance use epidemics of our time, it is important to explore and understand additional methods and strategies to help mitigate this issue. PRSS may be one additional layer of support or service to help overcome poor treatment retention rates, however, the impact and benefit of PRSS is still unknown and additional study is needed.

Assertive text-message outreach to young adults and family improves OUD treatment adherence

Presenter(s) Are:
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Kevin R. Wenzel, PhD
Marc Fishman, MD, DFASAM

Introduction: Opioid use disorder (OUD) is a major public health crisis, disproportionately affecting youth. Young adults are a developmentally vulnerable population with limited engagement in clinical care. Although medications for OUD including extended release naltrexone (XR-NTX) have demonstrated effectiveness, adherence is problematic. Assertive outreach and family based interventions are commonly used to address low rates of medication adherence in hard-to-reach populations, and could be a promising approach to increase treatment retention among young adults with OUD. In this study, we examined the impact of assertive outreach via text messaging to young adults and their family members in a multi-component intervention designed to improve XR-NTX adherence for youth with OUD.

Methods: We analyzed data from 21 young adults (18–26) who received the Youth Opioid Recovery Support (YORS) intervention over a period of 24 weeks. Participants intending to pursue outpatient OUD treatment with XR-NTX were enrolled into the study during an episode of residential care. Components of the YORS intervention include: 1) home delivery of XR-NTX; 2) focus on family engagement; 3) assertive outreach to patients and their family members; and 4) contingency management for receipt of XR-NTX doses. We hypothesized a pathway model that included text message outreach to young adults, text message outreach to family members, and individual/family counseling sessions to predict XR-NTX receipt. Two multiple regression models were used to calculate the relative contributions of pathways. Model one included text message outreach to young adults and text message outreach to family members as predictors of individual/family sessions. Model two included text message outreach to young adults, text message outreach to family members, and individual/family sessions as predictors of XR-NTX receipt.

Results: For the first model, multiple regression analyses found that text message outreach to family members ($\beta = 0.65$), but not to young adults ($\beta = 0.23$) was significantly associated with individual/family sessions. The overall model was significant, $F(2, 18) = 12.09$, $P < 0.001$, and explained 52.6% of the variance in counseling sessions. The second model found that text message outreach to young adults significantly predicted XR-NTX receipt ($\beta = 0.48$). However, neither text message outreach to family members ($\beta = -0.05$) nor individual/family sessions ($\beta = 0.34$) directly predicted XR-NTX receipt. The overall model was significant, $F(3, 17) = 4.64$, $P = 0.02$, and explained 35.3% of the variance in XR-NTX doses received.

Conclusions: Our results suggest that assertive outreach via text messaging and family engagement can be useful for increasing treatment engagement, particularly adherence to XR-NTX and counseling sessions. Given the magnitude of the associations within non-significant pathways, it is possible that in a larger sample size the pathways may have been significant. Future research should continue to examine theoretical pathways of YORS and assertive outreach interventions with a larger sample size to determine the key components that increase treatment engagement of patients with OUD in this vulnerable young adult cohort.

Assessing Barriers to Treatment Uptake and Retention among People who use Opioids

Presenter(s) Are:
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Dannielle Brown
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Background: While evidence-based treatment for opioid use disorder (OUD) exists, barriers to accessing and maintaining treatment persist. Lack of readiness for treatment is a commonly cited barrier, however our review of the published literature revealed a critical gap in the understanding of treatment systems from the perspective of people who use illicit opioids. Few studies have critically examined how previous experiences with treatment or perspectives about treatment might influence uptake and retention, and even fewer demonstrate the purposeful inclusion of people who use drugs in the planning of services. We sought to ascertain the perspectives and experiences of people who use illicit opioids to better understand their needs and inform efforts to improve treatment uptake and retention.

Methods: This study was conducted in collaboration with an outreach-based harm reduction/syringe access program in Chicago. A purposeful sample comprised of people who were currently using opioids was recruited from the program. Semi-structured individual interviews were conducted with participants, and included questions regarding participant history of opioid use, perceptions of treatment, experiences with treatment, and opinions on ways to improve uptake of treatment services. Interviews were transcribed verbatim and double-coded using AtlasTi and two analysts. Early in the process, a subset of codes was examined to determine inter-rater reliability (mean Kappa = .82), with all scores in the 'substantial' to 'almost perfect' agreement

range (Landis & Koch, 1977). Queries of coded data were analyzed using Weiss' issue-focused analysis to identify relevant themes.
Results: The sample (N = 40) was intentionally comprised of individuals who best represent the population at greatest risk of fatal overdose in Chicago. The sample was 65% African-American, 20% Caucasian, 10% Puerto-Rican, and 5% other. Sixty-two percent of participants identified as male, and over 80% were in the age group at greatest risk of fatal overdose (45–64) in Chicago. Participants shared a variety of barriers to engagement or retention in treatment, with the most prevalent themes centered in intensive intake requirements and practices including: cost or insurance barriers, difficulty with travel, daily visits required for methadone treatment, identification requirements needed for intake, lengthy and invasive questioning at intake, abstinence requirement for continued medication access, and the lack of immediately available treatment. Participants provided recommendations for lower-barrier treatment modalities, including co-location with outreach-based harm reduction services, provision of other needed services at the same site, reduction in cost, and elimination of the barriers cited above.
Conclusion: This study aims to fill a gap in literature that addresses participant perspectives on uptake and retention of evidence-based treatment for OUD. Findings indicate that barriers to treatment and retention are focused in system-level requirements and expectations. Denial of or discharge from treatment for failing to meet these requirements was a common experience among participants in this study. Results suggest missed opportunities to incorporate the perspectives of people who use drugs in the design of programs they need. A move to lower-barrier treatment entry and retention requirements, informed by potential patients, is imperative to reduce death from fatal overdose and improve overall health.

Assessing Cognitive Behavioral Therapy for Insomnia in Cannabis Use Disorder Patients
Presenter(s) Are:
Farid Talih, MD
Background: Sleep disturbances are commonly associated with cannabis use. There exists a bidirectional relationship between substance use and sleep disorders with sleep disorders promoting more substance use and with chronic substance use leading to more sleep problems [1]. Furthermore, studies have shown an association between insomnia and a decline in natural immunity with cytokines influencing sleep quality, and inflammatory cytokines having a combination of sleep- inducing and sleep-inhibiting effects [2]. In addition, insomnia severity has also been found to be directly proportional to the levels of cortisol and C-reactive protein (CRP) elevation [3]. In terms of polysomnographic findings, certain sleep characteristics seem to appear with cannabis use disorder patients such as decreased sleep time, increased sleep latency and deficiency in slow-wave sleep generation, whereas REM sleep tends to be influenced more by the quantity and frequency of cannabis use [4]. Cognitive Behavioral Therapy for Insomnia (CBTI) has demonstrated comparable efficacy with a longer maintenance duration after treatment discontinuation in randomized controlled trials of direct comparisons with sleep medication in patients with chronic insomnia [5].
Aims: Our main goal is to implement cognitive behavioral therapy (CBTI) in cannabis use disorder patients and to analyze the effects of CBTI on insomnia remission. We also aim to use biomarkers to quantify the severity of insomnia before and after implementing CBTI. This is done by examining the levels of Interleukin-2 (IL-2), Interleukin-6 (IL-6), cortisol and CRP before and after CBTI. The ultimate aim of this study is to recognize, measure and target insomnia particularly among chronic cannabis users seeking treatment.
Methods: We recruited 16 participants who have cannabis use disorder with concomitant insomnia at the American University of Beirut Medical Center. Participants completed the Insomnia Severity Index (ISI) questionnaire, as well as a screener for depression and anxiety the Patient Health Questionnaire-4 (PHQ-4) before/after CBTI. Additionally, participants were provided an actigraphy device to wear 1 week prior and 1 week post CBTI. Blood samples were taken before/after CBTI (CRP, Cortisol, IL-2, IL-6). Participants received 4 CBTI sessions over two weeks. 11 participants completed 3-month follow-up over the phone. Statistical significance was determined by Paired-Samples T test.
Results: Preliminary results showed a significant decrease in insomnia (ISI) among participants. PHQ-4 scores showed a significant decrease in depression/anxiety symptoms. Actigraphy data showed significant decrease in sleep onset latency (falling asleep faster). Other sleep parameters and biomarker levels have not shown a significant change. 3-Month follow-up showed a long-term improvement in insomnia and depression /anxiety symptoms.
Conclusion: This pilot study showed that CBTI is efficient in reducing insomnia severity, depression and anxiety symptoms, as well as, sleep onset latency among cannabis use disorder patients. The findings of this study will help in developing further avenues of research relating to sleep, substance abuse and treatment options.

Association between cannabis, cocaine, and heavy drinking in alcohol use disorder patients
Presenter(s) Are:
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Clara Chen, MHS
Background: Cannabis and cocaine are frequently used in association with alcohol. While well-established associations exist between cannabis and cocaine use, and heavy drinking in different clinical samples, it is unclear whether these associations are present in general hospital patients with alcohol use disorder (AUD). This study examined the associations between patients reporting 1) both cannabis and cocaine use, 2) cannabis only, and 3) cocaine only compared to those reporting 4) use of neither and the outcomes of heavy drinking, AUD severity, and its consequences among hospital patients with AUD.
Methods: This cross-sectional study included adult general hospital patients with AUD and at least one past-month heavy drinking day (HDD)(5+ drinks for men, 4+ for women) who were participating in a randomized trial comparing initiation of oral and extended-release naltrexone at discharge. Cannabis and cocaine were assessed by the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). DSM-5 AUD was determined using AUD and Associated Disabilities Interview schedule (AUDADIS), and past 30-day alcohol use using the Timeline Followback. Alcohol consequences were assessed by the Short Inventory of Problems (SIP) (range: 0–45). Regression models were fit to assess associations between exposure to the four categories of cannabis and cocaine exposure and the number of HDDs (negative binomial), AUD severity (logistic) and alcohol consequences (linear), adjusting for age, gender, race, Hispanic, education, marital status, and homeless (having at least one night in the street or in a shelter in the past three months).
Results: Of 225 inpatients, 19% were female, age was 50±10 (mean±SD) years, 49% were black, and 48% were homeless; 91% had severe AUD and 9% mild/moderate AUD. The number of HDDs was 20±10 and the SIP total score was 25±12. There were no significant associations between: 1) both cannabis and cocaine, and HDDs [Incidence Rate Ratio (IRR) = 0.88; 95% Confidence Interval (95% CI): 0.70, 1.12], 2) cannabis and HDDs [IRR = 0.96; 95% CI: 0.79, 1.17], or 3) cocaine and HDDs [IRR = 0.90; 95% CI: 0.66, 1.23], compared to 4) use of neither. No significant associations were found between 1) both cannabis and cocaine, and AUD severity [Odds ratio (OR) = 1.03; 95% CI: 0.21, 4.98], 2) cannabis, and AUD severity [OR = 1.21; 95% CI: 0.42, 5.24], and 3) cocaine and AUD severity [OR = 0.74; 95% CI: 0.13, 4.37], compared to 4) use of neither. Both cannabis and cocaine, cannabis only, and cocaine only were not significantly associated with the SIP total score [adjusted mean difference = 1.28 (95% CI: −3.52, 6.09), 1.21 (95% CI: −2.75, 5.17), −1.01 (95% CI: −7.18, 5.16), respectively], compared to 4) use of neither.
Conclusions: Among general hospital patients with AUD, we were unable to detect associations between cannabis, cocaine and heavy drinking, AUD severity and its consequences. Future studies should assess the longitudinal impact of both drugs on heavy drinking and its consequences in this population.
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Association between Clinically Administered Opioids and Discharge Opioid in Urgent Care

Presenter(s) Are:
Susan L. Calcaterra, MD, MPH
Yingbo Lou

Background: Emergency departments increasingly utilize nonopioid analgesics to manage acute pain and minimize opioid-related harms. Urgent care centers, commonly staffed by internists and family medicine trained physicians, are rapidly expanding to lower costs, offload busy emergency departments, and provide efficient access to healthcare. Musculoskeletal pain, back pain, headache, and abdominal pain are frequent complaints reported by patients cared for in acute care settings and are commonly treated with oral or intravenous opioids for acute pain control. Little is known about opioid prescribing in urgent care settings. This study assessed the association between in-clinic opioid administration, opioid receipt at discharge, and progression to chronic opioid use among urgent care patients.

Methods: This was a retrospective cohort study of patients 20 years or older, not on opioid medications, who presented for care to one of two urgent care clinics within a safety-net healthcare system from June 1, 2016 to April 30, 2019. We examined the association between receipt of a clinically administered opioid (CAM-opioid) and opioid receipt at discharge. We also examined the association between receipt of CAM-opioids and progression to chronic opioid use defined as a-90-day or greater supply of non-parenteral opioids with less than a 30-day gap in supply within a 180-day period.

Results: The study sample included 34,978 patients, of which 13.8% (n = 4,842) received CAM-opioids and 86.2% (n = 30,136) did not receive CAM-opioids. After adjusting for age, gender, race/ethnicity, insurance, and pain diagnosis, patients with CAM-opioids were more likely to receive opioids at discharge compared to patients without CAM-opioids (aOR = 12.30, 95% CI 11.44–13.23). Patients with fractures or joint dislocations (aOR = 1.46, 95% CI 1.32–1.61) or renal colic (aOR = 8.60, 95% CI 6.89–1.74) were more likely to receive an opioid prescription at discharge compared to patients with acute or chronic radicular back pain (ref). Older patients were more likely to receive an opioid prescription at discharge (aOR = 1.01, 95% CI 1.01–1.01). Patients with gastroparesis (aOR = 0.62, 95% CI 0.54–0.71) or migraines (aOR 0.37, 95% CI 0.30–0.45) were less likely to receive an opioid prescription at discharge compared to patients with acute or chronic radicular back pain (ref). Among a selected cohort of patients, CAM-opioids were associated with progression to chronic opioid use (aOR = 2.12, 95% CI 1.66–2.71).

Conclusions: CAM-opioids were strongly associated with opioid receipt at discharge and with progression to chronic opioid use. CAM-opioid receipt during an urgent care encounter could drive availability of prescription opioids for diversion, overdose, physical dependence on opioids, and the development of opioid use disorder. Increased use of nonopioid analgesics in urgent care would likely reduce this association and associated public health harms.

Begin the Turn: A Mobile Recovery Unit

Presenter(s) Are:
Ian Latham
Rashaad-Dreana Jett

Introduction: Despite numerous measures to increase access to life-saving buprenorphine treatment and avenues to recovery in the City of Philadelphia, numerous residents of the neighborhoods most affected by the opioid epidemic still are unable to access treatment. Begin the Turn is a low-barrier, trauma-informed mobile care unit with access to outreach services, counseling, case management, and buprenorphine treatment designed to address the overdose crisis in North Philadelphia.

Methods: The program identified fatal overdose hot-spots using GIS mapping and data from the City of Philadelphia. Two locations were selected for intervention. The unit was equipped with basic medical supplies, naloxone, and a private clinical environment, and staff included three outreach specialists with lived experience in chemical dependence and recovery, a counselor, a case manager, and at least one buprenorphine-waivered physician. Patients were enrolled after initial contact with an outreach worker and completed an intake session with a counselor and urine drug screen before beginning medical treatment. During the initial 6 months of operation, patient demographics, social needs, and clinical data were collected in REDCap electronic data capture tools hosted at Temple University for analysis. Patients were also screened for trauma history using a validated Adverse Childhood Experiences survey instrument. 3-month follow-up overdose data were obtained from the City of Philadelphia and mapped using GIS software to compare with previous maps.

Results: Begin the Turn provided buprenorphine treatment for 125 individuals and made 619 recorded outreach contacts. Patients had a mean age of 39.6 years and a median onset of use at 20 years of age. 66% (n = 125) of patients reported IV use, 95% (n = 125) of patients reported previous experiences with addiction treatment, and 52% (n = 125) of patients had previously suffered an overdose. 61% (n = 125) of patients reported a peak use of greater than 10 bags of heroin daily. 118 patients completed the Adverse Childhood Experiences survey with a mean score of 4.75 (n = 118). Overdose data before intervention and at 3 months are presented graphically and show a reduction in overdose events at one intervention site.

Conclusions: The initial 6 months of operation have identified a population with high rates of trauma and overdose. Early overdose data show a promising reduction in events. The mobile recovery unit has served to increase access to treatment for this population; future efforts will explore retention in treatment and the public health effects of mobile unit intervention.

Breaking Down Barriers to Treatment with M.A.T.T's (Mobile Addiction Treatment Team) Van

Presenter(s) Are:
Tara Kerner, DO
Janet Gillis-Toffolo, APRN

Introduction: Connecticut, with a population of 3.59 million ranks 9th of all states in opioid overdose deaths. Many studies have indicated that the majority of those who need treatment for opiate use disorder are not receiving the treatment they need. Reasons for not receiving treatment include inadequate accessibility, inadequate availability, stigma, a belief they can handle the addiction on their own, not being ready to stop, lack of insurance, privacy and cost. We designed a Mobile Addiction Treatment Team (M.A.T.T.) which parks in the community and delivers immediate, high-quality care to a vulnerable population creating a more direct route to accessing treatment and achieving recovery by reducing existing barriers to accessing care.

Methodology: M.A.T.T.'s van is a vehicle with a prescriber and a recovery coach on board at all times. Our services are displayed on the vehicle and we treat all persons regardless of insurance status. No appointments are required and individuals may simply approach the M.A.T.T.'s van. The prescriber evaluates the individual on the van for opiate use disorder and assesses their current state of opiate withdrawal. If the client is appropriate for Suboxone the prescriber electronically prescribes the appropriate dose of Suboxone via a secure web-based electronic health record to a designated pharmacy who delivers the medication to the van, to the person's residence or can be picked up by the individual at the pharmacy. The client self-administers their prescribed dose of Suboxone. The M.A.T.T.'s van program is designed to induct people quickly and safely on Suboxone and act as a conduit to ongoing treatment. Enough medication is provided until their appointment with the follow up agency. While on the van, a referral is made to an accepting agency for ongoing treatment. The recovery coach plays a key role in engaging the client and utilizes motivational interviewing skills, their own experiences with recovery, and their knowledge and compassion to help the client in the transition to outpatient treatment. The recovery coach and prescriber continue to offer support via text/visits for 3 months after induction.

Results: Over the course of 5 months, M.A.T.T.'s van saw 32 individuals and started all of them on Suboxone. 26 were referred to our parent agency and 6 were referred to agencies closer to their city of residence. 24 of the 32 kept

their intake appointments, 8 did not. That is a 75% show rate to intake. Of the 24, 17 remain in treatment and on Suboxone, 5 were lost to follow up, 2 are pending referrals. That means there is a 71% retention in treatment once engaged in treatment. The national average for retention rates at 12 months in addiction treatment programs is 50%. While our program has not been in operation long enough to make a comparative analysis, our results show promise that engaging people on the streets of their community and implementing a low threshold for induction on to Suboxone may prove to be a successful means of engagement and retention in treatment.

Buprenorphine provider availability for opioid-using people who inject drugs in CA

Presenter(s) Are:
Sara K. Schenk, MD
Alex H. Kral, PhD

Objective: To describe zip code level availability of buprenorphine providers and to determine if zip code availability is associated with buprenorphine treatment and non-prescribed use community-sampled, opioid-using people who inject drugs (PWID) in Los Angeles and San Francisco, CA.

Methods: Participants were 877 PWID who reported any opioid use (including heroin, prescription opioids) in the last 30 days. The SAMHSA record of buprenorphine waiver receipts by type and zip code were obtained for Los Angeles and San Francisco counties from 2016 to 2018. Descriptive statistics on the presence of any provider and number of providers by zip code were generated. PWID were classified by zip code buprenorphine availability in the following matter: No providers, 1 to 5 providers, and 6 or more. Multivariate analyses were conducted to determine if provider availability was associated with buprenorphine treatment in the last 6 months and non-prescribed buprenorphine use in the last 30 days.

Results: Nearly all opioid-using PWID resided in a zip code with a buprenorphine provider (84% with any−68% with 6 or more providers), yet only 9% had been in buprenorphine treatment in the last 6 months. Non-prescribed buprenorphine use in the last 30 days was reported by 8% of PWID. In multivariate analysis of factors associated with buprenorphine treatment in the last 6 months, residing in a zip code with 6 or more buprenorphine providers (Adjusted Odds Ratio[AOR] = 3.00; 95% confidence interval[CI] = 1.23, 7.36) was associated with buprenorphine treatment enrollment as compared to zip codes with none while controlling for confounders. In a multivariate model of non-prescribed buprenorphine use in the last 30 days, neither any buprenorphine provider or number of buprenorphine providers was associated with non-prescribed use of buprenorphine.

Conclusion: While the availability of buprenorphine providers appears adequate, the proportion of PWID with access to treatment is low. Buprenorphine provider density appears to improve treatment access without increasing non-prescribed buprenorphine use. Increasing access to buprenorphine medication should be a priority.

Buprenorphine XR in Jail and at Re-Entry vs. Daily Sublingual Buprenorphine-Naloxone: Pilot

Presenter(s) Are:
Mia Malone
Ryan D. McDonald, MA

Introduction: In 2016, opioids were involved in 42,249 deaths and opioid overdose deaths were five times higher than in 1999. On average, 115 Americans die every day from an opioid overdose. The opioid and overdose epidemic has intensified efforts to expand and optimize effective medicated assisted treatments (methadone, extended-release naltrexone, buprenorphine) in criminal justice and primary care populations. Re-entry into the community after jail is a high risk time with many competing interests and barriers to healthcare access that can make obtaining and/or filling a buprenorphine prescription challenging. Longer acting buprenorphine could offer more time to allow for linkage to community care and potentially avert relapse associated with barriers to MOUD access after incarceration. Extended-release buprenorphine (XR-B) is newly FDA approved and its effectiveness in a criminal justice setting is promising but untested.

Methods: This is an ongoing 8-week pilot proof-of-concept randomized controlled trial, open-label and unblinded, examining the feasibility and acceptability of Buprenorphine extended-release (XR-B) vs. daily sublingual buprenorphine-naloxone (SL-B) for the treatment of opioid use disorder (OUD) in jail and at community re-entry, N = 50. This is an ongoing 8-week, open-label, single site, proof-of-concept randomized controlled trial, N = 50. This pilot is recruiting from within the standard-of-care NYC jail opioid treatment program, at NYC Jails. Potential participants currently maintained on sublingual buprenorphine (currently a NYC jail standard of care) are offered study information and encouraged to enroll. Participants are randomized 1:1 to either XR-B or SL-B approximately a week before their release date. Post-release there are five follow-up community visits all conducted at Bellevue Hospital Center in NYC. Participants assigned to XR-B receive at least one additional XR-B injection in the community.

Results: We have randomized 30 (16 SL-B; 14 XR-B) of target sample size, N = 50. Mean age 43 (SD 10.5); 83% male; 50% Hispanic; 50% employed. At baseline, 77% reported opiate/heroin use in the 30 days prior to incarceration; 43% of which was IV injection. Mean lifetime treatment intake episodes of any medication for OUD is four (SD 3.2); 66% tried buprenorphine treatment prior to in-jail program participation. Of the 30 randomized subjects, 25 have re-entered the community; 72% confirmed licit buprenorphine use; 57% (XR-B) retained in treatment, 50% (SL-B) retained in treatment.

Conclusions: The new buprenorphine extended-release formulation (XR-B) has several potential feasibility and effectiveness advantages vs. daily sublingual buprenorphine (SL-B), including: 1) fewer overall medical, nursing, and pharmacy visits, fewer correctional staff hours, and potentially lower program costs vs. daily observed dosing, 2) near zero probability of diversion/misuse vs. frequent diversion, 3) an improved, long-acting 'bridge' of medication adherence at release, which is crucial as patients struggle to continue daily SLB adherence, avoid relapse, and connect to community treatment. Early rates of treatment retention show promising results for XR-B. Open-ended interviews conducted at the final study visits with patients will shed light on treatment satisfaction and in-jail experiences with XR-B.

Buprenorphine-Naloxone vs. Buprenorphine for Treatment of Opioid Use Disorder in Pregnancy

Presenter(s) Are:
Simone Vais, BA
Briana N. Perry, MD

Background: Pharmacologic treatment options for opioid use disorder (OUD) in pregnancy remains understudied. Prior studies have established the safety and efficacy of buprenorphine (BUP), a partial opioid agonist, and methadone, a full opioid agonist, in pregnancy. In the non-pregnant population, the combination of BUP and naloxone (BUP-NX), a partial opioid agonist, is commonly favored due to the decreased risk of diversion. Historically, women who were on BUP-NX prior to pregnancy were transitioned to BUP in pregnancy due to concerns for fetal exposure to naloxone3. Given the scarcity of safety data, there continues to be a lack of consensus regarding the use of BUP-NX in pregnancy. Recently, several small retrospective studies examined outcomes for BUP-NX use in pregnancy and found no adverse maternal or neonatal outcomes. There are no studies, however, that directly compare the use of BUP-NX versus BUP in pregnancy. This study compares the maternal and neonatal outcomes from pregnancies managed with BUP-NX versus BUP.

Methods: This single-center, retrospective cohort study included 33 pregnancies managed with BUP-NX and 22 managed with BUP between 2017 and 2019. Maternal outcomes included demographic characteristics, gestational age (GA) at treatment initiation, number of prenatal visits, GA at delivery, concurrent prescribed psychiatric medications, unprescribed or illicit substance use per urine drug screening during the pregnancy, and delivery outcomes. Infant outcomes included birth weight, Apgar scores, and neonatal

abstinence syndrome (NAS) outcomes (NAS diagnosis, pharmacologic treatment, and length of hospital stay).
Findings: There were no significant differences between the groups regarding prenatal care utilization, maternal substance use, delivery outcomes, or neonatal outcomes. Women treated with BUP-NX did have a lower average BUP dose at treatment initiation compared to women treated with BUP (10.5 vs. 13.3 $P = 0.04$). Among a subgroup of women transitioned from BUP to BUP-NX mid-pregnancy, no incidences of treatment destabilization (evidence of relapse, hospitalization or a required dose increase) were observed following the transition.
Conclusions: BUP-NX is non-inferior to BUP regarding maternal and neonatal outcomes in the treatment of OUD in pregnancy. These findings support the growing body of data indicating the safety of BUP-NX use in pregnancy.

Cardiac Surgeons Practices, Attitudes Regarding Addiction Care and Patients Who Use Drugs
Presenter(s) Are:
Max Jordan N. Nguemeni Tiako, MS
Syed Usman Bin Mahmood, MBBS
Introduction: Rates of injection-drug use associated infective endocarditis (IDU-IE) have been rising in the midst of the US opioid epidemic. A growing body of evidence suggests that patients with IDU-IE receive substandard addiction care during their hospitalization, leading to increased risk of not receiving care, recurrence of infection, return to drug use, and increased mortality. Studies show that comprehensive addiction care improves health outcomes. Stigma regarding substance use disorder (SUD) influences the quality of care patients receive. As key providers in the care of patients with IDU-IE, we sought to characterize cardiac surgeons' preferences and approaches to addiction care for IDU patients, as well as their overall attitudes towards SUD & people who use drugs.
Methods: This is a subgroup analysis of results from an anonymous survey sent to 2398 cardiac surgeons in the U.S., of whom 254 (10.6%) responded. Of the 254 respondents, only 201 completed >60% of the questions of interest. Surgeons were asked about their preferences and practices vis-à-vis multidisciplinary addiction care including addiction medicine and behavioral health consultations, and initiation of medication for opioid use disorder (MOUD). Attitudes were ascertained via responses to a list of questions previously used with physicians, pertaining to SUD stigma. Demographic information was also collected.
Results: Overall, most cardiac surgeons (82.1%, 161) report consulting another provider for addiction care. Only 35.3% (71) of respondents report having access to a dedicated addiction consultation service (ACS) in their hospital; however, when available,92.8% reported routinely consulting the ACS when caring for IDU-IE patients. Among those who do not have access to ACS, psychiatry consultations (38.1%, 48) and referral to drug rehabilitation (38.1%, 48) are the leading alternatives, while 14.3% (18) do not consult any services. The majority of respondents believe MOUD has a role in reducing recurrence of infection in IDU-IE (69%, 138) and think it should be initiated in the perioperative period (78.8%, 126), as opposed upon discharge (11.9%, 19).In terms of attitudes, most respondents find patients with SUD more challenging (91.2%, 177), and do not find caring for them satisfying (59.8%, 60). A quarter of respondents agree that SUD is a choice, (25.1%, 49) though over 3 quarters agree that it is treatable (77.9%, 152). Nearly a fifth of surgeons agree that MOUD replaces one addiction with another (18%, 35) and that drug use is a crime and deserves punishment (19.6%, 38). However, nearly two-thirds (62.7%, 121) disagree that treating patients with SUD is a waste of medical dollars, and nearly half (48.7%, 94) agree that treating SUD reduces cost.
Conclusion: While most surgeons report consulting other providers for addiction care and are in favor of peri-operative initiation of MOUD in IDU-IE patients, their reported attitudes suggest that fewer surgeons hold favorable views when it comes to patients with SUD. This gap between reported practice and attitudes may have an impact on addiction care delivery, and signals a need for increased education of cardiac surgeons on the lifesaving opportunity addiction care can provide for patients with SUD.

Cascade of Care for U.S. Pregnant Women with Opioid Use Disorder, 2006–2017
Presenter(s) Are:
Max Jordan N. Nguemeni Tiako, MS
Jennifer Culhane, PhD, MPH
Background: The incidence of opioid use disorder (OUD) in pregnancy has risen over the last decade, mirroring the US opioid epidemic. Such pregnancies are associated with maternal and neonatal co-morbidities. Standard of care for OUD in pregnancy includes pharmacotherapy with methadone or buprenorphine. Addiction specialists have proposed a cascade of care framework aimed at improving the quality of OUD care. This consists of identification of OUD, pharmacotherapy, retention in treatment, and remission. We identify predictors of retention on pharmacotherapy for OUD among pregnant women in the US.
Methuds: Discharges from the Substance Abuse and Mental Health Services Administration, a national dataset designed to track admissions into and discharges from all substance use treatment facilities that receive federal funding. Primary OUD was defined as heroin, non-prescribed methadone or synthetic opioids reported as primary substance in the treatment episode. Pharmacotherapy was defined as administration of methadone, buprenorphine or naltrexone. Retention was defined as treatment episode duration longer than 6 months. We performed multivariate logistic regressions to determine predictors associated with retention in treatment. Statistical significance was defined as P-value < 0.05.
Results: Between 2006 and 2017, there were 84,785 treatment episodes for primary OUD among pregnant patients. Pharmacotherapy occurred in 44.3% (37,599) of treatment episodes. Retention was achieved for 13% (11,038) of encounters. Among episodes with pharmacotherapy, retention was achieved for 17.49% (6560) of episodes, compared to 9.52% (4478) in episodes without pharmacotherapy.
The following characteristics were positively associated with retention in episodes that included pharmacotherapy: long-term residential treatment setting (OR = 2.18, $P = 0.001$), intensive outpatient psychotherapy (IOP) (OR 1.83, $P = 0.007$) and non-IOP (OR 2.61, $P < 0.001$). Conversely, patient history of criminal legal involvement (OR = 0.89, $P = 0.003$), and census divisions East South Central (OR 0.2, $P < 0.001$) and Mountain (OR 0.68, $P < 0.001$) were negatively associated with retention.
In episodes without pharmacotherapy, census divisions East North Central (OR 0.86, $P = 0.04$), West North Central (OR 0.71, $P < 0.001$) and East South Central (OR 0.13, $P < 0.001$) were negatively associated with retention, while census division Mountain (1.2, $P = 0.02$), history of at least one previous treatment episode (OR 1.23, $P < 0.001$), criminal legal involvement (OR 1.23, $P < 0.001$), long-term residential setting (OR 15.29, $P < 0.001$), IOP (OR 15.4, $P < 0.001$) and non-IOP (21.36, $P < 0.001$) were positively associated with retention.
Conclusions: There are geographic variations in retention rates, and behavioral health counseling is predictive of retention. The impact of criminal legal involvement differs in episodes with and without pharmacotherapy, which may be due to lack of access to pharmacotherapy in correctional settings. The severity of the opioid epidemic by region may explain variations in retention rates. Overall, most treatment episodes for OUD in pregnant women do not follow standard of care; and fewer achieve retention.

CBD or CBT: What Types of Treatment do Pain Management Specialists Provide?
Presenter(s) Are:
Stephanie Slat, BS
Pooja A. Lagisetty, MD, MSc
Introduction: Amidst rising concerns about the risks of long-term opioid use, comprehensive treatment for chronic pain has garnered attention from the medical community. However, it is unclear to what extent pain management

specialists currently provide multimodal treatments for chronic pain. Therefore, the aims of this study were to understand 1) the degree to which specific forms of treatment are offered by pain management clinics, 2) whether a patient's long-term opioid prescription presented any barriers to receiving care, and 3) how wait times for appointments vary.

Methods: The study used an audit ''secret shopper'' survey methodology. A research assistant called pain management clinics across 9 states with varying rates of overdose and simulated a patient on long-term opioid therapy for chronic pain seeking specialty care. Callers asked a series of questions about clinic size, providers available, insurances accepted, and referral requirements. In addition, they assessed the treatments offered (e.g. procedures such as injections, cannabinoids, behavioral therapy, physical therapy, etc.). Callers also asked if the clinic would provide assistance with opioid tapering and if they had a provider who uses buprenorphine to manage pain or opioid use disorder. Finally, wait time until the first appointment was also collected.

Results: Of 366 eligible clinics, 187 (51%) were willing to accept patients with Medicaid insurance during the call. Additionally, 201 (55%) required a referral before accepting the patient, and another 84 (23%) noted they only required a referral when the insurance company dictated one was necessary. Nearly all clinics (355, 97%) stated they perform procedures, such as injections, 77% were willing to manage medications for pain, and only 38% offered physical therapy. A quarter (89, 25%) offered CBD or medical marijuana as treatment options in the 8 states where it was legal (n = 355) while only 13% offered behavioral therapy. 246 clinics (67%) indicated that their providers would assist a patient with discontinuing opioids. 110 clinics (30%) stated they had a provider who prescribes buprenorphine. Clinics reported a median wait time to new appointment of 9 days (IQR 4–17).

Conclusion: For patients with chronic pain who may benefit from multimodal pain treatment that includes behavioral therapy, few pain management clinics were equipped to provide this care. Interestingly a larger proportion of these clinics offered CBD, despite evidence for efficacy being less robust than for behavioral therapy. The focus on procedural pain relief may be particularly limiting in patients who have chronic pain with co-morbid substance use disorders. In addition, many clinics required primary care referrals and did not accept patients on Medicaid, further limiting access to treatment for disadvantaged populations. However, wait time for visits was relatively modest.

Changing Pathways to Opioid Use Disorder Recovery During Inpatient Care

Presenter(s) Are:
Sandrine Pirard, MD, PhD, MPH
Carrie Bourdon, LCSW

Background: While Medication-Assisted Treatment (MAT) and in particular Opioid Maintenance Therapy (OMT) is associated with the most successful outcomes for individuals with Opioid Use Disorder (OUD), it is grossly underutilized (i). Many inpatient programs still use medical detoxification protocols, discharging clients without starting MAT. Detoxification is however associated with high rates of relapse and the risk of accidental overdose and death is high due to decreased tolerance (ii). Thus, moving away from traditional detoxification and instead starting MAT could greatly improve outcomes and reduce health care utilization (iii).

Description of pilot: In 2018, we launched the Changing Pathways (CP) pilot in CT. CP uses a multidisciplinary approach across all staff including nursing, physicians, and clinicians to incorporate MAT (buprenorphine or methadone) induction into inpatient withdrawal management care. The three essential components of the CP model are (1) in-depth MAT education; (2) MAT (buprenorphine or methadone) induction if chosen by client; and (3) warm transfer to guarantee continuation of MAT post-discharge.

Methods: Individuals participating in this pilot were Medicaid members with a diagnosis of OUD admitted for withdrawal management at one of the two freestanding inpatient pilot sites.

Results: The pilot was launched in October 2018; 469 MAT inductions were performed during the first year of the initiative, representing a significantly increase in induction rates (817% increase at the first site and 326% at the second). Members who were inducted on buprenorphine or methadone had significantly better outcomes than members who went through traditional detoxification protocols. Discharges Against Medical Advice (AMA) rates, readmission rates, and connect-to-care rates were greatly improved. The rate of individuals on MAT post-discharge at the two sites increased 52% from Q2 2018 to Q2 2019. Nearly 40% of inducted members discharging from pilot sites were medication adherent for the 90 days following discharge (when using 80% of days covered as the threshold for adherence), about 2.5 times the rate of non-inducted members. For members inducted at the pilot sites, there were statistically significant reductions in withdrawal management episodes and Behavioral Health (BH) Emergency Department (ED) visits, and the latter rate was nearly cut in half after the MAT induction. Additionally, among inducted members, those who met the 80% adherence threshold were significantly more likely to see a decrease in BH ED visits.

Conclusion: Overall, CP represents a promising, person-centered approach to supporting recovery for individuals with OUD.

Cigarette and E-Cigarette Use by Sexual Minority Youth: Does Consistency Matter?

Presenter(s) Are:
Philip T. Veliz, PhD
Rebecca Evans-Polce, PhD

Introduction: Research shows that self-identified sexual minorities (i.e., lesbian, gay, or bisexual) have a higher risk for nicotine/tobacco use than heterosexuals and sexual minority identification may expose this subpopulation to additional discrimination and thus, more vulnerable to coping with tobacco use. Sexual minorities who conceal, or who are not sure of their sexual identity, may experience cognitive dissonance, leading to stress and increased risk of tobacco use as a form of coping. Very few studies have assessed adolescent's inconsistent sexual identities and their use of nicotine/tobacco products. In order to fill a critical gap in the literature, the purpose of this study was to examine how variation in sexual identities among adolescents was associated with both cigarette and e-cigarette use.

Methods: The current study used four waves of the Population Assessment of Tobacco and Health (PATH) Study data from the adolescent sample (14–17 years of age at Wave 1). Secondary analysis of respondents who participated in the adolescent survey across each wave and who were old enough to respond to the sexual identity question were included in the study (n = 1639). The major variables examined were sexual identity (i.e., heterosexual, gay/lesbian, and bisexual) and past 30-day cigarette and e-cigarette use. In order to assess consistent/inconsistent sexual minority identity, we created a mutually exclusive variable that captured whether respondents consistently indicated a heterosexual identity, a consistent sexual minority identity, or whether respondent's sexual identity was inconsistent during the study period. Generalized estimating equations (GEE) with an autoregressive correlation structure were used in order to account for the longitudinal design.

Results: During the study period, roughly 94% identified as heterosexual: 1.1% identified as gay or lesbian and 4.5% identified as bisexual. Moreover, 89.9% had a consistent heterosexual identity, 1.9% had a consistent sexual minority identity, and 8.2% had an inconsistent sexual identity across the study period. The GEE analysis found that respondents who indicated being bisexual had higher odds of both past 30-day cigarette use (AOR = 2.29, 95% CI = 1.29, 4.06) and past 30-day e-cigarette use (AOR = 2.42, 95% CI = 1.52, 3.85) when compared to heterosexuals. Respondents indicating an inconsistent sexual identity had higher odds of both past 30-day cigarette use (AOR = 1.94, 95% CI = 1.04, 3.63) and past 30-day e-cigarette use (AOR = 2.18, 95% CI = 1.38, 3.44) when compared to adolescents with a consistent heterosexual identity. Adolescents indicating consistent sexual minority identity had similar odds of past 30-day cigarette and e-cigarette use when compared to adolescents with a consistent heterosexual identity.

Conclusions: While we confirmed that adolescent bisexuals are at higher risk for both cigarette and e-cigarette use, adolescents with inconsistent sexual identities were also found to be at greater risk for nicotine/tobacco use. Our findings identify sexual minority subgroups at higher risk for nicotine/tobacco

use during the teen years. Given that adolescence is a critical period in which nicotine/tobacco use usually begins, finding strategies to mitigate the initiation of use is needed with both clinical and school settings.

Cognitive Development of Young Children after Prenatal Opioid Exposure: A Meta-Analysis

Presenter(s) Are:
Leah F. Nelson, MD, MS
Keisha D. Patel

Importance: The number of children with prenatal opioid exposure to medication treatment (MT) with methadone and buprenorphine is increasing, but the cognitive impacts of this exposure are not well-understood.

Objective: To determine strength and consistency of findings in the medical literature regarding the early childhood cognitive developmental impacts of prenatal exposure to MT, particularly when accounting for variables outside the opioid exposure.

Data Sources: A search strategy obtained publications from PubMed, CINAHL, PsychINFO, Web of Science, and EMBASE from January 1972 to June 2019. Reference lists from identified articles were searched.

Study Selection: Inclusion criteria were cohort studies, children age 1–60 months with 2 months of prenatal MT exposure, use of standardized direct-observation testing scales, and report of means and standard deviations. We excluded case reports, case series, historical controls, and reviews.

Data Extraction and Synthesis: Two authors independently selected studies for inclusion, extracted data, and assessed the study quality. Data extracted included demographics, covariates, sources of bias, and effect estimates. Meta-analysis was performed using random-effects models.

Main Outcomes: Cognitive test scores, demographic variability between exposed and unexposed groups.

Results: Sixteen cohorts were included in a quantitative synthesis representing 1086 children: 485 exposed to MT antenatally and 601 non-exposed comparison children. On meta-analysis cognitive development following MT exposure was associated with an overall statistically-significant negative association (pooled SMD: -0.57; 95% CI: -0.93 to -0.21; I2 = 81%). Multiple sub-analyses on demographics (maternal education, race/ethnicity, socio-economics, prenatal tobacco exposure, infant sex) were conducted. Notably, sub-analysis of studies on prenatal exposure to tobacco smoke showed loss of association between opioid exposure and cognitive scores and became homogenous (SMD = −0.11; 95% CI 95%: CI -0.42 to 0.20; I2 = 0%).

Conclusions and Relevance: By conducting a priori defined sub-analyses, we demonstrate how poor recruitment, particularly imbalances in maternal tobacco use, can contribute to a negative overall association on cognitive development testing following prenatal opioid exposure. Promoting tobacco cessation for pregnant women with opioid use disorder should be prioritized in this high-risk population.

Colorado Medication Assisted Treatment Program Implementation Outcomes

Presenter(s) Are:
Claudia R. Amura, PhD, MPH
Tanya R. Sorrell, PhD, PMHNP-BC

Introduction: Opioid use disorders (OUD) cause morbidity and mortality, and present multiple legal problems, and health care utilization issues. Medications for Opioid Use Disorder (MOUD) are cost effective evidence-based approaches to address OUD. The Colorado Legislature funded the implementation of a MAT program in two rural counties with the highest OUD rates and access disparities, with the purpose of expanding the nurse practitioners (NPs) or physician assistants (PAs) workforce to treat OUD. This pilot MAT program increased access to care over 18 months. In this study, we evaluated the program's outcomes for patients continuing in treatment.

Methods: Adults with OUD received care at 3 rural clinics, which recorded de-identified patient-level data when patients started MAT and again after 6 months. The Addiction Severity Index was used to measure OUD's impact across various life domains. Of 643 patients seen in the first year, 207 received over 6 months of MAT, with 18% missing data. We tested pre-post changes using chi-square and t-tests.

Results: After over a year of MAT program implementation, 38% of patients were retained 6 months. Patients who completed 6 months of MAT reported less heroin use (37.8% vs. 13.4%), $P < 0.001$, and less use of prescription opioids (17.1% vs 9.8%), $P = 0.61$. Patients reported consuming alcohol on 82% fewer days/month, $P = 0.008$, and fewer used cannabis after starting treatment (47.6% vs 36.6%), $P < 0.001$. After 6 months of MAT, patients had fewer emergency room visits (6 vs 15), $P = 0.30$, fewer hospital days, $P = 0.03$; and more often reported good health (60% vs 21%), $P = 0.09$. There were no changes in severity of legal problems, $P = 0.74$. Lessons learned for ongoing barriers and facilitators encountered during implementation inform the development of policy to practice of new MAT programs.

Conclusions: Patients with OUD who completed over 6 months of MAT used less opioids and other substances, had less health care utilization, and had better self-reported health compared to pre-treatment levels. Results are limited to patients still in treatment, with 62% lost to follow-up. While more research is needed on factors affecting patient retention and on MAT's long-term effects, this study highlights the efficacy of the current MAT program to address one of the state's major public health crises.

Comparative Effectiveness of Different Treatment Pathways for Opioid Use Disorder

Presenter(s) Are:
Sarah Wakeman, MD
Marc Larochelle, MD, MPH

Background: Untreated opioid use disorder (OUD) results in substantial morbidity and mortality. Although clinical trials demonstrate the superior effectiveness of medications for OUD (MOUD) compared to non-pharmacologic treatment, national data on the comparative effectiveness of real-world OUD treatment pathways are lacking.

Objectives: To examine associations between different OUD treatment pathways and two poor clinical outcomes, overdose and opioid-related emergency department or inpatient utilization, as proxies for recurrence of OUD.

Design, Setting, and Participants: This retrospective study constructed a cohort of individuals with OUD between 1/1/2015 and 9/30/2017 using de-identified administrative claims from the OptumLabs Data Warehouse (OLDW), a longitudinal, real-world data asset

Exposures: One of six mutually exclusive OUD treatment pathways based on the initial treatment received in the 3 months after OUD diagnosis including: 1) no treatment, 2) inpatient detoxification/residential, 3) intensive behavioral health, 4) buprenorphine/methadone, 5) naltrexone, and 6) non-intensive behavioral health.

Main Outcomes and Measures: Opioid overdose or serious opioid-related acute care utilization during the 3 months and 12 months after receipt of initial treatment.

Results: Among 40,885 individuals, 59.3% received non-intensive behavioral health, 15.8% inpatient detoxification/residential, 12.5% MOUD with buprenorphine/methadone, 4.8% intensive behavioral health, and 2.4% MOUD with naltrexone. During the 3-month follow-up period 707 participants experienced an overdose and 773 had a serious opioid-related acute care utilization episode. Only treatment with buprenorphine or methadone reduced the risk of overdose compared to no treatment during the 3-month (AHR, 0.24 [CI, 0.14 to 0.41]) and 12-month follow-up period (AHR, 0.41 [CI, 0.31 to 0.55]). MOUD with buprenorphine or methadone was protective against serious opioid-related acute care utilization during the 3-month (AHR, 0.68 [CI, 0.47 to 0.99]) and 12-month follow-up period (AHR, 0.74 [CI 0.58 to 0.95]). Non-intensive behavioral health treatment was also associated with reduction in serious opioid-related acute care utilization during the 3-month follow-up period (AHR, 0.59 [CI, 0.44–0.80]).

Conclusions: Treatment with buprenorphine or methadone is associated with substantial reductions in overdose and serious opioid-related acute care utilization at 3 and 12 months compared with other treatment approaches,

yet most individuals are not treated with these medications. Strategies to address the underuse of MOUD are needed.

COMPASSION: Community Of Maternal PArenting Support for Substance Impacted WOmen & Newborns

Presenter(s) Are:
Vania Rudolf, MD, MPH, DFASAM

Objective: The project measured the impact of an novel COMPASSION (Community Of Maternal PArenting Support for Substance Impacted WOmen and Newborns) approach to support normalizing ''zero separation'' care for pregnant/parenting women, neonates and families impacted by opioid use.

Background: Untreated opioid use disorder in pregnancy is a major public health problem and timely treatment improves maternal, neonatal, family and societal outcomes. In Washington State in 2017, of 78,000 hospital births an estimated 1100 moms and 1100 babies were opioid-exposed. Finding optimal ways to provide compassionate neonatal opioid withdrawal syndrome (NOWS) treatment, trauma-informed care, medication for opioid use disorder (MOUD), maternal/parenting bonding opportunity and provider support while diminishing stigmatization and addressing social disparities have become priorities for programming, policy and research.

Methods: A case review compared 20 women-baby dyads practicing COMPASSION model of 5 days inpatient postpartum floor stay to 20 women-baby dyads engaged in routine postpartum care with discharge on day 1–3. All women had gestational age between 34–40 weeks and had initiated opioid agonist therapy with methadone (40–250 mg daily). COMPASSION model of 5 days postpartum floor stay included ''zero separation'' for mom and baby on the postpartum floor, proactive patient and provider education on NOWS/MOUD; daily addiction service rounding (supporting patient, provider, nursing, counseling and social work staff huddles); MOUD, counseling was given using trauma-responsive and non-judgmental approach for ongoing MOUD, tobacco cessation, breastfeeding, parenting/bonding focus, long acting contraception, social and child protective services (CPS) discharge coordination, mom/baby/dad/family triad, housing and community support. Primary outcomes included NOWS morphine treatment, length of NICU stay, and parenting with mom/baby discharge. Secondary outcomes included MOUD stability, maternal recovery engagement post delivery, safe discharge. T-tests were used to analyze the outcomes.

Results: A total of 40 women-baby dyads. Out of 20 COMPASSION babies only 4 needed NICU and morphine for NOWS comparing to 16 in the routine postpartum floor stay ($P < 0.001$). Length of NOWS NICU stay in the COMPASSION babies was 3.2 days compared to 18 days in the routine-care babies ($P < 0.001$). A total of 16 COMPASSION moms discharged with their babies compared to 12 women in the comparison group ($P < 0.001$). All COMPASSION women discharged stable on MOUD and 80% of them had a safe discharge with their babies to a long-term residential treatment. Only half of the women in the routine postpartum care group discharged with their babies.

Conclusion: The COMPASSION 5 days postpartum floor model provides an innovative way to normalize care for women, newborns and families impacted by the opioid crisis. This pathway for ''zero separation" between mother and newborn may offer a practical approach to reducing stigma while enhancing provider/patient support, cost-effectiveness, and clinical and social outcomes.

Disparities in Access to Medication Assisted Treatment for Alcohol Use Disorder

Presenter(s) Are:
Patricia R. Houck, MS
Ann Giazzoni, MSW, LCSW, MBA

Introduction: National data shows that black individuals receive specialty treatment for alcohol use disorder (AUD) as equitably as white individuals; however, data also suggests that black individuals are less likely to receive medication-assisted treatment (MAT) for AUD and are less likely to complete specialty treatment for AUD. These factors that could contribute to this disparity such as insurance status, income, and housing stability vary considerably among geographic areas and socioeconomic classes, making it beneficial to examine racial disparities in access to MAT in focused locations when equitably planning health services across a region.

Methods: Medicaid managed care member level data was analyzed to examine the accessibility of medication assisted treatment for AUD. All patients with an AUD diagnosis between January 2014 and December 2018 and having at least 6 months post treatment membership were included. ANOVA and 3×2 Chi Square tests were used to compare patient demographic and clinical data.

Results: Compared by racial/ethnic minorities, white individuals had better access to MAT medication (naltrexone, acamprosate, or disulfiram) for AUD than non-white individuals. This disparity was particularly prevalent among urban zip codes in Pennsylvania. White individuals were twice as likely to receive MAT for AUD (12.4%, compared to black members at 6.9%) and more likely than members of other races at 8.1% ($X2 = 29.92$, $P = 0.001$). Among patients prescribed a MAT drug, 53.7% lived in a high-deprivation area ($ADI >= 110$) while 62.9% of those referred to behavioral therapy and 58.6% of those who received neither treatment lived in a high-deprivation area ($X2 = 14.32$, $P = 0.001$). Finally, among those receiving MAT drugs, 77.4% had a diagnosis of Severe Persistent Mental Illness (SPMI) and were significantly more likely to receive a MAT drug ($X2 = 107.79$, $P = 0.001$) than other treatment types. Among those receiving a referral to therapy, 61.2% had a diagnosis of SPMI with therapy alone and 51.2% of those receiving no AUD treatment were diagnosed with SPMI. In a multivariate logistic model, statistically significant predictors of receiving MAT drugs for AUD are white race, SPMI, and residing in a zip code with area deprivation index less than 110 (living in a socioeconomically advantaged location).

Conclusion: In our sample, black individuals, those living in socioeconomically-disadvantaged areas, and those with no previous SPMI treatment were less likely to receive MAT drugs for AUD. Age and gender did not significantly predict likeliness to receive a MAT drug. Additional research is needed to identify the underlying causes of racial and ethnic disparities in alcohol use treatment. In the meantime, health systems should consider targeted education and outreach to providers using zip code- and county-specific demographic and health care information to expand access to addiction treatment. This will facilitate the selection of optimal treatment facility locations and treatment facility types to improve equitable access to MAT for AUD.

Do AUD+mTBI patients with post-traumatic headaches have worse alcohol-related outcomes?

Presenter(s) Are:
Emanuel N. Husu, MD
Amy A. A. Herrold, PhD.

Background: Alcohol use disorder (AUD) and mild traumatic brain injury (mTBI) share symptomatology and neuropathology and are often co-occurring. AUD prevalence is also higher in patients with mTBI. In military personnel with mTBI, headache is one of the most common debilitating chronic pain conditions. Moreover, up to 25% of people with pain may report self-medication with alcohol because of its perceived analgesic benefit. AUD-related outcomes may be worse in patients with headaches due to an attempt to self-treat their pain. Objectives: We conducted a preliminary study to test our hypothesis that veterans with AUD+mTBI+post-traumatic headaches have worse alcohol-related outcomes compared to veterans with AUD+mTBI without post-traumatic headaches.

Methods: We conducted a dovetail study abstracting data from 15 veterans with AUD+mTBI+post-traumatic headaches and 5 veterans with AUD+mTBI without post-traumatic headaches. We used the following validated alcohol-related outcomes: Penn Alcohol Craving Scale (PACS), Addiction Severity Index (ASI) Self-Report Form, and SCID-RV-5 (for DSM-5). For the SCID-RV-5, we used total number of AUD criterion symptoms met and for the ASI we used the Medical Composite Score, Employment Composite Score, and the Alcohol Composite Score. We performed two-sample Student's t-tests assuming equal variance between groups for continuous alcohol-related outcomes.

Results: Alcohol craving and number of AUD symptoms were slightly but non-significantly elevated ($P = 0.7$ and 0.6 respectively) for the headache group (PACS: 6.9 ± 7.1, SCID-RV-5: 5.7 ± 3.0) compared to the group without headaches (PACS: 5.5 ± 3.9, SCID-RV-5: 4.8 ± 3.1). There was a trend for a reduction in the ASI Employment Composite Score for the headache group compared to the no-headache group (0.6 ± 0.3 vs. 0.9 ± 0.1, $P = 0.08$). There was little difference in the ASI Medical Composite and Alcohol Composite scores between the headache and no-headache groups (Medical: 0.6 ± 0.3 vs. 0.6 ± 0.4, $P = 0.7$; Alcohol: 0.2 ± 0.1 vs. 0.3 ± 0.1, $P = 0.7$).
Conclusion: Our findings did not show a statistically significant difference in alcohol-related outcomes in veterans with AUD+mTBI+post-traumatic headaches as compared to those with AUD+mTBI without post-traumatic headaches. This pilot study showed elevations and trends that warrant future study with a larger sample size in this population. Additionally, future work could compare these findings to those of patients with AUD only.

Does Integrating MAT and Prenatal Care Improve Neonatal Outcomes in Northern NM?
Presenter(s) Are:
Chloe Hall, MD Candidate
Wendy Johnson, MD, MPH
Background: Northern New Mexico has a challenging history of opioid use disorder (OUD). Rates of OUD at hospital delivery and neonatal abstinence syndrome (NAS) in NM are rapidly increasing and are among the highest in the US. Medication for addiction treatment (MAT) in conjunction with other health and social services during pregnancy is associated with improved parenting and birth outcomes. However, there is limited understanding of the benefits of integrating MAT programs specifically with prenatal care (''integrated MAT''). In 2014, La Familia Medical Center (LFMC), a federally qualified health center in Santa Fe, NM, implemented an integrated MAT program, providing an opportunity to study the effects on prenatal care and neonatal outcomes.
Objective: To analyze the relationship of integrated MAT with prenatal care and neonatal outcomes, we performed a retrospective chart review of patients with OUD who delivered at Christus St. Vincent Hospital (CSV) in Santa Fe, NM, from 2012-2017.
Methods: Patients delivering at CSV, Santa Fe's sole community hospital, between 2012–2017 with an OUD-specific diagnosis code, positive opioid/opiate test at delivery, or history of participation in a MAT program were identified using Midas Health Analytics. All patients in LFMC's integrated MAT program who delivered at CSV were included in the study. Data on maternal demographics, social determinants of health, and maternal and neonatal health were collected by chart review. The primary metrics of interest were (1) number of prenatal visits and (2) a clinical composite for adverse neonatal outcomes, defined as either death, NICU admission, or having 2 or more specified poor health indicators (intrauterine growth retardation, pre-term delivery, neonatal abstinence syndrome, or lack of breastfeeding by time of hospital discharge). Maternal-neonatal dyads who had received care in the integrated MAT program were compared with those who received either no treatment, or treatment in a traditional stand-alone (''non-integrated'') MAT program.
Results: A total of n = 211 maternal-neonatal dyads were identified, 77 of whom received care from an integrated MAT program (74 from LFMC). Patients in integrated MAT programs had significantly more prenatal visits than either patients in no treatment (mean 10.7 vs. 4.6, $P < 0.0001$) or patients in stand-alone MAT programs (mean 10.7 vs. 5.8, $P < 0.0001$). Newborns of patients in the integrated program were significantly less likely to meet the clinical composite for adverse neonatal outcomes compared to either patients in no treatment (27% vs. 49%, $P = 0.02$), or patients in stand-alone MAT programs (27% vs. 43%, $P = 0.04$). Multivariate analysis confirmed that neonates born to patients in an integrated program were less likely to meet the adverse outcome composite (OR 0.46, $P = 0.05$).
Conclusions: Our results suggest that participating in an integrated MAT program may be associated with more frequent prenatal visits and improved neonatal outcomes. Further investigation in larger populations in other integrated MAT programs is needed to confirm this finding and explore the best treatment of pregnant patients with OUD.

Dronabinol prescribing at one hospital in a state with legalized recreational cannabis
Presenter(s) Are:
Erin Bredenberg, MD, MPH
Susan L. Calcaterra, MD, MPH
Introduction: On January 1, 2014, Colorado became the first state in the nation to sell legal recreational cannabis. Since then, rates of hospitalizations related to acute illness from cannabis use have increased dramatically. Regular use of high potency cannabis products can lead to physical dependency and abrupt cessation of cannabis use can lead to cannabis withdrawal syndrome (CWS). Patients experiencing CWS report intense insomnia, dysphoria, and anxiety. To date, there are no FDA-approved pharmacological interventions to mitigate cannabis withdrawal symptoms. Dronabinal, a synthetic form of delta-9-tetrahydrocannabinol, THC, is a cannabinoid receptor partial agonist. In small clinical trials, administration of dronabinol has been shown to suppress cannabis withdrawal symptom, though the evidence for use for this indication remains limited and dronabinol is not FDA-approved for cannabis withdrawal. We aimed to characterize dronabinol administration among hospitalized patients at one university hospital in Colorado.
Methods: Administrative data from the University Hospital were obtained via query of the electronic health record. Hospital-based orders for dronabinol were limited to inpatient hospitalizations from January 1, 2012 to August 19, 2019. We excluded dronabinol administration for patients on the Oncology and Bone Marrow Transplant services, where patients may be receiving it to treat chemotherapy-induced nausea and vomiting rather than CWS. We calculated rate of dronabinol administration by year and using a Kendall Tau-b correlation, and analyzed whether the rate of administration has changed over time. We also calculated absolute prescription numbers by medical or surgical service during this time period.
Results: From January 1, 2012 to August 31, 2019, 1,705 hospitalized patients at the University of Colorado received dronabinol. Though non-significant, administration of dronabinol increased over time from 0.15% in 2012 to 0.24% in 2019 ($P = 0.14$). There is practice variability with surgical services prescribing dronabinol more frequently than medical services. The three services that prescribed dronabinol most frequently in absolute terms included the Burn (24%), Neurosurgery (9%), and General Surgery (8%).
Conclusions: We found a trend toward an increase in dronabinol prescriptions at the University of Colorado over time, though it did not reach the level of significance. This analysis signals that inpatient prescribing of dronabinol at one institution in a state with high-potency, legalized cannabis occurs with some frequency and may be increasing. Furthermore, prescribing of dronabinol is highest on small surgical subspecialty services, suggesting that prescribing culture varies widely on the inpatient services.

E-cigarette Use During Adolescence Predicts Marijuana Use 1 Year Later
Presenter(s) Are:
Vita V. McCabe, MD
Rebecca Evans-Polce, PhD
Introduction: A large body of research has demonstrated that e-cigarette use is associated with greater risk for later cigarette use and lower cigarette risk perceptions among U.S. adolescents and young adults. Very few studies have examined whether e-cigarette use similarly predicts marijuana use. This association is important given the growing concern of the health risks associated with vaping marijuana products.
Methods: This study used data from the Monitoring the Future panel survey, focusing on those who were in 12th grade in 2014 and were followed up one year later (n = 305). Twelfth graders who used: (1) e-cigarettes only, (2) cigarettes only, (3) both e-cigarettes and cigarettes, and (4) used neither were compared on their risk for marijuana use in 12th grade and risk for marijuana use one year later.

Results: Ten percent of the sample used only e-cigarettes, 3% used only cigarettes, 8% used both e-cigarettes and cigarettes, and 79% did not use e-cigarettes or cigarettes in the past 30 days. All e-cigarette/cigarette use groups were more likely to use marijuana use in 12th grade compared to those who did not use e-cigarettes or cigarettes. However, controlling for 12th grade marijuana use, those who use e-cigarettes only were at greater risk for marijuana use one year later (aOR: 3.55; 95% CI: 1.46, 8.98) as were those who used both e-cigarettes and cigarettes (aOR: 12.24; 95% CI: 3.57, 41.91). Those who used cigarettes only did not have a significantly greater risk for marijuana use one year later compared to those who did not use e-cigarettes and cigarettes.
Conclusions: This study used a national sample to examine the association of e-cigarette and cigarette use with marijuana use. We found that irrespective of an individual's cigarette use, e-cigarette users were more likely to use marijuana up to one year later. While we are not able to determine the mode of marijuana use, research suggests using marijuana via a vaping device is increasing among adolescents. Thus, the link of e-cigarette use and marijuana use is concerning and warrants further investigation, particularly in light of recent evidence potentially linking marijuana vaping to severe pulmonary illness.4

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eConsult at Discharge: Linking Hospitalized Patients to Methadone Maintenance Treatment
Presenter(s) Are:
Sarah W. Takimoto, BS
Marlene Martin, MD
Introduction: Methadone maintenance treatment (MMT) is an effective, evidence-based treatment for people with opioid use disorder (OUD); however, rates of engagement to MMT after hospitalization are less than 20%. Hospitalization is a pivotal moment to offer and link patients with OUD to treatment as patients are often motivated to quit or cut back. Moreover, untreated OUD increases acute care utilization, risk of overdose and death, and infectious complications.
In October 2017, the San Francisco Health Network (SFHN) implemented an eConsult for the Opiate Treatment Program (OTP) at Zuckerberg San Francisco General Hospital (ZSFG), an onsite MMT. This web-based referral system allowed inpatient providers to link hospitalized patients to outpatient MMT. Currently, there is a gap in the literature about the characteristics of hospitalized patients referred to MMT and the factors that influence engagement in MMT. Given the nearly doubling of opioid related hospitalizations in the last decade, it is important to identify the factors that affect engagement in MMT post discharge.
Methods: This is a retrospective analysis of 94 hospitalized patients with OUD referred through the OTP eConsult from October 2017 through December 2018. Descriptive statistics were used to characterize patient demographics and hospital admission features (i.e. discharging department, inpatient methadone dose, length of stay, etc.) and to compare variables among patients who engaged in MMT and those who did not.
Results: The data showed that 40.4% of patients enrolled in MMT within 30 days of hospital discharge with 27.7% and 21.2% of patients retained in treatment at 30 and 90 days, respectively. Persons referred tended to be English-speaking, male, aged 18–65, on Medicaid, and be experiencing homelessness. Of referred patients, 70.2% were homeless, and race/ethnicity was 46.8% Non-Hispanic White, 34.0% Non-Hispanic Black, 6.4% Hispanic/LatinX, and 6.4% Other. In addition, 57.5% of patients had hepatitis C and 5.3% were HIV positive. Longer hospital stays were associated with higher rates of post-discharge enrollment (p-value 0.05). While not reaching significance, there were lower rates of enrollment in patients who received less than 60 mg of methadone when compared to patients receiving 60 mg or more at discharge (p-value 0.07).
Conclusion: Higher rates of MMT engagement following OTP eConsult in a safety net hospital were found at discharge among vulnerable populations than previously reported for privately insured patients with OUD with no defined referral process to SUD services. The higher rates of enrollment for patients with longer lengths of stay and higher methadone doses at discharge warrant further investigation to determine if inpatient practices along with use of an eConsult at discharge can increase the likelihood of post-discharge treatment engagement for patients with OUD.

Effect of payer-mandated substitution of brand to generic buprenorphine films on outcomes
Presenter(s) Are:
Anthony J. Accurso, MD
Inderbir S. Gohalwar, MD
Introduction: Generic buprenorphine/naloxone films came on the market in mid-February 2019. Shortly thereafter many payers began to mandate generic substitution for patients with opioid dependence. Here we report the rate of concordant urine drug testing for patients while they were on the brand and compare it to their rates after change to the generic. We also report on the patient-reported differences between the brand and generic buprenorphine films.
Methods: From March 2019–September 2019, the author/provider asked all patients in the practice about their experiences with the generic film transition and recorded their responses in visit progress notes. We reviewed the EHR and also called pharmacies to establish which film formulation patients were on between visits during the study period. We calculated the opioid concordance and overall concordance of urine samples from all patients in the practice, categorized by brand film, generic film or other. For patients who experienced a mandated change, we analyzed results with a paired samples t-test comparing outcome on brand vs. on generic film. We also report qualitative remarks from patients about the difference between the products.
Results: We identified 62 patients within our practice who submitted a total of 425 urine toxicology specimens during our study period. Opioid concordance results were: brand film 77.3%, generic film 78.6% and other formulation 78.6% ($P = 0.951$). Overall concordance results were: brand film: 69.5%, generic film 66.9%, other 71.4% ($P = 0.719$). We identified 30 patients who experienced a formulation change and had urine drug test results on both brand and generic formulations. The mean of the patients' individual opioid concordance rates was 90.3% on brand and 86.7% on generic ($P = 0.476$), while the overall concordant rate of patients was 77.5% on brand and 79.0% on generic ($P = 0.808$). On chart review, 20 out of 39 patients who experienced a change from brand film to generic film described experiences that we coded as potency differences (51.2%). Dose increases occurred in 8/39 patients (20.5%) and prior authorization for brand was requested by 4/39 patients (10.3%).
Conclusions: A majority of buprenorphine-maintained patients who experienced a change from brand to generic films reported lower generic potency. However, overall urine drug testing results were similar for all formulations. While differences in patient experience on various buprenorphine formulations likely exist, patients showed an ability to adapt to a new formulation. Some patients required an increase in their daily dose of medication once on generic formulation.

Effect of SC Weekly/Monthly Buprenorphine (CAM2038) Dose on OUD Treatment Outcomes
Presenter(s) Are:
Michael P. Frost, MD, FASAM, FACP
Genie L. Bailey, MD
Introduction: Opioid Use Disorder (OUD) is a chronic, relapsing disease with various pharmacologic treatment options. The safety and effectiveness of buprenorphine (BPN) in both sublingual (SL), injectable, and implantable, extended-release (XR) formulations for treatment of OUD has been established. Clinical guidelines recommend a target dose of 16 mg of SL BPN, with a range from 4 to 24 mg for daily maintenance, but encourage clinicians to individualize dosing to find the lowest dose that can meet treatment goals. Flexible dosing enables individualized treatment to address evolving patient needs and to ensure comfort (i.e., suppress opioid craving) over the course of the disease. CAM2038 is an XR injectable BPN developed in a weekly and monthly formulation and multiple doses. A post-hoc analysis was conducted

to evaluate the impact of CAM2038 dose on OUD treatment outcomes in patients converted from SL BPN in a 48-week, open-label, multi-national Phase 3 study evaluating the long-term safety, tolerability and efficacy of CAM2038 in adults with OUD.5

Methods: Individuals receiving daily SL BPN at baseline (n = 190) were converted to CAM2038 (weekly) or (monthly) at corresponding doses. In alignment with clinical practice and in accordance with Treatment Improvement Protocol (TIP)-63 Clinical Practice Guidelines3, the study included flexible CAM2038 doses. Dose adjustments and visit frequency were based on clinical symptoms and tolerability as assessed by the investigators. Urine samples were collected at weekly or monthly visits based on the frequency of CAM2038 injection. The mean percentage of urine samples negative for illicit opioids was evaluated for each dose received (the dose associated with the outcome was the last dose received prior to collection of the urine sample). Supplemental BPN doses were not included. Missing doses were not imputed. Missing urine samples were imputed as positive.

Results: All available CAM2038 doses were utilized during the study, however, the majority of participants received 24 and 32 mg (weekly) CAM2038 (mean [SD]: 25.2 mg [7.1]), and 96 and 128 mg (monthly) CAM2038 (mean [SD]: 107.3 mg [32.2]), corresponding to 16 to 24 mg SL BPN. These doses mimic clinical practice recommendation of 16 mg SL BPN target dose, with some individuals requiring lower or higher doses. The mean percentage urine samples negative for illicit opioids was similar across CAM2038 (weekly) 16 mg, 24 mg, and 32 mg doses (range 77.3 to 80.9% urine samples negative for illicit opioids) and all monthly doses (range 83.2 to 88.6%). CAM2038 (weekly) 8 mg dose (n = 31) had 91.5% urine samples negative for illicit opioids, possibly reflecting the small sample size and the inclusion of patients who are in other stages in their treatment and have reached more stability. All doses of CAM2038 were well-tolerated and CAM2038 demonstrated a systemic safety profile consistent with the known profile of BPN.

Conclusion: Participants responded to all doses of CAM2038 and all doses were well-tolerated. Treatment with CAM2038 individualized to lowest effective dose based on clinical response resulted in positive treatment outcomes. As these are post-hoc analyses, more research is needed to evaluate the impact of CAM2038 dose on treatment outcomes.

Effects on ED Provider Satisfaction After Initiating an ED-MAT Program

Presenter(s) Are:

Alister Martin, MD, MPP
Tyler Chavez, BS

Background: In May of 2018, our ED instituted an ED-MAT protocol. While adoption of DEA-X waivers was high in our ED we initially found that providers seldom initiated patients on MAT. We implemented three interventions to increase the provision of ED-MAT.

Purpose/Objective: While greater than 90% of our attending ED physicians had DEA-X waivers and were able to prescribe buprenorphine, we found that there remained an opportunity to increase the rate of MAT initiation in our ED. This is consistent with previous findings that many providers who obtain their waivers underutilize them. We implemented three interventions to increase the provision of ED-MAT over a 6 month period and set out to survey providers on their experience of these interventions to assess what effect they had on providers when it came to treating patients with OUD.

Methods: Three interventions were created. We created a Best Practice Advisory (alert) in the hospital's Electronic Health Record system which alerted providers to a patient's possible history of OUD and lack of current treatment, encouraging them to consider discussing OUD treatment with the patient. We also created a badgebacker designed to hang vertically behind a provider's hospital badge which contained a conversation guide for patient conversations, a guide and QR code for an online COWS scale calculator to evaluate withdrawal, a flowchart for OUD treatment, and a public commitment that the provider wearing the badge backer treats OUD. Lastly, monthly emails were sent to the department serving as a recurring reminder of the department's OUD initiative. Each email provided feedback on departmental progress, highlighted patient success stories, and gave personalized shout-outs to providers who followed the protocol. We surveyed the department regarding the utility of these interventions as well as their experience caring for patients with OUD compared to pre-intervention roll out.

Outcomes: We had a 31% response rate for a total of 35 responses. 74% of respondents said they felt they had a more (or much more) positive influence on patients with OUD compared to last year prior to intervention roll out. 71% said they felt more (or much more) satisfied treating patients with OUD compared to last year prior to intervention roll out. 57% said the monthly emails were moderately or very useful. 54% said the BPA was moderately or very useful. 42% said the badge backers were moderately or very useful.

Summary: Appreciating the role they play in the care of patients with OUD, many EDs have started ED-MAT programs including our own, which was the first ED in our state and among the first in the country to do so. We implemented three interventions to increase the provision of ED-MAT after our MAT protocol was launched. We found that the majority of providers felt a high level of satisfaction when it came to treating patients with OUD and that the majority of providers felt they had a positive influence on patients with OUD compared to pre-intervention. We also found that the three interventions had varying levels of utility among providers.

Efficacy of MAT to Improve Inpatient IV Antibiotic Therapy Compliance for PWID

Presenter(s) Are:

Young S. Jo, MD
Angela Vittori, MD

Introduction: Opioid use disorder (OUD) has led to the current devastating opioid epidemic in the United States. A few of the major complications from the epidemic has been infective endocarditis (IE) and infective osteomyelitis (IO) secondary to intravenous drug use (IDU). The combination of unsterilized equipment, sharing of needles, and overall poor personal hygiene increases risk of contracting infectious diseases for people who inject drugs (PWID). The treatment course for IE and IO are generally inpatient antibiotic treatment lasting two to six weeks. The hospital course for these patients get complicated as they often do not receive proper care for their substance use and end up leaving against medical advice (AMA). We studied whether medication assisted therapy (MAT) for their OUD have positive outcomes on decreasing patients leaving AMA, having fewer 30-day readmissions, and increasing length of stay.

Methods: The retrospective study is a secondary analysis of encounters made within the network of HCA enterprise hospitals across the country. All patients who are admitted to HCA hospitals with the ICD 10 diagnosis code for opioid use disorder (ICD code F11) and concurrent IE (ICD code I33) or IO (ICD code M86) were selected for analysis. After descriptive analytics were done, logic regression was gathered to determine the effect of MAT on patients leaving against medical advice, 30 day readmission, and length of stay. MAT was considered to be either buprenorphine or methadone at any dosage started during hospitalization course. The data was analyzed by SAS 9.4 and IBM SPSS Statistics version 24.

Results: 1565 patients were found admitted with both OUD and either IE or IO. Of those, 268 patients received MAT during their hospitalization. Controlled variables include age, gender, and race. Those who received MAT were 1.38 times more likely to leave AMA versus those who didn't with p value of .072. MAT did not impact 30-day readmission rates. Patients who received MAT had 5 additional days of hospital stay compared to those who did not receive MAT.

Discussion: Although statistically not significant, there is a correlation between MAT and reduced likelihood of patients leaving AMA. We have shown that those who received MAT stayed in the hospital for 5 additional days to continue antibiotic therapy. By treating the comorbid opioid use disorder, there is potentially a positive impact on patient care, to increase hospitalization compliance and complete IV antibiotic therapy. Further

research can determine whether those who received MAT also had improved mortality and morbidity.

Emergency Department Utilization Patterns in Patients with Opioid Related ED Visits

Presenter(s) Are:
Ethan Cowan, MD, MS
Siri Shastry, MD

Introduction: Opioid-related Emergency Department (ED) visits have surged over the past decade, with a 29.7% increase in overdose visits from 2016–2017. There is limited data on Emergency Department (ED) utilization patterns of patients with opioid use disorder (OUD). An improved understanding of utilization may underscore missed opportunities for screening, intervention and referral. We seek to more thoroughly investigate ED utilization patterns in patients with OUD.

Methods: This was a retrospective matched case-control study conducted at a single urban ED. Cases were patients with an opioid-related index ED visit from June 1, 2017 to May 31, 2018. Controls were patients with a non-opioid related index ED visit from June 1, 2018 to May 31, 2019. Cases and controls were matched 2:1 on age and gender. The primary outcome was the association between the number of ED visits in the 24-month period surrounding the index visit (12 months prior and 12 months following) and case status. Cochran-Mantel-Haenszel statistics and conditional logistic regression were employed for data analysis using SAS University Edition v9.4.

Results: There were a total of 224 cases. The mean age of cases was 43.9 (95%CI: 42.1, 45.7) and 76.8% were male. Cases had a mean of 1.80 (1.32, 2.28) visits prior to the index visit and 2.18 (1.48, 2.88) visits following the index visit. Controls had a mean of 1.00 (0.75, 1.25) visits preceding the index visit and 0.78 (0.34, 1.12) visits following the index visit. A single ED visit surrounding the index visit was associated with increased odds of being a case patient but did not reach statistical significance. More than one ED visit in the 24-month period surrounding the index visit was significantly associated with odds of being a case patient (OR: 4.407, CI: 2.866, 6.775).

Conclusion: In this study, patients with an opioid-related index ED visit had higher rates of ED utilization 12 months prior to and following the index visit when compared to an age and gender matched control population with a non-opioid related ED visit. Patients with an opioid-related visit were significantly more likely to have had more than one ED-visit in the 24-month period surrounding the index visit. These findings suggest that there are significant opportunities for ED intervention and referral to outpatient treatment both prior to and following an opioid-related ED visit in this patient population.

Evaluating a Student Run Smoking Cessation Program in a Dallas Homeless Population

Presenter(s) Are:
Thanos Rossopoulos, MS
Philip Day, PhD

Background: Smoking is the most preventable cause of premature death in the U.S. While 14% of adults above the poverty level smoke, about 75% of homeless adults smoke. Smoking practices among the homeless are uniquely high risk leading to public health concerns such as spread of disease and chronic morbidities. Medical students from UT Southwestern in Dallas, TX are addressing this issue through a smoking cessation program with the homeless. Program evaluation of this student-run initiative has not been done and could inform improvements to these services.

Objectives: To evaluate the effectiveness of a medical student run smoking cessation program in a homeless population.

Methods: Students lead a weekly smoking cessation class at a local homeless shelter delivering health education, pharmacotherapy, support groups, and individual coaching. Weekly surveys assess participant self-reported addiction (Heaviness of Smoking Index) and readiness to quit (Contemplation Ladder). CO levels for each participant are measured weekly.

Results: A total of 295 independent participants attended the program from January 2018 to October 2019 (for 760 observations); those that attended multiple sessions reduced tobacco use. Out of this total, 109 participants attended at least 2 sessions. The average number of sessions a participant attended increased to 2.39 in 2018 from 1.24 in 2017. Reduction in reported daily cigarette use and increase in readiness to change were significant across a participant's first and last session ($P = 0.039$ and $P = 0.022$, respectively). A total of 16 smokers had a successful quit occurrence, defined as a self-reported 7-day abstinence.

Conclusions: Participant retention rates improved and may be attributed to funding for NRT, modification of curriculum, and increase in quantity and diversity of volunteer base. Reductions in cigarette use behavior have been seen but may be underreported due to the transient nature of this population. Quit rates are difficult to assess for this same reason, in addition to insufficient participant reporting of abstinence. Nonetheless, results illustrate that medical students can be an effective vehicle to provide such support to undomiciled individuals. Furthermore, such an intervention may benefit medical students in teaching them about smoking cessation and providing care to vulnerable populations, neither of which are standard components of school curricula and could impact their propensity to volunteer or devote careers to such populations.

Evaluation of Community Pharmacist Attitudes Toward Harm Reduction in Bexar County

Presenter(s) Are:
Anna Bozhkova
Mikali Shedd, Pharmacy Student

Introduction: Harm reduction describes interventions aimed at reducing the negative effects of risky behaviors; in the context of substance abuse, this can include improving access to needles, syringes, and naloxone. Community pharmacies are widely accessible, making community pharmacists uniquely positioned to connect patients with these harm reduction resources. The ongoing U.S. Opioid Epidemic and climbing rates of Hepatitis C and human immunodeficiency virus (HIV) transmission in Bexar County, Texas necessitates investigation of strategies to improve these outcomes.1 This study characterized the attitudes of Bexar County community pharmacists toward dispensing harm reduction resources, described perceived rates of naloxone, needle and syringe dispensation, and reported use of pharmacy protocols for guiding dispensation of these products.

Method: Eligible participants were pharmacists with an active license and registered community pharmacy employment in Bexar county, Texas. Information on pharmacist licensure was collected from the online Texas State Board of Pharmacy database. An online survey was created using published literature, consultation with content experts, and validated using paper and electronic pilot surveys. The survey was distributed via email on 07–17–2018 and participants were given 6 weeks to respond. A weekly email reminder was sent to individuals who had not yet completed the survey. Participants who completed the survey were entered a raffle for one of four $50 gift cards to a local or online retailer. Data collected included demographics, perceived dispense rates of both needles/syringes and naloxone, availability of protocols for dispensing these product, and Likert-scale attitudinal questions. De-identified data were collected and assessed using Microsoft Excel and JMP Pro 14. Descriptive statistics, contingency and logistic analyses were used for data analysis.

Results: Participants (n = 32) were a median age of 37 [IQR 32–49], mostly White (n = 14) or Hispanic/Latino (n = 14), with a median graduation year of 2011 [IQR 1988–2016]. Most pharmacists agreed or strongly agreed that pharmacies are an appropriate place to access harm reduction resources (n = 26) and that pharmacists should be involved in providing harm reduction (n = 26). However, most pharmacists reported never or rarely dispensing both naloxone (n = 19) and needles and syringes (n = 22). Naloxone protocol use was reported by 66% (n = 21) of pharmacists and significantly enhanced the likelihood of naloxone dispensing ($P = 0.007$). All participants who did not have a naloxone protocol (n = 6) reported never dispensing naloxone. Needle

and syringe protocol use was reported by 47% (n = 15) of pharmacists but did not significantly affect needle and syringe dispensation ($P = 0.24$).

Conclusion: Despite community pharmacists' favorable opinions of and improved access to harm reduction resources, dispensing of needles, syringes and naloxone remains low in Bexar County, Texas. Pharmacy protocols enhanced the likelihood of naloxone dispensation, but overall were limited in their ability to assist with improving dispense rates of naloxone and needles and syringes. Future investigations should evaluate the content of these pharmacy protocols, and other barriers to dispensation of harm reduction products.

Expanding Access to Addiction Treatment for Inpatients Utilizing Existing Resources

Presenter(s) Are:
Susan L. Calcaterra, MD, MPH
Lauren McBeth, BA

Introduction: People with opioid use disorder (OUD) are increasing hospitalized for complications related to opioid use. While their acute medical issue is treated in the hospital, often their OUD is not addressed, resulting in a missed opportunity to engage high-risk patients in OUD treatment. Hospitalist physicians care for many hospitalized patients in the United States and are leaders of innovation in hospital medicine. We aimed to expand addiction treatment for hospitalized patients by: 1) training an existing hospital-based workforce in addiction medicine to provide evidence-based addiction treatment in the hospital setting, 2) implementing universal screening to identify hospitalized patients with OUD and offer life saving treatment, including medications for OUD (buprenorphine or methadone enrollment) and naloxone for overdose reversal, and 3) providing patients with linkage to addiction treatment following hospital discharge.

Methods: In year one, eleven hospitalists were recruited from an academic hospital who participated in a comprehensive addiction medicine training program which included: 1) a 15-part lecture series covering topics such as addiction in pregnancy, medications for OUD, 12-step programs, trauma and addiction, interpretation of drug testing, among others, 2) online addiction American Society of Addiction Medicine (ASAM) training modules with textbook, 3) membership to ASAM for increased participation in the field of addiction medicine, and 4) 10–$^1/_2$ day shadowing shifts with an addiction medicine physician. All participating hospitalists have committed to taking the Addiction Medicine board exam by 2021. In year two, hospitalist will attend on a Monday through Friday inpatient addiction medicine consult service. The program also supports a dedicated social worker and peer recovery coach who, in year one, outreached to local addiction treatment centers to identify community partners, and in year two, continue to work to link patients to treatment post hospital discharge. Year one metrics for hospitalist include: 100% buprenorphine certification, 100% online module completion, and 100% completion of shadowing shifts. Year two service goals include: initiation of Monday through Friday hospitalist-supported addiction consult service with buprenorphine or methadone and linkage to treatment for patients OUD, and community partnerships. Year two metrics include: number of addiction medicine consults seen pre/post program implementation; buprenorphine prescriptions initiated during hospitalization and at discharge, naloxone prescriptions at discharge, in hospital methadone use for prevention of opioid withdrawal, hospital-based methadone enrollment; 30-day readmissions for patients with OUD, billing for addiction services, and addiction medicine board certification.

Results: Since program inception in October 2018, 11 hospitalists have been buprenorphine waivered, hospitalists have completed online training and >70 shadow shifts. All hospitalists have participated in the 15-part lecture series. In August 2019, we hired a social worker and peer recovery coach who have visited with local treatment sites, including two methadone clinics. On October 1, 2019, we began our hospitalist-supported addiction consult service. Year two metrics will be measured in October 2020.

Conclusion: Program success requires a motivated champion with addiction medicine expertise to support the hospitalists, Hospital Medicine leadership support, and hospital support for a dedicated addiction medicine social worker.

Few Patients Prescribed Opioid Agonist Therapy in the Inpatient Psychiatric Setting

Presenter(s) Are:
Angela H. Lin, MD, MPHS
Carrie M. Mintz, MD

Introduction: Psychiatric comorbidities are common in patients with opioid use disorder (OUD) and are linked to increased risk for opioid overdose. Medication for addiction treatment (MAT) with buprenorphine, methadone, or naltrexone is the standard of care for OUD. In particular, buprenorphine and methadone, opioid agonists, decrease mortality risk in persons with OUD. Thus, psychiatric hospitalization presents an opportunity to provide MAT to a particularly vulnerable population. We sought to establish current prevalence of MAT prescribed for OUD on an inpatient psychiatric unit and determine demographic and clinical factors associated with MAT prescription.

Methods: All psychiatric admissions to the adult inpatient psychiatry unit at Barnes-Jewish Hospital (St. Louis, MO) within a one-year period (June 1, 2018 to May 31, 2019) with a diagnosis of OUD at admission, discharge, or in an active hospital problem were included in this retrospective cohort study. Primary outcome was prescription of MAT during hospitalization. Demographic variables included age, gender, race, housing status, and insurance. Admission characteristics and clinical factors included involuntary or voluntary admission status, primary discharge diagnosis, length of stay, suicidal ideation, urine drug screen results, and history of opioid overdose. Univariate binomial logistic regression was conducted to measure associations between these variables and the primary outcome. Given the known mortality benefit associated with opioid agonist therapy (OAT), secondary analyses were conducted with OAT prescription as the outcome.

Results: Of 225 admissions addressing OUD, 24.4% (n = 55) were prescribed MAT. Of admissions associated with MAT prescription, 32.7% (n = 18) initiated maintenance treatment, 56.4% (n = 31) continued home maintenance therapy, and 10.9% (n = 6) received MAT during hospitalization but did not continue MAT at discharge.

Men were less likely than women to receive MAT (OR = 0.42, 95% CI 0.22, 0.77), and African-Americans were less likely than Caucasians to receive MAT (OR = 0.30, 95% CI 0.14, 0.58). Odds of receiving MAT increased with length of stay (OR = 1.08 per additional day, 95% CI 1.01, 1.16). However, in subgroup analysis excluding patients who continued home maintenance therapy, these associations were no longer significant. No other variables were associated with MAT, including primary discharge diagnosis of OUD or related diagnosis, or reported history of opioid overdose.

OAT prescription followed similar patterns as seen in primary analyses: men were less likely than women to receive OAT (OR = 0.40, 95% CI 0.21, 0.77); African-Americans were less likely than Caucasians to receive OAT (OR 0.33, 95% CI 0.15, 0.66); odds of receiving OAT increased with length of stay (OR = 1.10, 95% CI 1.03, 1.19). In the subgroup analysis of admissions excluding patients who continued home maintenance therapy, these associations were no longer significant.

Conclusions: MAT is underprescribed during psychiatric admissions, even when OUD is identified as the primary diagnosis or when patients report a history of opioid overdose. These results demonstrate that inpatient psychiatric hospitalization represents a critical missed opportunity to engage this high-risk population in potentially life-saving treatment.

Geographic Distribution of Opioid Treatment Programs (OTPs) in the United States

Presenter(s) Are:
Sadia Jehan, MA
Peiyin Hung, PhD, MSPH

Introduction: Opioid Use Disorder (OUD) can effectively be treated with Medication for Assisted Treatment (MAT) which is the gold standard for

OUD treatment. However, one of the medications used in MAT, Methadone can only be dispensed through Substance Abuse and Mental Health Services Administration (SAMHSA) certified Opioid Treatment Programs (OTPs). The availability of OTPs is extremely limited, thus raising the question about who has access to OTPs in the local community. The objective of this study was to 1) to examine the geographic distribution of OTPs and 2) To assess the association between community characteristics and availability of OTPs at the Zip-code tabulation area (ZCTA) level in the United States.

Methods: Availability of OTPs, derived for 30513 ZCTAs was the outcome of interest which was dichotomized to indicate whether a ZCTA has an OTP or not. Data on location of OTPs was downloaded from Substance Abuse and Mental Health Services Administration (SAMHSA) services locator which is an online searchable database that provides information about substance abuse treatment across United States. The main variable of interest was assessed by median household income quartiles and location (urban/rural). Multivariate logistic regression was used to examine the association between community socioeconomic status and OTP availability. Model was controlled for ZCTA level demographic characteristics (Age, Gender, Race, Marital Status, Education). Source of community level characteristics was 2013–2017 American Community Survey (ACS). Data on rurality was taken from Washington, Wyoming, Montana, Idaho (WWAMI) Rural Health Research Center's website.

Results: In 2019 nationwide, there are 1,538 OTPs across 1,242 (4%) ZCTAs leaving 29,271 (96%) ZCTAs with no OTP. Out of 1,242 ZCTAs with OTPs, 216 (0.7%) ZCTAs have more than one OTP with a total of 512 (33%) OTPs concentrated in these ZCTAs. By median household income, communities in lower income quartile (mean income, $ 33746) have more OTPs when compared to communities in the highest income quartile (mean income, $ 88475) [lowest quartile: 518 (34%) OTPs versus highest quartile: 321 (21%) OTPs]. After controlling for other community characteristics, median household income was inversely associated with the odds of having OTP. Communities in the highest income quartile have 62% lower odds of having OTP when compared to communities in the lowest income quartile [adjusted OR, 0.38; 95% C.I 0.29–0.49; $P < 0.01$]. There were urban-rural differences in the availability of OTPs. Across 7413 (24%) rural areas, there were only 8 (0.5%) OTPs whereas there were 1530 (99.5%) OTPs across 23100 (76%) urban areas. Odds of having OTP in rural communities was 75% lower compared to urban communities [adjusted OR 0.25; 95% C.I 0.12–0.51; $P < 0.01$]

Conclusion: OTPs are concentrated in lower-income urban communities raising a concern about access to MAT for rural patients with OUD. Decreased access to OUD treatment can translate into higher mortality, injection drug use (IDU), and may negatively influence other opioid related outcomes in rural communities. Policies are needed to support and expand MAT in rural communities.

Healthcare on the Spot: Mobile Low-Threshold Buprenorphine Treatment in Baltimore City

Presenter(s) Are:
Robert E. Harris, MSN, CRNP, MPH
Ronald E. Saxton, MSPH

Background: The syndemic of opioid use and transmission of infectious diseases remains a public health crisis. Expanding access to integrated, low-threshold models of opioid use disorder (OUD) treatment has been shown to be effective at engaging and retaining people in care. To address service gaps for people who use drugs (PWUD), the Baltimore City Health Department (BCHD) established a mobile clinic called Healthcare on the Spot (The Spot) in September 2018. Services at The Spot are free and accessible to all regardless of citizenship or insurance status and include medication-assistant therapy (MAT) with buprenorphine; wound care; testing and treatment for HIV, hepatitis C (HCV) and other sexually transmitted diseases (STDs); HIV pre-exposure prophylaxis (PrEP); and case management. The mission of The Spot is to bring evidence-based, PWUD-centered clinical services to communities in Baltimore affected by drug use.

Aims: (1) Characterize the patient population accessing mobile, low-threshold OUD treatment services at The Spot; (2) describe services delivered; (3) evaluate retention in buprenorphine treatment.

Methods: Retrospective cohort study of patients accessing services at The Spot from 9/4/18–9/3/19. Demographic, behavioral, and clinical data captured in electronic medical record (INSIGHT) as part of routine clinical care. Patient characteristics and service delivery examined using descriptive statistics. Services at The Spot are based on weekly visits and 1-week scripts for buprenorphine, and patients often miss visits or cycle in and out of care. Time retained in buprenorphine treatment was analyzed using Kaplan-Meier survival estimates. Survival time spanned from initial buprenorphine script to the last script, with censoring at 182 days. Event of interest was last buprenorphine script.

Results: Over a twelve-month sample period, there were 1,938 visits among 427 unique patients: 315 (74%) patients diagnosed with OUD and prescribed buprenorphine; 3 engaged in HIV treatment; 11 started treatment for HCV; 12 started PrEP; 22 received wound care services; 176 trained and received naloxone. Among 315 patients prescribed buprenorphine: 207 identified as male (66%); 234 black (74%); mean age 46 years; 22 (7%) HIV positive; 107 (34%) positive HCV antibody or self-reported HCV diagnosis. Retention in buprenorphine treatment was 55.9% at one month and 27.3% at six months.

Conclusion: Low-threshold, integrated mobile service delivery model shows promise for engaging and retaining populations in treatment of OUD and co-occurring infectious diseases.

HIV Outbreaks Among People Who Inject Drugs: Opportunities to Engage Addiction Specialists

Presenter(s) Are:
Sheryl Lyss, MD, MPH
Buchacz Kate, PhD

Background: HIV diagnoses among persons who inject drugs (PWID) declined over 90% since peaking in the early 1990's. Yet, in the setting of the national opioid crisis, this progress has stalled. Diagnoses are now increasing nationally, particularly among younger adults (aged < 40 years) and non-Hispanic whites. Multiple large, recent outbreaks of HIV among PWID have contributed to these increases.

Objective: To describe recent HIV outbreaks occurring among PWID to identify opportunities for intervention, and, in particular, for engaging substance use disorder (SUD) treatment providers in outbreak response.

Methods: During 2016–2019, CDC and health departments identified 6 large HIV outbreaks predominantly among PWID. Similarities and differences in characteristics of these outbreaks and key elements of the public health responses were reviewed.

Results: Outbreaks occurred in metropolitan areas of various sizes in all 4 U.S. Census regions. Common factors within and across outbreaks included nonsterile injections multiple times per day; polysubstance use (usually opioids with methamphetamine or cocaine); marginalizing circumstances (homelessness or unstable housing, recent incarceration, exchange of sex for money or goods); and coinfections (hepatitis B and C viruses, sexually transmitted infections). Communities experiencing outbreaks varied with regard to services targeted to PWID, such as harm reduction (including syringe-service programs) and medical care (including medication for opioid use disorder [MOUD]). Factors that may have contributed to the outbreaks also varied, including the recent introduction of HIV into an existing needle-sharing network with rapid dissemination or contextual changes - in access to services for PWID, in the drug supply, or in social conditions - that may have resulted in increases in unsafe injection.

Health departments responding to these outbreaks experienced multiple challenges, including some directly relevant to SUD treatment providers. To identify persons with undiagnosed HIV, health departments sought to increase HIV testing in settings frequented by PWID, including street outreach and in emergency departments, correctional facilities, homeless shelters, and SUD treatment programs. MOUD improves antiretroviral treatment adherence and viral suppression and can reduce HIV transmission. Thus, to support PWID with HIV to achieve and maintain viral suppression, some responding jurisdictions increased the number of providers with waivers to prescribe buprenorphine or considered other approaches, including introducing low-barrier MOUD at syringe service programs or through emergency departments.

Implications: SUD treatment providers address multiple needs of PWID in their practices and communities and are critical partners for HIV outbreak response among PWID.
In this poster, we will review characteristics of these outbreaks and elements of the public health responses and propose opportunities for engaging SUD treatment providers during outbreak response. We will present models for screening for HIV in SUD treatment programs and models for initiating MOUD in settings frequented by PWID. We will discuss addressing injection and sexual risks among persons engaged in SUD treatment.
At the poster, the authors look forward to further discussion about opportunities for improved collaborations between public health and SUD treatment providers.

Implementation of BAWS Alcohol Withdrawal Protocol for Moderate-Severe Withdrawal in ICUs

Presenter(s) Are:
Darius Rastegar, MD, FASAM
Andrew S. Jarrell, PharmD

Background/Objective: There is limited evidence for optimal treatment of severe alcohol withdrawal and substantial variation in treatment approaches. The 5-item Brief Alcohol Withdrawal Scale (BAWS) was developed as a simpler and more objective assessment tool and implemented in symptom-triggered protocols, including an ICU protocol with guidelines for benzodiazepine infusions for severe withdrawal. In previous studies, this scale and linked protocols were found to perform well on a unit dedicated to treatment of substance withdrawal and on general medical/surgical units, but there was limited data on its use in intensive care units.
DESIGN: Retrospective, cohort analysis
SETTING: Medical and surgical intensive care units of two academic medical centers from April 1, 2017 to August 31, 2017.
SUBJECTS: Adults admitted to an intensive care unit who had the withdrawal protocol ordered and had moderate to severe alcohol withdrawal (defined as a BAWS score of $\geq$6).
MEASUREMENTS: Records were reviewed to collect demographic data, benzodiazepine exposure, treatment duration, withdrawal severity, and use of other agents.
Results: The BAWS-ICU protocol was ordered and implemented on 237 admissions; on 13 of these admissions, patients were treated through other means before the standard protocol was implemented. Of the remaining 224 admissions, only 33 (15%) had moderate to severe withdrawal; 24 (73%) were admitted directly from the emergency department, 9 (27%) were admitted for alcohol withdrawal, seizure or altered mental status. The mean age was 54, 73% were male and 54% had prior admissions for alcohol withdrawal. Thirteen (39%) were CAM-ICU positive. The median cumulative lorazepam (or equivalent) dose received was 22 mg (range 2–707 mg) and 7 received benzodiazepine infusions. Sixteen (48%) of the patients received adjunctive medications - 8 received other benzodiazepines, 2 propofol, 6 dexmedetomidine, 7 antipsychotic agents and 1 alcohol.
Conclusions: After development and implementation of an alcohol withdrawal protocol for the ICU, most patients did not develop significant withdrawal and among those who did, half were successfully treated using only the protocol, but there was still a great deal of variation in treatment and many received medications outside of the protocol.

Implementing Supervised Consumption Service Access for Emergency Department Patients

Presenter(s) Are:
Nina K. Lam, MD
Rebeccah Rosenblum, MD, FRCPC

People who use substances are frequent users of emergency department services. Unintentional opioid overdoses in and around acute care hospitals, including in the ED, are of increasing concern. Research has shown that supervised consumption services lead to decreases in the number of lethal overdoses in the vicinity of the service. Other benefits include increases in addiction treatment attendance, and decreases in the number of people who inject drugs and unsafe injection practices .
In April 2018, the Addiction Recovery and Community Health (ARCH) Team at the Royal Alexandra Hospital opened the first acute care Supervised Consumption Service (SCS) in North America. In the SCS, patients can consume substances by injection, oral or intranasal routes under nursing supervision; immediate assistance is provided if an overdose occurs. Upon opening, the SCS was accessible only to inpatients. After a quality assurance review, work began to expand SCS access to ED patients as well.
Between June 13–July 15, 2019, ARCH ED Registered Nurses were asked to identify ED patients with a history of active substance use who may potentially require SCS access. Nurses identified 69 patients over 43 8-hour shifts (range 0–4 patients per shift); thus, we anticipated an average of 5 ED patients per 24-hour period to potentially require SCS access. Based on this evidence of need, ARCH leadership worked with a) hospital legal team and Health Canada to expand SCS access to ED patients; b) ED leadership to develop a procedure and flowchart for ED SCS access. ED patients were able to access the SCS effective October 1, 2019.
From October 1 to December 1, 2019, the SCS had 35 visits by 23 unique ED patients. The median time spent in the SCS was 42.5 minutes (range 14.0–140.0 minutes). Methamphetamine was the most commonly used substance (19, 45.2%), followed by fentanyl (10, 23.8%); substances were all injected (91.4% into a vein and 8.6% into an existing IV). In this time period, there were zero unintentional, unwitnessed opioid poisonings in registered ED patients. Data collection is ongoing and will expand to include chief complaint, ED length of stay and discharge status.
Being able to reduce unintentional overdoses and unwitnessed injection drug use in the ED has the potential to improve both patient and staff safety. Next steps include a case series designed to examine the impact of SCS access on emergency care, retention in treatment and uptake into addiction treatment.

Increasing access to buprenorphine: Understanding barriers and solutions in primary care

Presenter(s) Are:
Sarah Leyde, MD
Juliana Macri, MD

Background: Opioid use disorder (OUD) and chronic pain are common, often co-occurring, conditions that are highly prevalent among Veterans. Within the San Francisco Veterans Affairs Healthcare System (SFVAHCS), only 33.0% of Veterans with OUD are prescribed pharmacotherapy treatment and over 1,000 have risk factors for developing OUD (e.g., prescribed chronic opioids). Buprenorphine, an evidence-based and highly effective treatment for both OUD and pain, can be prescribed by primary care providers (PCPs) with additional training and an X-waiver from the DEA. Of the 87 SFVAHCS PCPs, 17 (19.5%) are waivered; however, only 7 (8.0%) have prescribed buprenorphine within the past 6 months. We sought to understand barriers to prescribing buprenorphine and identify interventions to increase PCP prescribing.
Methods: We created and distributed an online survey to all SFVAHCS PCPs (n = 87) who work in geriatric, infectious disease, tele-primary care, and rural and urban primary care settings. Non-waivered providers were surveyed to evaluate interest in becoming waivered and barriers to obtaining a waiver. Waivered providers were surveyed to evaluate barriers to prescribing buprenorphine and solutions to increase prescribing.
Results: Of the 40 survey responders (46.0% response rate), 25 (62.5%) were not waivered and 15 (37.5%) were waivered. Some non-waivered providers expressed interest in obtaining an X-waiver (mean 3.60 on a 5-point Likert scale, where 5 = very interested). The most frequently reported barriers to becoming waivered were: 1) lack of time to complete training (n = 17); 2) limited access to training (n = 9); and 3) lack of incentive to become waivered (n = 8). Among waivered providers, the most commonly reported barriers to prescribing were: 1) lack of knowledge and/or experience (n = 9); 2) lack of clinic support/infrastructure (n = 8); and 3) lack of time to counsel patients during visits (n = 6). Interventions that waivered providers were interested in

included: 1) a "buprenorphine mentor" to call as needed (mean 4.57 on a 5-point Likert scale, where 5 = very interested); 2) educational materials (mean 4.14); 3) a 1-hour refresher course (mean 4.00); and 4) data identifying potential candidates for buprenorphine (mean 4.00).

Conclusions: Based on our survey of SFVAHCS PCPs, there are simple, actionable strategies that may increase the proportion of Veterans who have access to evidence-based treatment for OUD and chronic pain. Providing time, training resources, and employer incentives could increase the number of waivered PCPs. Once waivered, PCPs need further support to ensure confidence and skills in routine prescribing of buprenorphine. Strategies include mentorship, provider educational materials, and establishing clinic infrastructure to reduce the administrative burden of prescribing buprenorphine.

Integrated Versus Non-Integrated Treatment of Rural Pregnant Women with Opioid Use Disorder

Presenter(s) Are:
Elizabeth Saunders, MS
Daisy J. Goodman, CNM, DNP, MPH

Introduction: Pregnant women with opioid use disorder (OUD) have multiple comorbidities and face significant social challenges. Integrated treatment models, which combine addiction treatment and maternity care while addressing co-morbidities and social determinants of health, are widely endorsed, but little research has compared outcomes of real-world, integrated versus standard, non-integrated programs. To better understand the effectiveness of integrated programs, we conducted a retrospective record review to evaluate maternal and infant outcomes among rural pregnant women with OUD who received integrated versus standard treatment.

Methods: We reviewed clinical records of 225 pregnant women with OUD receiving integrated (n = 92), and standard care (n = 133), who delivered between 2015–2017 at a rural academic medical center. Data were abstracted for demographics, treatment participation, and maternal/infant outcomes. Descriptive statistics, X2 tests, and t-tests were used to describe integrated and standard care cohorts. Bivariate logistic, multivariate logistic and negative binomial regression models, adjusted for stable housing, psychotropic medication use, and level of smoking at delivery, were developed to evaluate outcomes among integrated versus usual treatment model participants.

Results: Participants were predominantly White, unemployed Medicaid beneficiaries with mean age of 27.9 (SD = 4.5) years. Most had other substance use disorders (178; 79%), mental illnesses (181; 80%) and tobacco use disorder (209, 92.9%). Women in the integrated treatment cohort were more likely to be diagnosed with an additional substance use disorder (89.1% vs. 72.2% respectively, $P < 0.01$), and less likely to enter treatment with stable housing (67.4% vs. 81.7%, $P < 0.02$). Regarding treatment model, women in the integrated cohort participated in a greater mean number of prenatal visits (15.2 [SD = 5.3] vs. 9.5 [SD = 3.9], $P < 0.0001$) and were more likely to receive psychotropic medications in addition to medication for OUD (46.2% vs. 31.7%, $P < 0.05$). Women in the integrated cohort were also more likely to receive tobacco treatment (92.9% vs. 74.2%, $P < 0.01$), report tobacco cessation (8.4% and 0.9%, $P < 0.01$), and to reduce the number of cigarettes smoked per day at time of delivery (−2.7 vs −0.9, $P < 0.05$). Main outcomes in the integrated cohort vs. standard cohort included fetal demise (n = 1[1.2%] vs. n = 4 [3.3%)] ns); intrauterine growth restriction (n = 5 [6.1%] vs. n = 17 [14.1%] $P = 0.07$); preterm birth (n = 10 [11.8%] vs. n = 33 [26.6%] $P < 0.01$); and mean infant days in hospital (6.5 [SD = 4.8] vs. 10.7 [SD = 16.2] $P < 0.03$). In adjusted multivariate models predicting these outcomes, receiving integrated care was a robust significant predictor of lower risk of preterm delivery (OR = 0.18 [95% CI = 0.06, 0.54]) and fewer days of infant hospitalization (IRR = 0.55 [95% CI = 0.41, 0.73]). Number of cigarettes per day at delivery also significantly predicted days of infant hospitalization. (IRR = 1.03 [95% CI = 1.01, 1.06]).

Conclusion: Pregnant women with OUD receiving integrated treatment and their infants achieved better outcomes than women receiving standard, non-integrated treatment. Further research with larger and more diverse samples is needed to compare outcomes of integrated and non-integrated models, and to understand the mechanisms through which integrated treatment may improve outcomes for pregnant women with OUD and their infants.

Interprofessional SUD and SBIRT Training for Health Professions Students

Presenter(s) Are:
Lucas G. Hill, PharmD, BCPS, BCACP
John R. Moore, MSW

Introduction: Foundations for Interprofessional Collaborative Practice is a course at The University of Texas at Austin that brings together students from the Dell Medical School, College of Pharmacy, School of Nursing, and Steve Hicks School of Social Work. In this course, interprofessional student teams complete a series of three-hour modules that expose them to interprofessional education collaborative competencies and clinical concepts. Since the introduction of this year-long course in the fall of 2016, one of the core modules has been focused on addiction. The addiction care module provides foundational knowledge regarding substance use disorder (SUD) and engages student teams in a simulated patient interaction to apply a clinical model of screening, brief intervention, and referral to treatment (SBIRT). The value of an interprofessional, team-based approach to patient care is emphasized. The role of stigma as a barrier to the provision of effective, compassionate care is also discussed at length.

Methods: In each of the first three years of the course (2017–2019), an assessment of addiction-related knowledge and stigma was administered to students before and after the addiction care module. The assessment included four multiple-choice items to evaluate knowledge and four Likert-scale items to evaluate stigma. The assessment also included two multiple-choice items to evaluate whether the students had personal or professional experience with addiction. Chi-squared tests were used to analyze nominal variables and independent t-tests were used to analyze continuous variables due to limitations in the data collection instrument that prevented accurate pairing of pre-/post-assessment data.

Results: A total of 868 students completed the pre-assessment and 806 students completed the post-assessment. After completing the addiction care module, students demonstrated a significant increase in mean cumulative knowledge scores on a scale of 0–4 (2.58 vs 1.98, $P < 0.001$) and a decrease in mean cumulative stigma scores on a scale of 4–20 (8.18 vs 9.12, $P < 0.001$). These trends were consistent across all four professions with the largest increase in knowledge occurring among social work students and the largest decreases in stigma occurring among nursing students. After training, students were more likely to report having personal experience with addiction among their family, friends, or self (65.1% vs 45.8%, $P < 0.001$) and professional experience working with persons suffering from addiction (35.0% vs 26.0%, $P < 0.001$). Students who reported having personal experience demonstrated higher levels of knowledge and lower levels of stigma on both pre- and post-assessments compared to students without personal experience. Students who reported having professional experience demonstrated similar levels of knowledge and lower levels of stigma on both pre- and post-assessments compared to students without professional experience.

Conclusion: An interactive three-hour addiction care module focused on SUD and SBIRT training for health professions students increased knowledge and decreased stigma related to addiction. Conducting this training in an interprofessional environment presented a unique opportunity to develop a shared mental model for team-based addiction care with the potential to support enhanced collaboration in future clinical practice.

Is Homelessness or Housing Insecurity a Barrier to Effective Addiction Treatment?

Presenter(s) Are:
Darcie Moeller, MD
Juleigh Nowinski-Konchak, MD, MPH

Introduction: Studies have shown that homeless people frequently have unmet medical needs and difficulty accessing medical care. These individuals often have significant competing needs that can take precedence over medical

care, such as food, shelter, and safety. It is well documented that homeless individuals have a higher prevalence of substance use disorders as compared to the general population. It seems logical that the same barriers homeless individuals face in accessing medical care would affect their ability to engage in treatment for substance use disorders. In this study, we investigate whether patients with homelessness or housing instability have reduced success with opioid use disorder (OUD) treatment compared to people with stable housing.
Methods: This is a retrospective study examining the relationship of housing status to treatment retention and outcomes in patients engaged in Cook County Health's (CCH) evidence-based OUD treatment program. 830 patients were initiated in OUD care at CCH from April 2018 to April 2019. Chart review was used to collect data on initiation date, date(s) of followup appointments, housing security, demographics, and illicit opioid use in the month preceding each visit. We assessed retention in care using continuous days of prescribed buprenorphine (allowing 30 gap days), and performed comparisons across housing categories using the Chi2 test. Success in treatment was assessed using self-reported heroin use in the previous 30 days (>10 days, 4–10 days, 1–3 days, 0 days) among 216 (26%) patients who completed at least one OUD care follow-up assessment.
Results: Among our high-risk population of patients, recruited across the jail-based and community-based settings serviced by CCH, we assessed 4 levels of 30-day housing status: in unstable housing or street homeless (homeless, 13%), stably housed but worried about losing housing (housing insecure, 66%), staying in a residential treatment center or therapeutic community (residential treatment, 13%), or not housing insecure (8%). Our sample was 59% male, 59% Black, and 9% Latinx. 92% of our sample were between the ages of 25 and 64.The proportion of patients reporting->10 days of heroin use in the previous month decreased across intake (at day 0), progress assessment 1 (at median days (IQR), 64 (39, 130)), and progress assessment 2 (at median days (IQR), 126 (84,196)) regardless of housing status (homeless, 80%, 0%, 0%; housing insecure, 67%, 18%, 18%; residential treatment, 49%, 0%, 0%; not housing insecure, 44%, 7%, 0%). Retention in treatment at 30 days was comparable between housing status groups (homeless 68%, housing insecure 65%, residential treatment 74%, not housing insecure 63%, $P = 0.40$) However, at 60 days, housing status was negatively associated with retention in treatment (homeless 47%, housing insecure 51%, residential treatment 69%, not housing insecure 54%, $P = 0.02$).
Conclusions: Our analysis suggests that housing insecurity and homelessness are possible barriers to early retention in opioid recovery treatment, but not to success in treatment. Efforts to remove barriers to access and early engagement in treatment may mitigate some of the outcomes disparity associated with homelessness.

Key Considerations for Planning Adolescent Substance Use Treatment: A Delphi Process
Presenter(s) Are:
Sean Grant, DPhil, MSc
Eric Pedersen, PhD
Background: Over 1.6 million adolescents in the US are estimated to meet criteria for substance use disorders (SUDs). While promising treatments for reducing the negative effects of SUDs are available, key stakeholders can have differing views regarding the information that should inform decisions about adolescent substance use treatment. This study aimed to identify the biopsychosocial needs, treatment goals, and feasibility concerns that different stakeholders consider the most important for informing decisions about adolescent substance use treatment.
Methods: We conducted an online modified-Delphi process with 188 participants from four stakeholder groups: providers of adolescent substance use treatment (n = 77); policymakers at the clinic, health-system, state, or federal levels (n = 53); researchers of adolescent substance use treatment (n = 32); and parents of adolescents who have received substance use treatment (n = 26). Participants rated the relative importance of specific needs, goals, and concerns for deciding the appropriate level of care for an adolescent entering substance use treatment. We used needs from the Global Appraisal of Individual Needs-Initial (GAIN-I) that map onto the American Society of Addiction Medicine (ASAM) Criteria, treatment outcomes from the Substance Abuse and Mental Health Services Administration (SAMHSA) National Outcome Measures, and feasibility concerns nominated by the participants themselves. Participants rated the relative importance of needs, goals, and concerns on a Likert scale from 1 (lower importance) to 9 (higher importance). We used the RAND/UCLA Appropriateness Method to determine which needs, goals, and concerns reached consensus in all four panels as highly important to inform level of care decisions for adolescent substance use treatment.
Results: Stakeholders identified several constructs as important to adolescent substance use treatment planning: individual adolescent characteristics unrelated to substance use, substance use and related behaviors, the environment in which an individual resides, desired treatment outcomes, clinician/treatment-planner behaviors, characteristics of substance use treatment settings, and barriers to and facilitators of access to affordable and high-quality care. The highest-rated biopsychosocial needs reaching consensus for importance in all panels were presence of suicidality, frequency of substance use, presence of behavioral withdrawal symptoms, and SUD severity. The highest-rated treatment goals reaching consensus for importance in all panels were reduction in substance use, reduced SUD symptom severity, and improved mental health. The highest-rated feasibility concerns were access to care, quality of care, a strong therapeutic alliance between provider and adolescent, adequate insurance coverage for adolescent substance use treatment, coordination of care across all service sectors, and taking a holistic approach to deciding treatment that is patient-centered and involves shared decision-making.
Conclusions: Stakeholders from varying perspectives have important insight into what factors may be most important to consider when planning treatment for adolescents with SUDs. Stakeholders in this study consistently emphasized considering substance use severity, co-occurring mental health, and access to continuous high quality care as part of treatment planning. Future research, policy, and practice can use these findings to develop, evaluate, and implement decision rules as part of treatment planning for adolescent SUDs.

Latent Classes of Youths' Nicotine Use and Association with Nicotine Dependence
Presenter(s) Are:
Carol J. Boyd, PhD, MSN, RN, FAAN
Philip T. Veliz, PhD
Introduction: Increasing numbers of adolescents living in the U.S. are vaping nicotine products; their numbers doubling between 2017 to 2019. While the scientific community acknowledges this increase in adolescents' vaping, it is unknown which adolescents who vape nicotine are developing tobacco use disorder symptoms. Using latent class analysis (LCA), we sought to examine the heterogeneity of adolescents' nicotine/tobacco use trajectories, including vaping and other nicotine products and their possible combinations, to determine the association between each trajectory class and risk of nicotine dependence and possible differences among demographic subgroups.
Methods: To meet the aforementioned aim, we used three waves of the Population Assessment of Tobacco and Health (PATH) Study data from adolescents (12–17 years old at Wave 1) and conducted a secondary analysis of those adolescents who stated they used a nicotine/tobacco product in the past 30 days. The PATH Study implemented a four-stage, stratified area probability sample design. Three waves of PATH Study data produced a sample of 1,101 youth (12–17 years old) who were nicotine/tobacco users at any wave. Nicotine/tobacco use was determined by asking adolescents about past 30-day use and frequency. A five latent class solution resulted: (1)"Stable/consistent multiproduct use trajectory" (n = 80), (2)"Increasing cigarette use trajectory" (n = 115), (3)" Increasing e-cigarette use trajectory" (n = 214), (4)"Experimental (poly-tobacco/nicotine) use trajectory" (n = 373), and (5)"Increasing other nicotine/tobacco use trajectory" (n = 319). Past-year nicotine/tobacco dependence was assessed with six items from the Wisconsin Inventory of Smoking Dependence Motives (WISDM-68).

Results: All types of past 30-day nicotine/tobacco use increased across the three waves. The most prevalent was the ''Experimental (poly-nicotine/tobacco) use trajectory'' (33.3%). Those represented by the ''Increasing cigarette use trajectory'' reported significantly more past-year nicotine dependence symptoms compared to the ''Increasing e-cigarette use trajectory''.
Logistic regression analyses were conducted with sociodemographic characteristics and trajectories. Females had higher odds of being in either the ''Increasing cigarette use trajectory'' or the ''Experimental (poly-nicotine/tobacco) use trajectory'' compared to males; however, females had lower odds of being in the ''Stable/consistent multiproduct use trajectory'' and ''Increasing other nicotine/tobacco use trajectory''. African Americans had lower odds of being in the ''Increasing e-cigarette use trajectory'' when compared to White respondents, while they had higher odds of being in the ''Increasing other nicotine/tobacco use trajectory''. There were some socioeconomic status and regional differences as well as differences in other substance use.
Conclusions: Our study differs from other research because we examined the heterogeneity of adolescents' nicotine/tobacco use to determine latent classes associated with symptoms of nicotine dependence. With LCA, we accounted for all current nicotine/tobacco users in our analyses and thus, we were able to demonstrate that several nicotine/tobacco user trajectories had a greater risk of nicotine dependence compared to only e-cigarette users. We found that adolescent nicotine/tobacco users are a heterogenous group with different risks for nicotine dependence. Since nearly all nicotine/tobacco use begins in adolescence and early adulthood, understanding the different use trajectories and their relationship to nicotine dependence will help clinicians tailor their educational messages and more precisely determine appropriate secondary prevention for at-risk youth.

Managing Gabapentin Dependence and Withdrawal: A Case of Extraordinary Tolerance
Presenter(s) Are:
Harithsa S. Asuri, MD
Niranjana Chellappa, MD
Gabapentin, an antiepileptic drug found to be useful in the relief of neuropathic pain, has become a staple of chronic pain management. Over the last decade, there have been several reports of gabapentin tolerance, dependence, and misuse. There is an increasing concern that the drug is not as benign as initially thought and has now been scheduled as a controlled substance in two states. The extent of this problem has not yet gained widespread recognition and the management has little description in literature. We present a remarkable case of gabapentin dependence and a novel method to manage withdrawal.
A 31-year-old male with a history of polysubstance dependence presented with fever, myalgias, and weakness following the abrupt cessation of gabapentin intake. He had been on the drug for 13 years for back pain after developing an opioid use disorder on long-acting oxycodone. Over time, he developed a use disorder for gabapentin as well, taking as much as 36 grams a day (10 times the recommended maximum daily dose). The patient reported significant physical and psychological withdrawal on tapering and seizures with discontinuation; He expressed a wish to safely stop the drug altogether. The unprecedented degree of dependence made management challenging and an innovative plan was developed. A lower dose of gabapentin was started and tapered while overlapping with pregabalin and phenobarbital in a symptom-triggered manner in response to the Clinical Institute Withdrawal Assessment score. Divalproex sodium was added for seizure prophylaxis and olanzapine for insomnia. Gabapentin was discontinued completely within a week and he was managed as an inpatient for an additional 10 days as phenobarbital was tapered. He was discharged with pregabalin, divalproex, perphenazine and a plan for continued outpatient phenobarbital tapering. He declined further inpatient addiction treatment.
The abuse potential of gabapentinoids has been discussed in literature, but there has been little description of the management of withdrawal and cessation of the drug. Our method was based on inferring that the mechanism of action of gabapentin, although poorly understood, results in a final gabamimetic effect, similar to that observed in benzodiazepine/barbiturate use.

Marijuana, Mental Health and Social Domains of Functioning: Public Perception of Harm
Presenter(s) Are:
Christopher Rienas, MD
Salomeh Keyhani, MD, MPH
Background: Since 2007, marijuana use among US adults, especially young adults, has been increasing while the perceived risk of harm has been decreasing. Questions about risk in federally sponsored surveys like the National Survey on Drug Use and Health (NSDUH) are nonspecific. We conducted a national survey to gain an understanding of the views of US Adults toward the risks and benefits of daily marijuana use on mental health, school success, job success and relationship quality.
Methods: Four questions were developed to address gaps in knowledge from federally sponsored surveys to assess the perceived impact daily marijuana use has on mental health, school success, job success and relationships. This survey was distributed to a nationally representative online panel of 16280 US Adults aged 18 and older. Responses were weighted and categorized by age and time of last marijuana use. We combined responses and developed multivariate models to compare views of US adults who used marijuana in the last year compared to those who did not.
Results: The survey response rate was 55.3%, which did not differ by the state's marijuana legalization status. Among the respondents, 52% were women, 64% were white, 12% were black, 16% were Hispanic, and 8% were of other races. Only about 61% of US adults reported daily marijuana use harms mental health while 22% reported it improves mental health. A larger majority of respondents reported that daily marijuana use harms school success (77%), job success (75%) and relationships (69%). In each of these domains about 7% of respondents reported a benefit, while the remainder of respondents perceived that there was no effect. In all domains, young adults (age 18–35) less commonly perceived daily marijuana use as harmful compared to older adults. About 28.9% of young adults reported daily marijuana use improves mental health and 18.7% reported no effect. Using marijuana in the last year was associated with a decreased likelihood of reporting daily marijuana use as harmful to mental health (OR 0.17 95% CI [0.15, 0.19]), school success (OR 0.26, 95% CI [0.23, 0.3]), job success (OR 0.20 95% CI [0.18, 0.23]) and relationships (OR 0.16 95% CI [0.14, 0.18]).
Discussion and Conclusions: The majority of respondents more commonly perceived daily marijuana use as harmful to mental health, school success, job success and relationships, however this perception was less commonly held among the young adults and past year users. However, heavy marijuana use has been associated with poorer mental health outcomes, school performance, job satisfaction and relationship quality, with the most profound effects seen in adolescent onset users. Results from this survey and future research into understanding knowledge gaps and misconceptions in popular culture and media may help to facilitate effective communication of risks of cannabis use to the public, but especially to adolescents and young adults.

Medical and Nonmedical Prescription Opioid Use at the School-Level Among U.S. Adolescents
Presenter(s) Are:
Philip T. Veliz, PhD
Carol J. Boyd, PhD, MSN, RN, FAAN
Introduction: Adolescents' prescription opioid misuse is an undeniable public health problem. Unlike illicit drugs, prescription opioids are widely marketed, prescribed, efficacious, and common in households, although the consequences of their misuse can be as devastating as those from illicit drugs. Prescription opioid misuse is associated with the transition to heroin use, emergency department visits, and fatal overdoses. Regional and national studies reveal that adolescents often get their diverted prescription opioids from peers or their own leftover prescription. However, very few studies have

assessed how the school context influences prescription opioid misuse. In order to fill a critical gap in the literature, the purpose of this study was to examine how medical use of prescription opioids at the school-level is associated with current nonmedical use of prescription opioids among U.S. secondary school students.

Methods: School- and student-level data come from the Monitoring the Future survey (MTF). The MTF is an annual nationally representative survey administered to 12th grade students in the U.S. For the current analyses, a sample of 228,507 12th graders within 1079 schools that participated in the MTF survey between 2002 and 2017. The primary variables included self-reported lifetime medical prescription opioid use (i.e., had personal prescription) and past 30-day (current) nonmedical prescription opioid use (i.e. used without a prescription) that were collected at the student-level and aggregated to the school-level. All analyses were conducted with Stata 15.0.

Results: Between 2002 and 2017, the prevalence of lifetime medical prescription opioid use varied considerably across 1079 U.S. secondary schools: school-level lifetime medical prescription opioid use range = 0.0% to 85.7% (Mean = 16.9%, SD = 13.6%); school-level past 30-day nonmedical use range = 0.0% to 36.0% (Mean = 3.1%, SD = 3.0%). Lifetime medical prescription opioid use was significantly higher at secondary schools that were located in the Western and Southern region of the U.S. (when compared to the North East), schools located in suburban areas (compared to urban and rural), schools with higher proportion of White students, and among those schools with a higher proportion of students whose parents had a college degree or higher. Most importantly, secondary schools with higher rates of lifetime medical prescription opioid use (i.e., 24.0% or higher among the student body) increased the odds of current nonmedical prescription opioid use among students by over 50% (AOR = 1.55, 95% CI = 1.32, 1.83).

Conclusions: This is the first investigation to identify school-level prevalence rates and correlates associated with medical and nonmedical prescription opioid use among U.S. secondary schools. There were schools with lifetime rates of medical prescription opioid use as high as 86% and current prevalence of nonmedical prescription opioid use as high as 36%. The findings highlight the need for secondary schools to assess their own student body rather than relying solely on state or national prevalence estimates. Given the evidence that higher rates of medical prescription opioid use at the school-level was associated with individual-level nonmedical prescription opioid use, it is should be recognized that enhanced monitoring and preventive interventions that account for socio-contextual influences are needed to prevent this type of prescription drug misuse.

Medical Student Perceptions of Harm Reduction: Does Further Education Make a Difference?

Presenter(s) Are:
Eleanor W. Keller, BS
Jilan Shimberg, BA

Introduction: The opioid epidemic is among the most significant challenges facing the upcoming generation of physicians. American medical schools are beginning to acknowledge the importance of education surrounding opioid use. While most schools have introduced educational reforms aimed at providing information on the epidemic, the introduction of clinical strategies focused on harm reduction remains underutilized. The impact of harm reduction-based educational interventions must be better understood in order to facilitate a shift in medical education.

Methods: An optional educational elective on the opioid epidemic was developed and offered to all medical students. Enrolled students attended panels comprised of physicians, drug-court judges, the county medical examiner, and patients. They also attended community field experiences in Cleveland (AA meetings, visiting treatment facilities, Naloxone training, drug court, autopsy shadowing).

Attitudes toward harm reduction were evaluated using the 25-item Harm Reduction Attitude Survey (HRAS). The HRAS uses a 5-point Likert scale and has shown evidence of validity and reliability with physician populations. Data were collected on demographics, past experiences with addiction, and attitudes toward harm reduction. Students enrolled in the elective received a pre and post-test HRAS. A control group of students not enrolled in the elective completed the HRSA once. Attitudes toward harm reduction were quantified based on survey results and compared between the groups for changes in attitudes.

Results: Forty-two first-year medical students completed the HRAS. At initial survey administration, the average score for students enrolled in the elective (n = 17) was 26.29 (SD = 7.69). The average score for those not in the elective (n = 25) was 27.36 (SD = 4.86). An independent samples T-test (two-tailed) reported no significant difference between groups prior to intervention (t (40) = 0.55, $P = 0.58$).

Attitudes toward harm reduction practices of students after completing the elective (M = 22.82) were significantly more favorable compared with attitudes of students before the elective (M = 26.93; t (57) = 2.34, $P = 0.023$). Nine students in the elective completed pre and post-elective surveys. Attitudes toward harm reduction for eight of nine elective participants changed on average by 3.44 points (Min = 1, Max = 14) after the educational elective; however, results did not reach statistical significance (t (16) = 1.47, $P = 0.093$). The limited sample size was expected given the number of students enrolled in the elective and the voluntary nature of the survey.

Discussion: Our pilot study demonstrated that medical students' attitudes toward harm reduction strategies can be improved with formal education. Exposure to harm reduction strategies during medical school may better prepare students to share harm reduction strategies with patients. With the growth of opioid-related curricula in medical schools, a reliable measure of harm-reduction for medical students needs to be developed as existing measures focus on the practicing physician.

Significance: Our data support incorporating harm reduction strategies in medical school curriculum to impact future physicians' knowledge and attitudes toward these practices. We advocate for future studies assessing if changes in attitude toward harm reduction impact clinical interactions with patients.

Medical Students' Desire for Buprenorphine Training in Residency

Presenter(s) Are:
Zofia Kozak, BS
Alexander Pappas, MD

Introduction: Buprenorphine is the first drug approved for office-based treatment of opioid use disorder (OUD), but the waiver and 8-hour training required by the Drug Enforcement Administration (DEA) to prescribe it contribute to low numbers of buprenorphine providers. Although surveys of residents and program directors suggest there is a strong interest in obtaining skills needed to adequately treated OUD, few residency programs incorporate this training, posing a significant logistical challenge for residents wishing to obtain the waiver. A 2019 survey of residency program directors suggested less than a third of programs encourage or require a waiver for buprenorphine prescription, with less than a quarter of surveyed directors reporting that their program dedicates at least 12 hours to addiction medicine.3 To the best of our knowledge, no existing studies have investigated medical students' perspectives on buprenorphine training during residency. Thus, the goal of this study was to examine medical students' attitudes and beliefs about treating patients with OUD, and to what extent they look for these training opportunities when identifying potential residency programs.

Methods: A nine-question online survey was distributed to University of Maryland SOM medical students (MS1–3) via email list-serv in May 2019. Responses were collected over one week. The survey evaluated attitudes towards OUD, buprenorphine training, and career aspirations.

Results: The survey was sent out to three cohorts of medical students (474 students) with a 35% response rate (n = 167). Of those who responded, 70% reported wanting to pursue primary care and 98% agreed/strongly agreed that primary care plays an important role in addressing the opioid epidemic. With regards to buprenorphine training, 98% agreed/strongly agreed that training should be offered within a primary care residency, 89% agreed/strongly agreed that if given time in residency, they would be interested in completing the training, and 53% reported that a residency program offering

buprenorphine training would attract them to that program. Additionally, 94% endorsed that it was important to them to have training in treating OUD; however only 34% knew that there is an 8-hour training required to obtain the Bupe-X waiver to prescribe buprenorphine. All respondents agreed that buprenorphine training should be either required and incorporated into residency (60%), or optional but embedded with protected time (40%).

Conclusions: The national shortage of buprenorphine providers impedes access to care for patients suffering from OUD and contributes to the ongoing opioid epidemic. Expanding buprenorphine training in residency programs may reduce the shortage of providers and our data suggest that medical students highly value this training opportunity. Residency programs should consider trainee interests and provide opportunities for their residents to receive buprenorphine training, particularly given the favorable impact this may have for expanding access to treatment.

Medical Students Inadequately Prepared to Work With Patients who Use Drugs

Presenter(s) Are:
Jasmine Landry
Leah Miller-Lloyd

Background: Feeling judged by clinicians is a significant barrier to care for people who use drugs (PWUD). Resident physicians tend to develop more stigmatizing attitudes toward PWUD throughout their training, while satisfaction in treating this population decreases. However, physicians who feel more prepared to treat SUD have more favorable attitudes toward PWUD and are more likely to provide evidence-based clinical care. Here we evaluate perceived preparedness and attitudes among medical students.

Methods: All medical students at Albany Medical College (n = 560) were recruited to take the Drug Problems Perceptions Questionnaire (DDPPQ), a survey designed to evaluate providers' confidence in and attitudes towards working with PWUD. The 20-item survey is scored on a 7-point Likert scale, where lower response scores represent a more positive answer (toward "strongly agree").

Results: 396 students (70.7% response rate) completed the survey in a two month data collection period. The percentage of students who agree (score = 3) with questions assessing confidence in knowledge and skills surrounding working with patients who use drugs increased with each class from first year medical students to fourth year students. In measures of role adequacy, 57% of fourth-year students felt confident counseling patients who use drugs, which is a greater proportion than the 36% of first year students. Similarly, 34% of fourth-year students did not feel knowledgeable enough about substance use disorder (SUD), and 36% felt they did not understand the risk factors associated with substance use disorder. Forty-four percent of fourth-years do not feel they could easily find a mentor to help refine their approach to working with patients who use drugs. Forty-eight percent of all students do not feel it is rewarding to work with patients who use drugs, including 45% of fourth-year students.

Conclusions: A substantial proportion of medical students do not feel prepared to work with patients who use drugs. Though knowledge scores improve over time, over one-third of fourth-year students, soon to graduate, do not feel they have an adequate education on this topic. Improvement of medical education regarding SUD includes improving knowledge and training on how to counsel patients with substance use. More importantly it entails changes in the "hidden curriculum", in which students witness stigma perpetuated by resident and attending physicians.

Medical Students Show Attitude Changes After Completing MAT Waiver Training

Presenter(s) Are:
Leah Miller-Lloyd
Jasmine Landry

Introduction: Medication treatment (MAT) is first-line treatment for opioid use disorder (OUD); buprenorphine is ideal for many patients given its high efficacy, good safety profile, and prescription in the outpatient setting. However, only 2.2% of U.S. physicians have the DATA 2000 waiver required to prescribe medication, including only 3.0% of primary care physicians and 16% of psychiatrists. Waiver training for medical students could bypass many barriers established physicians face, such as lack of flexible time, while improving students' OUD education.

Methods: Twenty-six medical students completed waiver training in October 2019 and were surveyed on knowledge, attitudes, and motivations to treat OUD before and after the 4-hour in-person training. The survey was adapted from a survey created at Harvard Medical School, combining aspects of the Buprenorphine Attitudes, Intentions, and Confidence Scale; the Medical Condition Regard Scale; and the Drug and Drug Problems Perceptions Questionnaire. Comparisons were made between pre- and post-training scores using independent samples t-tests. A control group (n = 29) not attending training was also compared to students attending the training (pre-training).

Results: After training, students had significantly better understanding that OUD is a treatable condition ($P = 0.008$) and felt more prepared to treat OUD ($P = 0.001$), and felt less that these patients were difficult to work with ($P = 0.049$). Students also had an increased intent to prescribe buprenorphine in their future clinical practice.

Compared to student participants pre-training, control students reported lower preference in working with patients with OUD ($P = 0.027$), were more likely to feel there is little they can do to help ($P = 0.024$), had more concerns about buprenorphine diversion ($P = 0.003$), and were less likely to intend to obtain the DATA waiver ($P = 0.000$).

Conclusion: Medical students who attended the training showed improved knowledge about OUD and attitudes regarding working with patients with OUD. A control group of students who did not sign up for the training reported more negative attitudes about working with these patients and less understanding of the role they can play in treatment of OUD. Many of the students not pursuing training may benefit from the knowledge and attitude changes we observed after training. Given the continued opioid crisis and dearth of MAT prescribers in most communities, getting students prepared for and excited to care for people with substance use is an important step in improving patient-access and the culture of medicine.

Medication Improves Treatment Retention in Adolescents with Opioid Use Disorder

Presenter(s) Are:
Carrie M. Mintz, MD

Background: Adolescents with opioid use disorder (OUD) are less likely than their adult counterparts to receive medication treatment. Whether this age disparity affects treatment retention for adolescents with OUD has not been previously studied.

Objective: This study examined (1) the association between age and OUD treatment retention at six months and (2) whether age disparity in treatment retention was explained by disparities in medication treatment by age.

Method: We used a national insurance database with OUD treatment claims from 2006 through 2016 to conduct this retrospective study. We examined OUD treatment episodes from 4,979 adolescents (ages 12–17), 76,229 young adults (ages 18–25) and 180,148 older adults (ages 26–64). Treatment type was defined as receiving psychosocial services only, naltrexone, or buprenorphine. The primary outcome was six-month treatment retention. Logistic regression was used to model retention prevalence for each age group while adjusting for covariates in partially-adjusted models. Treatment type was added to fully-adjusted models to determine if treatment type affected the association between six-month retention and age. To examine the effectiveness of type of treatment within each age group, analyses were stratified by age group and adjusted odds ratios for each type of treatment were compared.

Results: Prior to adjusting for treatment type, there was a clear age disparity in six-month retention such that adolescents were significantly less likely to be retained compared to their adult counterparts: estimated retention

prevalence was 17.6% (95% CI 16.5–18.7%) for adolescents, 25.1% (95% CI 24.7–25.4%) for young adults, and 33.3% (95% CI 33.0–33.5%) for older adults. After adjusting for treatment type, however, age-related disparities were markedly reduced. For example, within the buprenorphine treatment group, adjusted retention prevalence estimates were 40.4% (95% CI 36.9–44.0%) for adolescents, 39.9% (95% CI 39.4–40.4%) for young adults, and 49.4% (95% CI 49.1–49.8%) for older adults. Buprenorphine was the most effective treatment type for six-month retention within each age group examined. For example, within the adolescent group, the odds of retention at six months for those who received buprenorphine was 7.5 (95% CI 6.1 to 9.3) times as high as the odds of retention for those who received psychosocial services only, and 1.7 (95% CI 1.3, 2.3) times as high the odds of retention for those who received naltrexone.

Conclusions: Age disparities in six-month OUD treatment retention are largely a function of age disparities in medication treatment. Results point to need for improved implementation of medication treatment for persons with OUD, regardless of age.

Men's Substance Use During the 1st Year Transition to Fatherhood

Presenter(s) Are:
Alicia Boykin, MD, MS
Kelley Jones, PhD, MPH

Introduction: The transition to fatherhood is associated with both positive and negative life changes. A man's use of alcohol and other drugs significantly affect his health and fathering activities. The current study investigates differences in substance use (alcohol and illicit drugs) between younger and older fathers during pregnancy and the first year of fatherhood.

Methods: The study sample is from the Fragile Families and Child Well-being Study, which represents medium and large urban cities in the U.S. Paternal baseline use of alcohol and other substances (i.e., marijuana, crack, cocaine, heroin) were measured before delivery (during the last trimester of pregnancy) and during first year of fatherhood (in the last 30 days of the first year of fatherhood). We generated descriptive statistics based on pre-determined paternal age groups. We used Chi-square test to compare categorical variables, substance use before delivery and substance use during the first year of fatherhood between young fathers (< 21 years) and each older age group. We used Chi-square test to compare the percentage of fathers who continued, transitioned into or out of substance use following pregnancy.

Results: The sample consisted of 3031 fathers ages 15–53 (27.86, SD 7.13). There were 431 fathers in the youngest age group (< 21 years of age); 1105 ages 21–26, 1025 ages 27–35, and 470 ages 36 and older. The majority were Black (34%) or White (30%), married (54%), of higher socioeconomic status (40% $\geq$ 300% poverty level), attended college (46%), and employed (85%). Overall, 68% used alcohol before delivery, 61% used alcohol during the first year and less than 10% used drugs before delivery or during the first year of fatherhood. Young fathers (< 21 years of age) had lower alcohol use before delivery (54% vs 71%, $P < 0.05$) and during the first year (48% vs 68%, $P < 0.05$) com-pared to slightly older fathers (27–35 years old), however, twenty-percent of the youngest fathers started using alcohol during the first year. Of the youngest fathers who were using alcohol before delivery, the majority (71%) continued during the first year. There were no differences in alcohol use transitions during the first year regardless of age. Young fathers had higher frequencies of drug use before delivery (16% vs 2%, $P < 0.05$) and during first year (10% vs 2%, $P < 0.05$) compared to fathers over the age of 35. Fathers < 21 years of age were more likely to initiate drug use during the first year compared to fathers ages 27–35 years (6% vs 4%, $P < 0.05$).

Conclusion: Substance use during the first year of fatherhood may change for men. Young fathers are at risk for initiation of alcohol use and drug use during the first year of fatherhood. Increasing outreach to engage men during the first year of fatherhood allows clinicians to diagnose substance use disorders early, optimize delivery of treatment, reduce risk behaviors, and improve both paternal and ultimately family health. Future studies should explore the appropriate timing and delivery of interventions aimed to reduce or prevent paternal substance use during the first year of fatherhood.

Mobile Recovery Unit: Treatment Interests in a Population Struggling with Homelessness

Presenter(s) Are:
Rashaad-Dreana Jett
Ian Latham

Introduction: Stigma and social factors contribute to barriers for individuals struggling with opioid use disorder. These factors are often amplified in marginalized populations. Begin the Turn is a mobile recovery unit staffed by multi-disciplined professionals who provide behavioral health, case management, outreach services, as well as buprenorphine services street-side in the Kensington area of Philadelphia. In building the program, we characterized interest in the treatment and social needs of individuals struggling with opioid use disorder and homelessness.

Methods: We conducted a community-based survey of individuals engaging with Begin the Turn outreach team over a 6-month period: January to June 2019. Areas of high rates of overdose and overdose deaths, based on data from the City of Philadelphia, were identified as survey sites. We analyzed frequencies of identified demographics, patient characteristics, social needs, and interest in treatment services.

Results: Among 209 respondents, 63% were male and 51% identified as non-white. Housing was the most commonly identified need (78% of respondents), followed by food (40%) and medical (39%). 66.5% of respondents reported active insurance with 77.5% being interested in buprenorphine treatment and 95.7% of those with reported inactive insurance interested.

Conclusions: Despite stigmatizing perceptions including lack of interest in treatment, individuals report high rates of interest in buprenorphine treatment. Begin the Turn aspires to break down the dehumanization that individuals struggling with substance use disorder and concomitant homelessness face within other treatment systems. Targeted interventions to address the need for opioid use disorder treatment among homeless populations will need to not only focus on financial insecurity but also the myriad other challenges that accompany homelessness.

Mortality Risk Following Naltrexone Discontinuation: Systematic Review and Meta-Analysis

Presenter(s) Are:
Daniel J. Bromberg, MSc
Adam Viera, MPH

Introduction: Naltrexone is an opioid antagonist used to treat opioid use disorder (OUD). Naltrexone is generally compared to agonists therapies, chiefly methadone and buprenorphine. Mortality related to discontinuation of opioid agonist therapy has been the topic of three meta-analyses. Meta-analysis of mortality related to naltrexone discontinuation was conducted in 2017, using two studies. Articles that included mortality data but could not be included in the meta-analysis were not reported in this previous review. The present paper aims to systematically review all peer-reviewed evidence on mortality risk after naltrexone discontinuation for people living with OUD, create an updated meta-analysis of eligible articles, and qualitatively report findings for all included articles.

Methods: Building on the search in Sardo et al., a medical librarian created a search strategy to identify papers addressing mortality related to naltrexone. The search includes controlled vocabulary and keywords for each concept. The Ovid MEDLINE All search is presented here and was conducted on 12/20/2019. Similar searches were conducted in Embase, PsycINFO via Ovid, and Virtual Health Library. Two reviewers reviewed all titles and abstracts to identify potentially relevant studies. Inclusion criteria followed the precedent set by Sordo, et al. After full-text review, mortality data after discharge from naltrexone treatment were abstracted. A random-effects model calculated pooled-estimates of crude mortality rate (CMR) after discharge from naltrexone treatment, based on the precedent set by Degenhart and colleagues 2010.

Results: Eight studies met inclusion criteria and five studies were eligible for meta-analysis. The random-effects model found a pooled CMR of 2.96 (95% CI:0.50–5.43) per 100 person years; meaning that, on average, it is expected that 2.96% of OUD patients leaving naltrexone treatment will experience mortality. Qualitative synthesis found that, when compared, the mortality risk associated with naltrexone was generally higher than that for agonist therapies. Two studies, found that patients leaving naltrexone were five to eight times more likely to experience mortality than patients leaving agonist treatments. Four studies report low mortality rates among patients discharged from naltrexone therapy, though these studies did not compare naltrexone with other therapies. Reece, et al. 2010 is an exception as they found that the CMR for leaving naltrexone (0.389 per 100 person-years) was somewhat lower than that for leaving buprenorphine therapy (CMR: 0.579 per 100 person-years). This study included only naltrexone implant patients.
Conclusion: The pooled CMR after naltrexone cessation found here is comparable to, and somewhat higher than, previous findings (CMR 1.97 per 100 person-years; 95% CI:−1.23–5.18) (3). This is also similar and somewhat higher than CMR previously found for opioid agonists (CMR 1.79 per 100 person-years; 95% CI:1.47–2.10). There is indication from qualitative synthesis that mortality associated with discontinuation of naltrexone is higher than that of agonist treatments; however, the relative dearth of published data on this topic limits the potential for robust meta-analysis. That Reece, et al. found a lower CMR for patients given naltrexone implants vs. buprenorphine implies there might be differences in mortality related to drug delivery method.

Multidimensional Recovery Among an Urban Opioid Use Disorder Treatment Population
Presenter(s) Are:
Anna B. Parlier Ahmad, MS
Lori Beck
Background: The response to the opioid crisis has focused primarily on prevention and harm reduction. Recovery has received less attention. Recovery from substance use disorders is not simply abstinence; it is ''process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential.'' SAMHSA's working definition of recovery highlights four dimensions that support recovery including health, home, community, and purpose. Recovery capital captures individual factors that support recovery within these dimensions and has been associated with recovery outcomes. Additionally, prior research has highlighted possible gender differences in recovery outcomes. A better understanding of recovery capital among an opioid use disorder (OUD) outpatient treatment population is needed to guide the development of recovery-based systems of care.
Objective: 1) To describe and compare the recovery capital among an OUD outpatient treatment population by gender using SAMSHA's four dimensions of recovery; 2) To identify the relationship between recovery capital and length of time in treatment within this population.
Methods: Patients were recruited from a single outpatient substance use treatment clinic to complete a voluntary, electronic, cross-sectional survey between July and September 2019. The Brief Assessment of Recovery Capital (BARC-10) was used to assess components of recovery. Total scores range from 10 to 60 (1–6 each item) with higher scores indicating higher recovery capital. Items were categorized into recovery dimensions of health, home, community, and purpose. Participants who were taking medication (buprenorphine) for OUD and completed the BARC-10 were included in this study (n = 126). Social support was measured by the Medical Outcomes Study Social Support Survey. Length of current treatment episode was abstracted from Virginia's Prescription Monitoring Program. Descriptive statistics were calculated. Chi square and Mann Whitney-U were used to test differences by gender. Multivariate linear regression was conducted to identify relationship between BARC-10 total score and length current treatment episode while controlling for psychosocial factors and number of previous treatment episodes.
Results: Overall, 126 participants were included in the study (97% response rate): 45.3% men and 54.7% women. Most identified as Black (67.7%) and were single (69.0%). Compared to men, women were younger (38.87 ± 11.31 vs. 47.07 ± 12.12; $P < 0.001$) and more likely to be unemployed (60.9% vs. 42.1%; $P = 0.037$). Across gender in the past year, 37.3% of participants experienced homelessness and 55.6% experienced food insecurity. Mean total BARC-10 score was 45.08 (±9.73) and did not vary by gender. Several individual items of the BARC-10 within the purpose recovery dimension differed by gender ($P < 0.05$). Length of current treatment episode did not significantly predict BARC-10 total score ($P = 0.599$). Higher mean social support score was associated with higher BARC-10 total score ($P < 0.001$).
Conclusions: Individuals receiving medication (buprenorphine) for OUD can initiate and sustain recovery. Within the study sample, recovery capital was high and gender differences were minimal. More work is needed understand and improve the utility of recovery capital in clinical practice and to identify effective interventions across recovery dimensions.

Naltrexone for Opioid-Dependent Adolescents - a Bridge in The Treatment Gap?
Presenter(s) Are:
Matthew LaCasse, DO
Joanna Quigley, Dr
Introduction: Adolescents use heroin as well as prescription opioids. Almost 1% of US 12th graders have used heroin in their lifetime and 6% have used narcotics other than heroin; 3.4% are doing so annually. Unfortunately, access to care for adolescents and young adults with opioid use disorder appears to have decreased between 2009 and 2018; a time when opioid-related deaths increased. Naltrexone is a mu opioid receptor antagonist which blocks the effects of opioids, prevents intoxication and physiologic dependence. Here, we will present the literature on the use of naltrexone for adolescents with opioid use disorder.
Methods: Electronic databases including PubMed, psychINFO, the National Institute on Drug Abuse (NIDA) Clinical Trials Network Dissemination Library, NIDA Data Share, and Cochran Reviews were searched for scientific literature addressing the use of naltrexone in adolescents with opioid use disorder. The references of relevant literature were also assessed for inclusion.
Results: Three scientific articles were found to meet inclusion criteria. A retrospective case-series review (n = 8, ages 15–19 [n = 3 < 18 years]) in Australian hospitals suggested less overdose events after the implantation of extended release naltrexone (ER-NXT). A retrospective cohort study assessing United States Medicaid data (n = 4837, ages 13–22 [728 < 18 years]) found significantly improved retention rates for those youth receiving naltrexone compared to behavioral services alone. A case series (n = 16 ages 16–20 [7 < 18 years]) utilizing ER-NXT at a community treatment center found 10 of 16 patients remained in treatment for 4 or more months, 9 of 16 had a ''good outcome'' defined as substantially decreased opioid use, improvement in at least one psychosocial domain and no new problems due to substance use. Naltrexone was considered well tolerated and a more ''definitive'' treatment compared to behavioral services alone.
Conclusion: Preliminary data suggests improved risk of overdose events, retention in treatment, and improved outcomes with the use of extended release naltrexone (ER-NXT) for youth struggling with opioid use disorder. There is, however, very little data available to further assess naltrexone use in opioid dependent adolescents. To date, there are no published randomized controlled trials directly accessing naltrexone's efficacy and tolerability in this population. Further assessment could improve much needed access to treatment.

One-Year Hepatic Safety with Buprenorphine Extended-Release for Moderate-to-Severe OUD
Presenter(s) Are:
Sunita Shinde, MD
Yue Zhao, MD
Background: Buprenorphine extended-release (BUP-XR [RBP-6000]) is a monthly subcutaneous injectable treatment for opioid use disorder (OUD). Safety of BUP-XR was evaluated up to 12 months.
Methods: Adults with moderate-to-severe OUD enrolled in a Phase III double-blind (DB), placebo-controlled trial received 6 doses of BUP-XR

300 mg (n = 201), 2 doses of BUP-XR 300 mg followed by 4 doses of BUP-XR 100 mg (n = 203), or 6 doses of placebo (n = 100). 1 An open-label (OL) study enrolled 257 participants from this trial (Rollover group) and 412 participants naïve to BUP-XR (De Novo group). Both groups received an initial dose of BUP-XR 300 mg plus up to 5 (Rollover) or 11 (De Novo) monthly doses of 300 mg or 100 mg. Hepatic disorder treatment-emergent AEs (TEAEs) and liver function tests (LFTs) were evaluated; exposure-response analyses assessed the relationship between buprenorphine plasma concentration and the probability of elevated LFTs.

Results: Among participants receiving BUP-XR in the DB study and De Novo participants in the OL study, the incidence of hepatic disorder TEAEs was lower in the second 6 months compared to the first 6 months. No serious hepatic disorder TEAEs occurred. Incidences of elevated LFTs did not increase from the first 6 months to the second 6 months of treatment. Elevated LFTs were observed in participants with underlying co-existing hepatic illness or who were taking medications known to elevate liver enzymes. Only 6 of 868 (0.69%) participants discontinued due to elevated LFTs, 5 in the first 6 months and 1 in the second 6 months. No case of drug-induced liver injury was reported. Overall, exposure-response curves for LFTs were flat within the observed buprenorphine plasma concentration range.

Conclusions: For participants who received monthly BUP-XR for up to 12 months, hepatic elevations did not worsen over time, and no new safety signals emerged. These data support the use of BUP-XR as a long-term treatment for OUD.

Open-label Study Evaluating Engagement With Prescription Digital Therapeutics for SUD

Presenter(s) Are:
Krista Hill, PA-C
Audrey Margaret Kern, MD, DFASAM

Background: Prescription Digital Therapeutics (PDTs) are a new class of therapeutic delivering evidence-based disease treatment via mobile devices. PDTs have great potential to enhance treatment outcomes and improve access to CBT. reSET and reSET-O are FDA market-authorized PDTs for Substance Use Disorder (SUD) and Opioid Use Disorder (OUD), respectively. Both PDTs deliver disease-specific therapy via the following mechanisms of action: cognitive behavioral therapy modeled on the Community Reinforcement Approach (CRA), fluency training and contingency management. This study was conducted to evaluate engagement and satisfaction with reSET and reSET-O, as patient engagement and satisfaction with substance use treatment correlate with positive outcomes including retention in treatment.

Methods: This open-label study (Hassman Research Institute) enrolled 34 outpatient participants with SUD (n = 17) and OUD (n = 17). Participants received reSET (90 days) or reSET-O (84 days) with biweekly therapist appointments and urine drug screens (UDS). Participants were asked to complete 4 PDT therapy lessons each week and were prompted to self-report substance use/non-use every 4 days by their assigned PDT. All participants with OUD received buprenorphine. Surveys and/or structured qualitative interviews were performed at baseline, week 4 and week 12 to evaluate satisfaction with reSET or reSET-O. Interview responses were analyzed for common themes and engagement (e.g. PDT usage) was quantified from user activity logs. Median number of Patient self-reports was quantified to evaluate feature engagement and the concordance between UDS and self-report data was evaluated.

Results: Participants assigned reSET were 71% male, 82% African American, and 18% Caucasian with a mean age of 44 ± 15 years. Participants assigned reSET-O were 35% male, 94% Caucasian, and 6% African American with a mean age of 38 ± 10 years. All participants were motivated/very motivated to use their PDT at baseline. Continued engagement was observed throughout the study, with the majority of participants (59% reSET; 71% reSET-O) still using their PDT at week 12. Participants reported the therapeutic content was easy to understand (90%), relevant (80%), and helpful (100%). Most (>85%) participants reported practicing skills learned from therapy lessons daily or weekly. Some (13% reSET; 41% reSET-O) reported challenges incorporating reSET and reSET-O into their daily lives. Four key themes emerged as barriers to use: difficulty remembering to use the PDT, lack of time, distractions, and unforeseen events. Median number of self-reports completed were 6 for reSET participants and 7.5 for reSET-O participants. The concordance between self-reported substance use/non-use and UDS was high, 83.3% for participants assigned reSET-O and 86.3% for participants reSET, consistent with reported literature describing the reliability of the Timeline Followback method.

Conclusions: Findings of this study demonstrate high satisfaction and engagement with reSET and reSET-O. Participants practiced skills learned via the PDTs, consistent with the intent of CRA to build relapse prevention skills. The observed concordance between self-reports and objective UDS data suggests PDTs offer a reliable method of capturing substance use/non-use data.

OUD and Physician Assistants: Integrating OUD & MAT training into PA Curriculum

Presenter(s) Are:
Sheena D. Brown, PhD, MSCR
Tia M. Solh, MSPAS, PA-C

Introduction: As medical educators navigate the public health emergency caused by opioid use disorder (OUD), integration of effective instruction to train physician assistants (PA) to recognize and manage OUD is paramount. Research has shown that PAs are more likely than physicians to prescribe opioids in outpatient and emergent settings, which highlights the need for this training. Moreover, a recent national survey of practicing PAs and PA students revealed low confidence in screening patients for OUD and using opioid prescribing guidelines. Physician assistants should be competent in recognizing, performing screening and brief intervention, and utilizing pharmacotherapy for patients with OUD. This study sought to evaluate PA students' ability to diagnose and treat patients with OUD. In addition, the association between student performance and their perceived confidence in their ability to evaluate these patients was assessed.

Methods: Sixty-seven PA students were instructed on OUD after completing their second of nine core clinical rotations; training included interviewing and counseling techniques, referral, and treatment including including medications for addiction treatment (MAT). After the third clinical rotation, students participated in a patient simulation using standardized patients with chronic pain complaints, including chronic lower extremity pain due to a past injury; chronic low back pain; and chronic pain due to diabetic neuropathy. Faculty observers used a standardized rubric addressing students' adherence to the following: address and interact with the patient in a non-judgmental manner; display empathy; avoid medical jargon; assess for baseline opioid risk; discuss risks and benefits of opioids for chronic pain; discuss universal monitoring strategies; and include the patient's perspective in the treatment plan. Possible scores ranged from 1 (needs much improvement) to 4 (done excellently). The students completed a 5-point Likert scale survey before and after the patient simulation, assessing perceived confidence in: history taking, patient education and counseling, formulating a treatment plan, discussing abnormal urine drug screen results, and overall OUD treatment knowledge base. Statistical significance was set at $P < 0.05$. Institutional review board approval was granted for this study.

Results: Clinical year PA students showed significant improvements in their perceived confidence in their patient education and counseling skills ($P < 0.001$), ability to formulate a treatment plan for patients with chronic pain complaints ($P < 0.001$), ability to discuss abnormal urine drug screen results with patients ($P < 0.001$), and their overall OUD treatment knowledge base ($P = 0.019$). Students who performed better during the patient assessment were more likely to have higher confidence in their patient education and counseling skills($r = 0.365$,$P = 0.004$), ability to formulate a treatment plan for patients with chronic pain complaints ($r = 0.326$, $P = 0.001$), and their overall OUD treatment knowledge base ($r = 0.399$, $P = 0.001$). Additionally, students who felt prepared to treat patients with OUD after the simulation were more likely to perform better during the assessment ($r = 0.389$, $P = 0.002$).

Conclusions: PA students benefit from the integration of OUD and MAT in the PA curriculum. Students with higher confidence post-patient simulation display higher competency in screening, brief intervention, and utilizing pharmacotherapy for patients with OUD. One limitation of this study is the use of a single cohort.

OUD during Pregnancy: What We Didn't Know, but Now We Do
Presenter(s) Are:
Abigail Lukasik, MS
Karena Moran, PhD

Intro: Similar to the opioid epidemic in the general population, opioid use disorder (OUD) in pregnancy has become a pressing healthcare issue nationwide. OUD may involve misuse of prescribed opioid medications, use of diverted opioid medications, or use of illicit substances such as heroin. According to the CDC, the prevalence of OUD in pregnancy more than quadrupled from 1999–2014, and numbers continue to rise. Pregnancy provides a window of opportunity for screening, brief intervention, and referral to treatment. To identify potential missed opportunities, we conducted a query of Geisinger's fully integrated electronic medical record (EMR) to review records of women who delivered at Geisinger Medical Center and had indicators of OUD within their chart. It is suspected that unknown details about these women's OUD, not contained within easily accessible, discrete data fields, may have led to missed opportunities to treat and support pregnant women in this growing epidemic.

Methods: The EMRs of 326 deliveries at Geisinger Medical Center between January 1, 2016 and August 31, 2018 were reviewed. Five categories of episodes were identified: (1) women in current OUD treatment, (2) current illicit drug use or use within the last year, (3) history of drug use over one year ago, without maintenance treatment, (4) women prescribed opioids for chronic pain, and (5) revealed drug use or relapse after delivery. We also tracked patient encounters with the health system prior to delivery including prenatal visits, OB triage admissions, and ED visits.

Results: The majority of women were currently receiving treatment for OUD (62%). Of these women, most were receiving treatment outside of the Geisinger system (66%). Eight percent of women were using chronic prescribed opioids. Twelve percent of women were currently using illicit substances or had used within the last year. Most of these women were seen for prenatal appointments throughout pregnancy (78%) and had at least one additional encounter with the ED or OB triage during pregnancy (67%). About 10% of women had a history of drug use over one year ago, without any indication of maintenance treatment. Lastly, 6% women revealed drug use or relapsed after delivery. Almost all of these women had prenatal appointments with Geisinger (95%) and many also had at least one other encounter with the system during pregnancy either in the ED or OB triage (89%).

Conclusions: Comprehensive chart reviews revealed that information necessary to fully appreciate the scope of OUD is generally documented within progress notes and not retrievable by standard data pulls or easily gleaned by a hurried chart review in the clinical setting. These findings suggest we could make modifications to the current EMR that would maximize its potential to compile accurate and pertinent information about pregnant woman with OUD that is easily accessible. Because it was discovered that many of these women had multiple encounters with the system, a more accurate patient profile could help to rectify missed opportunities for effective screening and intervention to support women with OUD in pregnancy.

Outcomes After Discontinuation of Buprenorphine Extended-release: 18 Months Later
Presenter(s) Are:
Brent Boyett, DMD, DO, DFASAM
Walter Ling, MD

Objectives: The objectives of this analysis were: (1) describe real-world patient outcomes associated with opioid use disorder (OUD) over 18 months after discontinuing buprenorphine extended release (BUP-XR, SUBLOCADE), and (2) determine whether outcomes differed among participants who received different lengths of BUP-XR treatment.

Methods: Participants in BUP-XR clinical trials (NCT023579011, NCT025100142) were eligible to participate in the Remission from Chronic Opioid Use- Studying Environmental and Socioeconomic Factors on Recovery (RECOVER) study (NCT036048613). This analysis remapped the baseline assessment time point for participants who took part in the open-label extension study (NCT02896296) such that their new baseline was the first semi-annual survey after they had discontinued BUP-XR. Participants who missed an assessment were still eligible to complete future assessments. BUP-XR duration was classified as 0–2 months (m) BUP-XR, 3–5m BUP-XR, 6–11m BUP-XR, 12m BUP-XR, or 13–18m BUP-XR. The use of further pharmacotherapy after BUP-XR discontinuation was described. Logistic regression analysis was used to estimate abstinence outcomes for each BUP-XR duration group. These models included inverse probability weights to adjust the characteristics of each BUP-XR duration group to resemble the entire RECOVER cohort.

Results: Of 533 RECOVER participants, 522 completed the remapped baseline, with 66% male, 57% white, mean age 42 years, 47% employed,77% in stable housing. Over 70% of participants responded to each follow-up assessment (n = 430 completed the 6m, n = 417 the 12m, n = 387 the 18m assessment). There were 116 participants with 0–2m BUP-XR duration at remapped baseline, 61 participants with 3–5m, 86 participants with 6–11m, 135 participants with 12m, 135 participants with 13–18m BUP-XR duration. During the 18m RECOVER period after discontinuing BUP-XR, 33% of participants reported receiving further pharmacotherapy (46% of 0–2m, 42% of 3–5m, 21% of 6–11m, 30% of 12m, 31% of 13–18m BUP-XR duration groups). Within the full cohort, 47% of participants self-reported sustained abstinence for the entire 18-month observation period. At each assessment visit, more than 65% self-reported abstinence in the past week. In regression models, sustained 18m abstinence was significantly higher for 6–11m (48%, $P = 0.008$), 12m (52%; $P < 0.001$) and 13–18m (63%; $P < 0.001$) while 3–5m was significantly lower (24%; $P = 0.001$) compared to the 0–2m (37%) BUP-XR duration group. For self-reported past week abstinence, only the 13–18m BUP-XR duration group consistently had significantly higher abstinence compared to the 0–2m BUP-XR cohort.

Conclusions: In this RECOVER cohort, almost half of the cohort sustained abstinence for 18 months after discontinuation of BUP-XR within a clinical trial. Longer duration of BUP-XR pharmacotherapy was associated with significantly greater probability of abstinence. These real-world recovery outcomes may also be attributable to further treatment and other socioeconomic and environmental factors.

Outcomes of Imbedded Tobacco Intervention for Veterans in Substance Use Treatment Program
Presenter(s) Are:
Stephanie Bertucci, LICSW, MSW
Noah Venables, PhD

Background: Historically, substance use disorder (SUD) treatment programs have struggled to offer adequate interventions for tobacco dependence. Tobacco use is a leading cause of death in individuals with psychiatric illness or addictive disorders. Additionally, tobacco use is associated with less satisfactory SUD treatment outcomes, whereas treatment of tobacco dependence supports long-term sobriety. Despite these facts, the majority of SUD treatment programs in the U.S. do not offer tobacco cessation treatment (e.g. counseling or medications). The existing literature on treatment for co-occurring nicotine dependence in SUD treatment settings are limited in many respects, they are only conducted with clients who are interested in quitting smoking at treatment entry, they are limited to one or a few sites, university affiliated, or conducted in inpatient or residential treatment programs.

Methods: The Minneapolis VA Medical Center Intensive Outpatient Program (IOP) developed an intensive tobacco cessation intervention, Tobacco Cessation & Education (TCE) group. Since August 2018, all participants accepted into IOP with co-occurring tobacco dependence were scheduled to attend the

TCE group as part of their SUD treatment. Participants were scheduled for twice weekly, 30 minute therapy groups. The group included thorough tobacco use assessment, education, motivational enhancement techniques, carbon monoxide breath test educational activity, overview of medications, and other interventions from VA approved tobacco cessation handbooks. Participants interested in nicotine replacement therapy (NRT) or other tobacco pharmacotherapies were given prescriptions within less than a week of request, often within the same day.

Results: Out of 97 TCE group participants, 24 participants (23%) successfully quit tobacco while in the program compared to 10–11% who quit in a comparable study, a study which only included program participants who were initially interested in quitting. Fifty-nine participants (61%) were prescribed tobacco cessation medications. Participants also significantly progressed through the stages of changes related to quitting tobacco use ($P < 0.001$) as measured by a 1–7 self-report variable. Discussion: Outcomes suggest that an intensive and imbedded tobacco intervention enhances motivation to quit tobacco, increases likelihood that Veterans will obtain tobacco cessation medications, and facilitates a greater percentage of Veterans actually quitting during a 4-week SUD treatment program. The TCE group may be more effective because it is providing a higher dose of treatment compared to treatment as usual (e.g. brief counseling, medications only, quit lines, online apps). Imbedding the TCE group into a SUD program results in all tobacco dependent participants receiving the intervention. Our results show that majority (57%) of those not initially interested in changing their tobacco use habit (precontemplation stage) move towards a desire to quit during treatment. Compared to similar studies in which only those initially interested in tobacco cessation are enrolled in the tobacco cessation intervention, 10–11% of participants quit tobacco use compared to our finding of 23%. This difference is evidence for including TCE group, or other tobacco cessation interventions, as part of SUD treatment programs for all tobacco users rather than an optional intervention only for those participants initially interested in changing their tobacco habit.

Overdose Education & Naloxone Distribution at Student-Run Homeless Shelter Medical Clinics

Presenter(s) Are:
Scott A. Fabricant
Michael Gerstmann, MD

Overdose Education and Naloxone Distribution (OEND) programs have become a major pillar in the fight against overdose deaths. Opioid use is prevalent in the homeless community, and so methods to target this group are needed. Building on the trust of established relationships can help increase buy-in from participants, especially those who do not frequently interact with the medical system. Student-run free medical clinics serve low-income and homeless patients, and are an established presence as a source of information and care. Therefore our goal was to test the feasibility and response to an OEND program held at student clinics on-site at homeless shelters. Free clinics run by students of New Jersey Medical School are held at two Newark shelters, one for single adults and one for women with children. Four sessions were held over a 12-month period, three at the singles shelter and one at the family shelter. The presenting team consisted of two pre-clinical students and psychiatry resident for oversight and referrals. Presentations were modified from publicly available toolkits from RWJ Ernesto School of Pharmacy and Drug Policy Alliance. Topics included overdose recognition, steps to address overdose, rescue breathing, function and use of naloxone, legal issues, treatment options, and harm reduction. Kits consisting of naloxone 2 mg/2 mL, plastic syringe, and nasal atomizer were donated by the NJ chapter of DPA, with phone number to report kit usage and request replacement. A brief survey was provided at the beginning of sessions to gauge prior knowledge of naloxone and experience with overdoses; participants were free to opt out. 40 participants were recruited over 4 sessions, including 13 participants at the family shelter and 27 (median 8 per session) at the singles shelter. In the family shelter ($n = 13$ completed surveys), 3 (23%) knew someone using opioids recreationally, 1 (8%) had witnessed a suspected overdose, 4 (31%) had familiarity with naloxone/Narcan, and 2 (15%) correctly identified naloxone as working only on opioids. At the singles shelter ($n = 18$ completed surveys), 12 (67%) knew someone using opioids and 8 (44%) had witnessed a suspected overdose, but only 7 (39%) were familiar with Narcan and 3 (18%) correctly identified target substances. Attrition of potential participants and concerns about the survey were an issue initially, but staff participation markedly improved retention and participation. In total, 25 kits were distributed to individuals (7 at family shelter, 17 at singles shelter), plus additional kits for staff. To date, no calls have been received for replacement kits. OEND sessions at the singles and family shelters were considerably distinct. At the family shelter, engagement was high but perceived need was low. Conversely at the singles shelter, perceived need was high but engagement was challenging. Over time shelter staff became more involved, which appeared to enhance participation. Important lessons such as overdose recognition, naloxone myths, and legal issues were addressed, and a number of kits went into very high-risk hands. Future sessions will include a post-survey to gauge retention and elicit feedback for further improving the experience for participants.

Palliative Care Providers of Patients with Cancer Need Primary Addiction Medicine Training

Presenter(s) Are:
Janet J. Ho, MD, MPH
Julian A. Mitton, MD, MPH

Background: Patients with substance use disorders (PWSUD) are at increased risk for developing certain cancers, and between 2% to 35% of patients with cancer have a SUD. Early palliative care (PC) is the standard of care for patients with cancer, as it improves quality of life, reduces symptom burden (80% of patients with cancer report moderate to severe pain requiring complex opioid management), and saves costs to healthcare systems. With advancements in cancer therapies prolonging lifespan, patients may now be engaged in PC for longer periods than ever before. The intersection of these events - earlier PC consults, longer life expectancies, moderate or severe pain, and increased life stressors - means that PC clinicians are seeing more patients at risk for concerning substance/opioid use or opioid use disorders. Simultaneously, prior work shows a dearth of preparedness among PC providers in caring for PWSUD: only 27% report system resources for addiction and 13% report waivers to prescribe buprenorphine-naloxone.

As part of a larger initiative to improve care for PWSUD and serious illness, our aim is to assess the need for increased primary addiction medicine training among PC specialists at one large academic cancer center through comparing provider reported concern for SUD concerns versus chart review. We also aim to describe the population of PWSUD engaged in outpatient PC and identify treatment resource needs.

Methods: We used the electronic medical record to extract all referral requests (both new and established patients) for outpatient PC appointments between June 2016-Dec. 2019 and examined responses (yes, no, or unsure) to the required referral question "concern for aberrant opioid use?" Concurrently, we identified a cohort of patients with at least one PC outpatient visit between June 2016 - Dec. 2019 and diagnosis of/ concern for SUD using ICD9/ICD10 codes and keyword search within progress notes (e.g. "substance use, substance abuse, addiction, opioid misuse, aberrant use, opioid abuse, heroin, overdose"). Manual chart reviews will be conducted to characterize demographics, SUD criteria, medical comorbidities, addiction medicine involvement, sociodemographics, and resource utilization (ED visits, admissions, outpatient visits).

Results: From June 2016 - December 2019, there were 11,310 patients referred to outpatient PC. Of these referrals, 3.8% were concerned, 5.1% were unsure, and 91% were not concerned about aberrant opioid use. In contrast, extraction via ICD code and keyword search shows 13% of patients with diagnosis/ concern for SUD. Among this cohort, 37% were women, 8% were non-white, and 33% died.

Conclusions: Current trends in addiction medicine, oncology, and palliative care suggest a growing cohort of patients with cancer and unmet SUDS care.

Understanding characteristics and resource utilization of this cohort will help advocate for resource and system changes to facilitate better care. The discrepancy between provider reported concern for SUD and chart review diagnosis support prior findings that primary addiction knowledge is lacking among cancer treatment teams. This gap highlights the need for increased primary addiction medicine training among specialists, as well as interdisciplinary collaboration of addiction medicine specialists with cancer treatment teams.

Perinatal Cannabis Use Unrelated to Illicit Opioid Use When Prescribed OUD Medications

Presenter(s) Are:
Shelley L. Galvin, MA
Melinda Ramage, FNP-BC, CARN-AP

Introduction: Cannabis use may reflect a lifestyle choice and/or self-medication for diagnosed or undiagnosed conditions, especially psychiatric and substance use disorders. Though controversial, epidemiological, pre-clinical, and clinical research supports perceived effectiveness and biological plausibility of cannabis as an ''exit drug'' in the treatment of opioid use disorders (OUD). Associations of cannabis use and insufficient control of withdrawal and cravings while prescribed methadone or buprenorphine have been reported. While strongly discouraged, pregnant women consume cannabis medicinally with perceived effectiveness for nausea, vomiting, poor appetite, sleep and mood disturbances, pain, and anxiety. Pregnant women in treatment for OUD have high rates of mood and anxiety disorders and sometimes symptoms of opioid withdrawal or cravings. They also have high rates of cannabis use. The potential risks of harm associated with perinatal cannabis use is very concerning. However, interpretation of outcomes data is debated; reviews and adjusted meta-analysis remain inconclusive save a small, negative effect on birth weight. The scant research on cannabis use among pregnant women prescribed buprenorphine for OUD found no significant harmful outcomes, maternal or neonatal. Our objective was to examine, from a harm reduction perspective, the associations of cannabis use, type and dose of medication for OUD, and illicit opioid use in pregnancy.

Methods: In a secondary analysis of data from an IRB approved comprehensive, perinatal program (2014–2018), we used chi square and multivariate, binary logistic regression to compare OUD treatment groups: no prescribed medication versus methadone, high or low/moderate dose (at delivery; >89 mg/day v. <90 mg/day) versus buprenorphine (>16 mg/day v. <17 mg/day). Cannabis and illicit opioid use were evidenced objectively by maternal urine drug screen at delivery and/or neonatal meconium or cord toxicology.

Results: Overall, 18.6% (84/452) of women consumed cannabis near delivery. The rate of cannabis use differed significantly across the five treatment groups ($P = 0.034$): None 19/61 = 31.1%; high methadone 25/115 = 21.5%; low/moderate buprenorphine 22/138 = 15.9%; high buprenorphine 12/91 = 13.2%; and low/moderate methadone 6/47 = 12.8%. Illicit opioid use was significantly different ($P = 0.005$):19.7%, 3.5%, 10.9%, 5.5%, and 10.6%, respectively. In multivariate analyses, relative to no medication, buprenorphine [high-dose OR = 0.295 (95%CI 0.105–0.828); low/moderate-dose OR = 0.361 (0.157–0.834)] and low-dose methadone [OR = 0.440 (0.213–0.912)] were protective of cannabis use. High-dose methadone [OR = 0.147 (0.045–0.479) or buprenorphine [OR = 0.237 (0.079–0.714)] were protective of illicit opioid use. Cannabis use was not related to illicit opioid use [OR = 1.698 (0.813–1.229)].

Conclusions: Women not using medication for OUD had the highest rates of cannabis and illicit opioid use. Apparent substitution of cannabis for OUD treatment had limited effectiveness. Adjunctive cannabis use was related to dose and type of medication but unrelated to illicit opioid use. O'Conner, et al. (2017) also reported no association of third trimester cannabis and illicit drug use. Generalizability is limited by the dichotomized variable-use/no use'' though assessed objectively, and data from one regional program, in a state with no legal provision for any cannabis use. Sufficient doses of agonist treatment may be better to prevent illicit opioid use, but higher doses have evidence-based risks. Comprehensive harm reduction strategies in treatment of pregnant women with OUD requires additional research.

PHarm Reduction - Smoking Cessation by a Pharmacist in a Psychiatric Clinic

Presenter(s) Are:
Gerard Quinn, PharmD, BCPS, BCPP
Jasmin Brown, RN

Background: Smoking is believed to be the most significant driver of increased mortality among individuals with serious mental illness, decreasing life expectancy 10–25 years compared to the general population. Individuals with psychiatric diagnoses consume 40% of all cigarettes in the United States, while only representing 25% of the population.Quit rates have remained stubbornly low among patients with schizophrenia or bipolar disorder. Individuals with serious mental illness are provided fewer resources to quit or cut back. Given these barriers, clinical pharmacist-led smoking cessation interventions embedded within psychiatry clinics are a promising area of research.

Objectives: This observational study evaluated whether dedicated smoking cessation visits with a clinical pharmacist in a psychiatry clinic increased quit rates or reduced cigarette use, compared to primary care provider counseling or providing nicotine replacement therapy (NRT) only.

Methods: This study was conducted in an urban, public hospital-based integrated primary care and psychiatry clinic in New York City from May 2019 - Dec 2019. Data was collected through chart review.

Data Analyses: Descriptive statistics and $\chi 2$ analysis to compare reduction in cigarette use and quit rates by smoking cessation intervention category:

1. Clinical pharmacist (PharmD)
2. Primary care provider (PCP)
3. NRT only (with minimal counseling)

Results:

- N = 41 individuals
- Overall mean age = 51.2 years, 70% male, 68% non-white, 56% public insurance, 17% uninsured, and 12% unstable housing
- Psychiatric diagnoses: 41% mood disorder (depression or anxiety), 34% psychotic disorder (schizophrenia or schizoaffective), 10% bipolar disorder, 15% other psychiatric diagnoses (PTSD, ADHD)
- Mean quit rates: 39% for PharmD, 9% for PCP, 0% for NRT only groups
- Mean percent reduction in cigarettes/day = 47% for PharmD, 52% for PCP, 9% for NRT only groups (excluding patients who quit)

Limitations:

- Small study population at a single site
- Retrospective chart review-based observational study
- NRT only and low uptake of smoking cessation medications (varenicline or bupropion)

Strengths:

- Unique integrated clinic with PCPs, clinical pharmacist, nurse, clinical coordinator-community liaison, and patient care associates
- Pragmatic study design in an urban public clinic
- Diverse population in terms of race, language, insurance type
- Large percentage of individuals with serious mental illness
- Focus on NRT alone without confounding by smoking cessation medications

Future Directions:
Future research will include longitudinal, prospective data from this clinic as well as others within our facility, expanding our sample size. Other ideas for future efforts include smoking cessation groups, peer counselors, and nursing-led interventions.

Conclusions: Clinical pharmacists embedded within psychiatry clinics are ideally suited to provide the necessary smoking cessation interventions to reach this target population.

Pharmacy Access Improves Induction and Stabilization on Buprenorphine Therapy

Presenter(s) Are:
Tyler J. Varisco, PharmD
Douglas Ziedonis, MD, MPH

Background and Objectives: More than 25% of patients prescribed buprenorphine for the treatment of opioid use disorder (OUD) will discontinue therapy within the first month of therapy. Multiple sociodemographic and clinical factors are associated with early discontinuation of buprenorphine; however, previous studies have made the assumption that all patients prescribed buprenorphine can easily locate a pharmacy willing to dispense buprenorphine. Counterintuitively, pharmacies do not universally stock buprenorphine/naloxone combination products. With low availability in the community, patients are limited in their choice of pharmacy and may be funneled into pharmacies less convenient to their home. The objective of this study was to measure the association between pharmacy access and persistence on buprenorphine seven and thirty days after therapy initiation in a sample of incident buprenorphine users from the Texas Prescription Monitoring Program.

Methods: A longitudinal cohort of patients prescribed buprenorphine/naloxone combination products indicated for the treatment of OUD was identified from the 2016–2018 Texas Prescription Monitoring Program (PMP). Patients successfully induced on buprenorphine therapy were those who filled two prescriptions for buprenorphine/naloxone totaling at least seven days' supply. Among those successfully induced, successfully stabilized patients were those who filled at least two prescriptions totaling at least 30 days' supply. A ratio of pharmacies used to patients treated was calculated for each physician and assigned to each physician's respective patients and served as the predictor of interest. This was stratified into three categories: low access ($\leq$1 pharmacy per 4 patients treated), moderate (>1 to 2), and high (>2–3), and very high (>3). This ratio was used as the key predictor in a stabilized, inverse probability of treatment weighted logistic model aimed at measuring the adjusted association between pharmacy access and successful stabilization on buprenoprhine.

Results: Only 49% of pharmacies in Texas dispensed a prescription for buprenorphine over the course of the study period, thus, only 37.7% of patients were treated by a provider whose patients had very high pharmacy access. Higher pharmacy access was associated with significantly higher rates of induction (Moderate: aOR = 1.54, 95%CI = 1.52–1.55, High: aOR = 1.63,95% CI = 1.62–1.65, Very High: aOR = 1.58,95% CI = 1.57–1.60) and stabilization (Moderate: aOR = 1.42,95%CI = 1.41–1.43, High: aOR = 1.47, 95% CI = 1.46–1.49, Very High: aOR = 1.46,95% CI = 1.45–1.47).Discussion: Higher pharmacy access significantly improves induction and stabilization on buprenorphine therapy. In order to improve access, more pharmacies must stock and dispense buprenorphine products for OUD. Limited pharmacy availability remains a barrier to continuity of pharmacotherapy for opioid use disorder in the community setting, thus hampering efforts to prevent OUD related harm. The results of this study indicate that diversifying physician-to-pharmacy referral networks in the interest of improving patient-centered care may lead to improvements in the treatment of OUD.

Physical Activity, Mood & Drinking Outcomes Among Individuals Recovering from AUD

Presenter(s) Are:
Brooke H. Mounsey, BA
Alyssa T. Brooks, PhD

Introduction: Increased alcohol consumption is associated with greater physical activity (PA) levels in healthy populations however, patterns of PA levels among individuals recovering from AUD have not been closely examined. Increased PA may be particularly beneficial to this population given its potential for reducing cravings and improving mood. Early phases of recovery as well as the transition from inpatient to outpatient treatment may be a critical time period with respect to relapse.

Methods: This analysis examined a sub-group of 148 patients receiving inpatient treatment for AUD between 2015 and 2018 (NCT# 0010693). Patients wore the Actiwatch Spectrum (Philips Respironics) for up to 28 days following discharge. Participants' data were considered valid if they wore the watch for >60% of awake time at least 6 days per week. Non-sleep activity was categorized into sedentary, light PA, moderate PA and vigorous PA using established activity count cut-points. Participants also filled out daily diaries on outcomes such as craving level and number of drinks consumed per day. Weekly data on mood were obtained from the Comprehensive Psychopathological Rating Scale (CPRS) scores. One-sample t-tests were used to compare PA levels to those of the general population. Finally, Pearson's correlation coefficients were calculated to evaluate the relationship between PA levels and mood/drinking outcomes.

Results: Of the patients with four weeks of valid data following discharge (n = 79), participants spent an average of 52.1% of awake time in sedentary behavior, followed by 22.3% in moderate PA, 14.9% in light activity, and 10.6% in vigorous activity. The sample population differed significantly from the general US population across all four categories, with the largest relative difference being in vigorous PA (10.6% vs 0.2% of awake time, $P < 0.001$). Participants still spent over half of their awake time in a sedentary state (52.1%, CI: +/− 2.8%), which can pose serious cardiometabolic risks despite achieving recommended levels of exercise overall. In the first week following discharge, participants spent 51.2% of time sedentary, followed by 22.7% in moderate activity, 15.1% in light activity, and 11.0% in vigorous activity (n = 118). Participants differed significantly from the general US population at every level, spending a greater proportion of time in moderate and vigorous PA and a lower proportion at the sedentary and light PA levels ($P < 0.001$). There was a positive but non-significant correlation between sedentary behavior and depressive symptoms at week 1 post-discharge (r = 0.14, $P = 0.36$). Individuals who spent more time in sedentary behaviors in week 1 were also more likely to have increased alcohol cravings at week 1 follow-up, though this did not reach statistical significance (r = 0.18, $P = 0.24$).ConclusionsIn our sample, there was a significant amount of variation in physical activity, both within and between individuals during recovery from AUD and the transition back to community. Overall, this sample appeared slightly more active than the general US population.

Physician Perceptions of Opioid Supply and Monitoring Requirement Policy Changes

Presenter(s) Are:
Amie Goodin, PhD, MPP
Joshua Brown, PhD, PharmD

Introduction: Florida implemented House Bill 21 (HB21) in July 2018, which mandated state Prescription Drug Monitoring Program (PDMP) use by prescribers of Schedule II controlled substances. Additionally, HB21 restricted Schedule II opioids for acute pain to 3-days supply, with exemptions extending to 7-days supply. This study assessed physician perception of these opioid policy changes on prescribing practices as well as perceived efficacy and unintended consequences, after the first year of implementation.

Methods: All physicians, residents, and fellows in an academic medical center health system were invited to participate via email from July through September 2019, with twice monthly reminders. Survey instrument items were adapted from previously published PDMP and opioid policy evaluations[Refs 1–3] and data were collected via Research and Electronic Data Capture (REDCap) software. Descriptive statistics were calculated for each item and responses were stratified by physician specialty, where specialties were categorized as Psychiatry or Addiction Medicine (Psych/AM), Primary Care (Internal Medicine, Family Medicine), and others. Item response frequency distribution between specialties were compared via chi square

testing, with a priori significance set at 0.05. Content of free-text, qualitative, responses were analyzed for common themes.

Results: There were n = 214 responses (response rate~10.9%), representing n = 15 from Psych/AM, n = 58 from Primary Care, and n = 143 from other specialties (e.g., emergency, orthopedics, pediatrics, anesthesiology). The most frequently reported primary reason for PDMP use overall was-. . .for patients currently using opioid analgesics'' (39.7% all respondents), with 6.7% in Psych/AM, 50.1% Primary Care, and 38.6% others ($P = 0.027$). Psych/AM physicians reported that the PDMP use mandate ''. . .hinders my clinical work day'' less frequently than Primary Care physicians (46.7% vs. 58.6%; P = NS). A greater proportion of Primary Care physicians agreed that the opioid supply restriction policy was ''. . .a good idea'' relative to Psych/AM counterparts (62.1% vs. 53.3%; P = NS). The majority of respondents agreed that they ''. . .have made changes to practice due to HB21'' (59.2% overall, 73.3% Psych/AM, 69.0% Primary Care, 53.6% others; P = NS). About half of Psych/AM physicians agreed that-HB21 made it more challenging for chronic pain patients to access opioid therapies,'' (53.3%) as compared with the majority from Primary Care (77.6%; P = NS). In qualitative responses, common themes emerged for identifying the ''primary purpose of PDMPs'', where most respondents expressed frustration with the policy change. Themes identified included: ''to increase administrative burden'' (6 of 15), ''political scrutiny'' (4 of 15), and-to reduce opioids'' (3 of 15).

Conclusions: This study demonstrates that incorporation of PDMPs into workflow varies by physician specialty, as consistent with previous research.[Ref 4] These findings also suggest that physicians across specialties are responsive to policy drivers for adjusting opioid prescribing practices. While more than half agreed with the Florida opioid supply restriction, many simultaneously expressed frustration with the perceived increase in administrative burden of PDMP mandates. The majority considered opioid supply restrictions to have the unintended consequence of decreasing chronic pain patient access to opioid therapies, which suggests that opioid utilization by diagnosis should be assessed as an outcome in future policy evaluations of opioid supply restrictions.

Pick Your Poison: Hospital Admissions with Alcohol vs. Opioid Use Disorder

Presenter(s) Are:
Emily Loscalzo, PsyD
P. Joseph Resignato, MD

Attitudes of clinicians towards the patients they treat may influence the quality of care that patients receive. Clinicians may experience particular difficulty with individuals who present with highly stigmatized conditions, such as substance use disorders. Improved education for clinicians may help lead to attitude changes that can increase empathy and ultimately increase quality for care for individuals with substance use disorders, particularly if the individual is presenting for treatment for a substance-related issue. Since hospitalists and physician assistants are the leaders of treatment teams overseeing patient care, it is especially important to measure their attitudes towards individuals with substance use disorders (SUD).

The Medical Condition Regard Scale was distributed to 32 clinicians, 17 of whom responded (eight hospitalists, eight physician assistants, one did not disclose) to determine baseline attitudes towards patients with alcohol use disorder (AUD) or opioid use disorder (OUD) in advance of an educational module. Due to small sample size and lack of Gaussian assumption, Wilcoxon signed ranks test was used for data analysis. Attitudes were worse towards individuals with OUD. Individuals with OUD were viewed as slightly more irritating (average rank of 5.50 vs. average rank of 7.45, $P = 0.032$) and less satisfying to work with (average rank of 4.71 vs. average rank of 3.00, $P = 0.031$) than individuals with AUD. There was a trend towards clinicians preferring not to work with individuals with OUD (average rank of 3.50 vs. average rank of 5.43, $P = 0.058$) as compared to those with AUD. Hospitalists and physician assistants did not show significant differences in attitudes towards individuals with either AUD or OUD, although there was a slight trend towards hospitalists as compared to physician assistants endorsing that treatment for OUD is a waste of medical dollars (average rank of 2.50 vs. average rank of 0.00, $P = 0.066$). Regarding interventions for SUD, clinicians seemed to have primarily positive attitudes about their ability to find something to help AUD patients to feel better (76% or respondents), but seemed slightly less confident in their ability to help OUD patients (56.3% of respondents). Clinicians seemed somewhat divided in their feelings about whether there is little they can do to help patients with SUD (53% AUD, 43.8% OUD responded ''Disagree'' or ''Strongly Disagree'').

Conclusions from survey results indicate that more education about this population is still needed for hospitalists and physician assistants. Increased education may lead to increased empathy, thereby decreasing irritation and dissatisfaction when treating individuals with SUD, particularly OUD. Education on interventions that these clinicians can utilize in the community hospital setting would also be helpful to increase their confidence in treating symptoms of withdrawal and to improve their style of interacting with patients with SUD. Future studies will examine the impact of an educational intervention on attitudes in this cohort as well as 30-day readmissions and discharges against medical advice.

Pills to Powder: A 17-Year Transition to Heroin among U.S. Adolescents

Presenter(s) Are:
Sean E. McCabe, PhD, MSW
Philip T. Veliz, PhD

Introduction: An estimated 10 million people in the United States have misused prescription opioids at least once in the past year. While the medical use and nonmedical misuse of prescription opioids has been declining recently in the United States, there remain concerns about what patterns of prescription opioid exposure are associated with transitioning to subsequent heroin use. Most studies on this topic have been cross-sectional, retrospective or short-term prospective investigations. This national longitudinal study examined the relationship between the medical and nonmedical exposure to prescription opioids during adolescence and later transitioning to heroin use over a 17-year period.

Methods: Twenty-one independent national cohorts of high school seniors in the United States (n = 8,373) were surveyed and followed 17 years from late adolescence (ages 17–18) to early midlife (age 35). Adolescents were divided into the following subgroups: (a) medical use of prescription opioids without a history of nonmedical use, (b) medical after nonmedical, (c) nonmedical after medical, (d) nonmedical use only, and (e) population controls who had no exposure to prescription opioids. These subgroups were compared on their risk for heroin use over the next 17 years. The Monitoring the Future study oversamples drug users from high school to secure a population of drug users to follow into adulthood. Heroin use was measured at each follow-up wave from ages 17–18 to age 35. All multivariable analyses controlled for race/ethnicity, sex, parental education, geographic region, metropolitan statistical area, baseline cohort year, and baseline past-year substance use measures.

Results: Nearly one in five adolescents who reported nonmedical prescription opioid misuse followed by medical use transitioned to heroin use in adulthood over a 17-year period. Adolescents who reported medical prescription opioid use without a history of nonmedical misuse did not differ in odds of heroin use relative to population controls. Multivariable regression analyses indicated that adolescents who reported medical use after initiating nonmedical misuse had over seven times greater odds of transitioning to heroin use over a 17-year period relative to population controls (AOR = 7.8, 95% CI = 3.8–16.3).

Conclusions: This is the first national prospective study to examine the relationships between U.S. adolescents' medical and nonmedical use of prescription opioids and their transitioning to heroin use over a 17-year period. There is substantial risk for heroin use among adolescents prescribed opioids with a history of misusing prescription opioids. These findings reinforce the critical role of drug screening, especially when prescribing

opioids, to detect high-risk individuals who would benefit from an intervention to reduce later heroin use.

Pop up Hepatitis A/B Vaccination Vlinic in a Colorado Opioid Treatment Program

Presenter(s) Are:
Hermione Hurley, MBChB
Alejandra Santisteban, MPH

Background: Life-threatening diseases can be prevented by vaccination, but people with substance use disorder are under vaccinated. Hepatitis A virus (HAV) outbreaks disproportionately affect people who use substances or experience homelessness1. Hepatitis B virus (HBV) is a blood borne infection that can be transmitted between injection partners who share needles or equipment2. HAV and HBV are vaccine preventable diseases, but many clients at opioid treatment programs (OTP) are non-immune. We initiated a Public Health outreach vaccination clinic to increase rates of vaccination for clients in our OTP.

Methods: Between 06/24/2019 and 09/07/2019 we had 8 days of walk in vaccination clinics during morning hours when the OTP was open to dispense medications for opioid use disorder (MOUD). Vaccination was offered in a room adjacent to the medication dosing line, provided by Denver Public Health staff that billed and recorded vaccinations into our electronic medical record. Clients were able to check prior laboratory results to confirm immune status, and offered vaccination for HAV, HBV, or both if non-immune. If there was no record of immunity status, clients could request laboratory testing, or accept immediate empiric vaccination.

Results: During the study period, there were 652 individuals engaged in OTP care. Laboratory proven HAV and HBV immunity was available for 358 individuals, 52% of whom were non-immune to Hepatitis A, Hepatitis B, or both. Age cohort influenced immunity, 62% of individuals aged between 30–50 years were non immune to Hepatitis A, and 50% of individuals aged between 30–50 years were non immune to Hepatitis B. A total of 85 unique clients accepted a total of 137 doses, with 70 HAV vaccinations and 67 HBV vaccinations dispensed. This represents vaccination of 45% of our confirmed non-immune clinic population, and 26% of our estimated total non-immune clinic population assuming similar rates of non-immunity for individuals without laboratory testing.

Conclusion: Adults at OTP clinics are vulnerable to Hepatitis A and B virus infections. Those aged 30–50 years have high rates of non immunity given lack of childhood vaccinations, and low prevalence of community exposure outside of outbreak conditions. A pop-up vaccination model was well accepted and utilized by our OTP clients. This model of care could be adopted by other OTPs in communities experiencing HAV outbreaks, or to support seasonal requirements like influenza and pneumococcal vaccination3.

Predictors of Non-Fatal Opioid Overdose Among People who Inject Drugs in India

Presenter(s) Are:
Romil Saini, MD
Ravindra Rao, MD

Introduction: Drug overdose is a common cause of death among People Who Inject Drugs (PWID). Non-fatal opioid overdose (NFOO) predicts future fatal opioid overdose, and is associated with significant morbidity. Though India has sizeable number of PWID, there is limited literature on the rates and risk factors of NFOO in PWID from India. We aimed to study the presence of known risk factors for NFOO among PWID from India, and thus the factors which predict the occurrence of NFOO in the past year.

Methods: It was a community-based, cross-sectional, observational study. A total of 104 participants aged 18 years and above receiving HIV prevention services selected through simple random sampling and interviewed. The drug use patterns, rates of NFOO and risk factors of NFOO were assessed by a structured tool developed for the study. The pattern of psychoactive substance use was assessed with WHO - Alcohol Smoking and Substance Involvement Screening Test, and the severity of opioid dependence was assessed by Leeds Dependence Questionnaire. Co-morbid psychiatry illness was assessed using Mini International Neuropsychiatric Interview (version-7) while Opioid Overdose Knowledge Scale (OOKS) used to assess knowledge of opioid overdose.

Results: About 45.2% participants had experienced NFOO ever, while 25% (n = 26) had in last one year. Majority had many risk factors that could predispose them to NFOO. Multivariate logistic regression showed that the number of NFOO experienced ever (Adjusted Odds Ratio, AOR: 3.72), abruptly switching from one opioid to another (AOR: 8.84), and use of benzodiazepines while injecting opioids (AOR: 11.98) predicted the risk of having an opioid overdose within the past year. On the other hand, with increasing duration of opioid use, there is less likelihood of opioid overdose (AOR: 0.81).

Conclusion: Our study determines the risk factors which could predict the occurrence of opioid overdose in PWID. The study highlights the need for an urgent programme to prevent and manage opioid overdose among PWID in India

Predictors of Skin and Soft Tissue Infections Among People Who Inject Drugs

Presenter(s) Are:
Amelia A. Baltes, BS
Wajiha Akhtar, PhD, MPH

Introduction: Skin and soft tissue infections (SSTIs) are common among injection drug users. SSTIs complicate comorbid conditions and increase medical costs. SSTIs are the leading cause of morbidity and mortality among people who inject drugs (PWID). Some injection practices have been shown to correlate with SSTI incidence among people who inject drugs. The ongoing opioid epidemic has particularly affected rural communities, recognizing the increase of rural-dwelling PWID as a population with the unique health needs. The goal of this survey is to further clarify current injection practices in a rural sample that correlate with SSTI history.

Methods: The Wisconsin Rural Opioid Initiative Study surveyed a total of 998 PWID at six syringe service programs in rural Wisconsin. Between May and July 2019, 13 questions specific to SSTIs and injection practices - including skin cleaning, water source, injection frequency, location of injection, drug of choice, and SSTI treatment methods - were added to the survey. We estimated the prevalence of SSTI history and compared participant characteristics and injection practices to SSTI history using chi-square test for categorical variables and Mann-Whitney U test for continuous variables.

Results: Eighty complete responses for the SSTI-specific questions were collected and analyzed. Females were over three times more likely to develop a SSTI (OR = 3.07, $P = 0.038$) compared to males. Individuals who were able to find an injection location on their first attempt were significantly less likely to develop an SSTI than those who required multiple injection attempts before success ($P = 0.037$). Individuals using proper skin cleaning practices (i.e. alcohol pad, hydrogen peroxide, hand sanitizer, or soap and water) were less likely to develop an SSTI in comparison to those who did not use proper skin cleaning techniques (i.e. never cleaning skin prior to injection or tap water alone) ($P = 0.073$). Water sources also bore a significant relationship with SSTIs; individuals using purified sources of water, such as bottled water or water from needle exchange programs, were less likely to develop an SSTI in comparison to those who used tap water from a public bathroom or from home ($P = 0.093$). Lastly, location of injection -such as vein, skin, or muscle- related to SSTIs; people who inject into skin ($P = 0.038$) and into muscle ($P = 0.001$) were significantly more likely to develop an infection versus those injecting into veins ($P = 0.333$). Individuals who reported an SSTI (n = 18) often used warm compresses at home (56%), went to the emergency room or urgent care (56%), and were either prescribed medications (33%) or used over the counter medications (22%).

Conclusions: Overall, higher-risk injection practices were common among participants reporting an SSTI. These findings suggest that educational materials targeting PWID not in treatment should encompass a variety of injection behaviors- including skin-popping or muscling, proper skin cleaning practices, and the use of clean water sources. Future studies to understand

socio-demographic factors influencing risky injection practices and general barriers of safer injection practices to prevent skin and soft tissue infections are warranted.

Preliminary Efficacy of the Youth Opioid Recovery Support Intervention (YORS)

Presenter(s) Are:
Marc Fishman, MD
Kevin R. Wenzel, PhD

Introduction: Opioid use disorder (OUD) is a major public health crisis, disproportionately affecting youth. Young adults are a developmentally vulnerable population, with limited engagement in clinical care, and high rates of psychiatric comorbidity. Although medications for OUD including extended release naltrexone (XR-NTX) and buprenorphine have demonstrated effectiveness, adherence is problematic. Assertive outreach interventions are commonly used to address low rates of medication adherence in hard-to-reach populations, and could be a promising approach to increase treatment retention among youth with OUD. To address these barriers, we tested the preliminary efficacy of Youth Opioid Recovery Support (YORS), a multi-component assertive outreach intervention designed to improve engagement and medication adherence for youth with OUD.

Methods: We recruited 38 young adults (18–26) from an inpatient treatment facility who intended to pursue outpatient OUD treatment with XR-NTX. Participants were randomized to receive either the YORS intervention or treatment as usual (TAU) over a period of 24 weeks. Components of the YORS intervention include: 1) home delivery of XR-NTX; 2) focus on family engagement; 3) assertive outreach; and 4) contingency management for receipt of XR-NTX doses. Primary outcomes were total number of XR-NTX doses received and relapse to opioid use (defined as $\geq$10 days of use within 28 days) at 24-weeks.

Results: Participants in the YORS condition received more XR-NTX doses ($M = 4.28$; $SD = 2.27$) compared to those in TAU ($M = 0.70$; $SD = 1.17$), $t(24.88) = 6.00$, p .05).

Conclusions: These pilot results suggest that the YORS intervention for XR-NTX adherence and relapse prevention among young adults with OUD is feasible and efficacious, leading to improved outcomes compared to standard treatment. Specifically, our intervention group received more outpatient doses of XR-NTX and had fewer relapse events compared to participants in the TAU group, suggesting that an assertive outreach framework is applicable and beneficial to providing treatment for youth with OUD. Future research should examine which components of the intervention are most meaningful to improving outcomes, expand patient choice of medication, and perform economic analyses.

Promise of Illicit Drug Mortality Reduction After Jail Through Opioid Agonist Treatment

Presenter(s) Are:
Chen Y. Wang, MD
Stamatia Z. Richardson, MD

Background: Substance use disorders are common among incarcerated individuals, with increased risk of overdose immediately following release. With the emergence of fentanyl adulterants, a rise in mortality involving all illicit drugs has been seen. In an effort to reduce mortality risk in this vulnerable population, the Cook County Health Department of Correctional Health began offering maintenance methadone, buprenorphine, naltrexone, and naloxone rescue kits to eligible detainees in 2017. Detainees in this treatment program received substance use counseling and were referred to community-based recovery support services upon release. In this study, we characterize risk factors for illicit drug fatalities within six months of release from Cook County jail and used them to assess the adjusted mortality reduction associated with agonist treatment.

Methods: This is a retrospective study examining deaths within six months of release from Cook County jail. Cases of illicit drug fatalities from the Cook County medical examiner's database were merged with Cook County Health (CCH) corrections-based healthcare records from 2016 to 2018. We excluded patients discharged from jail to prisons, and patients who did not live within Cook County. We defined illicit drug deaths as those where an illicit drug - fentanyl, heroin, U-47700, cocaine, or amphetamine, or mitragynine (legal for adults) - was the primary cause of death according to the medical examiner's forensic report. CCH records provided data on healthcare and jail utilization, comorbidities, and demographics. Jail intake provided data on partner status, dependents, employment, and homelessness. In total 25 variables were included in Elastic-net Cox proportional hazards model used to identify meaningful predictors of mortality.

Results: In 2016–2018, 10,976 individuals discharged from jail-based care screened positive for illicit drug use at initial jail intake. Methadone treatment was maintained in detention for 288 detainees, buprenorphine-naloxone was used for 348, yielding 636 detainees total receiving opioid agonist treatment. Within six months of release from jail 142 illicit drug fatalities occurred, of which 134 involved opioids (fentanyl, heroin, u-47700, or mitragynine) as the primary cause of death. Fentanyl was the primary cause of death in 92 cases. In adjusted analysis, in-detention treatment with maintenance methadone, maintenance or induction buprenorphine showed a smaller risk of death [HR (95%CI): 0.30 (0.07, 1.25)] but was not statistically significant ($P = 0.10$). Dramatic decline in risk of death was observed during each sequential year of the study starting in 2016 [2017: 0.59 (0.40, 0.87); 2018: 0.44 (0.29, 0.67)] even as the total number of illicit drug fatalities continued to rise in Cook County as a whole. Mood disorder [1.70 (1.14, 2.50)] and release on electronic monitor [2.15 (1.43, 3.23)] were associated with greater risk.

Conclusion: Jail-based opioid agonist therapy shows promise for reducing illicit drug fatalities during the post-release period. Discordant trends in illicit drug fatalities during the study period between detainees released from Cook County Jail and the rest of Cook County suggest CCH's system-wide harm reduction efforts inclusive of jail-based agonist treatment may be effective. Effect of continuation of opioid agonist treatment after release should be followed.

Promoting Harm Reduction Among People with Injection Drug Use-Associated Infections

Presenter(s) Are:
Kinna Thakarar, DO, MPH
Kimberly Murray, MPP

Background: Increasing rates of injection drug use (IDU) associated-infections suggest significant syringe service program (SSP) underutilization. Our objective is to assess patient knowledge, attitudes, and practices of safe injection techniques and to determine predictors of SSP utilization.

Methods: This is an ongoing, eleven-month prospective pilot study of participants hospitalized with IDU-associated infections at four hospitals in Maine. Data are being collected through Audio Computer-Assisted Self-Interview survey and medical record review. A descriptive analysis of six-month data was performed to characterize injection knowledge, attitudes and practices. Primary outcomes include past 3 month 1) SSP utilization and 2) use of clean needles. Secondary outcomes include: uptake of past 3 month safe drug paraphernalia, naloxone, and medication for opioid use disorder (MOUD). After study recruitment is complete, additional descriptive analyses and logistic regression analyses will be performed to identify factors associated with SSP utilization.

Results: Of the 58 study participants enrolled, 27 participants (77%) reported past 3 month SSP utilization, though only 34% used SSPs frequently. Few participants (12%) reported clean needle/syringe use or safe drug paraphernalia use (19%). Thirty-eight percent of participants reported naloxone uptake, and 71% of participants were prescribed MOUD prior to admission. Injection of stimulants (27%) and opioids (71%) were common, and 93% of participants reported injecting alone in the 30 days prior to hospitalization. Many (63%) participants lived more than 10 miles from an SSP, with 24% of participants living in rural areas. Fifty-one percent reported difficulty accessing an SSP.

Conclusions Our study highlights unsafe injection practices and lack of frequent SSP utilization among people admitted with IDU-associated infections in Maine. Especially given stimulant use, our results also highlight the

need to promote harm reduction even among individuals prescribed MOUD. Particularly in rural areas, expansion of harm reduction services could reduce the rates of IDU-associated infections.

Race-Based Differences in Self-Report Drug Use at an Urban Methadone Treatment Program

Presenter(s) Are:
Sasha Deutsch-Link, MD
Annabelle Belcher, PhD

Background: Baltimore, Maryland has been at the center of an opioid epidemic for over 50 years. While heroin use disorder has historically disproportionately affected poorer Black communities within the city, in recent years this cultural landscape has shifted with the national opioid crisis. The city has witnessed a generalized increase in the incidence of opioid use disorder (OUD) that now spans across multiple races, ethnicities, and backgrounds. Methadone administered through opioid treatment programs (OTP) is one of the most effective modes of treatment for OUD. Although recent national epidemiological data demonstrates that lifetime rates of substance use disorders are lower in Black people compared to Whites, detailed data on race differences in substance use at initial presentation to methadone OTPs is lacking. Our study seeks to explore race differences in substance use among patients presenting to a racially diverse methadone OTP in Baltimore.

Methods: We conducted a single center cross-sectional study of 102 patients who presented for treatment intake. Data were obtained as part of a randomized controlled trial employing a behavioral intervention in which participants consented to partake. Data reported here were obtained prior to randomization and intervention. Patients were administered detailed substance use history questionnaires and urine drug screening at intake. Logistic and linear regressions assessed the relationship between race and substance use for binary and continuous dependent variables, respectively. Age was included as a covariate, as Black participants in our sample were older (46 compared to 42 years, $P = 0.002$).

Results: 36 participants (35%) self-identified as White and 66 (65%) as Black. The groups did not significantly differ in gender, education, income, or employment status. Logistic regression results showed significantly higher age-adjusted predicted probabilities for prior substance use in White patients: synthetic cannabinoids (.25 versus .059, $P = 0.009$), lysergic acid diethylamide/LSD (.40 versus .10, $P = 0.002$), phencyclidine/PCP (.27 versus .055, $P = 0.008$), and MDMA/ecstasy (.38 versus .14, $P = 0.010$). White participants were more likely to have been prescribed opioids (.80 versus .54, $P = 0.015$), have used prescription opioids prior to heroin/fentanyl (.28 versus .093, $P = 0.023$), and to have to have injected drugs (.88 versus .44, $P < 0.001$). They reported a higher mean total number of substances used prior to heroin/fentanyl (3.9 versus 2.6, $P = 0.020$), and at intake (8.5 versus 6.1, $P = 0.013$). Black patients were more likely to have used only two or fewer substances before trying heroin/fentanyl (.24 versus .49, $P = 0.021$).

Conclusion: White patients reported using more and a broader variety of other drugs before heroin/fentanyl and at intake. They were also more likely to have ever been prescribed opioids and to have used prescription opioids prior to heroin/fentanyl. These differences, which cannot be accounted for by indicators of socioeconomic status, may reflect cultural, environmental and/or geographic differences leading to different exposures. We believe this finding is particularly important, as significant efforts and attention in the opioid crisis have focused on opioid prescribing. However, these results suggest that inner-city Black patients may develop OUD through different pathways. More research and intervention should be directed towards understanding and addressing these processes.

Real-world use of extended-release buprenorphine (XR-BUP) in a low threshold Bridge clinic

Presenter(s) Are:
Alyssa M. Peckham, PharmD, BCPP
Laura G. Kehoe, MD, MPH, FASAM

Background: Extended-release buprenorphine (XR-BUP) may increase medication adherence and improve outcomes including overdose (OD). However, real-world experiences are limited and outcomes in low threshold clinics with high-risk populations are unknown. Overcoming treatment challenges, such as inability for some to stabilize on sublingual (SL) BUP for seven days prior to XR-BUP and ongoing craving/withdrawal symptoms during treatment, is lacking.

Methods: This retrospective case series included clinical chart abstractions performed on a convenience sample of 40 serial adult cases treated with XR-BUP at Massachusetts General Hospital Bridge Clinic from study time period February 1, 2019 to July 31, 2019.

Results: Patients were mostly male (n = 27), non-Hispanic white (n = 39), unstably housed (n = 31), with average age of 32.1. All were diagnosed with severe opioid use disorder (OUD) involving intravenous (n = 32) or intranasal (n = 7) heroin/fentanyl, or other oral opioids (n = 1). The average SL BUP dose prior to XR-BUP was 21.6 mg (standard deviation [SD] = 3.9; range 16–32) for an average treatment duration of 105 days (SD = 191; range 1–810). Of those with toxicology at time of XR-BUP initiation (n = 21), 100% were BUP positive while 62% (n = 13) were positive for other substances including opioids indicating use despite sustained BUP treatment. Nine (22.5%) patients received SL BUP for less than the seven recommended days (mean = 3.7, SD = 1.4, range = 1–6) due to high-risk. Conventional dosing was administered to 30% (n = 12), three of whom required increasing to 300 mg due to cravings. Empiric high-dose XR-BUP (300 mg monthly) was administered to 25% (n = 10). Twenty-two patients (55%) required supplemental SL BUP ranging from 4–24 mg, daily or as needed, for varying time periods. At the end of data collection, 67.5% (n = 27) remained on XR-BUP, 30% (n = 12) discontinued XR-BUP, and one was lost to follow-up. There was no significant difference in the proportion of patients seeking acute care between those who continued XR-BUP versus discontinued at 18.5% and 16.6%, respectively (x2 = 0.02, p-value = 0.89). Toxicology was negative for other opioids in 65% (n = 26) of patients throughout treatment. Thirteen (32.5%) experienced continued use of non-prescribed opioids, though less frequently and without euphoria. In six cases, continued use occurred during month one only. There were no reports of OD, withdrawal after use, or precipitated withdrawal after subsequent XR-BUP. The reasons for discontinuing XR-BUP were preference for SL BUP (n = 5), patient reported ineffectiveness (n = 2), incarceration (n = 1), sustained need for SL BUP (n = 1), fear of eventual withdrawal (n = 1), no longer interested in agonist treatment (n = 1), or adverse effects (AEs) myalgias and pedal edema (n = 1). The relationship between these AEs and XR-BUP is unclear given this patient had comorbid acute hepatitis C.

Conclusion: This real-world application of XR-BUP in a low threshold clinic setting found that treatment was feasible, well tolerated, and outcomes were good, with most individuals choosing to continue treatment and a majority with no evidence of ongoing opioid use or precipitated withdrawal. Administering SL BUP for fewer than the recommended seven days was safe and did not worsen outcomes, XR-BUP 300 mg monthly dosages were safe, and a substantial portion of patients required supplemental SL BUP during the first few months of XR-BUP.

Reasons for Starting and Stopping Methadone, Buprenorphine, and Naltrexone Treatment

Presenter(s) Are:
Olivia Randall-Kosich, BS, MHA
Barbara Andraka-Christou, JD, PhD

Introduction: Despite their efficacy, medications for opioid use disorder (MOUD) are underutilized in the United States. Nonetheless, few studies have explored reasons why individuals choose to start MOUD or discontinue MOUD after starting, especially extended-release naltrexone. We sought to identify reasons why individuals start and stop MOUD, including the differences between starting and stopping the three most common formulations: methadone, sublingual buprenorphine, and extended-release naltrexone.

Methods: We conducted 31 semi-structured interviews over the phone with a sample of white individuals with a history of MOUD utilization. Participants were recruited using snowball sampling from eight U.S. states. Interviews were audio-recorded, transcribed, coded in Dedoose© software, and analyzed using thematic analysis and modified event structure analysis.
Results: Participants primarily learned about methadone and buprenorphine from other individuals with OUD. Participants primarily became interested in starting buprenorphine and methadone after seeing the medications work effectively in peers, though methadone was perceived as a last resort. In contrast, participants primarily learned about and became interested in naltrexone after receiving information from health practitioners. Participants frequently stopped MOUD to prevent medication or health service dependence. Participants also felt stigma and external pressure to stop buprenorphine and methadone but not naltrexone. Some participants identified relapse and medication termination by health providers or the criminal justice system as reasons for stopping MOUD.
Conclusions: Given the frequency with which participants identified informal peer education as a reason for starting methadone and buprenorphine, peers with MOUD experience may be a trusted source of information for individuals seeking OUD treatment. Further research is needed to assess whether incorporating peer support specialists with MOUD experience into formal SUD treatment would expand MOUD utilization, retain patients in treatment, and/or improve OUD treatment outcomes.

Relationship of Anxiety and Depression to Substance Use and HIV Clinical Outcomes
Presenter(s) Are:
Rafael Chiquillo Sosa, MD, AAHIVS
Nicole Hood, MPH
Background: Prior studies have reported a higher prevalence of substance use disorders, major depression, and anxiety disorders among people with HIV (PWH).1,2,3 These behavioral health conditions may compromise antiretroviral therapy (ART) adherence, interfering with optimal HIV clinical outcomes. We evaluated the clinical relevance of routine screening for substance use behaviors and anxious/depressive symptoms, hypothesizing that PWH with elevated anxiety and depressive symptoms would report more unhealthy substance use, and have worse viral control and lower CD4 counts.
Methods: Participants (N = 888) were PWH with scheduled visits to HIV primary care providers at Kaiser Permanente Northern California (KPNC) in Oakland, California from 2018–2019. All patients received the validated, self-administered Tobacco, Alcohol, Prescription medication, and other Substance use Tool [tobacco, alcohol, prescription medication, opioids, sedatives, stimulants, cannabis, injecting drugs, other drugs] (TAPS), the Patient Health Questionnaire (PHQ-9) depression screener, and the Generalized Anxiety Disorder (GAD-2) instrument. Patients completed these measures either online via KPNC's online patient portal or on a clinic-provided tablet at the time of their visit. Screening results and HIV clinical outcome data were extracted from the KPNC electronic health record. The relationship of elevated anxiety and/or depressive symptoms (PHQ-9 $\geq$10 or GAD-2 $\geq$ 3) to problematic substance use in the past 90 days (substance use risk score), viral control, and CD4 count were evaluated using the chi-square test, Fisher's Exact test, and t-test.
Results: Of the 888 participants in the study, 86.0% were men. Race/ethnicity included 39.3% white, 33.8% black, 15.7% Hispanic, 9.2% other, and 2.0% unknown. Patients with elevated anxiety/depressive symptoms were younger compared with those with minimal or no symptoms (50.6 vs. 53.1 years; p-value = 0.024).
Patients with elevated anxiety/depressive symptoms vs. those without elevated symptoms had higher rates of cannabis (41.5% vs. 33.4%, $P = 0.059$), tobacco (27.6% vs. 14.3%, $P = < 0.001$), and stimulant use (10.5% vs 3.0%, $P = < 0.001$ respectively).
Though statistically non-significant, participants with elevated anxiety/depressive symptoms had lower HIV viral load suppression (91.3% vs. 94.7 with HIV RNA < 200 copies/ml; $P = 0.110$) and higher CD4 500+ T cells/μl; 68.5% vs 72.3%, $P = 0.522$), compared to those without elevated symptoms.
Conclusions: Discussion, limitations, clinical implications. Our study examined substance use patterns, HIV viral control, and CD4 among PWH with and without clinically significant anxiety or depressive symptoms. Limitations included the generalizability of findings given sample characteristics (private, stably insured, with strong viral control) and reliance on self-reported substance use measures.
Consistent with previous studies, the present study demonstrated that PWH with clinically important anxiety and/or depressive symptoms use more substances including cannabis, tobacco, and stimulants. Small, non-significant differences in HIV outcomes were found by anxiety and depressive symptoms status. However, we note that there was a trend for worse viral control that should be explored further in large samples. Routine screening of PWH for SUD and co-occurring anxiety and/or mood disorders may aid in early intervention.

Residents Confident to Facilitate Addiction Shared Medical Appointments after One Month
Presenter(s) Are:
Jasleen K. Salwan, MD, MPH
Molly Doernberg, MPH
Background: Shared medical appointments (SMAs) are a novel modality for treating chronic conditions where patients with the same condition are seen as a group by a clinician or an interdisciplinary provider team. SMAs have been shown to promote patient self-management of substance use disorders, but research on the educational impact of SMAs on medical residents is lacking.
Methods: One primary care internal medicine resident from an ambulatory medicine rotation cohort which included 4 half-day clinical sessions of addiction medicine was recruited to co-facilitate, with a clinical psychologist, four consecutive weekly SMAs for SUD. Third-year residents were preferentially selected for this role and comprised the intervention group. The clinical psychologist provided a manual on Cognitive Behavioral Therapy (CBT) for SUD as guidance. SMAs lasted approximately 60 minutes and were followed by debriefing and feedback with the psychologist and a board-certified addiction medicine physician. The other residents on the rotation saw patients with SUD in traditional one-on-one encounters and served as controls. At Weeks 0, 4, and 8, each resident was asked to complete a survey consisting of 41 multi-item questions ranked on a Likert scale assessing 1) Confidence in their knowledge and skills in addiction medicine (Confidence measures) 2) Self-reported knowledge of addiction medicine (Knowledge measures), and 3) Attitudes toward the care of patients with addiction as well as empathy in general (Attitude measures). Pre- and post-rotation trends were compared between the two groups. For residents who completed the survey at both Week 4 and Week 8, mean post-rotation scores were calculated. Statistical significance was assessed using Wilcoxon rank-sum tests.
Results: 19 residents completed pre- and at least one post-rotation survey (Week 4 or Week 8) for the Confidence measures, 17 for the Knowledge measures, and 16 for the Attitude measures. Confidence in facilitating an SMA increased from 5.7 to 8.3 (on a 10-point scale) in the intervention group compared with an increase from 4.2 to 5.8 among the controls. Confidence treating SUD increased from 7.1 to 8.0 (10-point scale) in the intervention group and from 6.6 to 8.4 among the controls. Self-reported knowledge of behavioral therapies for SUD increased from 2.9 to 3.2 (10-point scale) in the intervention group and from 2.3 to 2.6 among the controls. Attitude scores decreased from 42.4 to 42.1 on a 48-point scale of empathy toward patients with addiction in the intervention group compared with an increase from 41.0 to 41.6 among the controls. Scores on the 140-point Jefferson Scale of Physician Empathy decreased from 119.3 to 119.1 in the intervention group and from 115.8 to 113.2 among the controls. No findings achieved statistical significance.
Discussion: The findings suggest that residents develop confidence with co-facilitating SMAs for addiction after a 4-week experience. Growth in confidence facilitating an SMA in the control group may reflect spillover effects from experience providing SUD counseling in one-on-one encounters. The higher baseline confidence and knowledge in the intervention group may be

attributed to the preferential selection of third-year residents to co-facilitate the SMAs. Data collection is ongoing.

Risk Factors for Relapse and Treatment Termination in an Outpatient OUD-Treatment Program

Presenter(s) Are:
Cody R. Whitcomb, BA
Alison Miller, MD

Background: While group office-based opioid use disorder (OUD) treatment with buprenorphine/naloxone offers several advantages, it is not appropriate for every patient and additional work is needed to better predict patient success in this treatment setting. This study aims to investigate the patient characteristics that may influence treatment outcomes in an academic primary care setting, ultimately allowing providers to better predict patient success within this treatment model.

Methods: This is a retrospective descriptive study of patients who participated in the group-based buprenorphine/naloxone IMAT program at the Maine Medical Partners (MMP) Family Medicine practice between January 1, 2014 and June 30, 2019. Eligible participants included adults aged 18 or older who attended at least one IMAT visit during this time period. Patient characteristics included demographics, clinical risk factors, and OUD-specific variables such as drug(s) of abuse, age of first opioid use, and prior treatment attempts. IMAT outcomes included 90-day and 12-month retention in the program and evidence of relapse. Relapse was defined two ways, first as confirmed relapse (urine or patient admission), and second as 'total relapse' including those lost to follow-up as relapsed. Bivariate analyses were performed to evaluate patient characteristics associated with longer treatment retention and relapse avoidance.

Results: A total of 133 unique patients participated in a total of 139 IMAT treatment series during the study time period. At baseline, mean participant age was 37.8 (standard deviation = 10.4), with 59% of participants male, 95% white-non-Hispanic, 38% employed, and 30% homeless. The vast majority (73%) used heroin prior to treatment, 81% underwent previous outpatient or inpatient treatment, and 52% were still using at least one substance at intake. As of June 30, 2019, 32 patients (24%) were still actively enrolled in the MMP IMAT program.

Over the two year period, 63% of patients remained in the program at least 90 days, and 35% of patients remained in the program for 12 months. 90-day retention was significantly associated with higher level of education, increased marijuana use, and less intranasal drug use. 12-month retention was significantly associated with older age, race (non-white), having children, first opioid use later in life, less heroin use as drug of choice, fewer OUD-related complications, no polysubstance use at intake, not actively using substances at intake, and lower rates of concurrent dual-diagnosis intensive outpatient treatment (DDIOP). Patients with documented relapse during treatment had more marijuana use, increased polysubstance use, and continued opioid use at intake.

Conclusions: Buprenorphine/naloxone for the treatment of OUD in outpatient group settings is an important option for patients needing long-term maintenance therapy. However, not all patients are suitable for this treatment strategy and may require higher levels of care. Building on the work of other IMAT programs, this study demonstrated differences in treatment success based on a several patient characteristics and variables, highlighting the important of considering a wide array of factors when determining treatment appropriateness. Further work is needed to identify additional patient factors of importance and how they should be used to guide buprenorphine/naloxone treatment.

Sensory Experiences and Cues among Electronic Cigarette Users

Presenter(s) Are:
Jennifer T. DiPiazza, PhD
Pasquale Caponnetto, PhD

Background: Tobacco use causes an estimated six million deaths annually, worldwide. Relapse rates among treated smokers are estimated as high as 50% one year post quit. US FDA approved smoking cessation medications are not specially designed to address sensory experiences that influence smoking behavior. Yet, research demonstrating the effectiveness of pairing nicotine replacement and sensory reinforcers to improve cessation outcomes dates as far back as the seminal work of Cain and then Rose and colleagues who hypothesized the ''airway sensory hypothesis.'' This suggests the potential of sensory stimulating interventions such as an electronic cigarette, to serve as an important component of a cigarette smoking cessation intervention. Safety profiles of e-cigarettes are being evaluated and recently there are concerns about health outcomes associated with e-cigarette use. Nonetheless, e-cigarette use is on the rise and currently the only intervention available to study the influence of sensory experiences and cues paired with and without nicotine replacement on cessation outcomes. This research could provide insights into ways to improve the design of current cessation interventions.

Aims: We characterized the extent and quality of respiratory sensations and sensory related smoking cues associated with e-cigarette use among those who failed to quit cigarette smoking with traditional FDA approved cessation medications but succeeded in doing so with e-cigarettes. And, to understand former smokers' perceptions about the influence of sensory experience with e-cigarette use on cigarette cessation outcomes.

Methods: A nonrandom purposive sample of 156 participants recruited in the U.S. through the Consumer Advocates for Smoke Free Alternatives Association Facebook page completed an online cross-sectional survey to assess sensory experiences and smoking cues associated with e-cigarette use. Descriptive statistics, and the ANOVA/Kruskal-Wallis test with post-hoc testing and the two-sample t-test/Wilcoxon rank-sum test, as appropriate based on distribution, were used to assess the association between sample characteristics and sensory experiences and cues using investigator constructed questions, the Modified Cigarette Evaluation Questionnaire (mCEQ) and the Smoking Cue Appeal Survey (SCAS).

Results: Participants reported feeling the vapor in their throats, windpipes, noses, lungs, and on their tongues; reductions in nicotine craving; and enjoyment of their e-cigarette, including tasting, smelling, and seeing the vapor and touching the device. Women had greater craving reduction than men ($P = 0.023$). Those who began smoking at 13 years of age or younger had more smoking satisfaction and had greater sensory enjoyment than those who began smoking at 16–17 years of age ($P = 0.015$ and $P = 0.026$, respectively), as well as greater sensory enjoyment than those who began smoking at 14–15 years of age ($P = 0.047$). There was a significant overall association between the number of years a respondent smoked and e-cigarette sensory enjoyment ($P = 0.038$). Participants 18–34 years old rated e-cigarettes as being more pleasant compared to 45+ year olds, ($P = 0.012$). Eighty four percent of participants reported the sensation of the vapor as important, and 91% believed the sensations accompanying e-cigarette use contributed to their smoking cessation success.

Conclusions: For those who failed to quit cigarettes using approved cessation medications, sensory experiences associated with e-cigarette use may help smokers quit smoking.

Simple, Rapid Spectrophotometric Assay of Prescription Methadone for Diversion Control

Presenter(s) Are:
John Brooklyn, MD
Dwight E. Matthews

Introduction: Methadone is a successful treatment for patients with opioid use disorder in Opioid Treatment Programs. Patients get multiple doses to take home as they demonstrate success and compliance with the program. A major issue is diversion potential of these doses. Although methadone does not produce the same euphoric effects as other opiates, there remains significant illicit demand, primarily for self-treatment of opioid use disorder. The potential for fatal overdosing on diverted methadone is high, given methadone's long and variable elimination half-life (12–150 hours) and its ability to cause acute respiratory depression and cardiac arrhythmias. This risk is increased for opiate naïve persons. In 2015, roughly 1 in 4 of all synthetic and

semi-synthetic opioid related deaths were attributed to methadone. Pilot studies have attempted to investigate the extent of methadone diversion; however, HPLC-UV assays were unnecessarily complex and not practical for clinical applications. Our goal was to develop a simple, cost-effective methadone assay for use in clinics nationwide to perform in-house analyses of suspect samples by personnel lacking formal analytical training. A long-term goal is to allow extensive data aggregation to define diversion rates for methadone in Opioid Treatment Programs, the first step in reducing methadone diversion. An ideal result would be to reduce overdose fatalities by limiting the drug's illicit availability.

Methods: Four calibration standards were prepared by diluting 10 mg/mL stock with deionized water. Then, calibration curves were generated to reference test samples. We diluted a 1 mL aliquot from the suspect sample to ≈0.8 mg/mL with de-ionized water based on expected concentration and measured absorbance at, 292 nm, 265 nm and 259 nm.

Results: Figure 1 shows the linear relationship between concentration and absorbance at 259 nm,
265 nm and 292 nm showing the characteristic phenyl absorption peaks in the region around 260 nm and an interacting carbonyl-phenyl system around 290 nm. Figure 2 shows methadone exhibits strong absorption peaks in low ultraviolet regions (240 nm–340 nm) due to phenyl and carbonyl groups. Over 5 months in 2016, 84 samples were analyzed and 15 (17.9%) showed very low levels of methadone, indicating tampering.

Conclusion: This assay presents a simple, effective method for methadone clinics to perform in house analysis on 'call back' methadone doses. It allows clinics to define diversion rates of their patient body, while allowing state and federal agencies to better understand how much prescribed methadone is diverted to illicit uses. Measuring absorption at 292 nm for methadone and 265 nm to check for adulterants added to defeat the methadone assay makes it difficult to fool the assay with adulterants. i.e. minimal false negatives.

Stigma and Primary Care Access for Patients on Long-Term Opioids

Presenter(s) Are:
Colin Macleod, MA
Pooja A. Lagisetty, MD, MSc

Introduction: Recent data suggest that many primary care physicians (PCPs) are no longer prescribing opioids and may be unwilling to begin caring for a new patient who is on long-term opioid therapy. Without access to primary care, these patients may be at higher risk of resorting to illicit opioid use and other adverse outcomes such as hospitalization. PCPs' reluctance to care for this group is commonly attributed to increased administrative burdens and fears of legal sanctions. Yet, no study has quantified how stigma, which involves labeling an outgroup in a way that leads to discrimination, may influence clinic decisions in caring for patients on a long-term opioid prescription.

Methods: We used audit "secret shopper" methodology to call primary care clinics across nine different states with varying opioid overdose rates. Each clinic was called twice using two different scenarios. Both scenarios simulated a patient on long-term opioid therapy seeking to schedule a new patient appointment. They differed in the reason their prescription had been discontinued to examine stigma. Specifically, Scenario A stated that the previous PCP retired while Scenario B indicated that the prior PCP stopped prescribing without providing a specific reason. We measured whether a clinic was accepting any new patients and whether they had a provider willing to see and potentially prescribe opioids to the patient. If a clinic was unwilling to see the patient for his/her opioid management, we also attempted to schedule an appointment for non-pain related care (e.g. diabetes management). McNemar's test was used to assess differences between scenarios in proportions of acceptance and prescription potential.

Results: 452 (82%) clinics had calls completed for both scenarios. Regarding clinic willingness to potentially prescribe opioids, 193 (43%) clinics indicated that their providers would not prescribe opioids in either scenario, 146 (32%) said their providers would be willing to see the patient and may prescribe in both scenarios, and 113 (25%) reported different responses to the two scenarios. In this latter group, clinics had 1.83 greater odds (OR = 1.83 CI[1.23,2.76]) of indicating that someone would possibly prescribe if the caller's reason was that their doctor retired compared to if no reason was provided for the stopped prescription. 8.5% of the total paired calls (n = 904) resulted in the representative saying they would not prescribe for the patient or even accept them for diabetes management after initially saying they were accepting new patients.

Conclusion: Among the same clinics, willingness to potentially prescribe opioids for a patient on opioids seeking a new primary care appointment varied significantly based on reason given for needing a new doctor. Additionally, a sizable contingent of the simulated patient calls resulted in an outright denial of care for non-pain related reasons to patients taking opioids. Our results indicate that beyond administrative requirements and office policies, stigma around opioids and pain management plays a significant role in clinic decision-making when deciding to provide care for patients on opioids for pain.

Successful Treatment of Hepatitis C by Psychiatrists at an Outpatient Addiction Clinic

Presenter(s) Are:
Amy E. Colson, MD, MPH
Zev Schuman-Olivier, MD

Background: Injection drug use is the most common risk factor for hepatitis C and accounts for approximately 70% of new infections in the United States. Most people with HCV infection can be cured with a short course of well-tolerated oral medication. However, treatment of HCV among people who inject drugs remains low in part due to fear of discrimination in clinical settings, difficulty keeping appointments with unfamiliar specialists and an insufficient number of treatment sites. Mental health clinicians who administer buprenorphine/naloxone (B/N) treatment for opioid use disorder are uniquely poised to treat their patients' straightforward medical problems because patients are seen frequently and often have a high level of trust in their provider. We hypothesized that, with appropriate training, psychiatrists could manage uncomplicated cases of HCV infection during B/N treatment.

Methodology: Psychiatrists completed a 2-hour in-person training with an infectious disease consultant which addressed: 1) determination of the severity of HCV-related liver disease using an interview and laboratory tests but no physical exam; 2) HCV treatment with a 12-week course of once daily oral sofosbuvir/velpatasvir, including potential drug-drug interactions and management of side effects. Adults with HCV infection were eligible to participate if they were engaged in treatment with B/N for at least 12 consecutive weeks and did not have evidence of advanced liver disease. Psychiatrists initiated and monitored sofosbuvir/velpatasvir therapy during regularly scheduled visits for B/N. Ongoing telephone support for psychiatrist-treaters was provided by the infectious disease consultant. Adherence to sofosbuvir/velpatasvir was monitored with the MEMSCap Medication Event Monitoring System. HCV cure was determined by measuring HCV RNA 12 weeks after completion of treatment.

Results: Seven women and 4 men enrolled all of whom had a co-morbid Axis 1 diagnosis. At baseline, the mean HCV RNA was 2,662,207 IU/ml and the FibroSure fibrosis stage was F0 in six participants, F1 in two, F3 in one and unknown in two. Three subjects had prior unsuccessful HCV treatment with interferon/ribavirin. Eight of 11 completed the 12-week treatment course, one withdrew due to treatment-related headache, one withdrew due to gastrointestinal symptoms which pre-dated enrollment, and one was incarcerated at week 10. Of the 8 subjects who completed treatment, 7 had documented HCV cure and the last subject was lost to follow-up before cure status could be documented. Urine toxicology screens were positive for non-prescribed substances in 3 participants during sofosbuvir/velpatasvir treatment, all of whom were cured of their HCV. Adherence to HCV medication was high; the 8 subjects who completed the 12-week treatment course took a mean of 94% of prescribed doses.

Conclusion: Our pilot study suggests that uncomplicated HCV infection may be effectively treated by psychiatrists at regularly scheduled visits for buprenorphine/naloxone prescribing and mental health care.

Symptom-Triggered Alcohol Withdrawal Management via CIWA-Ar in a Jail Setting

Presenter(s) Are:
Ibrahim Muradian, PharmD
Jimmy Singh, MA

Introduction: Inmates with chronic alcohol use are at high risk for alcohol withdrawal syndrome during the initial five days of incarceration. This descriptive analysis aims to characterize the clinical challenges associated with implementing a symptom-triggered alcohol withdrawal management in an alcohol detoxification unit (ADU) in a county jail.

Methods: This descriptive analysis was conducted from July 1, 2019 to September 30, 2019 within the ADU in an all-male Los Angeles County jail. The ADU was implemented in April 2017 and operates via a nursing-led Clinical Institute Withdrawal Assessment for Alcohol revised (CIWA-Ar or CIWA) protocol, where all inmates who report recent alcohol consumption are initiated on the protocol and receive monitoring every four hours and symptom-triggered chlordiazepoxide for withdrawal management. All inmates who received at least one CIWA score during the study were included in the analysis. A CIWA score analysis was conducted that examined score frequencies for inmates' highest CIWA scores. The results of the analysis were compared to the clinically significant CIWA score ranges: CIWA $\leq$ 8 indicating no to mild withdrawal, 9–14 indicating moderate withdrawal and prompting treatment, and $\geq$15 indicating severe withdrawal and prompting transfer to acute care setting.

Results: A total of 13,942 CIWA scores were collected for the 1,178 inmates who were admitted to the ADU during the study with a monthly average of 393 inmates. Average length of stay in the ADU was 44 hours. The CIWA score range was 0–27. When examining highest CIWA scores for the 1178 inmates, 939 (79.7%) had a highest CIWA score $\leq$ 8, 233 (19.8%) had a highest CIWA score 9–14, and 6 (0.5%) had a highest CIWA score $\geq$15. A convenience sample of chart review of fifty charts yielded that 61% of inmates had clinically significant withdrawal symptoms requiring ordering additional doses of chlordiazepoxide beyond what was provided according to the symptom-triggered CIWA protocol. An additional analysis of hospital transfers from July 10, 2019 to September 30, 2019 revealed 36 total hospital transfers related to uncontrolled alcohol withdrawal symptoms.

Conclusions: This analysis of nursing-led CIWA scoring in a correctional setting suggests a discrepancy between withdrawal severity as demonstrated by CIWA scores and by ongoing clinically significant alcohol withdrawal as evidenced by requiring additional doses of medications and the presence of hospital transfers. Possible explanations are high variability in CIWA scoring given a rotating nursing schedule and applicability of CIWA scale in a correctional setting. Future studies may examine a pre-post analysis of CIWA scores following regular nurse training in alcohol withdrawal management.

Take-Home Naloxone and Opioid Reversals – One-Year follow-up at Opioid Treatment Program

Presenter(s) Are:
Mikiko Y. Takeda, Phar, MD
Joanna G. Katzman, MD, MSPH

Introduction: The opioid crisis and opioid overdose deaths (OD) is a serious public health issue in the US. Previous publications indicate that increased availability of naloxone significantly reduces overdoses. We conducted a one-year naloxone study among patients diagnosed with an opioid use disorder at the University of New Mexico's Addiction and Substance Abuse Program (UNMASAP). In 2018, we presented preliminary data on take-home naloxone use among these ASAP patients at the 49th American Society of Addiction Medicine Annual Conference. The current study details the final data analysis of the naloxone study.

Methods: The study was conducted at UNM ASAP between April 2015 and May 2017. The UNM ASAP specializes is an Opioid Treatment Program (OTP) for patients with opioid use disorder (OUD). We recruited adult patients (= 18 years of age) with OUD receiving methadone, buprenorphine or naltrexone as a medication-assisted treatment (MAT). We excluded patients who were allergic to naloxone or any of its inactive ingredients. Once enrolled, study participants received education on opioid overdose and were prescribed two naloxone autoinjectors at their initial visit. They were asked to participate in follow-up visits with the study coordinator every three months for a year. At every visit, the study participants were asked 1) if they used naloxone since their last visit, 2) to whom they provided naloxone. If participants used the naloxone kits, we replaced the naloxone.

Results: We recruited 395 participants: 31.6% were male and 68.4% were female, including 68 pregnant women. The majority of the study cohort were Hispanic/White (65.8%) and 70.6% were treated with methadone. Only 18% of the study participants received naloxone prior to enrollment. Seventy-three study participants performed opioid reversals for 114 community members who overdosed due to heroin use. The majority used naloxone for friends (55.3%). There was no association between having a companion present during OD education and performing at least one OD reversal. According to the NM Department of Health, the heroin death rates in Bernalillo County (location of ASAP) declined from 10.0 to 6.4 per 100,000 population between 2016 and 2018. Our study may have contributed to this reduction.

Conclusions: Patients at UNMASAP are at high risk of OD because of their treatment drugs and associated MME doses. This study demonstrates the importance of take-home naloxone at an OTP setting, as take-home naloxone provides community members with direct access to naloxone in the event of an overdose. Therefore, the authors believe policy makers should consider making take-home naloxone a mandatory component of every OTP to prevent opioid overdose deaths in the community.

Team-Based Model Increases Initiation of Buprenorphine for Hospitalized Patients with OUD

Presenter(s) Are:
Nicholaus J. Christian, MD, MBA
Richard Bottner, PA-C

Background: Medication for Addiction Treatment (MAT), such as with buprenorphine, is known to reduce mortality for patients with opioid use disorder. Buprenorphine induction in the hospital setting increases completion of inpatient medical therapies and ultimately the transition to outpatient OUD treatment. Few programs nationwide have implemented protocols to bring this evidence-based treatment into hospital wards. The Buprenorphine Team (B-Team) is an interprofessional team-based consultation service that works to screen and treat hospitalized patients eligible for buprenorphine and facilitates transition to an outpatient MAT clinic at discharge.

Program Design: A protocol for inpatient screening and initiation of buprenorphine was developed based on a literature review and expert opinion. An outpatient MAT clinic was engaged to ensure capacity was available to continue buprenorphine treatment at discharge. A core team was formed comprised of a pharmacist, nurse, social worker, physician assistant, psychiatrist, chaplain, palliative care and internal medicine providers. Patients are referred to the B-Team by primary medical or surgical providers. An initial screening is conducted by a B-Team clinical provider to determine eligibility for buprenorphine. If eligible, the B-Team provider initiates therapy in concert with the primary team. The patient is seen regularly by the B-Team social worker and chaplain. If eligible for continued outpatient MAT, the team coordinates with the outpatient MAT clinic to ensure the patient receives an appointment prior to discharge. A B-Team provider prescribes a sufficient supply of buprenorphine to bridge until the outpatient appointment. Process measures and patient demographics are entered into REDCap, and received IRB approval.

Eligibility criteria for inpatient induction was created in collaboration with the outpatient MAT clinic, which includes: 1. Admission to hospital with anticipated length of stay amenable to induction of buprenorphine, 2. Diagnosis of

OUD, 3. Not on other MAT, 4. No concomitant medical or psychiatric diagnoses limiting ability to attend outpatient MAT clinic appointments, and 5. Patient desires buprenorphine treatment.
Results: From September 2018 until September 2019, the B-Team received 122 patient referrals. 50 patients were eligible and buprenorphine was initiated. 45 patients received an outpatient MAT appointment, with 5 patients not eligible for outpatient MAT due to funding or discharge to a facility that could not accommodate MAT. 27 out of 45 eligible patients (60%) made it to their 1-week follow up appointment, 17 out of 41 (41%) were engaged in outpatient MAT at 1-month, 6 out of 33 (18%) were engaged at 3-months, and 3 out of 21 (14%) were engaged at 6-months. The program resulted in a 5-fold increase in unique prescriptions for buprenorphine in the hospital. Patient demographics such as admitting diagnosis, race, gender, average length of stay, and OUD severity are also reported.
Conclusion: A team-based model for inpatient initiation of buprenorphine increased number of prescriptions for buprenorphine in the inpatient setting and resulted in successful continuation of outpatient MAT in 60% of patients. The program was started at an institution without a traditional addiction medicine consultation service, which makes it a promising model that could be replicated at other institutions.

The ASAM Placement Criteria Promote Shared Decision Making
Presenter(s) Are:
Tami L. Mark, PhD, MBA
Howard Padwa, PhD
Background: Intake assessment are the first point of engagement for patients entering addiction treatment and form the basis for treatment planning. In the 1980 s, the American Society of Addiction Medicine (ASAM) developed a framework to facilitate patient assessment and matching to levels of care based on six biopsychosocial dimensions and five broad levels of care. ASAM criteria are being rigorously adopted by states participating in Medicaid demonstrations that allow Medicaid to pay for residential treatment. More recently, ASAM has developed a computerized, multidimensional assessment (Continuum) that applies algorithms based on the ASAM criteria and generates level of care recommendations. Understanding how patients perceive these different intake approaches is critical to optimizing their usefulness in keeping patients engaged in treatment.
Objective: To understand how patients' experience intake assessments based on the ASAM criteria and the computerized ASAM assessment and whether ASAM facilitates shared decision making.
Methods: Providers in California counties that are participating in a Centers for Medicare and Medicaid Services Medicaid 1115 demonstration are required to used validated medical necessity criteria to determine level of care placement. Counties that are participating are using the ASAM placement criteria. One county is using Continuum. Counties that are not participating in the Waiver are not using ASAM. We surveyed 1,028 Medicaid beneficiaries who had recently undergone assessments at one of 31 California treatment programs using on of the three assessment approaches about their experiences.
Results: Patients assessed using the ASAM criteria or Continuum were more likely to report that they understood the purpose of the intake assessments and that the intake assessment would help determine the most appropriate level of care decisions. ASAM and Continuum patients were more likely to report that they were asked about each ASAM biopsychosocial dimension such as withdrawal symptoms. For some dimensions, ASAM patients were more likely to report that they were asked about them then Continuum patients. ASAM and Continuum patients were more likely to report being told of different treatment options and whether residential or outpatient treatment would be best. Continuum patients were more likely to report assessments took too long compared to ASAM and non-ASAM patients. Non-ASAM patients were less satisfied with their placement decision than ASAM and Continuum patients.
Conclusions: Patients who received Continuum and ASAM-based assessments were more likely to understand how assessments were used to make level of care placement recommendations and were more satisfied with those recommendations.

The Association of Parental Substance Use of Cannabis on Parenting Style
Presenter(s) Are:
Rebecca L. Atkins, DO
Amy Lynn Meadows, MD, MHS, FAAP, FAPA
Purpose: Eleven states and the District of Columbia have now legalized marijuana for adult recreational usage (1). It is the most commonly abused drug in the United States (2). What effect is marijuana usage having on families and parenting? The current study is aimed to compare the parenting styles (permissive, authoritative, authoritarian) of individuals with self-reported usage of Cannabis and parenting styles of parents with no reported drug usage in the last 3 months. Studies have shown different parenting types are associated with higher risk of substance abuse and mental illnesses such as depression, anxiety or suicide attempts.
Methods: Adult (ages 18+) participants were recruited on Amazon.com mechanical turk (mTurk). All participants were required to have a 99% Human Intelligence Task (HIT) approval rate and have completed at least 500 HITs to be eligible; Participants were screened in to the study based on (1) self-reported parenting and/or primary caregiving and (2) whether at least one child in their care had been prescribed a medication in the prior 3 months. Participants were asked to self-report any substance use (tobacco, alcohol, cannabis, PO opioids, heroin or cocaine) and completed the Parental Authority Questionnaire (PAQ), which reports subscales (range: 10–50) on Permissive, Authoritarian, or Flexible (Authoritative) parenting styles. A total of 740 participants completed the study, 27 were removed due to failing at least 2 attention checks or responding from a non-US IP address. In the final analytic sample, 143 reported prior 3 months cannabis use and 189 reported no substance use in the prior 3 months. The UK Medical IRB approved all study procedures.
Results: In the analytic sample, the average age was 36.3 years and participants reported an average of 1.9 (range 1–8) children in their care. There were no significant differences between cannabis uses and non-substance users in PAQ Permissive (25.2 vs. 25.1) or Flexible (40.5 vs. 41.3) parenting styles. However, parents who self-reported cannabis use reported more Authoritarian parenting style than parents who reported no substance use (PAQ scores 33.4 vs. 31.5; $P = 0.004$).
Conclusions: Parents with self-reported Cannabis usage in the last 3 months when compared to parents with no drug usage appear to have a more Authoritarian parenting style as opposed to a permissive or authoritative style. Authoritarian parenting styles have been associated with increased risk in the offspring for addiction potential as well as mental illness (3). These results suggest the need for further investigation to understand how cannabis usage intersects with parenting.

The Significant Impact of Narcan Reversal on Overdose Mortality in Peoria County
Presenter(s) Are:
Mohammad Mousbah Al-Tabbaa, MD, MPH
Kathryn Endress, MSN, MPH, FNP-BC
Introduction: According to the CDC "70,237 drug overdose deaths occurred in the United States in 2017," with a 14% increase of overdose death in the state of Illinois. In Peoria County the total years of potential life lost due to overdoses in 2018 were 1,300 with an incidence rate of 24.6 per 100,000, affecting mainly African Americans and residents of lower income zip-codes. The CDC started an initiative in 2014 that allows laypersons to administer Narcan. Illinois has joined the initiative with a standing order that allows pharmacists and Narcan training programs to administer Narcan without a prescription. Despite the increase in Narcan prescriptions, the overall quantity is low in comparison to high dose opioid prescriptions. According to the CDC MMW report, "in 2018, one naloxone prescription was dispensed for every 69 high-dose opioid prescriptions."

Methods: A retrospective study that investigated the association between Narcan administrations and overdose mortality in 2018 was conducted. Data for Narcan administrations was collected from hospital emergency departments, Emergency Medical Services (EMS), the County Sheriff's Office, local police departments, and other agencies that distributed and/or administered Narcan in Peoria from January through December of 2018. Narcan administrations for non-Peoria county residents were excluded as well as administrations with no reported date. Data for the 2018 overdose mortality was collected through vital records at the Peoria City/County Health Department.

Results: A simple linear regression was performed to determine if Narcan reversals could predict overdose mortality in Peoria County in 2018. As monthly Narcan reversals increase, monthly overdose mortality decreases. 30.7% of the variation in overdose mortality was predicted by Narcan reversals.

Discussion: Limited studies were found that studied the significance of the Narcan administrations in decreasing overdose mortality.

One study done in Massachusetts evaluated post Narcan administration one year mortality for patients who received at least one Narcan administration by EMS between 7/1/13 and 12/31/15. They found that ''Death records indicated that 6.5% (n = 787) died the same day as the documented naloxone administration, 9.3% (n = 1,132) died within one year and 84.3% (n = 10,273) were alive at one year''. A systematic review done in Boston, MA evaluated the effectiveness of take-home Narcan in decreasing overdose mortality among people with opioid use disorder They found that-there is overwhelming support of take-home naloxone programs being effective in preventing fatal opioid overdoses''.

These studies have evaluated the effectiveness of Narcan in decreasing mortality in people who were identified as people with opioid use disorder only. Whereas our study investigated the effectiveness of Narcan administrations in decreasing overdose mortality in the entire population, and it proved the statistical significance of increased Narcan administrations in decreasing overdose mortality.

Conclusion: This study has proven the statistical significance of Narcan administrations in decreasing overdose mortality in Peoria County reinforcing the need for increased access to Narcan to be a public health priority. Still, these campaigns are not enough to curtail the opioid crises. It's recommended that future studies evaluate medication assisted treatment programs and other programs effectiveness in decreasing the opioid epidemic burden.

The Treatment Effectiveness Assessment as a predictor of success in OBOT

Presenter(s) Are:
Russell D. Berg, MD
Chelsea N. Stevenson, MA

Office Based Opiate Treatment (OBOT) programs allow providers to conveniently treat patients with opiate use disorder in a primary care setting. Many of the tools that exist to measure treatment success are expensive (urine toxicology) or require extensive training and time to administer (e.g. the Addiction Severity Index). The Treatment Effectiveness Assessment (TEA) is a short, easy to administer, questionnaire with which providers can assess OBOT patients' status across four domains: substance use, health, lifestyle, and community.

This study assessed whether TEA scores were associated with urine toxicology and consistent participation in the OBOT program at Harborview Medical Center (HMC) in Seattle WA. If so, TEA results may help guide less frequent urine toxicology testing for select OBOT participants and more intensive intervention for patients at higher risk of being lost to follow up.

Methods: The TEA was administered to 50 HMC OBOT patients over September 2018 through May 2019. TEAs administered after buprenorphine induction were used for analysis (n = 44 TEAs from 44 unique patients). A retrospective chart review was conducted, with collection of demographic information, urine toxicology, buprenorphine prescribing and appointment attendance for the 6 month period following the TEA. Lost to follow-up was defined as not actively seeing HMC OBOT providers or receiving buprenorphine at 6 months after TEA. Inconsistent therapy was defined as actively receiving buprenorphine treatment but having had 1 or more breaks in therapy. Consistent therapy was defined as OBOT participation without any breaks in therapy for 6 months following TEA. A break in therapy was defined as $\geq$1 week without use of buprenorphine and a corresponding Utox negative for buprenorphine.

Results: Higher TEA substance use scores (i.e. self-reported improvement in substance use) correlated with more favorable urine toxicology. The mean TEA substance use score for patients with urine showing no buprenorphine and presence of opiates was 1.3 while those with presence of buprenorphine and absence of opiates reported a mean TEA substance use score of 7.9 ($P = 0.007$ by Kruskal-Wallis test). Patients with consistent therapy in the HMC OBOT program reported higher TEA composite scores (mean 30.8, range 15–38) compared to those who were lost to follow up (mean 22.9, range 14–31) ($P = 0.01$, Kruskal-Wallis test).

Discussion: In this small retrospective chart review, the TEA correlated well with both biochemical and clinical measures of success of patients in the HMC OBOT program. This suggests that a simple and easily administered questionnaire may inform more selective ordering of urine toxicology to decrease programmatic costs and allow for earlier identification of patients at risk of inconsistent participation who might benefit from more intensive interventions to achieve remission from opiate use disorder.

Three Cases of Buprenorphine Microinduction in Critically Ill Patients

Presenter(s) Are:
Jade Malcho, MD
Timothy Wiegand, MD, FACMT, FAACT, DFASAM

Background: Buprenorphine is a high-affinity partial mu receptor agonist with long duration of action indicated for analgesia and opioid use disorder. Transition from full opioid agonists typically requires a washout period to avoid precipitated withdrawal. This may be particularly challenging in patients with difficulty stopping opioid use, even for brief periods. Two cases were previously described in a procedure named the 'Bernese Method' with administration of small doses of buprenorphine during ongoing heroin use. A similar technique was reported using buprenorphine shortly after methadone cessation. This technique allows for small amounts of buprenorphine accumulation at the receptor with gradual displacement of other opioids. The small doses don't trigger a stress response (precipitated withdrawal). Microinduction may be considered for individuals with significant physical dependence unable to tolerate standard buprenorphine inductions and hasn't been reported in critically ill patients receiving continuous opioid infusions.

Cases: 39 year-old male with history of craniopharyngioma resection, respiratory failure, and iatrogenic opioid dependence due to continuous fentanyl infusion (mean 250 mcg/hr > month) had severe agitation even with brief cessation or fentanyl decreases. After trials of dexmedetomidine, ketamine, antipsychotic, and other agents failed to support fentanyl weans buprenorphine was initiated, with fentanyl ongoing, starting at 30 mcg IV/6 hours → buccal 150 mcg/6 hours → 450 mcg/6 hours → 1 mg/12 hours. On Day 4 Fentanyl was decreased by 50 mcg/day and buprenorphine was doubled until reaching 8 mg/12 hours. Fentanyl was then completely stopped and the patient continued buprenorphine without signs of opioid withdrawal. His cognition rapidly improved such that he was able to work with physical therapy.

27 year-old male with opioid use disorder presented with complications related to mycotic aneurysm rupture. He was ultimately stabilized in the neurologic ICU and maintained on high-dose fentanyl infusions for sedation. Despite adding adjunctive agents he didn't tolerate fentanyl weans or even brief infusion holds. A microinduction was performed using buccal buprenorphine (150 mcg → 450 mcg → 1 mg → 2 mg → 4 mg) each dose given at 6-hour increments x4 before increasing. The patient tolerated this well and fentanyl was successfully weaned.

36 year-old male with a history of opioid use disorder previously on buprenorphine presented after a MVA resulted in a femur fracture, rib fractures and splenic rupture. He was treated with high dose hydromorphone PCA but still reported pain and opioid withdrawal symptoms. Ultimately, a microinduction was performed starting at 150mcg every 6 hours and titrated

upward identical to previous dosing. When 8 mg/12 hours was started hydromorphone was discontinued.
Case Discussion: These cases illustrate the microinduction, a novel buprenorphine induction technique used to transition patients from full agonists to buprenorphine in situations where patients cannot tolerate a standard induction and full agonists are continued.
Conclusion: Buprenorphine microinduction should be considered in any situation where a patient cannot tolerate the standard induction. Potential applications include transitioning from full opioid agonist analgesia, sedation weans in critically ill patients, and induction for traditional application in the treatment of opioid dependence.

Transdiagnostic and Self-Compassionate Innovations in Relapse Prevention
Presenter(s) Are:
Brian M. Berman, PsyD
Kris Kurlancheek, MA
Introduction: Substance use disorders (SUD) negatively impact productivity, health-care, and crime, while costing the U.S. $600 billion annually. At least 21.5 million people are identified as having an SUD, while up to 95% of those in recovery are expected to relapse. Due to high relapse rates and complicated co-occurring disorders, innovative treatment approaches are urgently needed.
Increasing evidence suggests that transdiagnostic approaches which target disorders co-occurringly are best suited for relapse prevention. Acceptance and Commitment Therapy (ACT) is one such approach and has demonstrated superior long-term outcomes compared to several established treatments. ACT aims to reduce psychological inflexibility by altering internal avoidance patterns, while increasing valued-action and self-compassion.
Objectives: This study aimed to examine the extent which psychological inflexibility, valued-action, and self-compassion are related to warning signs of relapse. It was hypothesized that psychological inflexibility would be positively associated with relapse signs, while valued-action and self-compassion would be negatively related to relapse signs. This study will add to a limited but growing body of literature examining the contribution of transdiagnostic processes in recovery. To our knowledge, this is also the first investigation into the relation between self-compassion and warning signs of relapse following SUD inpatient treatment.
Methods: This study was part of a larger 16-session investigation into the effectiveness of the Choice Point Model of ACT (CPM-ACT) in an inpatient SUD setting. Twenty-nine participants ($N = 29$) were assessed using a bivariate correlational analysis to assess the extent to which warning signs of relapse were related to psychological inflexibility, valued-action, and self-compassion at three months post-treatment. Assessment questionnaires included the Advanced Warning of Relapse Questionnaire (AWARE), Acceptance and Action Questionnaire-II (AAQ-II), Valued Living Questionnaire (VLQ), and the Self-Compassion Scale (SCS). The AAQ-II measures psychological inflexibility and the VLQ measures weekly valued-action.
Results: Results indicated that self-compassion, psychological inflexibility, and valued-action were each significantly associated with warning signs of relapse, $P < 0.01$. Self-compassion demonstrated the strongest association and was negatively correlated with signs of relapse $r(27) = -0.68$, $P < 0.001$. Psychological inflexibility also displayed a significantly strong positive relationship with signs of relapse $r(27) = 0.66$, $P < 0.001$. Valued-action showed a strong negative association with signs of relapse $r(27) = -0.58$, $P = 0.001$. All self-compassion subscales were also significant, $P < 0.05$.
Conclusions: These findings suggest that patients who demonstrated greater self-compassion following treatment completion also exhibited fewer signs of relapse. Those who attempted to avoid distressing internal states showed greater relapse signs, while engagement with valued-action was consistent with fewer relapse signs. This study has important implications for the advancement of relapse prevention protocols. Self-compassion, psychological flexibility, and valued-action appear to provide important contributions to addiction recovery. Modern approaches focusing on transdiagnostic processes may be key to altering perpetual relapse patterns, while helping forge a new unified model of addiction.

Trends in 311 Needle Reports in San Francisco - A Geospatial Analysis
Presenter(s) Are:
Laila Fozouni, MPH
Saira Khan, MA
Background: Drug overdoses are a major cause of mortality in the United States, and are now the leading cause of accidental death, outnumbering automobile accidents and gun violence. San Francisco (SF) has experienced one of the highest rates of overdose-related mortality in California, and public injection drug use and associated litter are major public health concerns.
Objectives: To use a publicly available, crowdsourced database of reports of discarded needles to a non-emergency municipal response system (311) to understand the evolving drug overdose epidemic in SF.
Methods: We conducted a geospatial analysis of needle reports in SF over a 10-year period between January 2010 and December 2019. We mapped needle reports to their corresponding census block group and used data from the American Census Survey to look for associations with sociodemographic variables such as race and income across block groups. We used ArcGIS to create natural breaks to categorize needle report data. Differences between groups were compared using Kruskal-Wallis tests.
Results: Between January 1, 2010 and December 31, 2019, 34,907 discarded needles were reported in SF. Out of 589 census block groups, approximately 64% of the needle reports originated in 40 of these census block groups, and 27% of the needle reports originated from just 6 census block groups. The 6 census block groups with the highest number of needle reports were located in the Civic Center, Tenderloin, South of Market, Mission, and Showplace Square neighborhoods. Census block groups that had higher number of needles, after stratifying by natural breaks, were associated with a higher population of black residents ($P < 0.001$). The stratified census blocks groups with the lowest and highest number of reported needles were associated with lower rates of reliance on public assistance ($P < 0.001$). There were no statistically significant differences in median household income between stratified census blocks. There were a total of 8 24-hour needle disposal boxes and 9 24-hour needle disposal kiosks; 3 boxes and 3 kiosks were located in 5 of the 6 highest needle reporting census block groups.
Conclusion: Reports of discarded needles in SF over the past 10 years have been primarily concentrated in 3 neighborhoods. Needle reports can demonstrate how the overdose epidemic disproportionately impacts certain demographic groups in San Francisco. Reports of discarded needles could be used to guide the development of harm reduction programs or target the installation of future safe needle disposal sites, as well as to provide an opportunity to engage the community.

Urine Opioid Screen Results Were Not Associated With Engagement in Buprenorphine Treatment
Presenter(s) Are:
Sanjana Kareti
Juleigh Nowinski-Konchak, MD MPH
Background: Return to substance use, whether brief or sustained, is not uncommon among individuals engaged in opioid use disorder treatment, with studies demonstrating recurrence of use even 6–12 years after observed abstinence. Modern recovery-oriented care models, informed by theories of behavior change, focus on risk reduction and improvement of overall health throughout an individual's recovery journey. Urine toxicology results are less informative in these contexts unless abstinence is achieved. Optimizing the role of urine toxicology testing to support a functional, behavior change care model remains a challenge to many practitioners and health care systems. To inform our own health system's evolution towards emphasizing functional outcomes, we estimated the time-dependent rates of opioid positive urine toxicology tests in an urban safety-net population engaged in buprenorphine treatment primarily for

heroin use disorder. We then assessed whether or not opioid positive screens were associated with continued proximate engagement in treatment, defined as filled buprenorphine prescriptions in the subsequent 30 day interval.

Methods: We conducted a retrospective cohort study of patients variably engaged in our primary care based opioid recovery program at Cook County Health, a public healthcare system serving over 300,000 patients residing in the community or institutionalized in Cook County Jail. We included 736 patients recruited from jail, ED, hospital, or clinic who commenced care between April 2018 and April 2019, and had ≥1 urine screen resulted. The proportion of patients testing positive for opioids on urine toxicology screen at 30 day intervals was calculated. We performed Chi-2 tests to assess whether ≥1 opioid positive urine screen during each 30 day interval was associated with retention in treatment during the subsequent 30 day interval.

Results: The majority of participants (63%) were ≥45 years of age. The majority were either Non-Hispanic Black (59%) or Latinx (9%). Fifty-eight percent were men. The median (IQR) number of urine toxicology tests per patient was 5 (2, 9). Opioid-positive tests were detected in a median (IQR) of 1 (0, 2) test per patient, or an average of 36% of all screens. We observed a reduction in patients with opioid positive screens from 39% in the first 30 days to 28% in the second 30 days. For each subsequent 30 day interval, opioids were consistently detected in 21%-31% of patients engaged in treatment for the first year. Positive urine opioid screens during each month were not significantly associated with retention in treatment for each subsequent interval.

Conclusion: In a population of diverse patients engaged in primary care-based buprenorphine treatment and recovery support for opioid use disorder, approximately a quarter to third of patients undergoing urine toxicology screens tested positive for opioids during the first year. Our findings indicate that urine screen results are limited in their ability to inform a functional health care model. Complementary measures such as patient reported outcomes of physical, mental, and social health, may help inform care in a functional health model.

Using Extended Release Buprenorphine Injection to Discontinue Sublingual Buprenorphine

Presenter(s) Are:
Alexis Ritvo, MD MPH
Susan L. Calcaterra, MD, MPH

Background: In 2017, the Food and Drug Administration approved extended-release buprenorphine (XR-BUP) for the treatment of opioid use disorder (OUD). XR-BUP is a long acting injectable buprenorphine with a half-life of 43 to 60 days and is administered monthly into the abdominal subcutaneous tissue. XR-BUP offers advantages over sublingual buprenorphine (SL-BUP) including increased medication compliance and decreased risk for diversion. Tapering of SL-BUP may be challenging for patients due to its high potency, an approximately 35 hour half-life, and because cessation of the 2 mg dose (the lowest available) often leads to intolerable opioid withdrawal symptoms. Stable patients maintained on SL-BUP who desire opioid cessation may successfully fully taper off of buprenorphine using a single XR-BUP 100 mg injection without intolerable withdrawal symptoms. We present three successful cases of this novel use of XR-BUP.

CASE SUMMARY TABLE of 3 CASES

COLUMNS: 1. Age,Gender 2. Substance Related Diagnoses 3. Opioid Use Prior To SL-Bup 4. SL-Bup Taper Attempts 5. SL-Bup Dose At Time of XR-Bup 6. Patient-Reported Experience With XR-Bup 7. Monthly Follow-Up

Discussion: This case series demonstrates a novel off-label use of XR-BUP 100 mg to facilitate discontinuation of SL-BUP without intolerable side effects. We identified a unique subset of stable patients with long-term outpatient follow-up who were appropriate to discontinue buprenorphine. Two of these patients were on SL-BUP for physical dependence to prescribed opioids and did not meet criteria for opioid use disorder. Thus, this approach may not be appropriate for all patients maintained on SL-BUP. Future studies will evaluate patient-reported outcomes for patients with moderate to severe OUD.

Vaping THC: A Dangerous High

Presenter(s) Are:
Anna Wethington, MD
Zafar S. Gill, MD

Introduction: In recent months there have been an increasing number of cases of acute inhalation injury related to THC and nicotine e-cigarette use. So far 2602 cases, including 50 deaths have been reported. Data describing patient demographics, epidemiology, pathophysiology and treatment of vaping induced lung injury is scarce, however a recently published series of 53 cases demonstrate that patients diagnosed with vaping-induced lung injury are young (median age 18), overwhelmingly male (83%) and present with a combination of respiratory symptoms (98%), gastrointestinal symptoms (81%), and constitutional symptoms (100%), with imaging showing bilateral ground glass opacities (100%). 58% of patients required ICU admission for respiratory failure and 32% required intubation. 92% were treated with systemic glucocorticoids with most patients showing improvement (62%). Here we describe a case of vaping-induced lung injury that supports many of these observations and adds to the evidence that these cases represent a novel etiology of acute lung injury in young e-cigarette users.

Case Presentation: An 18 year old previously healthy caucasian male presented with intractable nausea, vomiting, and mild cough for 3 days. The patient reported heavy vaping with both THC and nicotine e-cigarette cartridges (can we include his brand in here). On admission the patient was afebrile, heart rate 99 BPM, blood pressure 112/86, oxygen saturation 99% on ambient air. The patient experienced rapid decompensation of his respiratory status, requiring 3L by nasal cannula on day 2 and 10L by oxymask on day 6. CT of the chest demonstrated bilateral ground-glass opacities with tree-in-bud nodularity and peribronchial consolidation with widespread centrilobular nodules Extensive infectious work-up was negative including Respiratory viral panel, HIV antibody and PCR, Legionella Antigen, Aspergillus antibody, and endemic fungi testing. The patient completed 5 days of azithromycin and ceftriaxone -with no improvement of respiratory symptoms.Given the patient's vaping history and lack of response to antibiotics along with an extensive negative infectious workup, he was started on a 3day solumedrol burst followed by a 6 week prednisone taper. The patient rapidly improved with initiation of steroid therapy and was discharged on 1 L of supplemental oxygen after 9 days of hospitalization.

Discussion/Conclusions: This case illustrates the potential for significant pulmonary injury secondary to the use of THC and nicotine e-cigarettes.Similar to previously described cases of vaping-induced lung injury our patient was a healthy young male with heavy e-cigarette use who presented with predominantly constitutional and gastrointestinal symptoms and was noted to have diffuse pulmonary injury with rapid deterioration of pulmonary status and a subsequent rapid response to steroid treatment. Taking a thorough substance use history and having a high index of suspicion is imperative in making the correct diagnosis of vaping-related lung injury. Initiation of steroid therapy remains the mainstay of treatment in these cases. While it remains unclear what specific elements of e-cigarettes are responsible for this type of lung injury it has been suggested that Vitamin E acetate may play a role. Providers should alert their patients to the potential risks associated with e-cigarette products.

What are the Attitudes and Beliefs of Medical Students Surrounding Naloxone?

Presenter(s) Are:
Maya M. Nussenzweig, MPH
Andrea Cole, PhD

Introduction: In the United States, the rate of death by accidental opioid overdose has hit epidemic proportions in recent years (Kolodny et al. 2015). Naloxone is a rescue medication known to halt an opioid overdose if delivered

in a timely manner. The Institute for Family Health (IFH), a Federally Qualified Health Center in New York State, offers a naloxone distribution program designed to educate the community about opioid overdose prevention. The purpose of this project is to improve our training and get a better sense of medical student experience and comfort with overdose prevention.
Methods including intervention: IFH staff conducted naloxone trainings at two medical schools in the northeastern United States. The Integrating Overdose Prevention presentation was a 20–25 minute training that covered key terms as well as overdose statistics in New York City utilizing data from the NYC Department of Health. The training includes information about the medication, how to recognize signs of opioid overdose, and reviewed components of the naloxone-kit'' distributed at the training. Five pre-training survey questions were administered to 61 first year medical students, followed two weeks later by nine post-training survey questions distributed to participants via email. Questions in the pre-post assessment focused on previous experience, preparedness, and comfort with dispensing naloxone, measuring these on a 5-point Likert scale, with 0 = very unconfident, 4 = very confident. Descriptive statistics and independent samples t-tests were conducted in SPSS to detect significant differences in some pre and post responses.
Results: The pre-test sample consisted of 61 medical students. Of the 61 original participants, 31 responded to the post-test questions. Among the pre-test participants, the mean age was 24 years old. Forty-four percent of participants were white, 33% were Asian, 7% were Hispanic or Latino, 5% were Black or African American, 13% identified as another race/ethnicity or did not know/did not respond. Pre-test responses indicate low levels of comfort (M = 2.59) in administering naloxone and discussing risk with respective patients. Post-test responses indicate higher level of comfort (M = 3.37) with administration processes. There was a statistically significant difference in level of comfort discussing overdose risk with patients between pre and post training (t (90) = −1.991, $P = 0.05$). There was also a statistically significant difference in level of comfort with administering/dispensing naloxone between pre and post training (t(90) = −2.230, $P = 0.028$).
Conclusions: Our results highlight that our training is impactful. These findings will help us refine the training and ultimately increase the likelihood that emerging doctors will continue to find value in naloxone as well as assist their patients in obtaining it. Our findings are in line with other research indicating that first year medical students are lacking in expertise to prevent, diagnose, and treat addiction. As such, it is essential for medical schools to provide comprehensive addiction and overdose prevention training.

Why Cardiac Surgeons Decline Surgery for Injection Drug Use-Related Infective Endocarditis

Presenter(s) Are:
Max Jordan N. Nguemeni Tiako, MS
Cornell Brooks II, BS

Background: Cases of injection drug use related infective endocarditis (IDU-IE) are on the rise in the setting of the current opioid epidemic. Increasingly, cardiac surgeons are asked to make complex decisions regarding the management of patients with IDU-IE with little support about the substance use disorder that led to their patient's illness. Guidelines for the management of IDU-IE remain vague, leaving surgeons to make decisions for surgical intervention based on their understanding of the patient's condition as well as their thoughts or opinions about substance use disorder and its treatment. We evaluated reasons why cardiac surgeons may decline to intervene surgically on cases of IDU-IE.
Methods: This study is a sub-group analysis of a nationwide survey of cardiac surgeons' treatment approach for IDU-IE. Participants were asked the question ''Have you ever denied operating on a patient with intravenous drug use associated infective endocarditis? (you may explain why in the free text box next to your answer).'' 86 surgeons who reported having declined operating on IDU-IE patients included free-text answers. Responses were grouped into 4 applicable categories (active drug use, recurrent endocarditis with ongoing drug use, severe end-organ damage and other). Each response was additionally coded and evaluated for use of stigmatizing language. Review and classification of responses into the aforementioned categories was performed by 3 independent reviewers.
Results: We received free-text responses from 86 cardiac surgeons. Active drug use was the most mentioned (71, 82.6%), followed by recurrent endocarditis (50, 58.8%), and severe end-organ damage (9, 10.6%). More than half (45, 52.9%) of the responses included both active drug use and recurrent endocarditis. Furthermore, our coding of word choice reveals the use of stigmatizing, criminalizing and patient-blaming language (''recalcitrant,'' ''recidivism,'' ''contract violation'') in over a third (36, 43%) of responses. The lack of explicit acknowledgement of addiction as a complex chronic illness with highly effective treatment options is also noted, by way of phrases such as ''the addiction is stronger than the will to live'' and the preponderance of additional terms that reduce addiction to a matter of intrinsic will such as ''noncompliance,'' and ''quitting.''
Conclusion: Most cardiac surgeons who decline to operate do so on the basis of active drug use, though a minority primarily expresses concerns about severe end-organ damage. These findings add to the existing body of literature emphasizing the need for addiction treatment in this patient population surrounding the time of surgery. Understanding surgeons' reasoning in cases of declined intervention exhibits the opportunity to employ addiction medicine expertise in order to optimize the care of patients with IDU-IE. Lastly, the themes of stigmatizing and criminalizing language along with the lack of acknowledgement of addiction as a complex chronic illness highlights the need for additional training and support for cardiac surgeons who are increasingly caring for patients with IDU-IE.

Withdrawal Patterns during Transition from Opioid Use or Buprenorphine Treatment to XR-NTX

Presenter(s) Are:
Antoine B. Douaihy, MD
Abigail Zavod, MD

Introduction: Before initiating extended-release naltrexone (XR-NTX), a monthly μ-opioid receptor antagonist, an opioid-free period is recommended. The time course and severity of withdrawal symptoms during this period may vary based on management strategy and patient characteristics. We performed a cross-study comparison of the temporal pattern of opioid withdrawal during induction onto XR-NTX in 2 patient populations with opioid use disorder (OUD).
Methods: This post hoc analysis evaluated 2 clinical trials investigating a 7-day managed withdrawal period prior to starting XR-NTX (induction) using standing ancillary medications and counseling ± oral NTX/buprenorphine (BUP) transition protocols. Each study evaluated a different OUD population. Study 1 participants (N = 378) had active opioid use (excluding BUP) before entry into an outpatient study (baseline active OUD). Study 2 participants (N = 101) had received BUP treatment for ≥3 months before entry into a hybrid residential/outpatient study (baseline stable BUP). To ensure our findings were not influenced by the presence of oral NTX used in one of the treatment arms, the pattern of opioid withdrawal was analyzed for the placebo arms only (placebo for oral NTX). The pattern of withdrawal was compared between studies during transition (Days 1–7), at XR-NTX injection (Day 8), and following XR-NTX injection (Day 9: Study 1, n = 126; Study 2, n = 51).
Results: For the placebo arms, mean peak Clinical Opiate Withdrawal scale (COWS) scores were uniformly mild and decreased over time for participants in Study 1 (baseline active OUD, Days 1–7: 6.10; Day 8: 5.01; Day 9: 3.28) and were generally stable for participants in Study 2 (baseline stable BUP), with a slight increase at or near time of injection (Days 1–7: 4.95; Day 8: 6.43; Day 9: 5.38). During induction, the largest percentage of maximum peak COWS scores occurred on Day 1 (58.7%, 74/126) in Study 1 (baseline active OUD), and on Day 6 (31.4%, 16/51) in Study 2 (baseline stable BUP). Subjective Opiate Withdrawal scale scores followed a similar pattern.
Conclusions: In this post hoc, cross-study comparison, XR-NTX induction regimens were generally well tolerated. The temporal patterns of opioid withdrawal differed when participants were transitioning from baseline active OUD (Study 1) versus baseline stable BUP (Study 2). Baseline active OUD

participants were more likely to experience earlier maximum peak COWS scores followed by a gradual decline, whereas baseline stable BUP participants were more likely to experience later maximum peak COWS scores. Awareness of these differing withdrawal patterns may aid healthcare providers in optimizing treatment paradigms for managing opioid withdrawal. This study was funded by Alkermes, Inc.

Years of Life Lost Due to Opioid Overdose in Ohio

Presenter(s) Are:
Orman T. Hall, DO

Background: Opioid overdose is an increasing cause of mortality among young and middle-aged adults. Conventional reports including incidence alone do not fully convey what is meant to society by the loss of so many young individuals. The present work employs Years of Life Lost (YLL), a time-based metric, to give greater weight to deaths occurring among the young. We document a 7-year period in which there were rapid shifts in the demography and geography of fatal opioid overdose in Ohio. Although recent work has examined opioid overdose YLL at the national level, significant geographic variation in mortality burden exists within the US necessitating detailed state and regional analyses.

Objectives: To quantify the burden of premature mortality due to opioid overdose in Ohio, document the role of fentanyl poisoning in contribution to this evolving epidemic, examine geographic and temporal patterns of mortality burden within Ohio and measure the effect of opioid overdose on lifespan in the state.

Methods: A serial cross-sectional analysis was performed for all fatal opioid poisonings (N = 12,782) in the state of Ohio between January 1, 2010 and December 31, 2016. The burden of fatal opioid overdose was calculated in YLL. YLL were mapped with respect to geographic and cultural region. The geographic spread of fentanyl poisoning was also mapped and the shifting contribution of fentanyl poisoning to overall opioid mortality burden was assessed over time. Finally, the negative effect of opioid overdose on average lifespan was calculated for all-cause decedents in the year 2016.

Results: Opioid overdose resulted in 508,451 total YLL. In the year 2016 alone, there were 136,679 YLL attributable to opioid poisoning. Fentanyl related YLL rose from 7.5% of all YLL due to opioid overdose in 2010 to 69.0% in 2016. In the same year, opioid overdose lowered the average lifespan of all-cause decedents by 0.97 years. Although the vast majority of decedents were White (91%), YLL increased annually in all racial groups and the rate of change was greater for Blacks (387% change) than for Whites (245% change). Burden was not equally distributed within the state. Two distinct geographical clusters of excess mortality were identified.

Conclusions: Fatal opioid overdose accounted for over half a million YLL in Ohio during the 7-year study period. Opioid overdose mortality rose annually. Fentanyl involved overdoses accounted for an increasing proportion of excess mortality. This study contributes to the growing epidemiologic research regarding the opioid epidemic. Our study documents the recent emergence of fentanyl poisoning as a growing source of excess mortality over an increasing geographic area in the state of Ohio. Implications of the present work are many. Our results may be used to guide resource allocation and inform further research. Mortality burden expressed in YLL should be serially assessed in order to surveil the geographic spread of fentanyl and other opioid poisonings, identify community profiles and potential protective factors and evaluate the efficacy of ongoing and future efforts to control the epidemic.