THE CARE OF HOSPITALIZED INTRAVENOUS DRUG USERS IN 2019

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ABSTRACT

People who inject drugs, particularly opioids, are a growing population, especially in North Philadelphia. This population is at high risk for medical complications that require hospitalization. While hospitalized, this population poses unique challenges to the healthcare system, including high costs and readmission rates, as well as stress and burnout among providers and staff. These patients are at high risk of discharges against medical advice because of complicated social factors as well as inadequate recognition of pain and withdrawal. As the opioid epidemic evolves, previous strategies for managing these patients, which traditionally relied on referral to psychiatry or social work in addition to symptomatic treatment, need to be re-evaluated. Ethically, the decision-making capacity of these patients is frequently called into question, and there is a difficult-to-strike balance between respecting their autonomy and acting with beneficence to provide the best care. There are also public health concerns that come into play. Better acknowledgment of the issues that this population faces, and better management of pain and withdrawal, may improve their outcomes, as well as reduce provider stress and burnout.

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CHAPTER 1: INTRODUCTION

People who use intravenous drugs pose a unique challenge for the healthcare system when they are hospitalized. They are at risk for a variety of medical complications related to their drug use. They often do not have health insurance and use a disproportionate amount of limited financial resources. They have complicated social situations, which can make discharges and transitions of care difficult. They also have a reputation of being "difficult patients," often due to conflicts over management of pain and withdrawal, which can place significant stress on medical providers and staff. Outpatient care of intravenous drug users provides an entirely different set of challenges; this paper will focus on inpatient care.

People who inject drugs are at risk for a wide range of complications. They can suffer respiratory arrest or cardiac arrest after an overdose, which can cause immediate death without resuscitation, or lead to brain death or permanent brain injury if they are successfully resuscitated. In 2017 alone, there were 1,217 deaths related to drug overdose in the city of Philadelphia, 1,074 of which were due to opioids (City of Philadelphia, 2018). This statistic continues to rise every year. IV drug users are also at high risk of trauma, including burns and accidents, because their mental state is often altered. By sharing needles, IV drug users can contract chronic bloodborne pathogens like HIV and hepatitis C, which can cause significant morbidity and mortality over time (Sax 2018). By injecting their veins frequently, they are also at risk of introducing bacteria from their skin or their needle into their blood, which can spread throughout the body and cause infections of any organ. HIV and hepatitis C, while devastating if

untreated over years or decades, inflict little harm to the individual in the short-term. Bacterial infections, on the other hand, can be immediately debilitating and even life-threatening if not addressed promptly.

Bacterial infections present on a spectrum. They range from simple abscesses that can be drained and treated with a short course of oral antibiotics, to more serious infections that often take prolonged hospital stays with weeks of intravenous antibiotics, and sometimes require major surgical interventions, to cure. For example, IV drug users are prone to infective endocarditis, or an infection of the heart valves. Particulate matter that gets injected with drugs causes damage to the heart valves, making them more susceptible to becoming infected with bacteria that can enter the bloodstream via a non-sterile syringe or an injection through dirty skin. Patients who are diagnosed with endocarditis require a minimum of four to six weeks of intravenous antibiotics. They may also require open-heart surgery to repair or replace their heart valves if they are severely damaged by the infection. Patients with endocarditis also tend to spread infection to other parts of their body. IV drug users with endocarditis commonly have septic emboli to their lungs - pieces of the infection in the heart break off and travel to the lungs, which can cause difficulty breathing, hemoptysis (coughing up blood), and pleural effusions (fluid collections around the lung that may require drainage). They can also spread infections to their brain, bones, and other internal organs, each debilitating in its own way.

Patients who do not use drugs and need prolonged courses of antibiotics may be sent home with semi-permanent IV access and can complete their treatment as an outpatient. However, sending a drug user home with long-term IV access is considered

to be a liability to the hospital, as it provides easy access for injecting drugs and can lead to more infections if not properly maintained. This conception was refuted by a literature review published in 2018 in *Open Forum Infectious Diseases*, which concluded that people who inject drugs had somewhat higher levels of readmission when completing a course of outpatient IV antibiotics, but were rarely documented to misuse their catheter (Suzuki et al, 2018). Regardless, in common practice, these patients are not discharged home and instead must be sent to a skilled nursing facility to complete their treatment course. However, many facilities do not want the liability of taking care of drug users, who can be "difficult patients" and may "elope" with their IV in place and invoke police activity. So, many are sentenced to a 6-week or longer hospital stay. The infections themselves can cause lifelong disability and can even be life-threatening. The hospital itself provides an entirely different set of challenges.

CHAPTER 2: OBSERVATIONS

The hospital is a not an easy place for anyone to be. As a patient, it's almost always noisy. A phlebotomist arrives at 4:00 am for blood draws, and nursing assistants check vital signs every four hours. Medical students and residents arrive at 6:00 or 7:00am to ask often redundant questions and perform a physical exam. As a patient, you are at the mercy of the dietary staff to bring your meals, the nurses to bring your medications, the nursing assistants to detach you from your monitors and IV poles to go to the bathroom, and the medical team to order extra medications for you if you need them. You must go for tests whenever the department in question is available, which can often be in the middle of the night. You are not allowed outside, or off the floor to go to the cafeteria, or even past the view of the nurses' station to visit a vending machine.

For the typical IV drug user, things get worse. Boredom can become a major issue - most drug users do not have spare money to pay the ten dollar per day fee (at this particular hospital) to turn on the television in their room, and often do not have a cell phone or computer to entertain them. They frequently have damaged their relationships with family and friends and have poor social support. If a patient has an infection that is resistant to certain antibiotics, they are placed in a private room on "contact isolation," which means anyone entering the room must wear a gown and gloves to prevent the spread of the resistant infection to other patients. Studies have shown that patients who are on contact precautions have up to fifty percent fewer visits from providers than patients who do not have special precautions, and the evidence supporting the efficacy of this practice is sparse, but it is still practiced at most institutions (Sprague et al 2016).

Patients who are on contact isolation are not allowed to leave their room to walk around the halls or to sit in the patient lounge, where a free television is located. On the other hand, patients who do not have a resistant infections are permitted to leave their room but will almost certainly have a roommate. In a good scenario, the roommate can be a companion and provide the patient with someone to talk to and commiserate with. In a bad scenario, the roommate can be disruptive or unpleasant for a variety of reasons.

These things alone would make a prolonged hospital stay difficult. Before these issues even arise, however, the first challenge many IV drug users face in the hospital is withdrawal (Farrell 1994). Over time, the body and brain become dependent on opioids, and abrupt cessation causes symptoms that include nausea, diarrhea, cramping, sweating, anxiety, insomnia, and intense cravings. Unlike withdrawal from alcohol or benzodiazepines, opioid withdrawal is not life-threatening, and therefore is sometimes minimized by practitioners. However, the withdrawal is extremely unpleasant and reportedly one of the worst sensations a person can experience. Outside of the hospital, people who use opioids will go to extreme lengths to buy more drugs to stop feeling sick - stealing, exchanging sex for money, etc. Over time, they no longer feel "high," but continue to use to prevent withdrawal. When people are withdrawing in the hospital without the ability to make themselves feel better, they become "difficult patients" - angry, uncooperative, and irrational. In their attempt to ask for medication for treat their withdrawal, they often get labelled "drug-seeking" and "manipulative."

Patients who are experiencing withdrawal will sometimes "pocket" oral opioid medications that they are given (hide them in their cheek or under their tongue) and then crush them and inject them into their IV in an attempt to self-treat pain or

withdrawal. This causes complications, from malfunctioning IV lines to serious bacterial infections caused by oral flora introduced into the bloodstream. Additionally, people who have been admitted to the hospital previously and know that that they are likely to experience withdrawal will sometimes bring their own supply of opioids to use in the hospital, or ask a visitor to bring them drugs. It is not unheard of for a patient to overdose while in the hospital and need to be resuscitated, or even die of an overdose if they are not found soon enough. If there is suspicion that a patient is using an outside supply of illicit drugs, they will have their belongings searched and confiscated, be put on "one-to-one" supervision, in which case a nursing assistant will sit next to their bed twenty-four hours a day to monitor their behavior. They will also have a restriction or complete ban on their visitors. All of these extra rules, while not unreasonable from a hospital safety perspective, can make an already difficult situation for the patient even more intolerable.

For all of these reasons, people who inject drugs have very high rates of leaving the hospital against medical advice (AMA). An AMA discharge occurs when the patient acknowledges that their medical care is not complete and accepts the risks of leaving the hospital prematurely, including permanent disability and death. The patient is asked to sign paperwork to document this. Different providers have different approaches to AMA discharges; some, but not all, will provide a course of oral antibiotics as second-line treatment for patients being treated for less serious infections and give them instructions for follow-up. People who are discharged AMA have higher rates of readmission and worse outcomes than patients who complete their planned hospital stay (Glasgow et al 2010). Drug users commonly "elope" as well - they simply walk out of the hospital

without notifying anyone that they are leaving. If they elope with an IV in place, the police must be contacted to find them and remove their IV, as it is a risk for infections and a route for easy drug use.

All of these behaviors - injecting oral medications, overdosing in the hospital, discharges against medical advice and elopements - lead to poorer medical care for the patient. They also cause a significant amount of distress among providers and contribute to burn-out. With proper recognition and treatment of pain and withdrawal, these behaviors can be avoided. The reasons for the under-recognition and under-treatment of pain and withdrawal are multifactorial. There are certainly some providers who simply do not feel sympathy for these patients, and may believe that their problems are self-inflicted. However, many providers have the best interests of the patient at heart, but are limited by the current strategies for recognizing and treating withdrawal, which are often inadequate.

CHAPTER 3: CURRENT STRATEGIES FOR TREATING ACUTE OPIOID WITHDRAWAL

Unfortunately, there are no guidelines for addressing opioid withdrawal in hospitalized patients. The American Society for Addiction Medicine has published practice guidelines for the outpatient management of patients with opioid use disorder, but they do not make recommendations for inpatient management (American Society for Addiction Medicine, 2015). There have been a relatively small number of review articles addressing the issue. In 1994, the American Journal of Medicine published an article titled *Management of the hospitalized IV drug user: Role of the internist,* in which the authors observed, quite astutely for so early in the opioid epidemic, that inadequate attention to withdrawal symptoms by staff may provoke confrontations with patients, and that patients can sense when providers have an unfavorable attitude towards drug users, making effective care difficult (O'Connor et al, 1994).. In addition to a non-judgmental approach, they recommended clonidine, an anti-hypertensive that is often used off-label for management of withdrawal symptoms, for mild to moderate withdrawal. They suggested methadone, a long-acting opioid agonist, for severe withdrawal. In 2009, The Lancet published *Management of injecting drug users admitted to the hospital*, which recommended opioid substitution over detoxification, and emphasized using a proactive rather than a reactive approach (Haber et al, 2009). However, the types of approaches they warned against, which utilize rapid detoxification or a reactive as-needed pain management strategy, are still widely used.

Because there are no agreed-upon guidelines, management of pain and withdrawal is highly dependent on the team taking care of the patient and is often strongly influenced by opinion and bias. Main strategies for controlling withdrawal in the hospital include the use of non-narcotic medications, as-needed narcotics, or standing narcotics, which can include methadone, buprenorphine, or long-acting opiates like oxycodone. The addition of fentanyl and stronger synthetic opioids to heroin has made treating IV drug users more difficult than in the past, causing patients to have a higher level of dependence and making withdrawal more difficult to treat.

A strategy of using non-narcotic medications focuses on alleviating the physical symptoms of opiate withdrawal and can include clonidine, a blood pressure medication which is often used off-label in withdrawal and can alleviate tremors and mild anxiety; ondansetron, an anti-emetic; loperamide, an anti-diarrheal; and dicyclomine, an anti-spasmodic, for gastrointestinal distress. Benzodiazepines are sometimes added for control of more severe anxiety. Because clonidine is an anti-hypertensive, its use is limited in patients with infections, which can cause low blood pressure if the patient is septic. In this strategy, pain control relies on acetaminophen and NSAIDs such as ibuprofen. While this strategy addresses the physical symptoms of acute withdrawal, it fails to address cravings for opioids. In my experience, it is sometimes effective for patients who use relatively small amounts of oral or intranasal opioids but is generally not sufficient to treat acute withdrawal in most patients who use intravenous opioids regularly.

A strategy of using "as-needed" only opiates provides the patient with short-acting opiate medications only when the patient asks for them, either on their own or in

conjunction with the non-narcotics listed above. Because this method only uses short-acting medications, the patient experiences "ups and downs" and generally does not achieve adequate control of withdrawal symptoms or a steady level of pain control. Additionally, using medications only as needed causes the patient to rely on the nursing staff to respond to their call bell and bring medications frequently and promptly. In my experience, this causes tension between the patient and nursing staff. Again, this strategy is sometimes sufficient for patients with relatively low levels of dependence, but is generally inadequate for the majority of regular intravenous drug users.

A third strategy involves using methadone, which is a long-acting opioid agonist, meaning it acts on and stimulates the same opioid receptors on the brain that are stimulated by heroin. Methadone is a mainstay of outpatient medication-assisted treatment and effectively controls cravings and withdrawal symptoms. However, it can cause cardiac toxicity if started at too high a dose and requires slow, careful up-titration. Therefore, patients in the hospital can only receive three days of tapering doses of methadone unless a certified provider is involved. Like the first two strategies, this is often not sufficient to overcome the withdrawal symptoms of most intravenous drug users. It also requires the provider to switch to another strategy after three days, and although this may overcome the initial stages of acute withdrawal, many people are still experiencing cravings and withdrawal symptoms after three days.

A fourth main strategy uses buprenorphine, another mainstay of outpatient medication-assisted treatment, which is commonly co-administered in a combination form with naloxone under the brand name Suboxone. Buprenorphine is a long-acting partial opioid agonist, and naloxone is an opioid antagonist. Naloxone is added to

buprenorphine to discourage abuse of the drug - when Suboxone is used sublingually as intended, the naloxone is not absorbed and has no effect. However, if the Suboxone is dissolved and injected, the naloxone causes acute opioid withdrawal. Unlike methadone, Suboxone can reach therapeutic doses quickly and does not require significant titration. Because it is a partial agonist instead of a full agonist like methadone, it has a maximum dose at which it reaches a ceiling. Therefore, it sometimes does not work for patients undergoing surgery or experiencing other painful conditions, like broken bones or burns. Suboxone also requires a provider with a special license called an X waiver to prescribe ongoing doses, so this strategy cannot be used if addiction medicine specialist or other certified provider is not available.

A fifth strategy involves using scheduled doses of long-acting opiates, typically oxycodone (OxyContin) or morphine (MS Contin). This provides a baseline level of narcotic to prevent withdrawal. As-needed opioids and non-opioids can be added for additional control of pain or withdrawal, which is useful for patients with painful conditions. This strategy can be implemented by the primary inpatient team alone or with the help of an addiction medicine specialist, who can be helpful in titrating doses and transitioning to buprenorphine or methadone at the time of discharge or when the painful condition has resolved.

CHAPTER 4: A CHANGE IN PERSPECTIVE

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CHAPTER 5: QUANTITATING THE EFFECT OF WITHDRAWAL STRATEGIES

In an ongoing project with Daniel Mueller, MD, in the department of Infectious Diseases, I am investigating outcomes of people who inject drugs who are admitted to the hospital with Staphylococcus aureus bacteremia. S. aureus is a bacterium found on the skin and is the most common organism to cause infections in IV drug users. Its presence in the blood, rather than in a wound, indicates severe infection and necessitates at least two weeks of intravenous antibiotics, and frequently more.

Justification

North Philadelphia has very high rates of intravenous opioid abuse. According to government data, the opioid drugs (most commonly heroin, which is now frequently found to be mixed with fentanyl) available in the most prevalent areas is more potent yet less expensive than in other urban areas, making opioid use more accessible and more dangerous to this at-risk patient population. Opioid abuse has been rising at a rapid rate in recent years. Patients who engage in intravenous drug use are at elevated risk for life-threatening acute infectious complications such as infective endocarditis, skin and soft tissue infections, and osteomyelitis. These infections require hospitalization and often prolonged inpatient treatment with IV antibiotics. There is evidence that this patient population has a higher propensity to leave the hospital against medical advice (AMA), rather than completing their inpatient course of therapy (Choi et al 2011). We postulate that these patients leave AMA more frequently than the general population because of inadequately treated opioid withdrawal among other socioeconomic predisposing factors.

There is reason to believe that this population benefits from co-management with an addiction expert to assist in setting realistic expectations and managing symptoms of withdrawal. In this retrospective cohort study, we will compare the rates of AMA discharges in patients who had their opioid use disorder managed by an expert (addiction medicine consult service) to those whose opioid use disorder was managed by the primary team. We will focus on patients who are admitted with a primary diagnosis of Staphylococcus aureus bacteremia and have active IV opioid use at the time of admission. We will also look at secondary endpoints including readmission rates and mortality in the first year after hospitalization.

Methods

We first searched in VECNA, an infectious disease database, for patients whose blood cultures were positive Staphylococcus aureus between September 2016 and December 2018. We excluded patients who did not have active IV opioid use at the time of admission. Patients who only used oral or intranasal opioids, or patients who only used intravenous cocaine, were excluded. We also excluded patients who were admitted to the intensive care unit on a ventilator and expired while in the ICU, as these patients were unable to express withdrawal symptoms or leave AMA. 360 patients with Staph bacteremia were identified; 114 were included in the study based on the above criteria.

After subjects were identified, information from their chart was entered into a RedCap database. Data points collected included age, gender, ethnicity, admission diagnosis, qSOFA score on admission (an indicator of the severity of sepsis), complications of the bacteremia, MRSA vs MSSA (the resistance pattern of the bacteria),

HIV and hepatitis C status, duration of hospitalization, type of discharge (planned by team vs AMA), destination at discharge (home, skilled nursing facility, etc), whether or not an addiction medicine consult was completed, details on the time of pain management strategy (scheduled only, as-needed only, or a combination), type of pain medication used (narcotics only, non-narcotics only, or a combination), and death and readmission rates at 30 days, 90 days, and 1 year.

Preliminary Results

Sixty-three patients are currently available for analysis. Of this population of patients, the median age was 35 years, and 41% were women. Over 70% of this cohort was identified as non-Hispanic white, 16% as Hispanic/Latino, and 9% as African American. HIV was present in 10 patients (9%), and 48 patients (76%) had a history of (or were diagnosed with) hepatitis C. Forty-five (71.4%) had a planned discharge, while 18 (28.6%) left against medical advice or eloped from the hospital. In comparison, the general population has an AMA rate of 1-2%. Patients were hospitalized for an average of 15.3 days, but when stratifying for type of discharge, those who left AMA stayed an average of 7.5 days, while those with a planned discharge stayed 18.4 days. Addiction medicine consultation was obtained for 21 patients (33%). In patients receiving addiction medicine consultation, 19/21 (90%) remained hospitalized until planned discharge. Among those who did not receive addiction medicine consultation, 26/42 (62%) remained in care until planned discharge.

CHAPTER 6: ETHICAL ANALYSIS

When treating IV drug users who are admitted to the hospital, multiple ethical principles come into play. At the forefront is the idea of capacity, especially when patients are leaving the hospital AMA or refusing aspects of their care, at which times a capacity evaluation needs to be performed by the provider. A capacity evaluation includes assessing the patient's ability to understand information, appreciate the risks and benefits of the various options, and verbalize a choice. They must be of sound mind and not under the influence of substances or have an acutely altered mental state. Health literacy is a critical factor when assessing capacity, and people who inject drugs commonly have low levels of health literacy. While most people are able to verbalize that they have a life-threatening infection, they cannot grasp the details of the many ways the infection can be debilitating. Unfortunately, there is no standard way to assess for health literacy, and it would be impossible to say that every person who has low health literacy does not have capacity to make their own healthcare decisions.

Although they seem straightforward, capacity evaluations can be quite subjective and provider-dependent. Some providers take a paternalistic approach and are more "strict" in their capacity evaluation, and make a greater effort to keep patients in the hospital to complete treatment. While they are acting with beneficence, declaring that a person does not have capacity usually leads to the use of physical and chemical restraints to keep a person in the hospital for treatment. This decision takes away any autonomy that the patient may have. Many providers are understandably hesitant to say that a person does not have capacity, and are more lenient in their evaluation. Providers'

opinions of IV drug users also affects their evaluation of the patient's capacity. Providers may be less likely to say that a patient does not have capacity when the patient is being "difficult;" it is often easier to just let them leave. There is a significant amount of judgment surrounding the decision as well. IV drug users who leave the hospital AMA often cite withdrawal as a reason to leave the hospital, and providers sometimes speculate how they could possibly put their cravings for drugs ahead of their own well-being when they have a life-threatening medical condition.

The idea of autonomy is closely linked to capacity. While many of these patients have the autonomy to make their own healthcare decisions, they do not have the agency to advocate for themselves and make themselves healthy. People who use IV drugs over time become dependent, and while they are able to make decisions, their choices are heavily influenced by their addiction. People with substance use disorders often describe how they have become a slave to their drug use; they are not empowered to make decisions to help themselves. Even though they are not acutely intoxicated, their capacity to make good decisions is affected by their dependence.

The theory of distributive justice also comes into play when treating patients with opioid use disorder when considering healthcare resources. This population uses a disproportionate amount of resources, especially when they are hospitalized with complications related to their drug use. IV drug users frequently do not have health insurance or means to pay for their medical care. Furthermore, this population usually relies on safety net hospitals in resource-poor areas, where funds are already limited. In these situations, resources are often distributed according to patients' needs, with needier patients getting a greater share of resources. In this population, equity is more important

than equality. Each person has a different level of need and will need a different amount of resources to be successful. Luckily, providers are not responsible for distributing resources, and can theoretically provide the best care for the patient without thinking about resources. However, the amount of resources that are utilized by this population causes distress among some providers.

Public health is another concern when talking about any infectious disease. People who have hepatitis C and HIV are at risk for spreading these bloodborne pathogens to others if they share syringes, and should be informed of their diagnosis and provided with resources for follow-up if the diagnosis is made while they are in the hospital. Harm reduction is an important concept in preventing the spread of infectious diseases in people who use IV drugs and focuses on reducing the negative consequences of drug use. Syringe exchange programs and naloxone distribution and training are two mainstays in this population. When people are hospitalized, they have unfortunately suffered a harm from their drug use; however, this gives the provider an opportunity to talk openly about their practices and make suggestions for harm reduction.

Conclusion

As a provider, taking care of IV drug users who are hospitalized is a challenge, but it is also an opportunity. A hospitalization is a chance to link people to care, both for their medical conditions and for their substance use disorder, and can be the start of the recovery process. A hospitalization can be a teaching moment to provide counseling on harm reduction. And as we gain a better understanding of opioid use disorder and how

to manage it, it can be an opportunity for providers to regain trust from a population that often is often distrustful of the healthcare system, which has not always provided them with the best care in the past.

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