



The Scientific Basis of Opioid Addiction and Treatment

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It has become clear that we are facing a true opioid epidemic. Overdose deaths involving prescription or illicit opioids have increased by 200% since the year 2000, which is correlated with a similar increase in prescribed opioids. The Northeast is one of the areas in the U.S. that has experienced an especially high rise in deaths.¹ Many users are switching to heroin use when prescription opioids are unavailable or too expensive, which has led to a startling rise in the use of heroin.²

In recent years, it has become clear that **medication-assisted treatments (MATs)** are far more effective than psychosocial approaches alone in treating opioid use disorders. **They have much better treatment outcomes and prevent death.** MAT options are buprenorphine, methadone, and naltrexone. At the current time, MAT is not widely available in inpatient or outpatient treatment centers in New Jersey, which is a major barrier. There are also other access barriers which are discussed below. **Evidence has clearly demonstrated that access to MAT for all opioid-addicted persons will help combat this epidemic.**

Brief Overview of the Biology of Addiction

Biologically, we have a clear understanding of opioid use disorders. All abusable opioids bind to the **mu opiate receptor**, which leads to euphoria and intoxicating effects such as drowsiness or agitation, slurred speech, constricted pupils, impairment in attention and memory, and slowed breathing.³ While our brain does produce *internal* opioid-like substances such as endorphins, they are much weaker than *external* opioid drugs (prescription drugs, heroin, etc). These drugs are much stronger and can end up suppressing breathing entirely, which results in an overdose death.

Prolonged use of an opioid, or any other addictive substance, leads to disrupted circuits in the prefrontal cortex and the limbic system. The **prefrontal cortex** is located behind our forehead; It is responsible for our reasoning, our willpower, our personality. By contrast, the **limbic system** is one of the most primitive parts of the brain, located deep down at the level of our ears; it contains our emotions, our cravings and desires, our most primitive impulses.

An addicted brain can be conceptualized as having a weakened prefrontal cortex and an overactive limbic system.⁴ Cravings and desires are urgent and intense, and far eclipse any weak control that the prefrontal cortex has retained. The result is the **compulsive and reckless behavior** that we see in persons who are addicted. At its extreme, the person will give up her or his family, societal role, dignity – all driven by an inflamed limbic system that can't be contained. When a person's addiction has been treated, these brain structures will come back into balance and her or his original personality will re-emerge. **The "bad" behavior observed during the**

addiction is the result of a “broken brain,” and does not reflect upon the true character of the person.

Given this knowledge, we now regard addiction as a **brain disease**. To achieve brain recovery, there must be a **period of abstinence** from substances of abuse.⁵ While 28-day rehabilitation programs are the norm, there is even better brain recovery after 90 days of abstinence, and increasing recovery with even longer periods: 6 months, 1 year, etc. There is increasing cognitive and functional recovery with ongoing abstinence. Any **medications** that can assist with cravings or help prevent substance relapse can increase the likelihood of abstinence, and therefore lead to better treatment outcomes.

Opioid Use Disorders

Opioids are a special substance of abuse. While many substances are associated with a protracted withdrawal syndrome, it is an especially severe and difficult one for opioids. Our internal opioid system is crucial, since it helps us feel content, peaceful and pain-free. When it is severely disrupted by taking large amounts of external opioids (such as prescription drugs or heroin), it no longer responds correctly. People are left feeling “on edge” and discontent for months, sometimes even more than a year. This leads to an enormously high relapse rate, as high as 88% after detoxification.⁶

Unfortunately, relapse after a period of abstinence is much more likely to result in an **overdose death**. Since abstinence lowers a person’s tolerance (meaning that the next dose will be unusually strong), there is a much higher chance of an overdose death. A huge number of overdoses occur after leaving inpatient treatment, when a person has been opioid-free for a long time and is then released back to the community without any medication. The solution to this problem is to begin **medication-assisted treatment (MAT)** prior to discharge, which will assist in preventing relapse and decrease the chance of death if a relapse does occur.

There are three MATs for opioids use disorders: **buprenorphine (Suboxone®, Subutex®), methadone, and naltrexone (Vivitrol®)**. The first two are opioid agonists that mimic the action of opioids in the brain, which treats withdrawal and reduces/eliminates cravings. Buprenorphine is unique since it is a partial agonist, meaning that it has a “ceiling” effect and generally does not cause respiratory depression in an adult. The third MAT, naltrexone, is an opioid blocker which is given after the acute withdrawal period and prevents the effect of opioids if the person does relapse.

Although it may seem counterintuitive to give opioids to someone with an addiction to opioids, buprenorphine and methadone are both long-acting and don’t result in the “high” of recreational use. Once maintained on a proper dose, there are no cognitive effects and the person feels entirely “normal” with no intoxication or withdrawal. Hormones and other physical indicators come back into balance, indicating that it is truly a sober state. **When someone is on MAT, she or he is not likely to die in the event of a relapse, since they remain tolerant (or blocked) to opioids** and won’t have suppressed breathing.

After years of attempting to treat opioid use disorders using **psychosocial** treatments, the data confirm that MATs are far more effective in preventing relapse and death and improving a person's functioning.^{7,8} Given that overdose death is a frequent outcome in opioid use disorders, **it is the gold-standard of treatment to provide MAT to a person in recovery from opioids.** Persons receiving MAT should not be discriminated against or banned from certain treatments or residential programs, including halfway houses, since it is a necessary component of a recovery plan.

Barriers to Medication Treatment

Unfortunately, there are currently significant access barriers to MAT in NJ and nationwide:⁹

- For methadone clinics: long waiting lists for entry, lack of clinic access in certain geographic areas, limited insurance coverage, and the requirement that patients must attend the clinic daily for dosing
- For office-based buprenorphine treatment: onerous utilization management practices by both public and private insurance companies (including prior authorization requirements), "fail first" policies, requirements for psychosocial services that may be unavailable or uncovered, and a lack of providers for socioeconomically disadvantaged patients
- For naltrexone (Vivitrol®): lack of insurance coverage and a deficit of providers
- For all MAT: ineligibility to participate in many inpatient/outpatient programs or housing programs

Conclusion

To turn the tide on this epidemic, we need increased funding for both prevention and treatment, including inpatient/outpatient care and MATs. **The emphasis should be on providing MAT for all people who are in recovery from opioids** given that they have superior effectiveness to psychosocial treatments alone. There are currently substantial barriers for individuals to receive MAT, and this should be addressed by our legislators and our treatment system.

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