

The purpose of this brochure is to increase the understanding of the basic biology behind addiction, the consequences of perpetuating the narrative of drugs being a crime and not a health crisis, and a brief history on opioids. In doing so, it can begin to release us from the biases we hold about addiction. Addiction is a disease that does not discriminate against rich or poor. However, for those in the poverty cycle of living paycheck to paycheck, there is not much room to receive quality health care and education as preventative measures. That is why poor communities are being hit the hardest with the opioid epidemic.

## WORKS CITED

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# Biology of Addiction

"Our greatest glory rests not in never falling, but in rising up every time we fall."  
 -Oliver Goldsmith

Opioids are a class of drugs, most often prescribed for surgery, synthetically made from the opium poppy plant. They are depressants which act on the central nervous system to slow heart rate and breathing. Opioids relieve pain as well as create a sense of euphoria. This dangerous combination can be deadly. The most common prescribed drugs include Vicodin, OxyContin, and hydrocodone. Heroin, a street drug derived from morphine, is also common, but it different in that it is partially naturally occurring in the seed of the opium poppy plant.

In Wisconsin, the statistics have been gradually rising the past decade. The death count has risen from 12 to 30 in Brown County alone from 2014 to 2019. Statewide, that's a rise from 628 to 916 deaths. The overdose rate and emergency room visits has increased four times what it used to be in 2007. The CDC says that this has placed an "economic burden of [at least] \$78.5 billion a year including the costs of health care, lost productivity, addiction treatment, and criminal justice involvement."

dhs.wisconsin.gov

Nationwide, opioid use alone has surpassed the amount of gun related deaths and homicides combined. Also, of the 70,000+ people who have died, 22% of them died from a prescription overdose. Drug overdose is now the leading cause of accidental deaths.



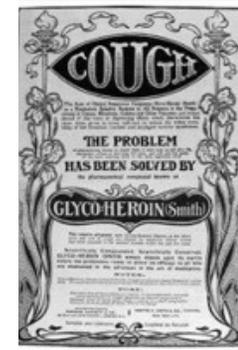
## BIOLOGY BEHIND OPIOID ADDICTION

The primary goal of the human body, or any living being for that matter, is to maintain a balance. This is called homeostasis. This biological process is the driving force that keeps us alive when the environment around us changes. For example, if body temperature increases, sweat is produced to cool the body. It is a self-regulating system.

So, when a drug, such as an opioid, is consumed, the body metabolizes it, allowing it to enter the bloodstream where it travels to its receptors located in the brain, spine, and gut. The nervous system receives the message to shut off the pain receptors; therefore, the brain does not process pain signals.

In addition, the brain reward circuit is heavily affected by opioids through dopamine, a neurotransmitter responsible for the feeling of euphoria. Dopamine reuptake channels are blocked by the opioid which does not allow it to be reabsorbed. So, dopamine can now continue to prolong the feeling of euphoria because it is "stuck" sending signals for pleasure. After a few times of using opioids, overstimulation of dopamine has become rampant.

Homeostasis tries to take control and lower the dopamine levels by closing dopamine receptors in order for the propagation to be blocked. This is called tolerance. In turn, this tolerance forces the body to adapt and depend on the drug. The duality of opioids in reducing pain and causing extreme feelings of pleasure is why it is dangerously addictive and is a chronic, relapsing brain disease.



The misunderstanding of the addictive nature of opioids was not understood until the overdose rate surged in the 1990s which is when pharmaceutical companies "reassured" medical professionals that opioids are not addictive. Because of this gross mismanagement, the public health has been left to scrounge for resources to curb the crisis. Heroin used to be legal and was marketed as a cough suppressant and to aid the men fighting in war. By the early 1900s, more than 1/4 million were addicted. The government banned the sale of heroin, and patients now became "criminals" where no help was provided. Fast forward a century to the 1990s when opioids are made and distributed. The FDA fast tracked the sale of this drug without studies verifying its safety, and their collusion with Big Pharma to change opioid labels to "long-term use" has led to them becoming a multibillion-dollar company in no time. Now, they have become "too big to prosecute" as the DEA has been hindered in doing their jobs by lawmakers.

"Tell me why life-saving drugs cost thousands of dollars and life-destroying drugs cost pennies?"

-Lora Marie Durr, 2018