

The Emergency Department Toolkit for Managing Patients with Opioid Use Disorder

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Citation: Elder JW, Christoffersen K, Moulin A, Rose JS, Grover CA (2019), The Emergency Department Toolkit for Managing Patients with Opioid Use Disorder. *Journal of Emergency Medicine and Primary Care*. ReDelve: RD-EMP-10010.

Received Date: 22 February 2019; **Accepted Date:** 28 February 2019; **Published Date:** 05 March 2019

Abstract

Emergency departments are seeing more cases of overdoses on both prescription opioids as well as other substances and is often the first point of medical contact for a person with opioid use disorder, providing an opportunity for prevention and treatment. Initiating Medication Assisted Treatment (MAT) in the emergency department and linking patients to outpatient treatment can promote long term recovery. We discuss various interventions that can be implemented in the emergency department to address opioid use disorder: 1. Understanding the disease 2. naloxone distribution, 3. implementing screening, and 4. Medication Assisted Treatment (MAT)

Keywords: Buprenorphine; Opioid Epidemic; Opioid Use Disorder; X-Waiver

Introduction

With the increasing prevalence of Opioid Use Disorder (OUD) much of the nation is now aware of the destruction of addiction. Emergency Departments (ED) are seeing more cases of overdoses on both prescription opioids as well as other substances. As recently as 2016, for opioids, the number of deaths by overdose reached 63,632, with nearly two thirds (66.4%) caused by prescription opioids, illicit opioids, or a combination of the two [1]. The number of deaths for almost every demographic studied has also rapidly increased since 2004, including the elderly and young adults [2]. No matter the age, every overdose leaves a family and a community devastated. In many cases, the ED is the first point of medical contact for a person with OUD, providing an opportunity for intervention during which the course of a person's life can be altered.

As OUD and overdoses have increased, so has the knowledge surrounding screening and treatment. Screening and treatment efforts now include Medication Assisted Treatment (MAT), SBIRT (screening, brief intervention, and referral to treatment), and naloxone. In the ED, use of these screening and treatment tools can save lives and aid in transitioning these patients from the ED to outpatient/inpatient treatment centers. Linking patients to treatment, outpatient programs, and support from the recovery community can promote long term recovery [3].

We discuss various interventions that can be implemented in the ED to address OUD. The toolkit consists of 4 principles that can be implemented immediately: 1. Understanding the disease, 2. naloxone distribution, 3. implementing screening, and 4. MAT

Understanding the Disease

Understanding the neuropath physiology of Substance Use Disorder (SUD) is a critical part of the ED toolkit for treating OUD. Since the 1950's, "addiction" has been recognized as a medical disease. Despite this, many medical providers struggle recognizing this position on SUD. As with the general population, SUD with addiction is seen as a moral disorder by many emergency care professionals. This results in impaired communication, under treatment, and stress for both the provider and patient. However, advancement in neuroscience led to a better understanding of the disease model of SUD [4].

According to the American Society of Addiction Medicine (ASAM), addiction may be defined as the following

"Addiction is a primary, chronic disease of brain reward, motivation, memory, and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social, and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance abuse and other behaviors.

Addiction is characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement of recovery activities, addiction is progressive and can result in disability or premature death" [4].

The neurobiological basis of SUD with addiction involves dysregulation of the brains reward pathways. The midbrain reward center is present within the brain to support the identification of factors that are considered "good for survival." Those stimuli that are better-than-expected cause the release of the neurotransmitter dopamine. Dopamine marks the event as good for survival within the midbrain. This is ultimately communicated to the prefrontal cortex for meaning and memory cortex for storage. The complex interplay of the ventral tegmental area, nucleus accumbent, and medial forebrain bundle, with the prefrontal cortex underlie the normal reward function of the brain. The prefrontal cortex normally keeps some degree of control over the midbrain response. This is termed "top-down" control. This "top-down" control allows the prefrontal cortex to place value, meaning, and choice to the given experience.

With severe SUD, this pathway malfunctions. The introduction of an exogenous stimulus such as a drug or alcohol or a behavior such as gambling causes an exaggerated and pathologic response by the midbrain. Either direct or indirectly, dopamine secretion is greatly exaggerated. The

exogenous stimuli are now incorrectly interpreted as “good for survival”. Under the right circumstances, this response will override the “top-down” influence of the prefrontal cortex. The midbrain begins to dominate the response resulting in a reversal of the normal cortical override causing the midbrain to override the prefrontal cortex resulting in “bottom-up” control. The midbrain wants more of the stimuli resulting in craving, a severe compulsive response unique to SUD, and influences the higher cortical functions to achieve this goal. The prefrontal cortex is no longer able to clearly evaluate moral, choice, or meaning of a given situation. The drug takes a priority in the brain and is perceived as “necessary for life”. This helps explain many of the behaviors seen with severe SUD: use despite adverse consequences, making dangerous and irrational choices, and struggling with insight. Many factors contribute to the potential dysregulation of this pathway including genetics, environmental factors, drug exposure, duration, and stress response. With effective evaluation and treatment, these behaviors diminish and resolve and the normal “top-down” control of the brain is restored.

Harm Reduction- Provide Resources and Prescribe Naloxone

While there are various options for managing addiction and opiate dependence in the ED, there are two strategies that require minimal resources and can be implemented quickly.

First, ED providers should be aware of existing treatment resources available to patients in their area, and routinely refer patients with substance abuse for treatment. Recent studies have shown that referring ED patients for treatment for substance abuse reduce costs, reduce ED visits, and increase treatment compliance [10-13]. Treatment programs and resources vary widely from area to area and can often be made into a list or handout that can be given to patients. The Substance Abuse and Mental Health Services Administration (SAMHSA) also has a web-site where you or your patient can put in an address and determine the outpatient substance abuse treatment services nearest to them (<https://findtreatment.samhsa.gov>). Working with social services or behavioral health staff at your institution can be helpful to generate the list of available treatment resources and to help find more tailored outpatient services for patients that arrive in the ED. Even if your institution is in an area that has few treatment resources, most areas have support groups, such as Alcoholics Anonymous or Narcotics Anonymous. Web-based searches can help locate meetings near your institution. Although these lay groups are important, they are not a substitute for proper medical evaluation and treatment. Once a “referral list” is generated, it can be given to ED patients when substance abuse or addiction is identified. A potential pitfall with such lists that should be considered is that such referrals lists often do not provide enough information for patients to know whether a program could help them (i.e. insurance, language, transportation, etc), and are not as helpful as intended. Patients should be given treatment information in a non-judgmental fashion, just as a referral to pulmonary medicine would be given to an asthmatic.

For those institutions with minimal local treatment resources for substance abuse, telemedicine can be very effective in providing treatment for substance abuse through electronic communication and media [14]. Consultations by substance abuse counselors, social workers, and addiction medicine physicians can be done in the ED using a computer, smartphone, or tablet via videoconference. Patients who receive consultation in the ED can continue to receive therapy via telemedicine after discharge. Additionally, patients can also be referred at the time of discharge to followup with telemedicine on their own after discharge. Telemedicine is a growing field in medicine, with more research needed and experience needed to optimize patient care through this medium.

Second, ED providers can prevent overdose by prescribing Naloxone [15]. For patients who present to the ED after an opioid overdose, nearly twenty percent will have a second overdose within two years, and over ninety percent will continue to receive opioids from their doctor after their overdose [16]. As such, ED providers should provide patients who present with an opioid overdose with a prescription for naloxone at the time of discharge. Patients, as well as any family or friends accompanying them should be instructed on how and when to use the naloxone. Additionally, naloxone should also be prescribed as a precaution to any patient on high doses of opioids, such as those on 100 mg morphine equivalents per day or more, as the risk of overdose is greater on a high dose opioid regimen [17]. Naloxone should also be prescribed in a precautionary fashion to patients who are on opioids along with other sedatives, such as benzodiazepines or muscle relaxants, as there is a higher risk of overdose when multiple sedating medications are used [2,18].

ED providers can also consider routinely co-prescribing naloxone when any discharge prescription for opioids are given. Even though ten tablets of a low potency opioid such as hydrocodone may seem innocuous, if mixed with other sedating medications or taken accidentally by a child or elderly family member, an overdose could still occur. As such, routinely co-prescribing naloxone along with opioids may be considered a public health and safety measure.

Naloxone comes in various forms, and insurance coverage and cost vary from formulation to formulation. Doses and formulations are included in Table 1. Insurance coverage will, obviously, vary regionally and by provider. Prices are from GoodRx.com (Accessed May 12, 2018).

Formulation	Dose	Route of administration	Notes on administration	Approximate Cost (no insurance)
Nasal Narcan	4 mg (dispensed as a box with #2 4 mg doses)	Intranasal	Easy to use, no risk of provider needle stick	\$135 for 2 doses
Evzio	0.4 mg (dispensed as a box with #2 0.4 mg auto-injectors)	Auto-injector with verbal instructions to operator	Verbal instructions guide operator on how to administer	\$3850 for 2 doses
Naloxone (generic)	0.4 mg vial, with 0.4 mg/mL.	Intramuscular injection (providers must be able to draw up medication and provide IM injection)	Must also provide syringes, needles, and sharps container. + risk of provider needle stick	\$14 per dose (plus cost of needle, syringes, and sharps container)
	Patients should be given 2 doses			
Naloxone (generic)	2 mg pre-filled syringe with 2 mg/mL.	Intranasal (providers must be able to connect syringe to nasal atomizer)	Must also provide nasal atomizer to allow nasal administration	\$33 per dose (plus cost of nasal atomizer)
	Patients should be given 2 doses			

Implement Screening, Brief Intervention, and Referral to Treatment (SBIRT)

- Screening: assess patient for risky behaviors using standardized screening tools
- Brief Intervention: if patients screens positive, engage patient with feedback and advise
- Referral to treatment: refer patient in need of additional health services

Screening, Brief Intervention, and Referral to Treatment (SBIRT) is a well-established intervention that was developed over 20 years ago for patients suffering from addiction to help facilitate time and resource intense interventions in the ED. Incorporating a psychosocial intervention with motivational interviewing, SBIRT has been shown to be effective strategy with unhealthy alcohol use and its framework has more recently been applied to other substance use including tobacco and opioids [19]. Most patients will screen negative (80%) and the initial screening process will take 1-2 minutes. If a full SBIRT is required, the process can take between 5-20 minutes. Time has been cited as one of the main barriers that limits SBIRT implementation [20]. Hospitals have developed effective non-physician teams that have been shown to effectively perform SBIRT that has resulted in higher rates of enrollment in outpatient treatment programs [21].

There are a variety of screening tools available to assess patients for substance abuse such as AUDIT (alcohol), DAST (drugs), and CRAFFT (substance abuse under 21). Becoming familiar with the different screening instruments is essential and can be facilitated by several iPhone apps and online modules [22].

Brief interventions are designed to change the behavior of patients at risk of substance abuse and help encourage patients with more serious dependence to accept treatment. The most commonly employed strategies involve a brief version of cognitive behavioral therapy and/or motivational interviewing [22].

Referral to treatment involves helping a patient obtain access to specialized treatment, selecting treatment facilities, and helping with potential barriers such as cost or transportation. The Substance Abuse and Mental Health Services Administration (SAMHSA) Treatment Locator is a valuable tool to facilitate this process. SAMHSA also has a 24-hour national help line to help patients and families (1-800-662-HELP).

Despite the ED being at the center of the opioid epidemic, most EDs have struggled to identify, treat, and refer patients for substance abuse treatment. EDs have successfully regionalized trauma, stroke, and STEMI care and can transform the healthcare landscape when specific health care issues arise, creating an opportunity for intervention with patients struggling with SUD. Validated screening programs like the SBIRT are increasingly utilized to detect and help treat patients suffering from substance abuse. SBIRT is a great public health intervention in helping patients with substance abuse by decreasing ED visits, non-fatal injuries, hospitalizations, arrests, and motor vehicle crashes [23]. While a few EDs have created SUD programs, most EDs continue to struggle to identify patients struggling with addiction, initiate treatment, and refer patients to outpatient treatment programs. Several innovative initiatives (i.e. tablet screening, telemedicine) have deployed the screening and brief intervention process of SBIRT but the referral to treatment process has not yet incorporated innovative tools [24,25,26].

Start Medication Assisted Treatment (MAT) in the Emergency Department

For those EDs that have been able to implement some of the basic interventions, a big step forward is to be able to provide MAT in the ED. MAT is defined as when medications and behavioral therapy are used together to treat substance use disorders. This is currently being used for OUD, as medications such as buprenorphine and methadone can be used to keep patients out of opiate withdrawal without causing euphoria that may interfere with treatment. While methadone is best managed in clinics with special experience and training in the use of methadone, buprenorphine can be used in multiple settings, including primary care and the ED [27].

In its simplest form, MAT involves prescribing buprenorphine to patients with opiate dependence to initially alleviate withdrawal and then to prevent withdrawal on an ongoing basis without causing euphoria, allowing patients to follow up with outpatient treatment resources. Buprenorphine acts as a mixed agonist/antagonist at the opiate receptor, activating the mu opioid receptors while having a ceiling effect on respiratory depression - giving it an excellent safety profile [28,29].

When used in the ED, buprenorphine can be given to patients in withdrawal as an IM, IV, PO, or topical preparation. Once withdrawal has been stabilized, the patient can be referred for further treatment in an addiction clinic or primary care clinics. While this has not been in the traditional purview of ED, a 2015 study at Yale found the initiation of buprenorphine for opiate dependence in the ED to be very effective in treating patients while in the ED and for improving compliance with follow up [27]. A follow up study of this intervention found the initiation of buprenorphine for opiate dependence to cost-effective as well [30].

Buprenorphine, when used for the treatment of addiction and drug dependence, is a restricted medication, and currently regulated by the Drug Addiction Treatment Act of 2000 (DATA 2000). Basically, buprenorphine for the treatment of opiate dependence is limited to the acute setting (three days or less from initial presentation) or to physicians who have completed a special training [31,32]. The training consists of 8 hours, and more information can be found at <https://www.samhsa.gov/medication-assisted-treatment/buprenorphine-waiver/management/apply-for-physician-waiver>.

In practical terms, the DATA 2000 regulations on buprenorphine allow for any health care provider to provide buprenorphine in the acute setting of withdrawal in the hospital or ED, in any form, for up to three days after presentation. To continue treatment with buprenorphine after discharge - a prescription must be given to the patient, and in order to write a prescription for buprenorphine, the provider must have completed the training and obtained his or her buprenorphine waiver (which is often called an X-waiver). The use of buprenorphine for pain management is unrestricted [31].

When beginning with a MAT program in the ED, emergency providers must identify other waived providers in their community who are able to prescribe buprenorphine and continue the care of the patient after discharge from the ED. Without a provider to take over their care and prescribing of buprenorphine, patients may end up in a “revolving door” cycle of presenting to the ED, being treated with buprenorphine, only to return to the ED when they have run out of buprenorphine or are in withdrawal again. In other words, if the ED is a “launch pad” for the treatment of opiate dependence with buprenorphine, a “landing pad” is also needed to accept and

continue patient care. Additionally, as patients with opiate addiction and dependence are at very high risk of relapse, may have issues following up with resources, and often face multiple psychosocial issues, referring ED MAT patients to social work or case managers can be extremely helpful.

Finally, it is important to note the details of how to prescribe buprenorphine. Buprenorphine comes in many forms, from injectable, to tablet, to sublingual film, to patch. Table 2 lists the various forms of buprenorphine and highlights key points about each. Buprenorphine should be avoided in patients with severe liver disease as it is metabolized by the liver. However, providers should not be compelled to screen patients by ordering liver function tests if there is no history of liver disease [29,33]. Additionally, buprenorphine - as an agonist/antagonist - can precipitate withdrawal in patients who are currently intoxicated with opioids. Buprenorphine should only be started in patients in opiate withdrawal, but then can be used as a maintenance therapy [33]. Because of the long half life of methadone, patients should have had at least 36-48 hours since their last dose of methadone before starting buprenorphine to avoid precipitated withdrawal [34].

To avoid misuse of buprenorphine, such as crushing and injecting tablets, buprenorphine is often combined with naloxone. As naloxone is not absorbed orally, when taken properly, the naloxone in combined buprenorphine/naloxone will not cause withdrawal, and functions to deter misuse [29].

Formulation	Dose	Notes
Buprenorphine injectable	0.3-0.6 IM once prn withdrawal	One dose can keep a patient out of withdrawal for approximately 24 hours
	0.3 mg IV once prn withdrawal	
Buprenorphine tablet (generic)	8 mg to 24 mg SL daily, in divided doses	Inexpensive
2 mg, 8 mg		
Buprenorphine/naloxone tablet	8 mg to 24 mg SL daily, in divided doses	Also available as a film (Suboxone), instead of a tablet
2 mg/0.5 mg, 8 mg/2 mg		
Buprenorphine patch (BuTrans) 5 mcg/hr, 10 mcg/hr	One patch (5 to 20 mcg/hr) topically once, wear for 7 days	Easy to put on patients in the ED, and DC with patch for continued treatment. Provides less buprenorphine than other forms – patients may feel residual withdrawal
Other Brand formulations: Zubzolv, Bunavail, Belbucca	Alternative dosing regimens – review in drug reference	Expensive

A common dosing regimen is to provide patients with 8 mg of sublingual buprenorphine for acute withdrawal, and if their symptoms of withdrawal are improved - continue with an additional 8 mg. Additional doses, up to 24 mg, can be given until withdrawal is resolved. For patients being discharged from the ED, most patients will need 8 mg of buprenorphine BID or TID to manage

their withdrawal symptoms. Unfortunately, insurance coverage and the cost of medications may be an issue for many patients. Combination products tend to be more expensive than buprenorphine alone. Generic buprenorphine is the least expensive and is reasonably priced with the assistance of a pharmacy discount program, such as GoodRx.

Challenges and Strategies When Implementing Interventions in the Emergency Department

Setting up a program and starting to implement some of the above tools for patients that arrive in your ED can be a daunting task. Identifying a champion to lead this initiative in your ED is a key first step in dealing with many of the logistical issues. Please reach out to the authors for questions about how to move forward and create a program in your emergency department, or if you would like a copy of protocols being used at our institutions.

At its core, there are a few predictable logistical issues to get started. Having a meeting with your substance abuse counselor/case management/social worker, ED pharmacist, ED administrative team is a key first step. What has worked in alternative EDs may not work or may not be practical based on the staffing/resources in your ED. Here are several logistical steps that may help your program move forward:

- Complete the training to receive your X-waiver and encourage your colleagues to do the same. Even though the waiver is not required to use the medication in the ED, it will help increase your familiarity and comfort as you begin to use the medication.
- Setting up a screening program is a vital way to increase the capacity of your program, but it is useful to just start with patients that either self-identify or are identified by the clinician as needing help.
- Use the SAMHSA treatment locator to understand what resources already exist in your community. This list is generally only updated annually but may help you identify key resources and/or people with experience in your area.
- Reach out to local addiction treatment programs and support groups and contact key people in those organizations, who can help streamline referrals for patients or address unmet needs in the community. If you're not sure of who to reach out to, a hospital or ED social worker can likely connect you with local programs and groups.
- Educate your pharmacy team on the 72-hour rule that enables non X-waivered physicians to treat patients with buprenorphine in the ED. Pharmacists, clinicians, and administrative staff are often unaware of this rule and understanding it ahead of time can save a lot of time and energy as you implement your program.
- Understanding the potential billing implications of this work ahead of time can be useful - performing and recording a SBIRT can be a way to both provide a valuable service to your patients and increase revenue for your department.
- Case review sessions - meeting monthly as you begin your program can be a valuable tool in growing and refining your program. Spending time reviewing cases can help to grow insight and capacity among you and your colleagues.
- Technology - telemedicine and decision support software are increasingly becoming a part of the tools to provide improved access and versatility to substance abuse treatment. Contracting with vendors/business that offer these services could be an important step in growing your EDs program.

Conclusion

With over 23 million people in the United States in need of treatment for illicit drug or alcohol use, emergency physicians are not strangers to patients suffering from addiction [35]. Traditionally, emergency physicians are trained to recognize overdose and stabilize patients in physiologic crisis but have lacked an emphasis on treating patients suffering from addiction who are not in crisis. The opioid epidemic has highlighted the impact of addiction and should inspire us as emergency physicians to understand how we can better help treat addiction in the emergency department. We outlined ways that your ED and emergency physicians can start being a part of the opioid epidemic in your community.

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