Science Says: Why are opioids so addictive?

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Credit: Susan Buck Ms/Public Domain

Pleasure. Craving. Withdrawal.

When opioids act on the brain, they trigger the same processes that give people feelings of pleasure from activities like eating, but they do it far more intensely.

Opioids also make some brain cells pump out a chemical messenger called dopamine, which encourages more drug use. Over time, that can produce craving that continues even long after someone stops using opioids, which can lead to relapse.

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In other brain circuits, opioids initially produce drowsiness and slower breathing. With repeated exposure, these circuits adapt so that a person feels relatively normal while using the drugs. But that adaptation also means that when a person is not using, they feel jittery and anxious—some of the symptoms of withdrawal.

Opioids can also impair people's self-control if taken over time, so it's harder to stop using them even if people want to and even if the drugs no longer give them pleasure.

Dr. Nora Volkow, director of the National Institute on Drug Abuse, compared the effect of the drugs to driving with bad steering.

"Your steering wheel does not work properly. So not only are you actually accelerating with intense desire and motivation to get the drug, you are not able to self-regulate and say, 'If I take the drug, I will end up in jail.'"