Understanding Medication-Assisted Treatment as a Response to the Opioid Crisis

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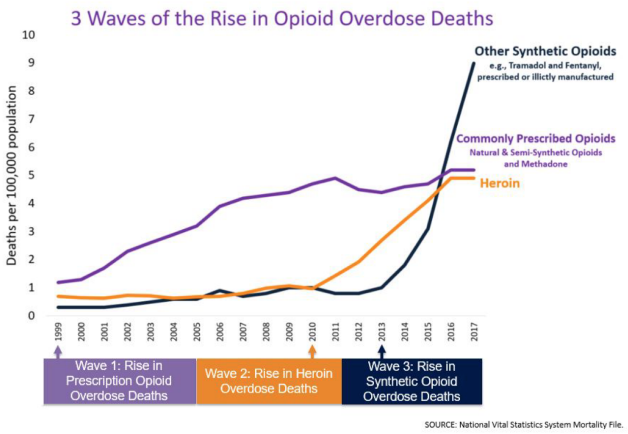
History of the Opioid Crisis

It goes without saying that the opioid crisis is an extreme epidemic, that is not only plaguing the United States, but is affecting the entire world. The Centers for Disease Control (CDC) has recently published statistics that exhibit the horror and the consequences of the opioid crisis in America. Between 1999 and 2017 more than 700,000 Americans died from a drug overdose.[9] In 2017 alone, 68% of the more than 70,200 American drug overdose deaths involved an opioid, a number that was 6 times lower in 1999.[9] On average, 130 Americans die every day from an opioid overdose.[9] Currently, it is estimated that over 1.9 million people in the United States are struggling with a prescription opioid addiction.[10] This is a crisis that has not only existed in America for decades, but continues to grow exponentially affecting more and more people every year. In addition to overdosing, a person with an opioid addiction are also at a greater risk of contracting HIV and Hepatitis C, as well as, a higher rate of criminality.[11] Not only does the opioid affect Americans emotionally and physically, but it also affects Americans economically. The opioid crisis is estimated to cost the United States over $78 billion annually through lost wages, medical treatment, and criminal justice involvement.[2] This is an epidemic that will not resolve itself and needs to be addressed immediately.

The opioid crisis is an epidemic and therefore it must be treated like one. The first step to eradicating a disease is to understand its epidemiology, so it is crucial that the cause of this disease is identified. The opioid crisis can be broken down into three, chronological waves. The first wave, the source of the epidemic is suspected to have begun in the 1990's when physicians were relatively liberal in their prescription of opioids, such as hydrocodone and oxycodone, which resulted in patients developing an addiction to them. The 1990's weren't the first time that patients had gotten addicted to the pain medications meant to help them. It was sometimes the case that soldiers after World War II became addicted to the morphine that they received on the battlefield and in hospitals; but, after the war access to such drugs was limited thus preventing an epidemic. However, in the 1990's there was little concern or regulation about the prescription of opioids and they could be found across the country, thus access to them was relatively easy. The easy access to opioids without much restriction led many Americans to develop an addiction to them. In the early 2000's it became apparent that the overprescription of opioids was becoming a problem, which caused the implementation of restrictions and regulations about the prescription of opioids.

It was at this point, in the mid-to-late 2000's that 2nd wave of the opioid crisis began. When people who were addicted to opioids could no longer access them due to the restrictions and regulations placed on opioid prescriptions, they began to look for other ways to feed their addiction. These addicts began turning to street drugs like heroin in order to satisfy their needs. Unlike before when these people were receiving their drugs in a controlled amount that was determined by a physician, these addicts were now taking a drug that was unregulated in quantities that were unmonitored. This led to a dramatic increase in overdose deaths in the early 2010's.

The third wave of the opioid crisis began in 2013 upon the introduction of illicitly-manufactured fentanyl (IMF) into the mainstream illicit drug culture. IMF is extremely potent, as it requires significantly less IMF to produce the same euphoric high as heroin making addiction and overdose extraordinarily easy. Due to its high addiction potential and its ability to create a significant high in a small dose, drug dealers on the black market began lacing other drugs (cocaine, heroin, counterfeit pills, etc.) with IMF in hopes to gain more customers. However, due to its extreme potency, IMF is exceptionally easy to overdose on, so whether it be a drug dealer's miscalculation or a drug abuser unknowing consumption of IMF can quickly and easily lead to an overdose, thus creating a huge spike in deaths from 2013 to present day (See figure below).[9]



Medication-Assisted Treatment

Now that the source of the opioid epidemic has been identified, we can now begin to move towards a solution. Many people make the mistake of thinking that an addiction is solely a psychological issue and can get resolved with therapy; however, this is not the case. Though addiction does have a psychological component that needs to be addressed, addiction is also a physical issue and withdrawal is known to be excruciating and debilitating. Symptoms of opioid withdrawal include vomiting, headache, anxiety, depression, fever, muscle aches and hypertension to name a few. As long as someone is undergoing these symptoms, it will be impossible for them to get the psychological help they need in order free themselves from their addiction. Therefore, in order for someone to progress towards becoming addiction free, they must manage the symptoms of their withdrawal.

A leading method used to manage withdrawal symptoms while a patient undergoes the journey to become addiction free is medication-assisted treatment (MAT), also known as substitution therapy.[10] In MAT certain opioid drugs are given to suppress the withdrawal symptoms in recovering addicts so that they can focus on their psychological treatment and therapy while weaning themselves from illicit opioid use. Some people claim that MAT is wrong and ineffective as the basic premise is substituting an one opiate for another. However, studies have shown that taking participating in a MAT program greatly improves quality of life for patients as patients have displayed a better ability to hold a job, avoid crime and violence, and reduce exposure to HIV, as well as, suppress illicit opioid use.[10,11] Additionally, studies have shown that both methadone and Suboxone help patients stay in treatment and lower their risk of death by 50% as compared to behavioral therapy alone.[2] If opioid addiction is treated as an illness, then it makes sense that medication is needed for treatment. The two most common MAT drugs used for opioid addiction are methadone and Suboxone.

Methadone

Methadone is an opioid that was introduced in Germany in 1937 as a painkiller.[2] It was quickly discovered that Methadone not only was a successful painkiller; however, it didn't produce the same euphoric high as other pain killing drugs like morphine. By the 1960s methadone was being used in America as a MAT drug for opioid addiction.[2,3] Methadone is a full opioid agonist meaning that it has a similar chemical makeup as other opioid drugs is able to bind to opioid receptors in the body. Methadone's binding to opioid receptors of the body has multiple effects. Firstly, when methadone binds to these receptors, an addict won't develop withdrawal symptoms.[5] Secondly, when methadone becomes bound to an opioid receptor, that receptor is no longer able to bind with opiates (like heroin, morphine, and codeine) or other opioids (like oxycodone and hydrocodone).[5] This means that when a patient takes methadone they can no longer get a euphoric high from another opiate or opioid. If a patient no longer can feel the euphoric effects of other illicit drugs while on methadone, then they will have no need to use them. Additionally, methadone has a long half-life of around 24-36 hours, which means that taking methadone will work all day.[8] Methadone treatment has consistently been at the forefront of opioid addiction treatment for decades with the National Institute of Health and Clinical Excellence (NICE) in the UK deeming it be a first-rate treatment for opioid/opiate addiction.[11]

Though methadone has an excellent track record of being an effective MAT drug for opioid addiction, it isn't without its risks. Because methadone is a full opioid agonist, it still produces a slight euphoric high.[8] It's important to note that the high produced by methadone is immensely less intense than that of its more dangerous counterparts (e.g. heroin, hydrocodone, morphine, fentanyl, etc.).[8] However, because methadone does produce a slight euphoric high, it still has a potential for abuse. In 2009 the CDC reported that 30% of painkiller deaths had methadone involved, however, it was often not the case that methadone was the sole factor in the death as other substances (opioids, alcohol, benzodiazepines) were often found to have also been consumed as well.[10] Patients who have not been properly educated about pharmacology of methadone attempt to enhance the minimal high by using additional substances which increases the risk of overdose.[10]

Due to methadone's potential for abuse methadone was declared a Schedule II drug.[10] Additionally, the United States Congress passed the Narcotic Addiction Treatment Act in 1974, which established opioid treatment programs (OTPs) which are specialized clinics set up to aid people with opioid addictions.[7,10] OTPs must be certified by the

Substance Abuse and Mental Health Services Administration (SAMHSA) and registered by the Drug Enforcement Administration (DEA).[10] A patient can only receive methadone from an OTP, not from a hospital or normal health clinic, and can only be prescribed by a doctor who has undergone a specialty training program (11). OTPs require that patients be present in person each day to receive their medication and are subject to constant evaluation by physicians and other healthcare experts.[6] Additionally, the National Institute on Drug Abuse mandates that a methadone treatment program last a minimum of 12 months to ensure that the treatment isn't stopped prematurely before the patient is ready. These precautions have been added to counter the potential risks of methadone and have contributed to methadone's success over the past 40 years. As of 2006, there were 1,400 active methadone clinics in the United States that, on average, treated over 250,000 patients a day.[6]

Suboxone

Suboxone is another MAT drug used to treat opioid addiction that came into circulation in 2002 after it was approved by the Food and Drug Administration (FDA).[2] Unlike methadone, Suboxone's original purpose was to treat people suffering from an opioid addiction. Suboxone is a combination of the two drugs buprenorphine and naloxone.[2] Suboxone is composed of 80% buprenorphine and 20% naloxone.[3] Buprenorphine, like methadone, is an opioid agonist; however, buprenorphine is only a partial opioid agonist while methadone is a full opioid agonist. By being a partial opioid agonist buprenorphine is still able to bind to the opioid receptors in the body preventing withdrawal symptoms from developing and preventing other opioids from attaching to the opioid receptors; however, it won't produce the same minimal euphoric high that a full agonist like methadone produces.[10] Also, Suboxone has half-life similar to that of methadone meaning that, like methadone, Suboxone only needs to be taken once a day.[8] Naloxone, the other active component of Suboxone, is an opioid antagonist meaning that naloxone actively works to remove opioids bound to opioid receptors which additionally helps to prevent users from feeling a euphoric high.[8] Due to its relatively low percent composition, the naloxone typically remains dormant unless there is an overabundance of opioid agonists.[8] If abused, the naloxone part of Suboxone will activate and can cause uncomfortable and challenging withdrawal symptoms.[8] The interaction of buprenorphine and naloxone within Suboxone produces the "ceiling effect," which means that after a certain amount of Suboxone is taken it will no longer continue to activate the opioid receptors.[8] This "ceiling effect" prevents overdoses as patients have will have no reason to overindulge or abuse the Suboxone. A study done in the United Kingdom found that users were six times less likely to overdose on Suboxone than methadone.[4] Due to its lower potential for abuse, Suboxone was declared a Schedule III drug.[8] Though Suboxone was deemed to be safer than methadone, studies have indicated that methadone was more effective at retaining patients in treatment than Suboxone.[11] This may be because patients can't make the jump from having the intense euphoric high of heroin or IMF to no high at all, they are two polar opposites; however, with methadone, patients still receive a slight high which makes the transition to MAT easier and less drastic. For this reason, methadone is more often prescribed with people suffering from a more intense opioid addiction.[11]

In 2000 Congress passed the Drug Abuse Treatment Act (DATA) which allowed the prescription of buprenorphine products (like Suboxone) to be prescribed by specially trained physicians in a clinical setting.[8] This act meant that Suboxone could become much more accessible than methadone as a patient didn't have to go to a specialized clinic to get it. However, DATA included a stipulation that limited practices to prescribing buprenorphine products to only 30 people at a time.[12] The reasoning behind this limitation was that Congress wanted to ensure that doctors were able to keep a close eye on their patients. Though the limitation was made with good intentions, the result was a lot of people were unable to receive the medication that they needed and continued to suffer. DATA was amended in 2005 and allowed for every certified doctor to prescribe to up to 30 patients, as before a group practice had the same 30 person limit as a single practitioner.[12] This amendment still wasn't able to account for the rising of the opioid crisis, so in 2006 DATA was amended once again and allowed physicians who had their specialized buprenorphine certification for more than one year the option of increasing their max patient load to 100 patients.[12] This second amendment helped, but once again, it wasn't enough to counteract the damage caused by the opioid crisis which at this time began to grow at an alarming pace. Finally in 2016, DATA was amended a third time and allowed for nurse practitioners and physician assistants to become eligible to prescribe buprenorphine products upon completion of the specialized buprenorphine certification. Additionally, the max number of patients was increased to 275 for qualifying doctors.

Though there have been many steps taken to ensure that people suffering from opioid addiction are able to receive the help they need, many claim that even the adjusted patient caps are continuing to inhibit people from accessing treatment. One claim is that the 30/100/275 patient limit discourages

physicians from becoming experts as that limited number of patients isn't enough to sustain a complete practice.[1] There's also evidence that suggests that the patient caps disproportionately affect the poor. Since there is a high demand for treatment and a limited number of treatment spots, doctors pick and choose to prescribe to patients with better insurance or have money available to pay for the treatment upfront leaving the poor unable to access treatment.[1] Additionally, when there are limits to something there's inherently going to be those that can't access it. When people who need help can't access to it legally, they turn to illegal means. By denying people access to buprenorphine treatment it creates a market to sell buprenorphine illegally, which is another major problem people have with the patient limits.[1]

Though there are some flaws that need to be addressed in the way that Suboxone is prescribed, it is still a very beneficial drug. Since 2002, Suboxone has been used to treat approximately 3 million Americans with opioid dependencies.[2] Suboxone as a MAT drug is extremely effective as it has been shown to significantly lower the risk of overdose and has a low risk of abuse. Though Suboxone had a lower retention rate in therapy than methadone, the patients who used Suboxone were more likely able to completely suppress their illicit drug use.[11] For this reason Suboxone is chosen over methadone to be given to patients with moderate to less severe opioid addictions.

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