Suboxone Initiation in the Emergency Department and Hospital

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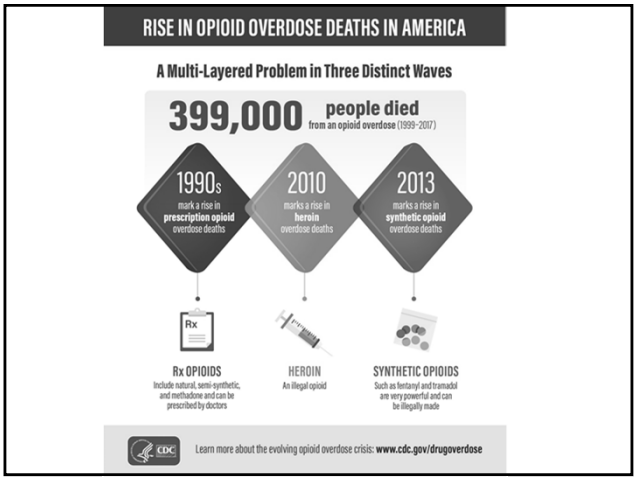
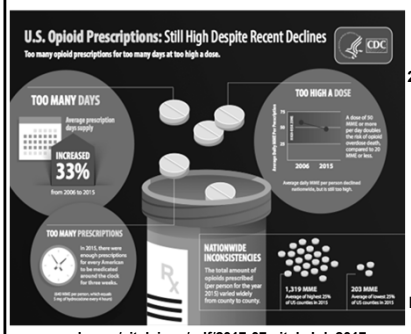
Objectives

- The problem
- Description of Medication-Assisted Treatment (MAT)
- Role of the Emergency Department and Inpatient setting for initiation of MAT
- Protocols and how to initiate
- Role for Peer Support

Staggering National Statistics [1-6]

- 1999-2017 >400,000 people died from an opioid overdose (OD) (700,000 all overdose deaths)
- 2016: >2 million U.S. residents have an Opioid Use Disorder (OUD)
- 47,600 opioid related deaths in 2017 (>5x increase since 1999)
  - Provisional data notes 5% nationwide decline in deaths for 2018
- 130 Americans die daily from an opioid overdose
- White males 25-44 y/o highest heroin death rate
- Major cause of decreased life expectancy since 2016





www.cdc.gov/vitalsigns/pdf/2017-07-vitalsJuly2017

2012: 81 scripts/100 people (>255 million prescriptions)

2017 decline to 59 scripts/100 people (191 million)

Nationwide decline since 2012

Some states still high: AL (107 scripts) [5]

Ohio in 2017: 63.5 prescriptions/100 people

Prescription Drug Monitoring Program/OARRS queries up:
2016: 24 million
2017: 89 million [7]

2017 Death Rate due to Drug Overdoses by State [1,2]

- 1. West Virginia: 57.8/100,000
- 2. Ohio: 46.3/100,000
- 3. Pennsylvania: 44.3/100,000
- 4. District of Columbia: 44/100,000
- 5. Kentucky: 37.2/100,000

Ohio Overdose Data [7]

- 1999-2011 death rate due to opioid related OD increased 440%
- >500,000 years of life lost from 2010-2016 (average lifespan in OH decreased by one year)[8]
- 2018 22% decline from 2017
  - 3,764 deaths: 2,733 fentanyl
  - 10 deaths/day
  - 2018-19: Franklin County deaths on the rise[9]

Costs Related to Opioid Overdose in Ohio and US

- Ohio 2012
  - $2 billion toward work loss and medical expenses
  - Inpatient hospital expenses: $39.1 million
  - $5.4 million/day
- US 2018: $179 billion [10]
  - $73 billion related to mortality
  - $60 billion health care
  - $26 billion lost productivity
  - $11 billion criminal justice
  - $9 billion child and family

Opioid Use Disorder: Chronic Relapsing Condition that is Treatable!

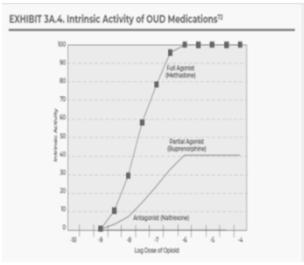
- Medication-Assisted Treatment
  - Saves lives (harm reduction) and reduces infections
  - Increased engagement in recovery services and avoidance of illicit opioids
  - Decreases craving
  - Minimal euphoria, minimal respiratory depression
  - Allows the reward system to "lose" the hijacker and return to normal coping skills, rewire the maladaptive behaviors that are often lethal
  - Length of treatment variable-but may be lifelong
  - Abstinence based therapies and counseling alone are INEFFECTIVE (90% relapse rate) and DANGEROUS[11]

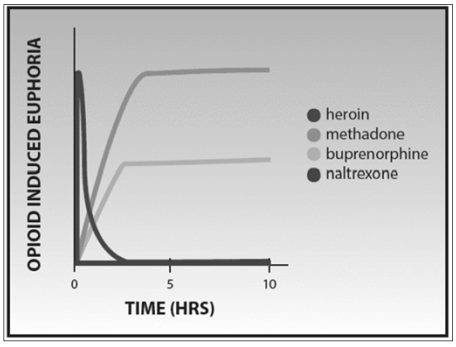
What is Medication-Assisted Treatment (MAT)?[12]

- Buprenorphine (semi-synthetic opioid) (2000)
  Partial opioid agonist-antagonist with high affinity for the mu receptor; long acting, t ½ 37 hours
  - Minimal respiratory depression and euphoria (decreases craving)
  - Often combined with naloxone (film/tab) to prevent misuse/diversion
  - Monthly injections (SC) or subdermal implant (6 months)
- Methadone (1947-approved 1972)
  - Long acting full mu agonist
  - Typically only obtained outpatient from federally sanctioned Narcotic Treatment Programs
- Naltrexone (Vivitrol)
  - Mu antagonist, monthly injection Vivitrol; abstinence 7-10 days prior

Buprenorphine Pharmacology

- Ceiling effect: lower risk of respiratory suppression
- Higher affinity for opioid receptors than other opioids which can precipitate withdrawal symptoms in patients who have recently used a full opioid agonist.





https://www.drugabuse.gov/publications/medications-to-treat-opioid-addiction/what-are-misconceptions-about-maintenance-treatment Sources: Cruciani & Knotkova, 2013; Goodman et al., 2006 [12]

Buprenorphine[12]

- 2 mg, 4mg, or 8mg, tabs or films SL
- Subutex (buprenorphine)
- *Suboxone (buprenorphine-naloxone, 2-0.5mg/8-2mg)
  - $6000/year including twice weekly counseling
- Zubsolv, Bunavail (buprenorphine/naloxone)
- Probuphine (buprenorphine implant 6 months) 2016
  - $5000/injection
- Sublocade (buprenorphine monthly SC injection): 2017
  - $1500-1600/month

Suboxone Myths [13]

- Replacement of one addiction for another
  - Addiction=compulsively taking a substance, despite harm;
  - taking a prescribed medication to manage a chronic disease
  - While buprenorphine has analgesic properties, very minimal euphoria
- Too time consuming to initiate and the medication is "dangerous"
  - Simple screening, determine if in withdrawal, dosing is not complicated and much easier to start than insulin; very few side effects;
- Detoxification is "effective"
  - NO! 90% relapse rate with detox alone; also increased rate of overdose
- Decrease opioid prescribing will "fix" the problem
  - Since 2012-13, prescribing patterns have declined, but death rate rising

Evidence for MAT [14-17]

- Increases retention in recovery services
- Decreases rate of AMA and readmission
- Lowers mortality and morbidity
- Decreases use of illicit substances
- Decreases rate of transmission of HIV and Hep C

Why Target Patients in the ED?

- Frequent encounters with OUD given lack of primary care
- >50% of patients who died from an opioid OD had a health care encounter in the year before their death
- 50% ER admissions involve a substance use disorder
- 30% increased ER visits in 2017 for non-fatal opioid overdoses [12]
- Barriers to care and treatment gap [18]
  - 2016: 21.7 million with Substance Use Disorder: 2.35 million were able to access (10%)

Why Initiate MAT in the ED?

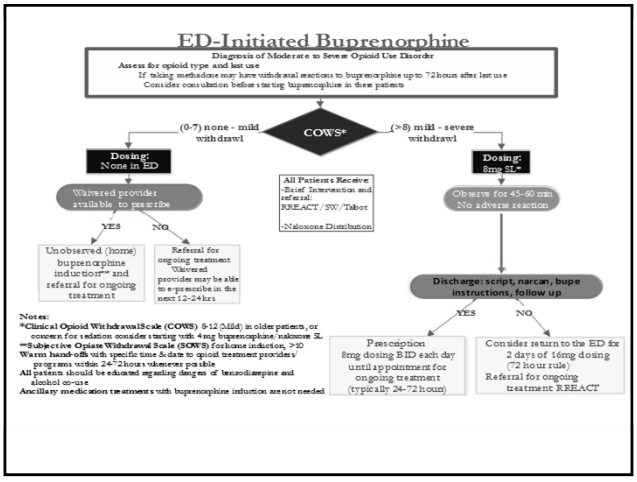
- *Journal of American Medical Association* 04/2015 D'Onofrio et al: Emergency department-initiated buprenorphine/naloxone treatment for opioid dependence: a randomized clinical trial
  - 78% initiated on Suboxone (in ED or home) engaged in treatment at 30 days (compared to 37% for referral only group and 45% of brief intervention group)
  - Urine Drug Screen in prior 7 days more likely to be free of illicit opioids

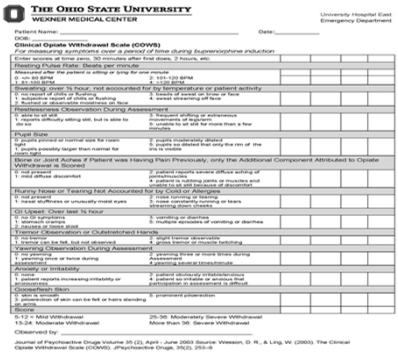
Why Initiate MAT in the ED?

- *Annals of Internal Medicine* 08/2018 Larochelle*:* Medication for opioid use disorder after nonfatal opioid overdose and association with mortality: a cohort study
  - Large retrospective study of >17,000 ED visits for nonfatal opioid overdose
  - 4.9% all cause mortality and 2.2% opioid related mortality
  - If started on methadone or Suboxone, lowers to 2.5% for all cause mortality and 1.4% opioid related

ED Protocol

- Identification of Opioid Use Disorder
  - OD, medical complications, requesting detox, or other
  - Majority will have severe OUD, use DSMV for OUD for unclear cases for confirmation
- Withdrawal, timing of last use
  - Clinical Opiate Withdrawal Scale (COWS) or Subjective Opiate Withdrawal Scale (SOWS), typically approx. 12 hours
- Dosing (ED, inpatient, versus home) 4-8 mg
- Harm Reduction: narcan, Hep A vxn, HIV/STI, fentanyl strips
- Linkage and Peer Support





THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

University Hospital East
Emergency Department

Patient Name: _____ Date: _____
DOB:

Clinical Opiate Withdrawal Scale (COWS)
For measuring symptoms over a period of time during buprenorphine induction

Resting Pulse Rate: Beats per minute					
Measured after the patient is sitting or lying for one minute					
0: ≤ 80 BPM 1: 81-100 BPM	2: 101-120 BPM 4: >120 BPM				
Sweating: over ½ hour, not accounted for by temperature or patient activity					
0: no report of chills or flushing 1: subjective report of chills or flushing	2: flushed or observable moistness on face 4: beads sweating on face				
Restlessness Observation During Assessment					
0: able to sit still 1: reports difficulty sitting still, but is able to do so	3: frequent shifting or extraneous movements of legs/arms 5: unable to sit still for more than a few minutes				
Pupil Size					
0: pupils pinned or normal size for room light 1: pupils possibly larger than normal for room light	2: pupils moderately dilated 5: pupils so dilated that only the rim of the iris is visible				
Bone or Joint Aches if Patient was Having Pain Previously, only the Additional Component Attributed to Opiate Withdrawal is Scored					
0: not present 1: mild diffuse discomfort	2: patient reports severe diffuse aching of joints/muscles 4: patient is rubbing joints or muscles and is unable to sit still because of discomfort				
Runny Nose or Tearing Not Accounted for by Cold or Allergies					
0: not present 1: nasal stuffiness or unusually moist eyes	2: nose running or tearing 3: nose constantly running or tears streaming down cheeks				
GI Upset: Over last ½ hour					
0: no symptoms 1: stomach cramps 2: nausea or loose stool	3: vomiting or diarrhea 5: multiple episodes of vomiting or diarrhea				
Tremor: Observation or Outstretched Hands					
0: no tremor 1: tremor can be felt, but not observed	2: slight tremor observable 4: gross tremor or muscle twitching				
Yawning Observation During Assessment					
0: no yawning 1: yawning once or twice during Assessment 2: yawning three or more times during Assessment 4: yawning several times/minute					
Anxiety or Irritability					
0: none 1: patient reports increasing irritability or anxiousness	2: patient obviously irritable/anxious 4: patient so irritable or anxious that participation in assessment is difficult				
Gooseflesh Skin					
0: skin is smooth 3: piloerection of skin can be felt or hairs standing erect	5: prominent piloerection				
TOTAL					

5-12 = Mild Withdrawal
13-24: Moderate Withdrawal
25-36: Moderately Severe Withdrawal
More than 36: Severe Withdrawal

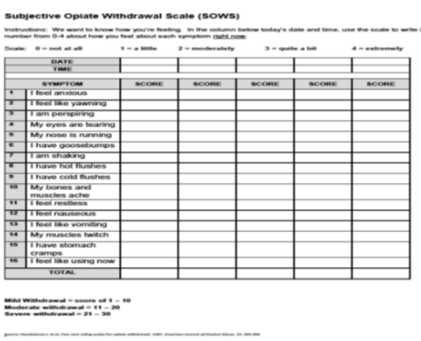
Observed by: _____

Journal of Psychoactive Drugs Volume 35 (2), April - June 2003 Source: Wesson, D. R., & Ling, W. (2003). The Clinical Opiate Withdrawal Scale (COWS). *J Psychoactive Drugs, 35*(2), 253–9

COWS:
Mild 5-12
Moderate: 13-24
Mod Severe: 25-36
Severe >36

COWS>8
Last Use: at least 12 hours

Post OD: 2-3 hrs



Subjective Opiate Withdrawal Scale (SOWS)

Instructions: We want to know how you're feeling. In the column below today's date and time, use the scale to write in a number from 0-4 about how you feel about each symptom *right now*.

Scale: 0 = not at all 1 = a little 2 = moderately 3 = quite a bit 4 = extremely

	DATE					
	TIME					
	SYMPTOM	SCORE	SCORE	SCORE	SCORE	SCORE
1	I feel anxious					
2	I feel like yawning					
3	I am perspiring					
4	My eyes are tearing					
5	My nose is running					
6	I have goosebumps					
7	I am shaking					
8	I have hot flushes					
9	I have cold flushes					
10	My bones and muscles ache					
11	I feel restless					
12	I feel nauseous					
13	I feel like vomiting					
14	My muscles twitch					
15	I have stomach cramps					
16	I feel like using now					
	TOTAL					

Mild Withdrawal = score of 1 – 10
Moderate withdrawal = 11 – 20
Severe withdrawal = 21 – 30

SOWS>10

Role of the Peer Coach

- **Shared experience**
- **Transportation**
- **Facilitate transitions of care for recovery**
- **Legal Aid**
- **Social Determinants such as food, shelter, ID, insurance**
- **Finding case management**
- **Engaging bedside during ED/inpatient stay and may follow up to 12 months**

Video: Peer Coaching

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9. Franklin County Coroner and Office Press Release. 6/6/19 Dr. Anahi Ortiz
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- 18. Blevins C, Rawat N, and Stein M. Gaps in the Substance Use Disorder Treatment Referral Process: Provider Perceptions. *J Addict Med.* Vol 12, no 4. July/Aug 2018.

MAT in the inpatient setting

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Outline

- Acute care medical settings: intersection of two epidemics
- OUD complicates inpatient care
- Why initiate medication assisted treatment in the hospital?
- OSU's inpatient MAT consult team
- Specific issues related to inpatient MAT

Two epidemics: opioid overdose and IVDU related infections

- Ohio University study: more than 500,000 years of life lost in Ohio from opioid overdose deaths between 2010-2016. In 2016, opioid overdose deaths lowered the lifespan of an average Ohioan by 0.97 years.[1]
- OSUWMC had over 5,400 ED visits and 5,700 inpatient hospital admissions for which OUD was a primary or secondary diagnosis in 2017[2]

Hall OT et al, "Years of Life Lost due to Opioid Overdose in Ohio: Temporal and Geographic Patterns of Excess Mortality", Journal of Addiction Medicine 10/7/2019

Increase in intravenous and inhaled opioid and methamphetamine related infections

- UNC and NC Department of Public Health study[1]:
  - 12-fold increase in hospital admissions for IVDU associated infectious endocarditis in North Carolina from 2010- 2015
  - costs increased from $1.1 to $22.2 million
- 9% of new HIV cases and 64% of new HCV cases diagnosed in 2015 were attributed to illicit IVDU[2]

1. "Hospitalizations for Endocarditis and Associated Health Care Costs Among Persons with Diagnosed Drug Dependence — North Carolina, 2010–2015," CDC Morbidity and Mortality Report Weekly, June 9, 2017 / 66(22);569–573"
2. "Opioid summaries by state: Ohio", NIH National Institute on Drug Abuse, www.drugabuse.gov, updated February 2018, accessed 12/4/18.

Call to Action: Annals of Internal Medicine 7/13/18

Annals of Internal Medicine — IDEAS AND OPINIONS

Integrating Treatment at the Intersection of Opioid Use Disorder and Infectious Disease Epidemics in Medical Settings: A Call for Action After a National Academies of Sciences, Engineering, and Medicine Workshop

Sandra A. Springer, MD; P. Todd Korthuis, MD, MPH; and Carlos del Rio, MD

As a result of the opioid use disorder (OUD) epidemic (1), new epidemics of hepatitis C virus (HCV) and HIV infection have arisen and hospitalizations for bacteremia, endocarditis, skin and soft tissue infections, and osteomyelitis have increased (2–4). Optimal treatment of these conditions is often impeded by untreated OUD resulting in long hospital stays, frequent readmissions due to lack of adherence to antibiotic regimens or reinfection, substantial morbidity, and a heavy financial toll on the health care system. Medical settings that manage such infections offer a potential means of engaging people in treatment of OUD; however, few providers and hospitals treating such infections have the needed resources and capabilities (5). There is thus an urgent need to implement and scale up effective OUD treatment in health care settings to address the intersecting epidemics of OUD and its infectious disease (ID) consequences (6). The American through the Ryan White Comprehensive AIDS Resources Emergency Act (Ryan White CARE Act) and other public health policies. Workshop participants agreed on the need for partnership across treatment settings and specialties, increased access to addiction care and funding, and improvement of addiction treatment expertise among providers who manage the infectious complications of OUD. On the basis of the workshop discussions, we agreed on 5 action steps.

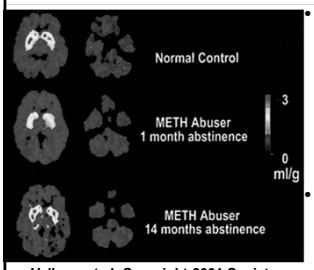
Action Step 1: Implement screening for OUD in all relevant health care settings. All persons who are evaluated in medical settings for overdose, endocarditis, bacteremia, skin abscesses, vertebral osteomyelitis, HIV infection, and HCV infection should be screened for OUD. The Rapid Opioid Dependence Screen (created by S.A.S.) (10) takes less than 5 minutes to administer. Because ID specialists are likely to be consulted for anyone requiring long-term antibiotic therapy or patients

Call to Action: Annals of Internal Medicine 7/13/18

Action Steps:

- Implement screening for OUD in all relevant health care settings, in all persons evaluated in medical settings for overdose, endocarditis, bacteremia, skin abscesses, vertebral osteomyelitis, HIV and HCV
- For patients with positive screening results, immediately prescribe effective medication for OUD and/or opioid withdrawal symptoms
- Develop hospital based protocols that facilitate OUD treatment initiation and linkage to community based treatment upon discharge

Review of neurobiology of addiction



Volkow, et al. Copyright 2001 Society for Neuroscience

- Opiates binding to opiate receptors throughout reward pathway (ventral tegmental area, nucleus accumbens), causes release of dopamine throughout pathway, produces euphoria
- Brain tries to balance the frequent stimulation of dopamine transmitters by shutting down some receptors
- The same amount of drugs won't cause the same degree of stimulation = tolerance

Natural History of OUD

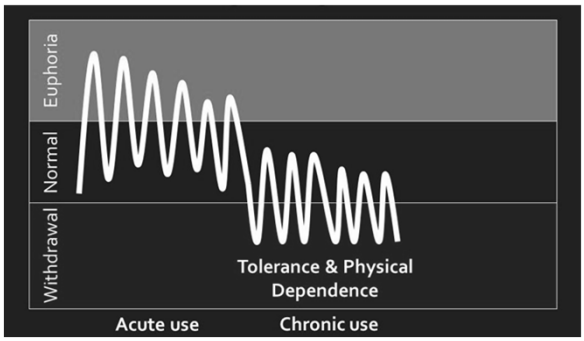
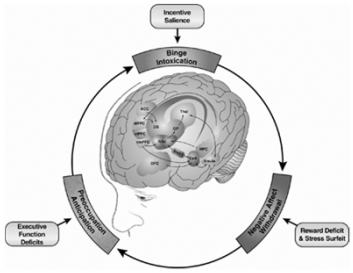


Image retrieved from https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis

Changes in executive function

Neuroplastic changes throughout the limbic or dopamine reward pathway lead to:
- loss of coping skills
- more risky decision making
- anxiety and stress related to finding next dose to avoid dysphoria and withdrawal



Volkow et al, ASAM Principles of Addiction Medicine

OUD complicates hospitalizations

- 25-30% of patients leave against medical advice (AMA)[1, 2]
- Fear of mistreatment; financial, legal, and social pressures; craving and withdrawal
- Longer length of stay and high rate of readmissions (4 days longer in an OHSU 2015 study)[3]
- Misuse of drugs during hospitalization[4]
- Reduced adherence to medical recommendations increases risk for readmission[5-7]
- Complex interactions between nurses, providers and patients with OUD[8]

[1] Ti et al., 2015; [2] Rosenthal et al., 2016; [3] Englander et al., 2017; [4] Ti & Ti, 2015; [5] Moreno et al., 2029; [6] Ronan & Herzig, 2016; [7] Rosenthal et al., 2016; [8] Englander et al., 2018a

Inpatient Settings

An opportunity to engage

- **Hospitalization presents a "reachable moment" to initiate and coordinate OUD care in patients admitted for other medical-surgical reasons. Often first point of contact with medical providers.[1]**
- **According to a needs assessment at Oregon Health Science University, the majority of hospitalized patients with OUD are interested in quitting or cutting down on opioids:[2]**
- **Patients emphasize importance of understanding substance use disorders, addressing fears of withdrawal, and caring, nonjudgmental staff.[3]**

[1] Englander et al., 2018a; [2] Englander et al. J Hosp Med. 2017 May; 12(5): 339–342 ; [10] Velez et al., 2017

Goals of initiation of MAT during hospitalization

- **Management of withdrawal symptoms**
- **Harm reduction: patient more stable, more likely to stay in the hospital to undergo recommended medical treatment**
- **Start long term treatment for OUD**
- **Taper not advised: 80-90% chance of relapse if patient undergoes taper without MAT provided at discharge, with lowered tolerance -> high risk of overdose**

Chutuape, M et al. Amer. J. of Drug and Alcohol Abuse. Vol 27:1, 2001.

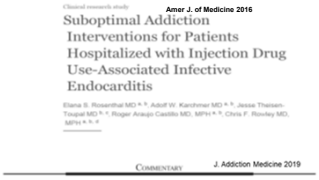
Literature on starting inpatient MAT programs


J. Addiction Medicine 2019

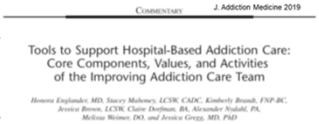
Treatment for Opioid Addiction Must Be Offered in General Hospitals: But How?


J. Hosp Med 2017 REVIEW

Inpatient Management of Opioid Use Disorder: A Review for Hospitalists


Amer J. of Medicine 2016

Suboptimal Addiction Interventions for Patients Hospitalized with Injection Drug Use-Associated Infective Endocarditis


COMMENTARY J. Addiction Medicine 2019

Tools to Support Hospital-Based Addiction Care: Core Components, Values, and Activities of the Improving Addiction Care Team

Data on inpatient MAT programs


Predictors for 30-Day and 90-Day Hospital Readmission Among Patients With Opioid Use Disorder

J. Addiction Med 1/2019:

MGH study found decreased 30- and 90 day readmission rates in patients with OUD taking buprenorphine during index hospital admission by 53% and 42% compared with patients with OUD not on buprenorphine

JAMA Intern. Med 2014

Buprenorphine Treatment for Hospitalized, Opioid-Dependent Patients:

A Randomized Clinical Trial

BMC study found increased entrance into outpatient MAT therapy in patients discharged with buprenorphine and linkage appointment compared with detox and given information to make own appointments (72% vs 12%), improved adherence at 6 mos (17% vs 3%)

Prescribing buprenorphine inpatient vs. discharge

- For patients with opioid use disorder who are admitted to the hospital for a primary diagnosis other than opioid dependency, prescribers without a DEA-X waiver may initiate, maintain and/or adjust BUP/NX dose as an adjunct to patient management.
- Those without a DEA-X waiver cannot prescribe at discharge.

MAT consult team at OSUWMC

- Staffed by hospitalists with DEAX waivers and buprenorphine training
- Patients referred by primary attendings, seen by MAT consult attending and MAT social worker
- When patient agreeable and medical setting appropriate, patient is started on suboxone
- Patient counseled by MAT SW and follow up appointment made with outpatient provider. Warm handoff provided
- Bridge prescription for suboxone provided at discharge
- 35% decrease in AMA rates in patients seen by MAT team in first 7 months of consult service

Inpatient MAT and Psychiatry Consultation- Liaison Team collaboration

- Assessing decision making capacity and lethality risk
  - Leaving against medical advice
  - Consenting to procedures
- Behaviors that are difficult for staff to manage
  - Leaving the unit
  - Suspicious behavior
  - Crisis intervention for evolving behavioral emergencies
- Collaborative interventions to remove barriers to safe discharge
- Comorbidities: primary psychiatric illness, traumatic brain injury
- Complex withdrawal: concurrent use of EtOH or benzodiazepines

Longer length of stay in patients with OUD who need IV antibiotics

- Initiating MAT in OUD is the standard of care
- Initiating MAT may lead to decreased AMA and readmission rates
- If not leaving AMA, patients stay longer which costs the hospital and is typically not reimbursed
- Limited number of SNFs/LTACHs accepting patients with history of IVDU or OUD is major barrier to care
- Not receiving meaningful recovery counseling while inpatient

Cost saving opportunity

Combining antibiotic therapy with OUD treatment after discharge

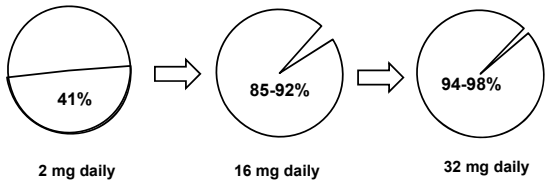
- Study through Virginia Commonwealth Health System 2006-2011
- 205 patients (all types of addiction) with need for ongoing IV antibiotics discharged to a residential addiction facility contracted w/ the hospital
- Met medical stability criteria prior to discharge (cleared bacteremia, etc.)
- Not treated with MAT
- 73% antibiotic completion rate, 20% AMA
- Over 6 years saved $2.5 million for hospital, based on saved hospital days at $835 per bed-day

Solutions to aftercare for patients w/ IVDU needing IV antibiotics

- Bring counseling to skilled nursing facility
- Bring skilled nursing to counseling facility
- Provides expedited, robust OUD treatment for patients while completing their acute medical care
- Improves hospital length of stay for these patients, allowing OSUWMC to serve more patients and decrease ED wait times and boarding times

Treating acute pain in patients on buprenorphine

Buprenorphine and Mu Receptor Occupancy



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Acute Pain Management Strategies

- Continue buprenorphine and add full opioid agonists
- Continue buprenorphine but divide dose every 6-8 hours
- Discontinue buprenorphine and use full opioid agonists
- Discontinue buprenorphine and replace with methadone and full opioid agonists

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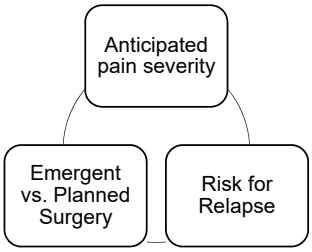
Considerations for Choosing a Strategy



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Emergent vs. Planned Surgery

Emergent

- If I continue buprenorphine, how will the patient's pain be controlled?
- If I stop buprenorphine, how will full agonists affect the patient?
- How long will buprenorphine act in the patient after the last dose?
- How will buprenorphine be reinitiated?

Planned

- What is the anticipated pain severity?
- Do I have time to taper and/or switch buprenorphine?
- Can care be coordinated to effectively taper and restart buprenorphine?

Risks with Discontinuing Buprenorphine

- Delay of procedures
- Requirement of increased visits for care coordination
- Re-initiation of buprenorphine risk of withdrawal precipitation
- Chance of no re-initiation

High risk of failure to re-initiate buprenorphine in perioperative patients

- **Hospital buprenorphine continuation is associated with reduced opioid requirements, while not significantly impacting pain levels, functionality, or length of admission.**
- **Failure to reinitiate buprenorphine occurred in 31/57 patients (54.4%) in the discontinuation group.**

Houchard G, et al., Hospital Opioid Requirements Following Continuation Versus Discontinuation of Buprenorphine for Addiction – A Retrospective Cohort Study, Journal of Pain & Palliative Care Pharmacotherapy
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