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Scientific Program
Abstracts of the
ACAAM 2020 Annual Meeting

March 24, 2020

On behalf of the Poster Sub-Committee for the Annual Meeting of The American College of Academic Addiction Medicine I am writing with several updates about the canceled 2020 Annual Meeting poster session to which you had been accepted.

2020 Meeting & Poster Session

The 2020 meeting previously scheduled for April in Denver will not be rescheduled as an in-person meeting. We are currently re-imagining the meeting as a series of bi-monthly online gatherings to stay in touch and share important information. One possibility is to use the June gathering to showcase your posters and celebrate the graduates. Expect to receive more information after the current public health issues become clearer and we work out the logistics.

2020 Poster Session Winners

Poster session winners were selected prior to cancellation of the meeting and we would like to recognize them here:

Emily Buirkle, MD - Rutgers University
Co-Author: Erin Zerbo, MD
Buprenorphine induction with microdosing: A review of the literature

Haileigh Ross, OD - Ohio Health Grant Medical Center
Co-Author: Krisanna Deppen, MD
A novel case of injectable buprenorphine for opioid use disorder in pregnancy

Kumar Vasudevan, MD - NYU School of Medicine
Co-Authors: Mia Malone; Ryan McDonald, MA; Anna Cheng; Michael Matteo, CASAC; Monica Katyal, JD MPH; Jasdeep Mangat, MD; Jonathan Giftos, MD; Ross MacDonald, MD; Joshua D. Lee, MD MSc
Buprenorphine Extended-Release vs Sublingual Buprenorphine in Jail and at Re-Entry: Pilot Comparing Feasibility and Acceptability

Publication of Poster Abstracts

Accepted abstracts have been posted on the ACAAM website: https://www.acaam.org/scientific-program-abstracts-of-the-acaam-2020-annual-meeting/. Please take a moment to review the many interesting submissions. The document is downloadable so that you may save it and reference it on your CV.

Sincerely,

Robert J. Sokol, MD
Chair, Poster Sub-Committee of the
Program Committee for the
Annual Meeting of The American College of Academic Addiction Medicine

Abstracts

Abstracts

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TITLE

Street Smarts for Medical Students: Implementing a Novel Course on Social Determinants of Health

OBJECTIVES

1. To assess the impact of a novel elective course on medical student knowledge and confidence in identifying opioid use disorder and social determinants of health.

2. To evaluate student perceptions of the novel elective curriculum and its instructors.

METHODS

To characterize the impact of the course for learners, a pre-course and post-course survey was developed and administered. The survey was designed to evaluate students' knowledge and self-reported competency (1=novice; 5=expert) related to OUD and social determinants of health. Institutional Review Board approval was obtained to conduct the study and a secondary analysis of the data was performed. A total of 30 students enrolled and successfully completed the course. Four students did not provide consent for inclusion of their data, yielding a total of 26 students for inclusion within the study. A series of paired samples t-tests were conducted to assess differences in student knowledge and self-reported competency before and after the course. Students also provided written feedback about the course content and instruction techniques.

RESULTS

Students demonstrated a statistically significant improvement in knowledge from pre- to post-course with regards to both cumulative (pre course: 69%, post course: 85%, $t(21)=5.434$, $p<.05$) and OUD based knowledge (pre course: 65%, post course: 86%, $t(21)=6.385$, $p<.05$). Students also displayed a statistically significant improvement in their social determinants of health competency following the course (pre course: 2.95, post course 3.44, $t(20)=4.489$, $p<.05$). Subjective written responses from students were collectively positive, and the content was well received.

CONCLUSIONS

Students demonstrated increased knowledge about OUD and improved self-reported competency about social determinants of health upon completion of this course.
Early exposure to educational content regarding OUD and social determinants of health equity may be a valuable first step for preparing students to more effectively identify and manage patients with OUD during their clerkship experiences. This may, in turn, lead to future physicians who are better prepared to address the clinical needs of patients with addiction and who understand the inherent psychosocial challenges that often complicate management and treatment of this population.

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TITLE

Trends in the use of adjunctive agents for alcohol withdrawal syndrome

OBJECTIVES

While benzodiazepines are the mainstay of treatment for alcohol withdrawal syndrome, a variety of adjunctive agents are used in AWS. We studied trends in the management of inpatients with AWS.

METHODS

The Explorys platform collects billing and HER data from participating. The de-indentified data was used to identify adult inpatients with a diagnosis of AWS.
We studied trends in the use of adjunctive agents including clonidine, anti-epileptic agents, phenobarbital and baclofen. The study is limited by the association of billing for drug use, an inpatient encounter, and the diagnosis of AWS. We cannot determine from this study the intention of the use of the drug.

RESULTS

We reviewed the records of 96050 inpatients from 2016 to 2019. This consisted of adult patients of whom 15% were age 65 or older. Eighty-two percent of patients were Caucasian and 73% were male. Forty one percent had private insurance, 29% were Medicaid, and 16% were Medicare. Lorazepam was the most commonly used benzodiazepine (28%) followed in equal proportions by midazolam, diazepam, and chlordiazepoxide, each at 15-16%. The use of temazepine increased over the study period. (p=.02) Haloperidol was used in 46% of patients and clonidine in 42% of patients. Phenobarbital was used in 6% of patients. The anti-epileptics were used occasionally with valproic acid (8%), oxcamazepine (2%) and carbamazepine (55) of the time. Clonidine was used frequently (42%) of the time and dexmedetomidine 7%). Baclofen was used in 6% of patients.

CONCLUSIONS

There appears to be considerable variation in the treatment of AWS. Haloperidol and clonidine are frequently associated with inpatient care of patients with AWS. The anti-epileptics are used less frequently despite evidence supporting their use. Phenobarbital is rarely used in association with AWS. Despite a paucity of evidence to support its use baclofen is used in 6% of patients with AWS.

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TITLE

A Patient With Rapid Metabolism of Buprenorphien/Norbuprenorphine

OBJECTIVES

Buprenorphine is a semi-synthetic opioid that has both agonist and antagonist properties at the mu opioid receptor. It is prescribed in outpatient medication assisted treatment as various formulations to treat opioid use disorder (2, 3, 4, 5). Buprenorphine is administered sublingually and has low oral bioavailability due to extensive first-pass liver metabolism (4, 5). It is primarily metabolized in the liver via N-dealkylation through the cytochrome p450 3A4 enzyme into active metabolites, including norbuprenorphine (1, 3, 4). Buprenorphine and its metabolites are primarily excreted in the feces, and urine excretion accounts for about 10-30% of total (4). Urine tests to detect buprenorphine and its metabolites have better sensitivity and specificity than immunoassays. It is important to note that inducers and inhibitors of cytochrome p450, as well as other medications, food, and pregnancy (3, 4) can affect the presence of buprenorphine and it metabolites in the urine. No case reports to date have been published about rapid metabolizers of buprenorphine.

METHODS

Most buprenorphine clinics utilize clinical presentation and urine drug screening to assess patients for medication adherence. At our institution, we utilize clinical assessment, urine toxicology, and buprenorphine and norbuprenorphine levels measured from urine specimens. The levels of buprenorphine and norbuprenorphine are used to establish baselines and to confirm adherence to the prescribed regimen. Our clinical experience has consistently shown a positive correlation between prescribed buprenorphine doses and buprenorphine and norbuprenorphine levels. Here we present a case in which a patient's measured levels were persistently lower than expected when controlled for external factors. This rare instance suggests a unique intrinsic etiology, particularly rapid metabolism.

RESULTS

The patient is a 48 year-old male with opioid use disorder, severe, who presented to the medication-assisted treatment clinic for buprenorphine maintenance. The patient reported adherence, but his buprenorphine and norbuprenorphine levels were significantly low compared to his prescribed dose. A 2005 article by Bottcher showed a measured association between prescribed buprenorphine dose and the urine drug and drug metabolite levels. The patient was prescribed buprenorphine/naloxone 8mg-2mg sublingual twice daily, and his norbuprenorphine:buprenorphine levels ranged from 48:15 ng/mL to 112:72 ng/mL with urine creatinine ranging from 11 to 46 mg/dL. Laboratory testing, including a complete blood count, complete metabolic panel, thyroid stimulating hormone, lipid panel, and testosterone levels, were unremarkable. The patient did not use herbal supplements or ascribe to extreme dietary habits. Further, the buprenorphine and norbuprenorphine levels remained consistently low when adherence was controlled through direct observed therapy, indicating that this patient is a rapid metabolizer of buprenorphine.

CONCLUSIONS

This case report highlights the importance of supervised collection of urine samples to discourage adulteration and of using expected ranges of buprenorphine and norbuprenorphine in relation to buprenorphine dosing as part of the clinical management in patients with opioid use disorder. The case sheds more light on the importance of further research to determine buprenorphine dosage to expected norbuprenorphine:buprenorphine ratios. The patient was uniquely identified as a rapid metabolizer in our clinic after direct observed therapy to rule out poor medication adherence.

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TITLE

The streets to the wards: Potential for lipid emulsions in opioid overdose

OBJECTIVES

Opioid overdose continues to discriminatorily impact underserved, inner-city communities that lack unbarred, unbiased access to clinical care. Frequent opioid users cite numerous "at-home" methods of reversing or preventing overdose, including the use of milk. While patients frequently describe the utility of drinking or injecting milk to prevent the onset of the overdose, clinical literature is notably lacking any rigorous evidence of its efficacy and safety. However, these anecdotes suggest a potential role for lipids in the management of opioid overdose, which we examine here through a review of the literature.

METHODS

The National Center for Biotechnology Information PubMed Database was queried using the following advanced search: (Opioid Overdose) AND (Milk); (Opioid) AND (Milk); (Opioid Overdose) AND (Lipid Emulsion); (Opioid) AND (Lipid Emulsion). All search results were reviewed by authors for further analysis as per *a priori* inclusion criteria centered on topical relevance.

RESULTS

Of all search results for milk, opioids, and opioid overdose, one (1) case report directly addressed the practice of using dairy milk to prevent overdose. Of all search results for lipid emulsion, opioids, and opioid overdose, only four (4) *in vitro* and *in vivo* animal studies suggest a role for opioid receptors in mediating the rescue action of lipid emulsion for other pharmacologic agents.

CONCLUSIONS

High-quality evidence supporting the use of dairy milk for opioid overdose is notably lacking, with the one documented case highlighting the numerous adverse effects of intravenous milk injection. The creation of a lipid sink in a clinical setting may improve patient outcomes and efficacy of medication-assisted treatment post-overdose. Our review of the literature, and its notable gaps regarding the use of lipid-based therapy for opioid overdose, suggests a potential area of future clinical investigation. The lack of evidence around in-field use of dairy milk to prevent or reverse overdose justifies the need for effective patient-centered education on evidence-based overdose reversal measures.

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TITLE

Relationship of Anxiety and Depression to Substance Use and HIV Clinical Outcomes

OBJECTIVES

Evaluate the relationship of anxiety and/or depression to substance use screening, HIV viral control and CD4 count.

METHODS

Participants (N=888) were patients with HIV (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 (TAPS), the Patient Health Questionnaire (PHQ-9), and the Generalized Anxiety Disorder (GAD-2) screening instruments. Patients completed these measures either online via KPNC's portal or on a clinic-provided tablet. 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, 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 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

Limitations included the generalizability of findings given sample characteristics (private, stably insured, with strong viral control) and reliance on self-reported substance use measures. The present study demonstrated that PWH with clinically important anxiety and/or depressive symptoms use more 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.

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TITLE

Physician Reliance on PDMP (Prescription Drug Monitoring Program): Stigmatization Toward Patient with Addiction

OBJECTIVES

Stigmatization toward patients with addiction by physicians is a well-known problem, and can easily damage the patient-physician relationship needed to provide optimal care in this highly adherence-dependent field. The magnitude of human and financial loss brought by all forms of mis-prescription has stimulated technological efforts to control this problem. PDMP (prescription drug monitoring programs) have been implemented by 49 states to help keep both providers and patients safe from prescription interaction and volme errors.

METHODS

Case Report

RESULTS

We report a case of a middle-aged woman with an opioid use disorder, admitted to the hospital for fever and in *status epilepticus*. She stipulated to regularly receiving benzodiazepines as an outpatient for anxiety. Her hand-written benzodiazepine prescriptions were not reflected on the PDMP. Consequently, while she was subsequently undergoing treatment of bacterial endocarditis, her requests for temazepam and alprazolam were perceived as pathologic drug-seeking behavior. It was later discovered that patient had in fact received benzodiazepines as she had reported, and that the error lay with a contractor hired by the pharmacy to input data into the PDMP. The patient departed against medical advice, prior to completion of treatment.

CONCLUSIONS

Discussion: Patients with addiction face stigmas from medical providers usually due to their chronic maladaptive behaviors related to substance use. It's hard to consider these patients as reliable historians at times. In this case, stigmatization toward patients with addiction may have played a role where the PDMP was valued over what the patient was reporting. The patient's departure from medical care may have been prevented if the discrepancy was resolved earlier. Maintaining a healthy reservation concerning PDMP reliability, certainly to at least the degree reserved for the patient's own history, may help to maintain a healthy relationship with the patient and ultimately aid in providing optimal health care.

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TITLE

Hydromorphone-induced Tactile Hallucination – Rare Opioid Side Effect

OBJECTIVES

As distinct from delusions, opioid-induced hallucination is an uncommon and significant adverse effect. When it is experienced as a tactile bsensation, it requires distinction from pruritus. Unfortunately, opioid-induced hallucinations may be under-reported and are frequently attributed to underlying psychiatric disease rather than as direct effects of the opioid. Given the high number of patients presenting with opioid intoxication and requiring opioid use disorder treatment, awareness of the potential of this adverse opioid effect is important.

METHODS

Case Report

RESULTS

We are reporting a case of a young woman with opioid use disorder who experienced multiple visual hallucinations and an episode of tactile hallucination manifested shortly after taking oral hydromorphone, in the course of hospitalization to manage postoperative pain. Patient saw images that she described as "beetles" and "flies" on her visual periphery approximately 30 minutes after administration of oral hydromorphone. Patient received hydromorphone 2mg every 4 hours as needed at that time. Later, she sensed bugs crawling on her forehead and in her hair. The patient had no history of hallucinations in the past even during active substance use. All hallucinations ceased upon discontinuation of the hydromorphone.

CONCLUSIONS

Discussion: Development of hallucinations can be multifactorial, to include medication-induced. Opioid-induced hallucination is an uncommon. Disorienting and frightening, the phenomenon requires clinician awareness of its possibility. Opioid-induced hallucination is believed to be under-reported, the patients commonly being fearful of being identified as psychologically unstable. A review of the literature disclosed no report of hydromorphone-induced tactile hallucination (formication).

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TITLE

Urine Drug Screening on Labor and Delivery

OBJECTIVES

At our institution there is no standardized urine drug screening protocol. We set out to determine the number of urine drug screens (UDS) that return positive during labor and delivery evaluations, demographics of women who receive UDSs, number of positive neonatal drug screens, follow-up after a positive result, and the relationship of maternal UDS results to neonatal drug screen results.

METHODS

This is a retrospective chart review examining all women in 2017 who received a UDS on labor and delivery at Kapi'olani Medical Center for Women and Children (KMCWC).

RESULTS

Out of 297 UDSs that were ordered, 59% identified as Native Hawaiian or Pacific Islander and 83% had public insurance. No reason for ordering was documented in 31% of UDSs ordered. The most common reason for ordering a UDS was history of substance use, with confirmatory testing positive in only 35% of such cases. Confirmatory testing was negative in 6% of all positive maternal UDSs. 36% of women had a positive result on preliminary testing, and 33% on confirmatory testing. The most common drug found was methamphetamine (47%). 90% of women received a social work consultation while in the hospital, and 70% were referred to child welfare services.

CONCLUSIONS

The majority of women evaluated in labor and delivery who received UDSs were nonwhite, had public insurance, and received a social work consultation. Maternal drug test results were not reliable for predicting neonatal drug test results and vice versa.

With rising rates of substance use disorders in the pregnant and reproductive-aged population and the associated stigmas, it is important to treat patients in an evidence-based manner and identify potential intrinsic bias. This project is a first step to identify how UDSs are being used in the care of pregnant women in our community. Traditional indications for ordering UDSs may not predict substance use. Standardized unbiased UDS guidelines should be implemented using screening and reflex confirmatory tests.

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TITLE

Case report of intra-ocular buprenorphine/naloxone use in opioid use disorder treatment

OBJECTIVES

The most commonly used formulation of buprenorphine is co-formulated with naloxone to be taken sublingually in the form of a tablet or film. Co-formulation with naloxone decreases potential for misuse via intravenous or intranasal administration. We describe a case of intraocular administration of buprenorphine/naloxone films in a patient treated for opioid use disorder.

METHODS

Prior studies have found that buprenorphine is misused intranasally, likely due to increased bioavailability and faster onset of effects relative to sublingual administration. To my knowledge, there are no reports on the intraocular administration of dissolved buprenorphine/naloxone.

RESULTS

A 53-year-old man presented to establish care in clinic after incarceration. He had a prior history of heroin use and opioid use disorder, which he had been managing with buprenorphine/naloxone while incarcerated for several years. He reported dissolving small amounts of buprenorphine/naloxone films in water or saline eye drops and applying the liquid intraocularly. He indicated this was common practice for others during incarceration and used ~1/8th of the 8/2mg buprenorphine/naloxone films daily. He reported some mild euphoria with administration, but no withdrawal symptoms, cravings, or illicit drug use. Urine screening toxicology was notable for buprenorphine and negative for all other substances, including opiates. Gas chromatography/mass spectroscopy (GC/MS) confirmation showed a norbuprenorphine level of 46ng/mL and a buprenorphine level of 170ng/mL. He was transitioned to sublingual administration and stabilized at 4/1mg daily. Urine toxicology testing continued to show positive testing for buprenorphine alone, as well as confirmatory GC/MS levels of buprenorphine in the range of 190-580ng/mL and norbuprenorphine levels in the range of 210-830nl/mL. He continues to have no illicit opiate use, cravings, or withdrawal symptoms, and is actively engaged in treatment.

CONCLUSIONS

We describe the case of a patient who self-managed opioid use disorder with intraocular buprenorphine/naloxone for several years while incarcerated and was successfully transitioned to sublingual buprenorphine/naloxone. We need further studies on the pharmacokinetics, bioavailability, safety profile, and misuse liability of intraocular buprenorphine administration given the lack of studies and published reports.

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TITLE

Case report of Kratom and benzodiazepine dependence managed with buprenorphine/naloxone and chlordiazepoxide tapers

OBJECTIVES

Kratom, or *mitragyna speciosa***,** derived from a tree in southeast Asia, is readily available in the United States and consumed for its stimulant and analgesic properties. It is recognized as a drug of potential misuse by the Drug Enforcement Administration, owing to the ability of its alkaloids (primarily mitragynine and 7-hydroxymitragynine) to activate the μ opioid receptor and cause dependence, withdrawal and addiction.

METHODS

The few case reports on Kratom dependence and withdrawal describe a presentation similar to that observed with opioid withdrawal and management with symptomatic adjuncts or buprenorphine/naloxone. Even less is known about the appropriate management of polysubstance dependence in patients with a history of substance use disorders. Here we review the short-term management of Kratom and benzodiazepine dependence in a patient with a remote history of opioid use disorder.

RESULTS

Patient was a 51-year-old man with a history of OUD (in remission), Kratom dependence, and PTSD (on chronic lorazepam) who presented for medically supervised withdrawal. He reported a distant history of OUD, which was treated with buprenorphine/naloxone for several years, and recently tapered at his request. Soon thereafter, he started Kratom for its mood-enhancing properties. He developed opioid-withdrawal-like symptoms and worsening anxiety with cessation of Kratom use. He reported daily use of lorazepam (>3mg/day) and Kratom (>20mg/day). On admission, he reported mild anxiety, with Clinical Institute Narcotics Assessment (CINA) score of 2, vitals notable for blood pressure of 157/90 and pulse of 85, and screening urine toxicology was negative for opiates, benzodiazepines, barbiturates, cocaine, and methadone. With a four-day buprenorphine and chlordiazepoxide taper, peak CINA and Clinical Institute Withdrawal Assessment-Benzodiazepine (CIWA-B) scores of 18 and 10, respectively, improved to 0, and vital signs normalized. He was offered, but declined ongoing treatment with buprenorphine at discharge.

CONCLUSIONS

Dual Kratom and benzodiazepine dependence can be successfully managed using buprenorphine/naloxone and chlordiazepoxide tapers, resulting in the normalization of vital signs, withdrawal scoring metrics and subjective withdrawal symptoms. We need further studies on the overlap of Kratom dependence and OUD and the utility of long-term opioid agonist treatment in Kratom dependence.

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TITLE

Development of a comprehensive clinical guideline for opioid use disorder management in hospitalized patients

OBJECTIVES

Medication for opioid use disorder (OUD) is highly effective, but underutilized during hospitalizations — due, in part, to lack of provider comfort with medications for OUD and misconceptions about regulations. This practice improvement intervention aimed to: (i) create a comprehensive clinical guideline for providers to initiate or continue OUD treatment in hospitalized patients; and (ii) engage stakeholders in the development and implementation of the guideline.

METHODS

An addiction medicine fellow and hospitalist, with mentorship from three addiction experts, developed and implemented a clinical guideline for OUD management at a large, urban, academic hospital. We developed the guideline based on OUD protocols from several academic institutions across the United States, a literature and web search, interviews with addiction experts, and a review of federal and state regulations on OUD treatment. These protocols were reviewed and synthesized into a single guideline, which underwent an iterative process of revisions during a series of 14 project team and stakeholder engagement meetings: six with addiction medicine, two with pharmacy, and one each with addiction psychiatry, emergency medicine, the hospital pain committee, information technology, social work, and nursing.

RESULTS

We reviewed 13 protocols detailing OUD management in hospitals: four were publicly available via literature or web search, six were unpublished and obtained via addiction experts at the institution, and three were published national or society guidelines. Our guideline includes: (i) a flow sheet to guide the initiation or continuation of OUD treatment; (ii) flow sheets on initiation of buprenorphine and methadone; (iii) a discharge planning guide; (iv) a guide to expert resources; (v) a summary of state and federal regulations; and (vi) patient-facing educational materials. We made the guideline available on the hospital's intranet and presented it during didactic seminars to medical providers.

CONCLUSIONS

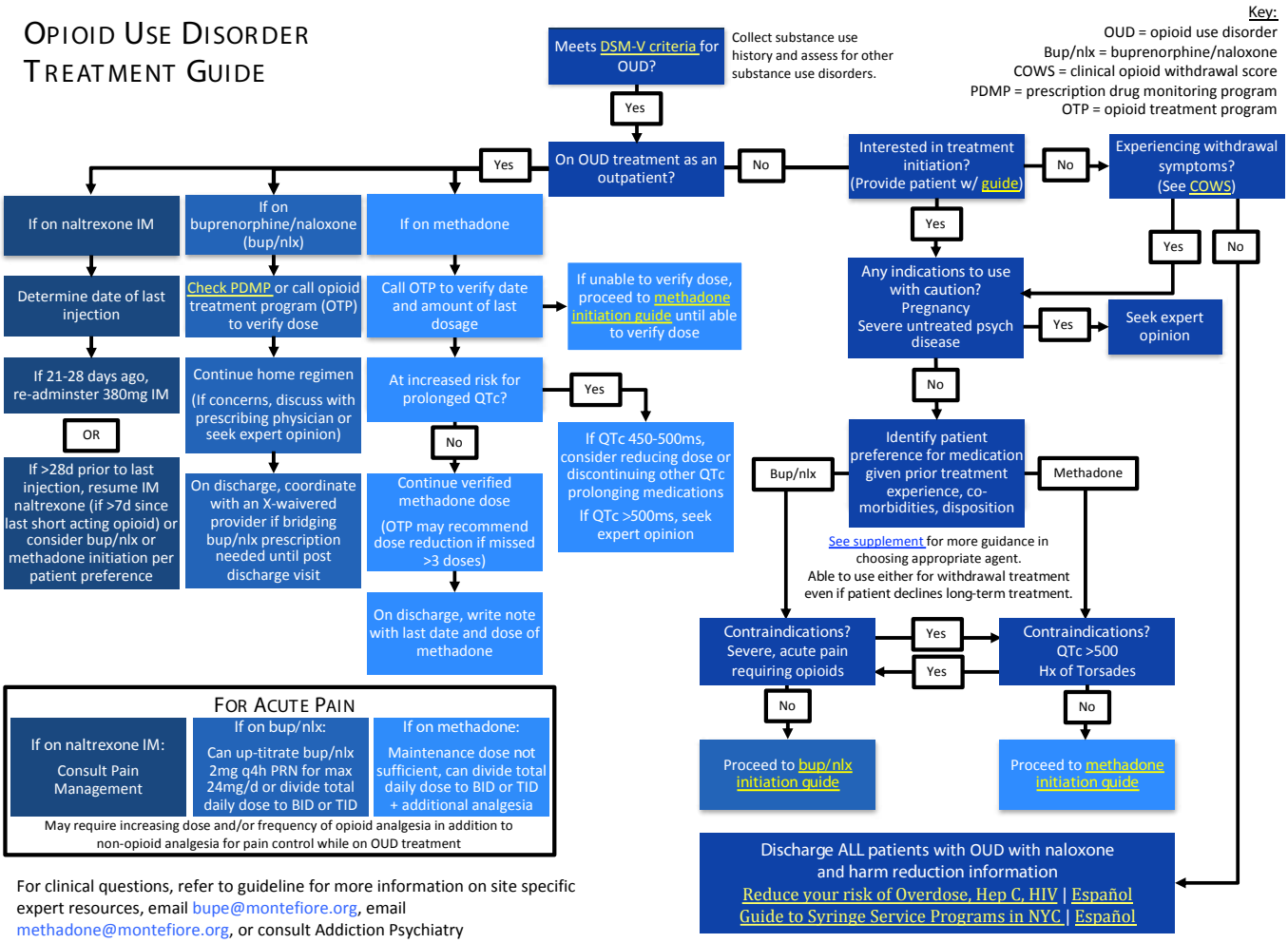
We compiled and synthesized a broad array of addiction expertise in hospital management of OUD to create a comprehensive clinical guideline to support medical providers in OUD management for hospitalized patients at our institution. Next steps include evaluation of this intervention, examining provider preparedness to initiate OUD treatment and changes in prescribing patterns.

Continued

Table 1. Summary of Clinical Guideline Contents and Brief Description

Guideline Content	Description
Opioid Use Disorder Treatment Guide	One-page flow sheet outlining how to initiate or continue OUD treatment for eligible patients
Buprenoprhine/naloxone Initiation Guide	One-page flow sheet detailing how to start buprenorphine/naloxone for hospitalized patients with OUD and/or opioid withdrawal and plan for discharge
Methadone Initiation Guide	One-page flow sheet detailing how to start methadone for hospitalized patients with OUD and/or opioid withdrawal and plan for discharge
Discharge Planning Guide for OUD Treatment	One-page checklist for providers outlining how to connect patients with outpatient treatment for OUD if newly initiated on methadone or buprenorphine, including contact information, harm reduction and opioid overdose prevention materials
Patient Guide to Medications for OUD	One-page guide detailing the benefits of medication for OUD treatment and information about methadone and buprenorphine for patients
Resources for Expert Opinion and Clinical Questions	Compilation of all resources for expert addiction opinion, including email resources, on-site addiction consult service contact information, and X-waivered physician champion contact information for each hospital campus
Regulatory Issues	Review of federal DEA and state regulations on the administration and use of buprenorphine and methadone in the acute-care setting

Figure 1. Opioid Use Disorder Treatment Guide



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TITLE

Integrating Genetics and Nutrition in the Treatment of a Person in Recovery from Opioid Use Disorder: A Case Study

OBJECTIVES

1) to determine feasibility of integrating SNP genotyping with nutritional supplementation in the treatment of addiction.
2) to test unbiased method of measuring cognitive performance pre and post supplementation.

METHODS

Patient Selection:
The patient is a 42 year-old male with known severe opioid use disorder who underwent residential treatment without medication assisted treatment (MAT) and has been in sustained remission for >25 months. His remission has been documented by negative serial urine screens and periodic follow up visits.

SNP Genotyping:
Single nucleotide polymorphisms (SNPs) at two locations in the MTHFR gene, rs1801131 and rs1801133, were assayed using real-time PCR methodology.

Supplementation:
The patient was administered l-methylfolate (Enlyte-D) 12mg/day over the course of 5 days prior.

Neuropsychological testing:
The patient was administered the continuous performance task (CPT) using PEBL software. Baseline CPT testing was performed for three trials over four days prior to l-methylfolate (Enlyte-D) supplementation. After five days of supplement loading, CPT testing was administered again for three trials over three days.

RESULTS

SNP genotyping results indicate the patient is homozygous G at rs1801131 and heterozygous GA at rs1801133 in the MTHFR gene.

Patient described subjective experience of impatience during CPT testing pre-l-methylfolate. Post supplementation, patient described subjective experience of calmness and increased concentration during CPT testing.

Results of CPT testing showed increased correct trials and decreased commission errors following l- methylfolate supplementation.

CONCLUSIONS

Genetic testing revealed the patient is most likely unable to create L-methylfolate at levels necessary for cognitive functioning comparative to population average ("normal"). Supplementation with an FDA-approved form of L-methylfolate (Enlyte-D) was correlated with increased attention as measured by CPT. It should be relatively straightforward to add SNP genotyping and nutritional supplementation to routine treatment of addiction. Objective testing of cognitive performance pre and post supplementation was essential to the patient's compliance with supplementation.

Continued

	Test 1		Test 2		Test 3		Test 4		Test 5	
Correct Trials	149	120	139	120	144	120	147	120	137	120
Correct Targets	149	153	139	144	144	147	147	147	137	138
Correct Foils	86	-33	97	-24	95	-27	95	-27	102	-18
Target Acc Rate	0.974		0.965		0.98		1		0.993	
Foil Acc rate	86		97		95		95		102	
Comission Errors	7		6		3		0		1	
Omission Errors	0		0		0		0		2	
Correct RT Mean	504.12		526.24		538.22		1618.71		1664.93	
Correct RT SD	277.27		423.46		263.43		323.44		254.45	
Error RT Mean	1153.43		1298		1843		NA		789	
Error RT SD	1158.15		1645.26		2168.8		NA		0	
Sensitivity	5.031		4.906		5.136		6.18		5.535	
Bias	18.02		22.799		14.628		1		5.967	

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TITLE

Implementing Opioid Overdose Prevention Training into Basic Life Support Curriculum for Medical Students

INTRODUCTION/OBJECTIVES

Opioid-related fatalities are a societal crisis, and training medical providers in opioid overdose prevention remains an unmet need. To help meet this need, a novel educational program titled RISE-MD (Rush Integrative Substance Use Education for Medical Doctors) was initiated at Rush University Medical College in 2020. One of the programmatic objectives is to provide opioid overdose prevention training. Third year medical students will begin clinical rotations and are in need of naloxone training as they care for patients in a variety of clinical settings. Thus, opioid overdose prevention training will be integrated into the Basic Life Support (BLS) curriculum in May for this class. We hypothesize that this training session will increase knowledge of, and attitudes towards, prevention of opioid overdosing.

METHODS

The study will be a repeated measures design of 150 third year medical students. Two weeks prior to the BLS/Overdose prevention training session, all students will receive an email link to the Modified Opioid Overdose Knowledge Scale (MOOKS), Opioids Overdose Attitudes Scale (OOAS), and the Modified Medical Regard Scale (MMRS). Completion of these scales will be required prior to the training session. Training will be a 30 minute session developed for medical providers as part of the BLS curriculum, provided by the RISE-MD faculty. The MOOKS, the OOAS and the MMRS will be resent to all student trainees two days, and again two months after the BLS session. Upon receipt of follow-up surveys, student trainees will receive a certificate of completion. Outcomes from each scale will be tallied and compared using a one way repeated measures analysis of variance (rmANOVA; primary outcome). Retention will be determined by comparing pretraining *versus* two months post training using a *post hoc* Dunnett test (secondary outcome). $P<0.05$ will be considered significant.

RESULTS

It is expected that opioid overdose prevention knowledge will be enhanced (rmANOVA, $p<0.05$) and retained (Dunnett, $p<0.05$), and that attitudes will be persistently changed (rmANOVA and Dunnett, $p<0.05$).

CONCLUSIONS

If the expected outcomes are realized, the study will show that (i) knowledge and self-reported preparedness to recognize and respond to an opioid overdose will increase after naloxone training, and (ii) opioid overdose prevention can be successfully integrated into BLS curriculum in medical schools.

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TITLE

Prolonged Withdrawal Associated with Phenibut, a GABA Analogue

OBJECTIVES

Discuss the effects of Phenibut, one of the novel agents that is growing in popularity for online purchase.
Provide a detailed description of a case involving Phenibut use.
Considerations of managing Phenibut withdrawal and intoxication.

METHODS

We collaborated with Family Medicine, Critical Care Pulmonary ICU providers, Poison Control Center, and Adult Psychiatric Consult Team to perform a thorough medical workup for acute psychosis and encephalopathy in the setting of recent PHB withdrawal. We utilized Pubmed for our literature review.

RESULTS

The patient was taking up to 34 g per day of PHB, suggested use being anywhere from 500- 2000mg daily. He required several medications to target his acute agitation and what appeared to be hyperactive delirium, which included Haldol and Ativan. He was put back on home Baclofen, which he had received in the ED for suspected PHB withdrawal approximately one day prior to this presentation. He was placed on CIWA given the suspicion that PHB could mimic the withdrawal from benzodiazepines or alcohol. His home psychiatric medications, including Aripiprazole, Buspirone, and Escitalopram were discontinued with concern of the possibility of serotonin syndrome. He required a brief ICU admission and Precedex given the ongoing deterioration of his mental status accompanied by severe agitation. He was ultimately transferred back to the medical floor at which time a Valium taper and discontinuation of Baclofen was recommended. Of note, the patient remained afebrile throughout his course along with largely inconclusive infectious and metabolic workups. On the day of discharge, he was no longer scoring on CIWA, not exhibiting withdrawal symptoms, and was determined to be functioning at his baseline with the plan to complete a valium taper as an outpatient

CONCLUSIONS

Given the changing landscape of substance use disorders physicians must be up-to-date on the agents growing in popularity. PHB is easily accessible online and has a potential for abuse, intoxication, and significant withdrawal that could prove life threatening.

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TITLE

Conceptualizing a Serious Game to Educate Adolescents about Prescription Opioid Safety

OBJECTIVES

The study aimed to: (1) design and develop a serious game prototype to educate adolescents about prescription opioid safety in clinic and school settings; (2) propose a conceptual framework for developing a serious game to educate youth about safe and responsible use of prescription opioids.

METHODS

Initial project steps comprised the formulation of an integrated conceptual framework that included factors from health behavior models and game development models. This was followed by the formal process of serious game development, which resulted in a game prototype. Assessment of the game prototype was obtained through group discussions, individual interviews, and questionnaires with adolescents following gameplay. Field notes were used to keep track of responses from group discussions. Content and thematic analysis were used to analyze field notes and open-ended questionnaire responses, which were then used to refine the game prototype.

RESULTS

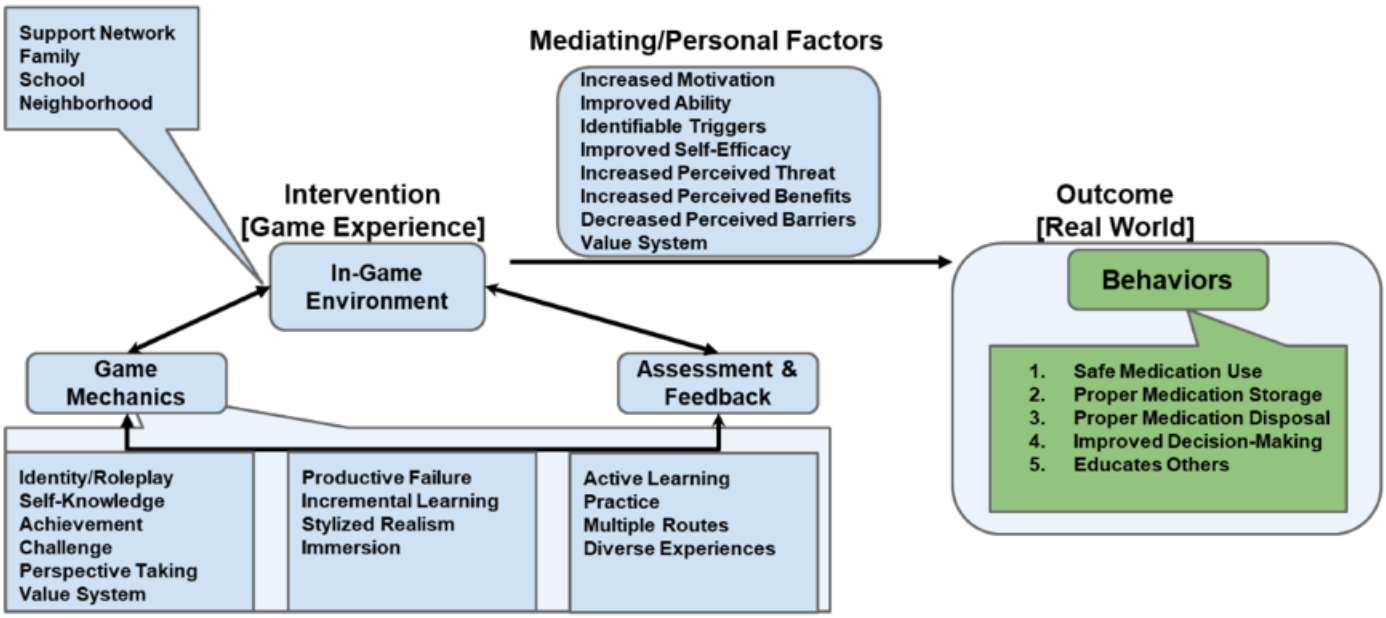
A total of 10 playtests with 484 adolescents and emerging young adults (AYA) in community settings such as middle schools, high schools, and colleges were conducted by the project team between March and June 2019. AYA provided feedback on the initial game prototype using questionnaires administered through Qualtrics or in- person on paper. Preliminary feedback suggested that the teens found the game objectives, outcomes, and design appealing. Overall, the game was perceived as realistic and the learning outcomes seemed achievable.
Suggestions for improvement included need for additional direction on gameplay, clearer instructions, concise dialogue, and reduced technical problems in gameplay.

CONCLUSIONS

We propose a conceptual framework for developing a serious game prototype to educate youth about prescription opioid safety. The project utilized a theory-driven conceptual framework for development of a serious game targeting adolescent opioid misuse prevention and garnered preliminary feedback on the game to improve quality of game play and the prototype. Feedback through informal assessments in community settings suggest that youth and their families were interested in a game-based approach to learning about prescription opioid safety in homes and schools. Next steps include modifications to the game prototype based on community- based feedback, integrating learning analytics to track players in-game behaviors, and formal testing of the final prototype.

Continued

Serious Game-Based Intervention Behavior Change Framework



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TITLE

Improving AUD medication treatment at a Federally Qualified Health Center network in New York State

OBJECTIVES

An estimated 88,000 people die from alcohol-related causes annually in the U.S. (SAMHSA), making it the third leading preventable cause of death. Recently, a study by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) found that the number of death certificates mentioning alcohol more than doubled from 1999 to 2017.

In 2016, the prevalence of use of FDA approved pharmacotherapy (naltrexone, acamprosate or disulfiram) upon new episodes of alcohol use disorder were respectively 2.1%, 1.7% and 1.9% statewide, in NYC and in the Hudson Valley (OASAS). These medications are widely underutilized.

The objectives of this study were:
1. To identify the percentage of patients with an alcohol-associated diagnosis who are being prescribed medication for this condition.
2. To identify the effect of educational interventions on prescribing behaviors of clinicians.

METHODS

This study was performed from April 2019 to now at all IFH sites. Using the medical record database EPIC, we performed a cross-sectional analysis at three points in time. We looked at the percentage of patients with an alcohol-related diagnosis who were receiving pharmacological treatment.

Between the measures, three educational interventions were performed.
1. An email communication with an attached journal article from the American Family Physician detailing recommendations for mediation assisted therapy (MAT) for alcohol use disorder (AUD) to all providers.
2. A lecture to Family Medicine Residents on MAT for AUD
3. A follow up email broadcast with an attached educational document summarizing the topic and responding to questions generated during the talk.

RESULTS

A first report (April 2019) showed that 1 % of IFH patients with an alcohol-related disorder were receiving pharmacologic treatment. After the first intervention, (October 2019) the percentage of patients had increased to 5 %. Results for the month of January 2020 are pending.

CONCLUSIONS

A series of simple educational interventions can positively affect prescribing practices in the treatment of alcohol-related conditions. Further research is needed to confirm that hypothesis and understand better the patterns of care for these patients.

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TITLE

Treatment for opioid use disorder in primary care: a retrospective cohort study

OBJECTIVES

Untreated opioid use disorder (OUD) remains a public health problem in the United States, especially among medically-underserved and low-income populations. Federally Qualified Health Centers (FQHCs) like The Institute for Family Health (IFH) play an important role in addressing the opioid epidemic, yet remain underutilized.
Further, there's been scant research on use of medication-assisted treatment (MAT) in primary care, especially in FQHCs. The purpose of this research is to understand the characteristics of the patients at IFH with OUD and the factors that predict prescriptions of MAT.

METHODS

We performed a retrospective cohort study using data from IFH's electronic medical record (EMR). Our cohort includes patients seen for at least one medical visit in our FQHC network from May 1, 2015 to May 1, 2019 (study period), over age 13, and newly identified during the study period as having OUD. We used a generalized linear model to determine the factors that predict prescriptions of MAT.

RESULTS

Table 1. shows the characteristics of our cohort. The 1,853 patients in our cohort, represent 1.3% of the total patient population over age 13 seen at IFH during the study period. 25% of our cohort received at least one buprenorphine or naltrexone prescription and 16% have documentation of treatment with methadone. 36% of the cohort were seen by an X-waivered provider at their first medical visit during the study period.
In our cohort male gender, being seen at an upstate site, having private insurance, and having at least one encounter with a mental health counselor are associated with a higher likelihood of being prescribed MAT.

CONCLUSIONS

FQHCs seem to be a good setting to treat OUD, given 25% of our cohort received at least one buprenorphine or naltrexone prescription during the study period.
Not all patients were seen by mental health, but those who did had a higher likelihood of being prescribed MAT. The future direction of our research is to understand the factors that predict retention among our cohort.

Continued

Table 1. Patient Characteristics

	All patients		No buprenorphine or naltrexone		Prescribed buprenorphine or naltrexone		
Characteristic	N	Percent	N	Percent	N	Percent	p-value
Total	1853	100	1392	100	461	100	
Male	1072	58	788	57	284	62	0.152
English	1785	96	1333	96	452	98	0.107
White	855	46	562	40	293	64	0.000
Black	369	20	308	22	61	13	0.000
Hispanic	491	27	403	29	88	19	0.000
Uninsured	246	13	182	13	64	14	0.004
Public insurance	1397	75	1071	77	326	71	0.004
Private insurance	210	11	139	10	71	15	0.004
New York City	1088	59	925	67	163	35	0.000
Upstate New York	765	41	467	33	298	65	0.000
Nicotine Dependence	859	46	611	44	248	54	0.000
Mood Disorder	1201	65	838	60	363	79	0.000
Bipolar Disorder	348	19	245	18	103	22	0.024
Pain Disorder	766	41	593	43	173	38	0.055
CCI* =1	488	26	367	26	121	26	0.001
CCI* >=2	380	21	312	22	68	15	0.001

*CCI – Charlson Comorbidity Index

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TITLE

Buprenorphine Titration for Patients on Long-term Opioid Therapy Whom Develop Opioid Use Disorder

OBJECTIVES

Diagnosing OUD in patients on LTOT can be difficult as many OUD criteria could also be attributed to uncontrolled pain. Buprenorphine is the only FDA approved medication for office-based treatment of both OUD and pain. This makes it an ideal option for with both disorders and in those in whom diagnosis of OUD remains unclear but harms of LTOT seem to outweigh benefits. However, transition from LTOT, particularly high-dose LTOT, to buprenorphine has traditionally involved long periods of tapering and brief periods of withdrawal. This case report demonstrates a novel method for conversion from LTOT to buprenorphine that does not involve a withdrawal period.

METHODS

Methods included review of the patient's record as well as review of pertinent literature.

RESULTS

Mr. S is a 74yo gentleman with widespread osteoarthritis and chronic pain treated with LTOT for over 40 years. He was prescribed oxycodone IR 30mg every four hours. He had had an inappropriate UDS and frequent requests for early refills, which prompted referral to addiction clinic. Excluding tolerance and withdrawal, he met one DSM-5 criteria for OUD. He initially declined transition to buprenorphine due to concerns about the withdrawal period. He engaged in weekly visits with a slow taper.

One year later, he was on 20mg every 6 hours. He agreed to engaging in a novel approach for transitioning to buprenorphine without a period of withdrawal.[1,2]. This approach involved bridging low-dose sublingual buprenorphine in overlap with oxycodone for several days until buprenorphine was at a therapeutic dose. He did not experience withdrawal and is now doing well on buprenorphine 4mg every eight hours.

Day	Buprenorphine Dose	Oxycodone Dose
1	0.5mg BID	20mg Q6 Hours
2	1mg BID	20mg Q6 Hours
3	1mg TID	20mg Q6 Hours
4	2mg TID	20mg Q6 Hours
5 and onward	4mg TID	None

CONCLUSIONS

Buprenorphine offers the opportunity to continue to treat both pain and OUD in an office-based setting. The above method allows for patients on LTOT to make the transition to buprenorphine without a period of withdrawal. This is advantageous particularly in those whom are medically frail or averse to withdrawal.

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TITLE

Streamlining treatment for opioid use disorder: from hospital to skilled nursing facility to home.

OBJECTIVES

Patients with opioid use disorder (OUD) are frequently hospitalized. Many may benefit from staying at a skilled nursing facility (SNF) after discharge for physical and occupational therapy, specialized wound care, intravenous antibiotic administration or other reasons. This prolonged exposure to the medical system is an opportunity to engage people with OUD in addiction treatment. However, there are numerous barriers to transitioning patients with OUD to SNFs, especially when they have been newly initiated on medication therapy for OUD (mOUD).[1,2] [3] To pilot a program to improve care for hospitalized patients with OUD who are being referred to a SNF. The goals of the program are to increase inpatient initiation of mOUD, expand SNF capacity for caring for patients with OUD, and create care-linkage from hospitals to SNFs to outpatient opioid treatment programs (OTPs). We hypothesize that these interventions will reduce total healthcare utilization through prevention of emergency department visits and hospitalizations and reducing discharges against medical advice.

METHODS

This program is a partnership between an academic hospital, two SNFs, two OTPs, and local and state health authorities. Patients were eligible if they were: hospitalized at Johns Hopkins Bayview Medical Center; met criteria for OUD and were not currently engaged in treatment but were interested in mOUD; and were deemed likely to require SNF stay. Patients were identified through outreach to inpatient providers, social workers and case managers, and Addiction Medicine service consults. Enrolled patients were initiated on buprenorphine or methadone while in the hospital and discharged to one of the partnered SNFs. Those starting methadone were enrolled with a partnering OTP, who delivered their methadone to their SNF. The nurse case manager and dedicated peer recovery coach offered supportive counseling and case management services for up to one year after enrollment.

RESULTS

In the first four months, 29 patients were approached; 16 patients were eligible (55%), and of these 14 enrolled. Of these, 9 initiated methadone (64%) and 5 initiated buprenorphine. Thirteen of these transferred to SNF and 3 of the enrolled patients (21%) continued with mOUD after discharge from SNF.

CONCLUSIONS

A pilot multidisciplinary program was able to overcome barriers to initiation of mOUD for hospitalized patients being discharged to SNFs.

(Endnotes)

1 Kothari P, Guzik J. Difficult Decisions: Health Care Provider Perspectives on Discharge Planning: Form Hospital to Skilled Nursing Facility. United Hospital Fund; 2019. https://nyshealthfoundation.org/wp-content/uploads/2019/01/health-care-provider-perspectives-uhf-jan-2019.pdf. Accessed by February 20, 2020.

2 Wakeman SE, Rich JD. Barriers to Post-Acute Care for Patients on Opioid Agonist Therapy; An Example of Systematic Stigmatization of Addiction. J Gen Intern Med. 2017;32(1):17-9. doi:10.1007/s11606-016-3799-7.

3 Pytell JD, Sharfstein JM, Olsen Y. Facilitating Methadone Use in Hospitals and Skilled Nursing Facilities. JAMA Intern Med. 2019 Nov 18. doi: 10.1001/jamainternmed.2019.5731.

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TITLE

Hospitalization among Persons who Use Drugs and Hepatitis C Treatment Trajectory – An Exploratory Qualitative Analysis

OBJECTIVES

Rates of hospitalizations due to complications from drug use and infections with hepatitis C virus (HCV) have increased amidst the ongoing substance use epidemic. Persons who use drugs (PWUD) face numerous barriers to initiating and completing HCV treatment. Since hospitalization is an opportunity to engage PWUD regarding substance use, we aimed to understand how hospitalization alters HCV treatment readiness and engagement.

METHODS

We conducted in-depth semi-structured individual interviews with hospitalized adult PWUD with HCV seen by an addiction consult service at an urban academic medical center from June to November 2019. We audio-recorded and transcribed interviews. Transcripts were coded in dyads deductively and inductively at the semantic level then analyzed for themes using iterative categorization. We extracted details of HCV, substance use, and healthcare utilization history via chart review and visually represented patient experiences using journey mapping.

RESULTS

Of 27 participants, average age was 41 (range 23-64) years; majority were Caucasian (85%), male gender (67%), and primarily used opioids (78%). Many patients felt over-burdened by acute illness, outpatient follow-up, homelessness, and other stressors. Mostly, these patients did not have the bandwidth for HCV during their current admission. However, some patients felt hospitalization was an opportune time, especially if experiencing prolonged length of stays, to learn more about HCV and to develop an HCV treatment plan. Finally, for a few highly-engaged patients with prior outpatient plans for HCV treatment initiation, acute illness disrupted their pre-hospitalization HCV treatment trajectory. Most patients felt hospital providers failed to discuss HCV and were dismayed at missed opportunities to assess HCV in a controlled setting.

CONCLUSIONS

Hospitalization can be a strong motivator for some PWUD to prioritize HCV treatment, however others feel overwhelmed by acute medical issues and/or psychosocial stressors. Hospital providers should ask patients about HCV and address needs regarding HCV education and linkage to care.

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TITLE

Multidisciplinary teams are needed to treat opioid use disorder and infective endocarditis: a case series

OBJECTIVES = Introduction

Injection drug use-related infective endocarditis (IDU-IE) is increasing in the United States [1]. Patients with IDU-IE have complex medical needs and risk factors for poor health outcomes. This case series describes two patients with IDU-IE and illustrates the importance of structured multidisciplinary care that includes addiction medicine (AM).

METHODS = Case 1

A 42-year-old woman with history of severe OUD receiving MTD with ongoing heroin use was admitted for cardiac arrest. She was diagnosed with candidal aortic valve IDU-IE. Cardiothoracic Surgery (CTS) performed aortic valve replacement. She was discharged on MTD 60 mg/d and fluconazole 800 mg/d with AM, CTS and Infectious Disease (ID) follow-up.
Eight weeks later, after receiving a third QT prolonging medication, azithromycin, for bronchitis, she was readmitted for hypokalemia and TdP. AM facilitated transition from MTD to buprenorphine (BUP) to reduce ongoing risk of TdP. Her care required collaboration between AM, Cardiology, CTS and ID.

RESULTS = Case 2

A 21-year-old woman with a remote history of IDU-IE s/p tricuspid valvectomy and severe OUD in remission receiving MTD was admitted to Cardiology for decompensated heart failure related to prior valvectomy. CTS performed tricuspid valve replacement and pacemaker placement. AM managed post-operative pain medications and MTD. She was discharged on MTD 120 mg/d. Paced ECG at discharge showed QTc 569ms (JTc 393ms), improved from QTc 614ms on admission.
Twelve days later she developed syncope, was found to have TdP on cardiac monitoring, and was admitted to Cardiology. AM was consulted to address MTD dosing. She declined transition to BUP due to concerns of return to heroin use. MTD was reduced from 120 to 85 mg/d and she was evaluated for a defibrillator. Her care required collaboration between AM, Cardiology, CTS and ID.

CONCLUSIONS = Discussion

These cases illustrate that IDU-IE is a complex illness where the addition of AM to multidisciplinary hospital-based care can prevent missed opportunities and improve outcomes. AM specialists serve an essential role convening specialties in the care of patients with OUD. In the absence of AM specialists, hospital teams may not have knowledge to best address patients' OUD to develop comprehensive treatment plans. These cases illustrate why hospital AM specialists should be integrated into a multidisciplinary team to optimize care.

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TITLE

Challenges in Managing Ketamine and Polysubstance Use Disorder: A Case Report of ARDS and Rhabdomyolysis.

OBJECTIVES

The NMDA noncompetitive inhibitor ketamine has gained major public attention with the discovery of its therapeutic potential to treat major depression, chronic pain and substance use disorder. Nonetheless, its potential for abuse with resulting psychiatric and medical complications has been well established. We herein present a case of a young male adult with the objective of evidencing the addictive and toxic qualities of ketamine, exemplified in this case by rhabdomyolysis, it also exhibits the risks implicated in polysubstance use disorder with the featured result of overdose and acute respiratory distress syndrome (ARDS).

METHODS

The patient was evaluated directly by the author, patients clinical records were reviewed extensively, a non-systematic literature search in English was performed using PubMed identifying similar presentations with ketamine.

RESULTS

A 25 year old Man presented to the hospital with altered mental status, dyspnea and multiple emetic episodes after co-ingestion of ketamine, apap-oxycodone and alprazolam. The patient required ventilator support, broad spectrum antibiotic coverage, vasopressor support and multiple sedative agents after establishing a diagnosis of aspiration pneumonia, septic shock, ARDS, opioid and benzodiazepine withdrawal, and ketamine induced rhabdomyolysis. Additional history revealed a long standing use of intranasal ketamine as self-treatment for depressive symptoms, additionally, the patient had escalated use of apap-oxycodone, alprazolam, cannabis, alcohol and cigarettes that had resulted in two prior overdoses. The patient made a remarkable recovery from the cardio-pulmonary insult and was extubated uneventfully after 7 days. Rhabdomyolysis subsided with supportive treatment without compromising renal function. Sedative withdrawal symptoms subsided with symptom triggered management, finally, the patient declined medication assisted therapy for opioid use disorder at the time of assessment. One month after follow up the patient remained abstinent from all substances except cannabis.

CONCLUSIONS

With the regained interest in ketamine's therapeutic potential, clinicians must remain conscious of its potential for abuse, toxicity and the medical challenges that can arise in the setting of polysubstance use disorder.

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TITLE

A novel case of injectable buprenorphine for opioid use disorder in pregnancy

OBJECTIVES

Medication for opioid use disorder (MOUD) in pregnant patients is associated with better prenatal care, decreased overdose risk, and increased participation in substance use treatment. There is inconsistent access to MOUD amongst incarcerated patients. With the Food and Drug Administration approval of once-monthly injectable buprenorphine, there is an opportunity to provide MOUD to patients who otherwise would not have access. The need for regular prenatal appointments in the pregnant, incarcerated patient with opioid use disorder creates a unique opportunity for the administration of injectable buprenorphine.

METHODS

A 37-year-old G3P0202 woman with a history of opioid use disorder presented from jail to her initial prenatal appointment at a high-risk obstetrics office at 12 weeks, 6 days gestation. She had been without opiates for approximately twenty days prior to this appointment and reported symptoms consistent with mild opioid withdrawal. She requested sublingual buprenorphine as she previously had 9 months of recovery while taking sublingual buprenorphine. She also disclosed a history of opioid overdose following a previous release from jail where she was not provided with MOUD during incarceration. The patient's case was discussed with the medical director of the jail, who would not permit sublingual buprenorphine due to diversion risk, but was agreeable to injectable buprenorphine outside of the jail. The patient was hospitalized for initiation of injectable buprenorphine as the medication could not be obtained in the office within a reasonable time period. Additionally, this allowed for fetal monitoring during the initiation process.

RESULTS

The injection was tolerated well and patient began to have relief of her withdrawal symptoms within one week. She was continued on injectable buprenorphine in the office once per month until she was released from jail twenty-one weeks into her pregnancy. Due to patient preference, she was continued on injectable buprenorphine following her release from jail. She maintained regular follow-up and her drug screens remained consistent with treatment. She had spontaneous rupture of membranes at 37 weeks, 3 days gestation and delivered a healthy baby. She has continued with regular counseling and follow-up since delivery and continues to receive once monthly buprenorphine injections.

CONCLUSIONS

Daily, sublingual buprenorphine is a common and effective component in the treatment of opioid use disorder during pregnancy. However, myriad patient, healthcare system, and societal factors may compromise access and compliance. Injectable buprenorphine may provide a safe and effective option for maintaining recovery and decreasing the risk of overdose in pregnant patients who may not otherwise have access to medication for their opioid use disorder.

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TITLE

Survey of Southern Wisconsin Needle Exchange Clients Regarding Opioid Overdose and Naloxone Use

OBJECTIVES

Heroin-related deaths have increased fivefold between 2010 and 2016 (CDC). The Opioid Overdose Prevention and Naloxone Use Survey collected data regarding the circumstances of opioid overdose and the administration of naloxone by non-medical personnel. It is crucial to understand these details in order to provide proper education to and enhance awareness among opioid users, overdose witnesses, healthcare workers, and the public.

METHODS

Paper and online surveys were offered to needle exchange clients at the AIDS Resource Center of Wisconsin (ARCW) in Madison and Milwaukee, Wisconsin. The 36-item survey explored overdose victim demographics, frequency of witnessing or experiencing an overdose, drugs contributing to the overdose, interventions taken, experience with naloxone, and the outcome of the overdose.

RESULTS

In total, 120 informed consents were obtained, which resulted in 110 completed surveys. Those witnessing the overdose were typically male (48%), white (83%), 25 to 34 years of age (55%). Those experiencing an overdose were typically male (67%) and 25-34 years of age (53%). Regarding the most recent overdose witnessed, the person overdosing was most commonly a friend (41%) overdosing in a house or apartment (64%). Common interventions included administering naloxone (58%), calling 911 (40%), rescue breathing/CPR (28%), and painful stimulation (25%). Upon revival, 68% continued using, while 7% of the overdoses resulted in death.

CONCLUSIONS

Three major themes were discovered: the fear of legal consequences hampers the motivation of overdose respondents to call for emergency services, the increase in naloxone availability allows for greater overdose response by laypeople, and an increased prevalence of fentanyl-laced drugs was perceived as increasing the frequency of unintentional opioid-related overdoses. Educational efforts should target individuals involved in overdose situations and the current policies affecting this population. Further research is needed to establish whether and in what ways Good Samaritan laws have changed behavior.

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TITLE

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

OBJECTIVES

Skin and soft tissue infections (SSTIs) are common among people who inject drugs (PWID). SSTIs complicate comorbid conditions and increase medical costs. SSTIs are a leading cause of morbidity and mortality among PWID. Some injection practices have been shown to correlate with SSTI incidence among PWID. The ongoing opioid epidemic has particulary 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 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 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

80 complete responses for the SSTI-specific questions were collected. Females were over 3 times more likely to have a history of SSTI (OR=3.07, p=0.038) compared to males. Individuals able to find an injection location on first attempt were significantly less likely have a history of SSTI than those requiring multiple injection attempts before success (p=0.037). Individuals using proper skin cleaning practices (i.e. alcohol pad, hydrogen peroxide) were less likely to have a history of 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 were less likely to develop an SSTI compared to those using tap water (p=0.093). Location of injection – such as vein, skin, or muscle – related to SSTIs; people who inject into skin (p=0.038) and/or muscle (p=0.001) were significantly more likely to develop an infection compared to those injecting into veins (p=0.333).

CONCLUSIONS

Higher risk injection practices were common among participants reporting SSTI. Findings suggest 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 SSTIs are warranted.

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TITLE

Screening in Trauma for Opioid Misuse Prevention: The Role of Social Support

OBJECTIVES

Social supports play a vital role in addiction development, prevention, and recovery, with potential contribution to the risk of initial misuse and ongoing use of substances and during the recovery process. Prior research suggests that the quality of an individual's interpersonal relationships influences their potential for success in treatment for an opioid use disorder. Further investigation is required to determine what role social support and interpersonal relationships play in the initiation of opioid misuse.

METHODS

295 patients with traumatic injuries from the University of Wisconsin Hospital Trauma and Orthopedic Surgery Services were enrolled. Participants completed standardized measures for socio-demographics, substance use history, opioid misuse risk, mental health, medical history, and injury and pain severity. The role of social support was analyzed using the Interpersonal Support Evaluation List-12 (ISEL-12) and was administered during the baseline visit. The ISEL-12 scores reflect the social support present at the time of the initial traumatic injury. In 207 patients, COMM scores 6 months post-discharge and ISEL-12 were evaluated as both primary independent and dependent variables with marital status, morphine equivalent daily dose (MEDD) at baseline (24 hours pre-discharge), opioid use at 6 months postdischarge, pre-injury depression and anxiety (composite PHQ-9 and GAD-7), and discharge pain intensity as clinically relevant covariates.

RESULTS

Multiple regression analysis revealed that ISEL-12 ($\beta = -0.155$; $p = 0.02$) and depression/anxiety ($\beta = 0.316$; $p < 0.001$) were significant predictors of COMM scores 6 months post-discharge ($R^2 = 0.213$).
When controlling for pre-injury depression and anxiety, patients who met COMM cut-off criteria (score ≥ 9) for aberrant behaviors associated with opioid misuse (N = 16), had significantly lower baseline ISEL-12 scores ($F(1, 206) = 7.166$, $p = 0.008$) than negative patients ($M = 23.63$, $SD = 7.44$ versus $M = 29.67$; $SD = 6.17$, respectively).

CONCLUSIONS

Baseline ISEL-12 scores were negatively related to COMM scores 6 months post-discharge, indicating that higher baseline levels of perceived social support are associated with lower risk for aberrant behaviors associated with opioid misuse. Baseline levels of perceived social support were significantly lower in patients who met COMM cut-off criteria at 6 months post-discharge. These findings indicate that the perceived presence and quality of social support within an individual's life may play an important role surrounding the initiation of opioid misuse.

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TITLE

Characteristics of inpatients hospitalized for substance use disorder who received osteopathic manipulative treatment (OMT) from 7/1/2016-6/30/2017.

OBJECTIVES

Inpatient hospitalization for persons with substance use disorder (SUD) can often offer an opportunity to initiate treatment and preventive care. At our hospital, a tertiary care teaching hospital in a region where injection drug use is rising, a multidisciplinary "IMAT" (integrated medication assisted treatment) team is available to facilitate substance use disorder treatment and services. In addition, consultation services for osteopathic manipulative medicine (OMM) are available. OMT is a non-invasive, hands on approach that can improve patient comfort, promote recovery, and potentially reduce length of stay in hospitalized patients. The objective of this study was to describe demographics and health characteristics of IMAT patients who received a request for OMT. We also aimed to identify areas of need and opportunities for practice improvement in hospital based OMM for persons with SUD.

METHODS

A retrospective chart review was conducted on inpatients at our hospital in Portland Maine and included hospitalized patients seen by the IMAT consult service between 7/1/2016 and 6/30/2017. Data was abstracted from electronic medical records. Descriptive analysis was performed using Microsoft Excel and Stata.

RESULTS

A total of 145 patients were seen by the IMAT service during their hospitalization. 34 (23.4%) patients received OMT. Musculoskeletal complaints were the primary reason for consult requests. Among those seen, 55% had one visit, 20.6% had 2, and 14.7% had 3. There were 17 males and 17 females, 2 were pregnant. 67% were hospitalized for infection, 44% required some type of surgery for an infectious complication. 36% of patients were seen by the acute pain management consult service; 65% of those did not receive OMM consults. Regarding medications for opiate use disorder (MOUD), of those seen for OMT, 44% were on MOUD prior to admission, 73% were planning MOUD at discharge.

CONCLUSIONS

Our study showed that OMM consultation requests were somewhat low. Given the prevalence of musculoskeletal complaints in patients seen, these results suggest that OMT may be under-utilized in patients who are hospitalized for consequences related to drug use. Additional research is warranted to determine if OMT helps reduce length of stay, facilitate treatment for addiction, and improve patient outcome.

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TITLE

Analysis of Medical Students' Reflections After Attending a Mutual Help Group Meeting

OBJECTIVES

Substance use disorder is a major public health concern in the United States and physicians are at the forefront of its diagnosis and treatment. Exposure to substance use disorder treatment during medical school improves the sensitivity of physicians towards this vulnerable population (Kastenholz et al, 2016). Many medical schools require students to attend at least one mutual help group meeting. The most frequently reported concern is the religious undertone of meetings (Kastenholz et al, 2016). Since spirituality as it relates to illness is incorporated into the curriculum at Rutgers New Jersey Medical School (NJMS), the goal of this study was to investigate if this concern persisted in our student population.

METHODS

This study evaluated 108 essays submitted by third year students at NJMS between 2017- 2018. Students were asked to reflect on their experience after attending an Alcoholics or Narcotics Anonymous meeting. Two members of the research team scored the reflections, identifying themes that were generated by preemptive analysis. Themes were coded in a binary or trinary format. Interrater reliability was assessed using Cohen's Kappa analysis and was found to be "strong" $k = 0.895$ (95% CI, .866 to .924), $p < .001$.

RESULTS

Though 29.6% of students mentioned feeling nervous prior to the meeting, 92.6% of students reported an overall positive experience. 6.48% of students rated the experience as neutral, whereas 0.92% rated the experience negatively. 50% of students addressed the theme of spirituality in meetings. Of these students, 63.1% and 25.7% rated spirituality as a neutral or positive aspect, respectively, while 11.1% viewed spirituality negatively. 70.4% of students commented on the sense of community at meetings and 95.8% said they gained at least one new insight into addiction treatment. 32.8% of students stated they would recommend a mutual help group to future patients in recovery.

CONCLUSIONS

This study demonstrated that students found attendance of a mutual help group meeting to be a positive experience, with the majority of students indicating that they gained new insight into addiction treatment. The frequency of negative attitudes towards spirituality was significantly less than shown in prior studies, which may relate to the inclusion of spirituality in the context of illness in our curriculum. This may suggest a need for greater discussion about the role of spirituality in the treatment of substance use disorder during medical education.

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TITLE

Prolonged precipitated withdrawal during monitored buprenorphine initiation in a patient with non-pharmaceutical fentanyl use

OBJECTIVES

Non-pharmaceutical fentanyl (NPF) is now a commonly used illicit opioid. Some patients with opioid use disorder (OUD) exclusively use NPF. Patients using NPF have described precipitated withdrawal when self-initiating buprenorphine, even after 80 hours of opioid abstinence[1]. Inpatient literature on this subject is sparse. This case details precipitated withdrawal in a patient with exclusive NPF use who was treated with buprenorphine based on current addiction medicine practice.

METHODS

A review of the patient's clinical record was performed. A literature search on fentanyl use and buprenorphine treatment was performed.

RESULTS

A 41-year-old obese man (BMI 39) was admitted to the hospital for treatment of influenza. He reported daily intranasal use of 30 bags of NPF and requested buprenorphine treatment. The Addiction Medicine Consult Service (AMCS) evaluated him on hospital day (HD) 2, which was 24 hours since last use of NPF. The AMCS determined the patient had severe OUD and moderate opioid withdrawal (COWS=12). Urine toxicology showed fentanyl only. The patient received 4mg sublingual buprenorphine-naloxone (SL BUP) and subsequently developed a COWS = 20. Over the course of the next 24 hours, the patient was given a total of 36mg of buprenorphine, high dose benzodiazepines, clonidine, hydroxyzine, and ketorolac to treat his severe opioid withdrawal.

Precipitated withdrawal symptoms continued to be severe on HD 3-5 despite ongoing SL BUP of 24mg daily and other adjuvant treatments. On HD 6, opioid withdrawal symptoms began to resolve and a benzodiazepine taper was started. The patient was discharged on HD 8 on 24mg SL BUP daily with close outpatient follow-up.

CONCLUSIONS

Fentanyl's high lipophilicity[2] compared to other opioids may contribute to precipitated withdrawal occurring from buprenorphine initiation even when patients are opioid abstinent for 12-24 hours. Elevated BMI may be a risk factor due to the likelihood of large fentanyl deposition in fat tissues. For obese patients with exclusive NPF use, methadone may be preferred over buprenorphine for rapid stabilization without risk of prolonged precipitated withdrawal.

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TITLE

Buprenorphine induction with microdosing: A review of the literature

OBJECTIVES

Classic buprenorphine induction can present challenges for patients and providers. The required withdrawal period prior to initiating buprenorphine and potential for precipitated withdrawal can be distressing to patients. Buprenorphine microdosing is a novel but increasingly reported method of induction that obviates discontinuing full opioid agonists and inducing withdrawal. Patients receive small, gradually increasing doses of buprenorphine overlapping with full opioid agonists. Published cases of buprenorphine microdosing through December 2019 are reviewed.

METHODS

A review of case reports and case series of buprenorphine microdosing was conducted.

RESULTS

Eleven articles collectively documenting 42 cases of buprenorphine microdosing were identified and are summarized in Table 1. The number of cases per article ranged from 1 to 15, and 8 of the 11 articles were published in 2019. Microdosing has been employed in patients starting buprenorphine for treatment of opioid use disorder or chronic pain in both inpatient and outpatient settings. Most patients were taking short-acting opioids prior to micro induction, but 5 articles included patients on methadone. The starting dose of buprenorphine ranged from 0.2mg to 2.5mg SL administered in multiple small doses. Four articles made use of buprenorphine patches. Induction duration ranged from an "ultra-fast" 3 day protocol to one exceeding 100 days. All 42 patients tolerated the micro induction well and only mild withdrawal symptoms were reported.

CONCLUSIONS

Buprenorphine micro induction has been successfully performed in various settings in the US and abroad. Despite variability in buprenorphine dosing and duration of protocols, microdosing was well tolerated and did not produce moderate or severe withdrawal in any cases. Longer protocols are often seen in outpatients initially on methadone, and more rapid protocols are used in the inpatient setting. The sudden rise in published cases of microdosing suggests a growing interest in the method. Further studies can help clarify key unanswered questions: Which patients are most appropriate candidates for microdosing, what is the optimal dosing regimen for subpopulations, and can this method of induction improve treatment retention.

Continued

Table 1: Summary of Case Reports & Case Series of Buprenorphine Micro Dosing in the Literature

Author	Year	Location	Cases	Setting	Bup Indication	Initial Opioid	Bup Patch Used?	Starting Dose Bup [a]	Protocol Length [b]
Hess	2011	Switz	11	IP	OUD	MTD	Yes	35µg Patch	4
Kornfeld	2015	CA	3	OP	Pain	IR opioid	Yes	20µg Patch	5 [c]
Hämmig	2016	Switz	2	OP	OUD	Heroin or MTD	No	0.2 mg	9, 29
Rahee-mullah	2019	CA	1	IP	OUD	IR opioid	Yes	20µg Patch	3
Terasaki	2019	CO	3	IP	OUD	MTD or IR opioid	No	0.5 - 1.0 mg	8, 11, 8
Lee	2019	Canada	1	IP	Pain	MTD and IR opioid	No	2.0 mg	5
Klaire	2019	Canada	2	IP	OUD	IR opioid	No	1.0 - 2.5 mg	5, 3
Rahee-mullah	2019	CA	15	IP	OUD	IR opioid	Yes	20µg Patch	4
Sandhu	2019	Canada	1	IP	OUD	IR opioid	No	0.25 mg	7
Jafari	2019	Canada	1	OP	OUD	MTD	No	0.5 mg	115
Martin	2019	Canada	2	IP	OUD	IR opioid	No	0.5 mg	14,16

Switz = Switzerland, CA = California, CO = Colorado, OP = Outpatient, IP = Inpatient, OUD = Opioid Use Disorder, MTD = Methadone, Bup = Buprenorphine, IR opioid = Immediate Release Opioids

[a] Cumulative buprenorphine dose received on Day 1 of protocol

[b] In days

[c] Duration of microdosing not specified in other 2 cases

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TITLE

Challenges of initiating buprenorphine micro induction in an inpatient teaching hospital

OBJECTIVE

Buprenorphine microdosing is a method of induction in which full opioid agonists are continued while the patient receives small, escalating doses of buprenorphine. The method has been increasingly reported, but is still an off-label practice. We present the challenges encountered while implementing buprenorphine micro induction at our inpatient teaching hospital.

METHODS

The patient described below is a composite of 8 inpatients induced onto buprenorphine with microdosing.

RESULTS

A 50 year old female with untreated opioid use disorder was admitted for trauma resulting in pelvic fracture. When evaluated by our addiction consult service, she was interested in treatment with buprenorphine but was unable to undergo classic induction as she required opioids for acute pain. She was agreeable to induction with buprenorphine micro dosing.

Due to hospital formulary carrying buprenorphine tabs, the smallest available dose was 0.5mg. The patient was scheduled to receive 0.5mg on day 1, 1.0mg BID on day 2, 2.0mg BID on day 3, and 4.0mg BID on day 4. The buprenorphine dose ordered for day 1 was automatically rounded to 1.0mg in the electronic medical record and so a higher dose than intended was administered. On day 2, the evening dose of buprenorphine was held as the patient was at CT scan. The patient was discharged to subacute rehab on day 3 of protocol, prior to completion of induction.

CONCLUSIONS

The challenges we encountered during buprenorphine micro induction are echoed in the literature. Administering doses less than 1.0mg can be challenging as buprenorphine tabs crumble when divided. In our hospital, small doses had to be entered as a miscellaneous order to avoid dose rounding in the EMR. Micro doses were less familiar to pharmacy, nursing, and primary teams, and so explanation of dosing rationale to all parties was essential. Patients were sometimes discharged mid-induction, an issue that was addressed by providing specific instructions to aftercare facilities.

An order set for buprenorphine microdosing and increased education on the process would further streamline induction. Hospitalized patients often require opioids for acute pain and discontinuation of full agonist therapy is not feasible. Despite challenges, micro dosing was well tolerated and allowed patients requiring opioid pain medications to engage in medication assisted therapy prior to discharge.

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TITLE

Confidence among multidisciplinary healthcare providers in the treatment of substance use disorders

OBJECTIVES

Project ECHO (Extension for Community Health Outcomes) is an evidence-based, reproducible, tele-educational model that enhances the capabilities of healthcare providers in managing complex, chronic health issues. ECHO ACCEPT (Addiction & Co-morbid Conditions: Enhancing Prevention and Therapeutics) is our statewide educational initiative connecting multidisciplinary experts in the fields of addiction and mental health to both prescribers and non-prescribers who provide care to people with substance use disorders (SUD) to support the delivery of evidence-based care through interactive case discussions and didactics. The aim of this study is to assess the characteristics of and confidence in SUD management.

METHODS

We surveyed by email 357 individuals who had signed up to receive ECHO programming email notifications, with up to seven reminders sent to non-respondents (between 8/30 and 10/29/2019). The response rate was 13%. The survey used a five-point Likert scale to obtain baseline confidence measures across 10 domains of SUD care. The Mann-Whitney U was used to test for response differences between prescribers and non-prescribers.

RESULTS

Among all 45 respondents, 32 see patients which includes 23 prescribers (MD, DO, NP, PA) and 9 non-prescribers (e.g., counselors, social workers). Compared with non-prescribers, prescribers were less likely to report being very or extremely knowledgeable about regional resources available to people with addictions (35% vs. 78%, $p<0.03$). Overall, prescribers were less likely to rate themselves as being very or extremely confident in 7 of our 10 SUD care domains (range: 30% to 52% vs. 56% to 78%).

CONCLUSIONS

A substantial proportion of prescribers and non-prescribers are not very confident in the skills necessary to deliver effective care for people with addictions. This educational program may help address these notable gaps, and this survey highlights the importance of incorporating both prescribers and non-prescribers as program participants and content experts given their differing strengths.

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TITLE

Buprenorphine Extended-Release vs Sublingual Buprenorphine in Jail and at Re-Entry: Pilot Comparing Feasibility and Acceptability

OBJECTIVES

Extended-release buprenorphine (XR-B) is newly FDA-approved for opiate use disorder (OUD); its effectiveness in a criminal justice setting is promising but untested. This ongoing 8-week pilot proof-of-concept randomized controlled trial examines the feasibility and acceptability of Buprenorphine extended-release (XR-B) vs. daily sublingual buprenorphine-naloxone (SL-B) for OUD in jail and after release.

METHODS

This pilot is recruiting from within the standard-of-care NYC jail opioid treatment program. Potential participants currently maintained on sublingual buprenorphine are offered study information and encouraged to enroll. We randomized participants 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 in NYC. Participants assigned to XR-B receive at least one additional XR-B injection in the community.

RESULTS

We randomized 38 (21 SL-B; 17 XR-B) of target sample size, N=50. At baseline, 79% reported opiate/heroin use in the 30 days prior to incarceration; 37% of which was IV injection. Mean lifetime treatment intake episodes of any medication for OUD is four (SD 2.9); 89% tried buprenorphine treatment prior to in-jail program participation. Of the 38 randomized subjects, all have re-entered the community; 76.3% confirmed licit buprenorphine use; 76.4% (XR-B) retained in treatment, 76.2% (SL-B) retained in treatment.

CONCLUSIONS

XR-B has several potential advantages vs. SL-B notably the near zero probability of diversion and an improved, long acting "bridge" of medication adherence at release and reduced primary care burden (less interfacing with pharmacies, less concern about varied urine tests, etc.). Early discussions with patients show a significant percentage of patients reporting high satisfaction and confidence in abstinence with treatment. Open-ended interviews conducted at the final study visits with patients will further shed light on treatment satisfaction and in-jail experiences with XR-B.

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