

Drugs, the brain, and a crisis: The Science of Addiction

Understanding a crisis that is as wide spread as the growing Opioid Crisis is difficult for someone who has never taken, much less seen an example of what qualifies as a drug of the classification. A drug that kills “every day, more than 115 Americans after taking and overdosing on opioids.”

Drug overdose deaths continue to increase in the United States.

- From 1999 to 2016, more than 630,000 people have died from a drug overdose.
- Around 66% of the more than 63,600 drug overdose deaths in 2016 involved an opioid.
- In 2016, the number of overdose deaths involving opioids (including prescription opioids and illegal opioids like heroin and illicitly manufactured fentanyl) was 5 times higher than in 1999.
- On average, 115 Americans die every day from an opioid overdose.¹



Dr. Danny Winder, Professor of Molecular Physiology and Biophysics; The Winder Lab

In order to help Hillsboro High School students better understand exactly what is in crisis in America, the Academy of Health Sciences hosted a guest speaker, Danny Winder, from the Winder Lab, which is a lab that studies drug abuse and addiction at the [Winder Lab Molecular Physiology & Biophysics and Vanderbilt Brain Institute](#) a department within the Vanderbilt School of Medicine.

Dr. Danny Winder explains spoke to students and teachers recently about what actually happens to one's brain when a person is overdosing on an opioid. First he explained that these kinds of narcotics are extremely addictive. Dr. Winder explained how the opioid crisis developed.

Opioids are not a new drug, what is new in the last 30-40 years is how these drugs have been prescribed by physicians. Heroin, an opiate, has been around for centuries, however, it

is the increase in synthetic opiates is on the rise, and if not curbed, America is set to the equivalent of the entire population of Nashville in less than 10 years.

“

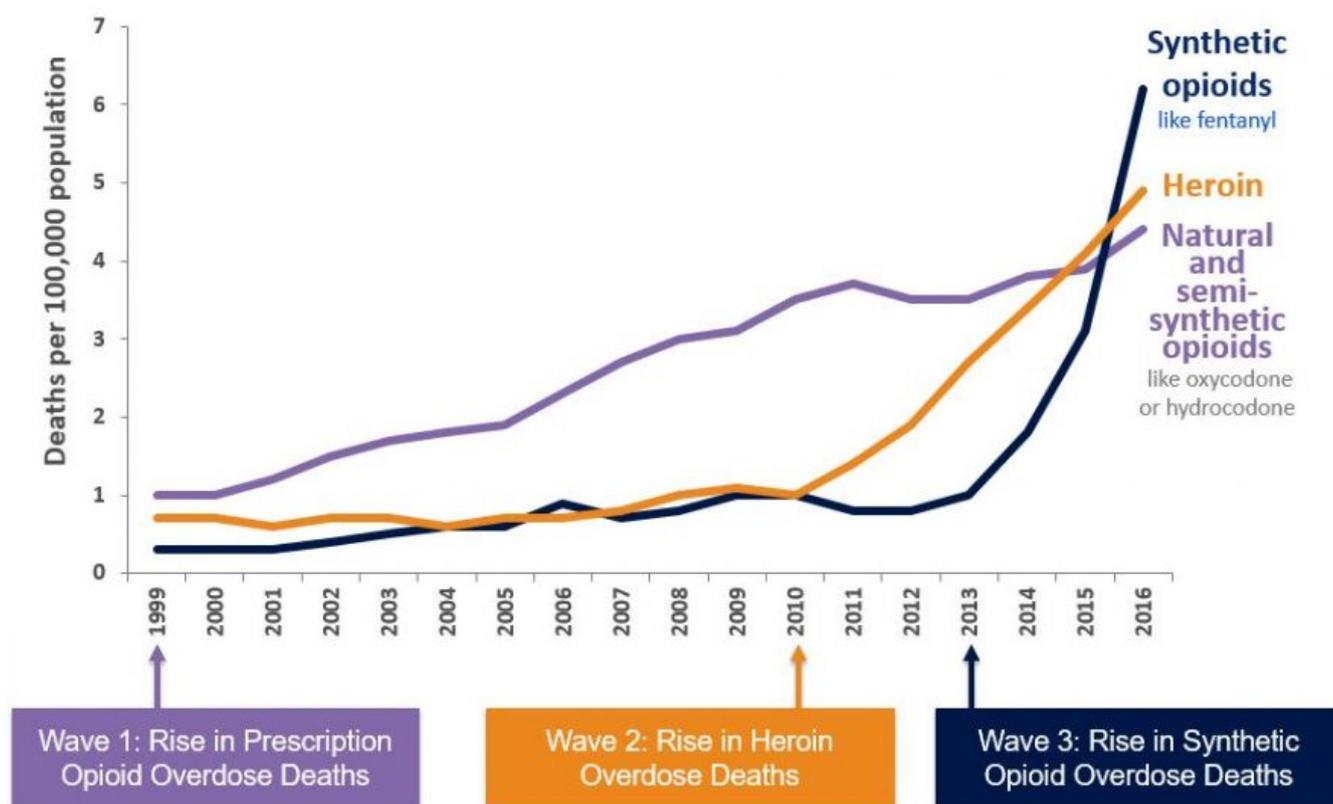
It's much easier in America to get high than it is to get help.”

– - Vox

In the late 1990s, big pharmaceutical companies created, presented research and reassured that physicians in the medical community that they had developed new synthetic painkillers that mimicked their organic brothers but without the addictive side effects.

“Over the past couple of decades, the health care system, bolstered by pharmaceutical companies, flooded the US with opioid painkillers. Then illicit drug traffickers followed suit, inundating the country with heroin and other illegally produced opioids, particularly fentanyl, that people could use once they ran out of painkillers or wanted something stronger. All of this made it very easy to obtain and misuse drugs.”²

3 Waves of the Rise in Opioid Overdose Deaths



SOURCE: National Vital Statistics System Mortality File.

Mehta, Rupal B. (CDC/ONDIEH/NCIPC)

Unfortunately, many patients who were prescribed opioids became addicted much more quickly than predicted to the euphoria produced by the drugs. Pharmaceutical sales incentives encouraged physicians to prescribe these drugs even more at higher rates. People when they become addicted they tend to use the drug more than when prescribed to them, and this is an issue because it kills them.

What is a drug addiction?



The National Institute on Drug Abuse defines addiction as a “chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences.”[†] It is considered a

brain disease because drugs change the brain—they change its structure and how it works. These brain changes can be long-lasting, and can lead to the harmful behaviors seen in people who abuse drugs.”³

Why do people take drugs?

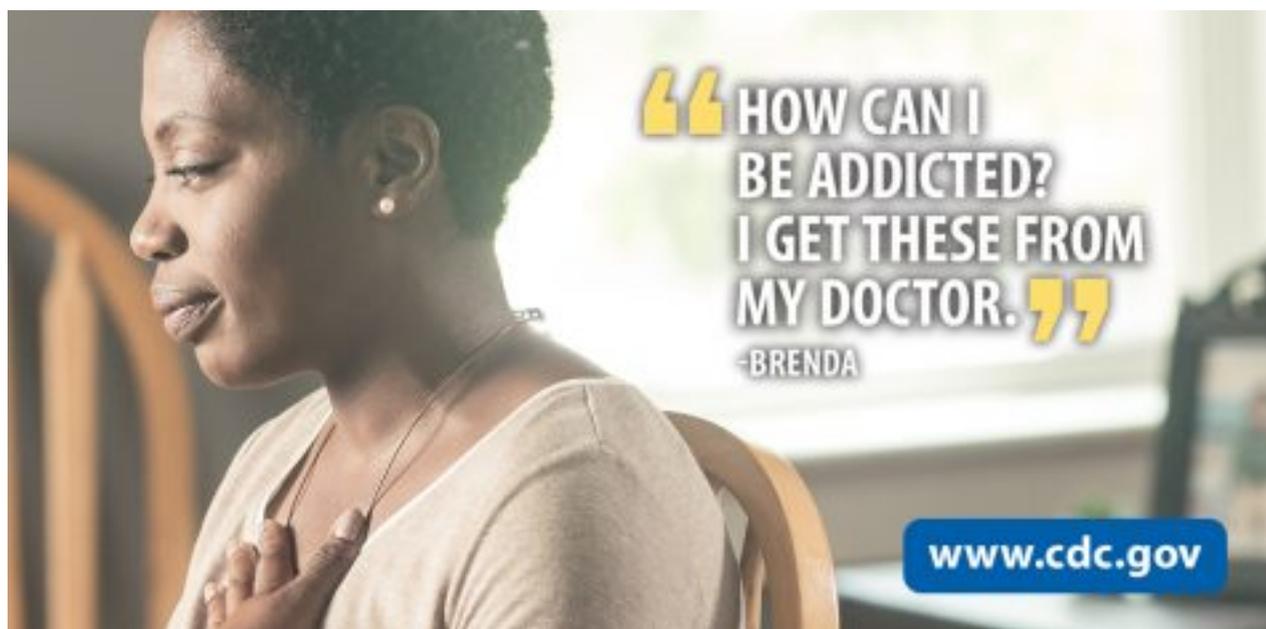
In general, people begin taking drugs for a variety of reasons:

- **To feel good.** Most abused drugs produce intense feelings of pleasure. This initial sensation of euphoria is followed by other effects, which differ with the type of drug used. For example, with stimulants such as cocaine, the “high” is followed by feelings of power, self-confidence, and increased energy. In contrast, the euphoria caused by opiates such as heroin is followed by feelings of relaxation and satisfaction.
- **To feel better.** Some people who suffer from social anxiety, stress-related disorders, and depression begin abusing drugs in an attempt to lessen feelings of distress. Stress can play a major role in beginning drug use, continuing drug abuse, or relapse in patients recovering from addiction.
- **To do better.** Some people feel pressure to chemically enhance or improve their cognitive or athletic performance, which can play a role in initial experimentation and continued abuse of drugs such as prescription stimulants or anabolic/androgenic steroids.
- **Curiosity and “because others are doing it.”** In this respect adolescents are particularly vulnerable because of the strong influence of peer pressure. Teens are more likely than adults to engage in risky or daring behaviors to impress their friends and express their independence from parental and social rules.⁴

If taking drugs makes people feel good or better, what's the problem?

If the drugs make feel better faster, why are they a problem? Dr. Winder's lab in the Vanderbilt Brain Clinic studies how the brain is changed on a molecular, physiological and biophysical level. "Increasingly, addiction is understood as a long-lasting change in brain function outlasting withdrawal...Relapse driven by learned associations (cue, context) as well as by mental state transitions (stress, anxiety) can occur long after obvious negative consequences of cessation of drug intake have stopped. Thus, intense focus is being placed on neural mechanisms driving drug "craving" sensation and initiation of relapse to intake after extinction. Our lab takes a combination of brain slice electrophysiological and biochemical approaches coupled with behavioral analysis in mice to begin to determine the lasting changes produced by drugs of abuse that induce relapse behavior."⁵

"In 2016, there were 1,186 opioid-related overdose deaths in Tennessee—a rate of 18.1 deaths per 100,000 persons—higher than the national rate of 13.3 deaths per 100,000 persons.



Deaths from heroin overdose have increased since 2010 from 17 to 260 deaths. Deaths from synthetic and prescription opioids have also increased, from 72 to 395 deaths and from 516 to 739 deaths, respectively.” The United States is in the midst of an opioid overdose epidemic, killed more than 42,000 people in 2016, more than any year on record. 40% of all opioid overdose deaths involve a prescription opioid.

Learning from a health care professional who studies the actual molecular changes the brain made a large impact on the audience. Students we moved to keep discussing the subject long after the presentation was over. It is that interest that prompted the Hillsboro Globe to provide this information.

Below is a list of the controlled substances that are considered an Opioid. See one of our AGHS teachers (Dr. Fisher-Jackson, Ms. Thomas, and Ms. Nelson) to learn more about opioids or check out one of the websites below.

Opium	Hydromorphone	Oxymorphone
Heroin	Fentanyl	Tramadol
Oxycodone	Codeine	Carfentanil
Hydrocodone	Methadone	Buprenorphine
Morphine	Meperidine	Signs Of Abuse

[CLICK HERE TO READ MORE](#)

Prescription opioids can be
addictive and **dangerous**.
It only takes a little to lose a lot.



1. Center for Disease Control: <https://www.cdc.gov/drugoverdose/epidemic/index.html>
2. German Lopez: <https://www.vox.com/science-and-health/2017/8/3/16079772/opioid-epidemic-drug-overdoses>
3. NIDA: <https://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drug-abuse-addiction>
4. NIDA: <https://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drug-abuse-addiction>
5. Winder Lab: <https://medschool.vanderbilt.edu/winder-lab/>

Useless, misused and overused phrases just released on the 2017 Banished Word List

DETROIT – What words, phrases or often used descriptives would make your list of “Banished words and Phrase from the English Language if you had the power to scratch those most irritating to you in 2017? There is such a list and is fun to take a look

and those overused, misused, and generally useless words that plague our language.

What word or phrase would You banish from 2018 if you had the power? (presented in alpha order)

- "Confevfe"
- "Drill down"
- "fake news"
- "impactful"
- "let that sink in"
- "unpack" (concepts)

Vote

[View Results](#)

⌄ Loading ...

Northern Michigan's Lake Superior State University on Sunday released its 43rd annual [List of Words Banished from the Queen's English for Misuse, Overuse and General Uselessness](#) . The tongue-in-cheek, non-binding list of 14 words or phrases comes from thousands of suggestions to the Sault Ste. Marie school.

This year's list includes the following

"let me ask you this"

"tons"

"unpack"

"dish"

"impactful"

"drill down"

"nothing burger"

"Let that sink in"

and the top vote-getter, "fake news."

The others are "pre-owned," "onboarding/offboarding," "hot water heater," "gig economy" and the Trumpian Twitter typo

“covfefe.”

“It wasn’t as focused on politics in a very dirty sense,” he said. “Most of the nominations were well thought through ... considering how the year was.”

As evidence, he points to “fake news,” which garnered between 500 and 600 votes. The phrase has been leveled against entirely fabricated reporting, stories that contain errors or inaccuracies, and those with a critical tone. It has even been wielded as a cudgel against entire news networks. It was also found to be the second most annoying word or phrase used by Americans in an annual Marist College poll, behind “whatever.”

“I think a lot of people know fake news when they see it. It can be propaganda, it can be satire,” Shibley said. “It’s used deliberately to paint a certain story or notion as not being true.”

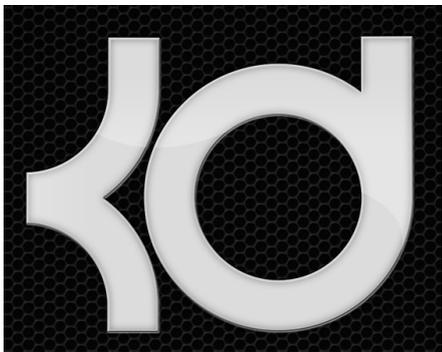
Lake Superior State and Marist have company in tracking and trumpeting mass word usage.

Words that have been in use are also monitored.

“Youthquake,” defined as “a significant cultural, political, or social change arising from the actions or influence of young people,” is [Oxford Dictionaries’ word of the year](#) . Oxford lexicographers said there was a fivefold increase in use of the term – coined a half-century ago by then-Vogue editor Diana Vreeland – between 2016 and 2017. The word has been used to describe youth support for Britain’s Labour Party and the election of 30-something leaders in France and New Zealand.

[Merriam-Webster’s 2017 word of the year](#) is “feminism.” Lookups increased 70 percent over 2016 on Merriam-Webster.com and spiked several times after key events, such as the Women’s March on Washington in January.

C. Totter reviews Kevin Durant 6th Signature kicks



My first pair of KD 6's, Kevin Durant's brand, was the "Away" color way and even since then I fell in love with his designs, which eventually started my sneaker head passion. As a basketball player, I have played in the shoe before but needed an ankle brace for support.

This started my passion for collecting all of the color ways of KD shoes to rock on my feet with my outfit. The KD VI is his best signature shoe. Not long after, friends wanted to know where I purchased these rocking shoes.

The shoe was first available at retail on June 29, 2013 at stores in Washington, D.C. and globally starting June 3. Also on Nike ID was accessible to people who wanted to make their own design for themselves.

Leo Chang, shoe designer of the KD VI, inspiration on the signature shoe is based on a wristwatch. Unlike the popular [KD V](#), which was a mid-cut, the VI is a low-top sneaker that is long on innovation tune to the NBA superstar's playing style.



“When Kevin and I first discussed his sixth shoe we wanted to create a simplified design that was bold, beautiful and told a story,” said Chang, Nike Basketball Footwear Design Director. After the sneaker itself was a success, Nike constructed the “KD VI Elite” series to put a spin on the kicks which featured a full-length 360 Zoom bag, Hyperfine and foam-based upper and Kevlar-reinforced Dynamic Flawier.

The KD VI Elite packed about as much new technology as possible into one shoe. Unfortunately, for a lot of hoopers, the tech-heavy shoe won’t hold up on the performance

end. Depending on the player's foot shape on width can take some time to adjust to the shoe when playing too, yet still holds up its part similar to the original KDs'.

The KD VI features six key performance pros:

- *New tongue construction for superior fit*
- *Ultra-thin two-layer upper with Flywire for lockdown support*
- *Hyperfuse construction for comfort and breathability*
- *Nike Zoom in the forefoot for responsive cushioning*
- *Max Air unit in the heel for maximum impact protection*
- *Data-informed traction pattern for non-slip control*

The KD VI performance cons:

- *Ankle problems*
- *No ankle support to prevent possible injury*
- *Slight tearing around the tongue area*
- *Stress and how the shoe fits the player*

Soon Nike was running out of ideas for the shoe and was time to bring in the new design, KD 7, for the NBA player.

I still wear his most popular kicks today. If I had to pick my favorite one, it would be the "What the KD 6'". This shoe combines all the colors into one pair to represent all the colors made throughout the time period.

Overall, this was a very unique design from the line-up history but more models have been produced as well. The latest models of the KD 8,9, and 10 had took some time to get use to so people just only used them for on court purposes.

Colleges and NBA players were able to wear his PE colorways and exclusive releases to friends and family. Even AAU players were seen on court hooping in them.



From Nike Basketball's press release:

PERFORMANCE

High-speed lateral footwork is the key to sports such as tennis and soccer and corresponding footwear is designed to target this skill-set. Why not basketball? Analyzing Durant's need for quickness on the court, Chang landed on a low-profile design that's light in weight and tight to the foot. "As I look to evolve my game, my shoe plays a big role," said Durant. "The KD VI has the low and light feel that Leo and I conceived from the start and I'm excited to get out and play in it next season."

For more resources:

<http://hiphopwired.com/242571/nike-basketball-debuts-kevin-durants-kd-vi-signature-sneaker-photos/>

<https://news.nike.com/news/the-kd-vi-kevin-durant-s-most-transformative-shoe>

<https://thegymratreview.com/2014/06/25/performance-review-nike-kd-vi-elite/>