

Inter-LACES

Los Angeles County Evaluation System: An Outcomes Reporting Program

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What are opiates?

According to NIDA, opiates like morphine and heroin, "...resemble natural chemicals that have binding sites in the brain and the body...these receptors are involved in different functions..." such as the experience of pain relief, pleasure, or relaxation.

What is fentanyl?

"Fentanyl is a powerful synthetic opiate analgesic similar to but more potent than morphine... typically used to treat people with chronic pain who are physically tolerant to opiates," (NIDA). It is a schedule II prescription drug (drugs with high abuse potential).

Opiate Abuse and Overdose Deaths

With the recent deaths of renowned actor Philip Seymour Hoffman (February 2, 2014) and "Glee" star Cory Monteith (July 13, 2013), the dangers of heroin and other opiate use are once more in the spotlight. Autopsy results have found that Mr. Hoffman died from a mix of substances, including heroin, cocaine, benzodiazepines, and amphetamines,¹ and that Mr. Monteith died from alcohol and heroin use.²

Substance use disorders are not a new healthcare crisis; Mr. Hoffman, who once remarked that he was in recovery for over two decades, is one among many Americans who have struggled with substance use even after the "War on Drugs" began in the early 1970s. And deaths attributed to the reported use of heroin and other opiates are, unfortunately, not uncommon and in fact, are growing.³

Few drugs have the effect on the body and mind that opiates do. According to the National Institute on Drug Abuse (NIDA), one reason for this is the chemical structure of opiates, which

...resemble natural chemicals that have binding sites in the brain and the body called opiate receptors. Scientists have identified three types of opiate receptors: mu, delta, and kappa (named after letters in the Greek alphabet). Each of these receptors is involved in different functions. For example, mu receptors are responsible for the pleasurable



Opiates act on many parts of the brain and nervous system, including the

Limbic system, which controls emotions

Brainstem, which controls things your body does automatically, like breathing

Spinal cord, which transmits sensations from the body

Heroin, one of the most commonly abused opiates, is described by NIDA as “...an opioid drug that is synthesized from morphine, a naturally occurring substance extracted from the seed pod of the Asian opium poppy plant. Heroin usually appears as a white or brown powder or as a black sticky substance, known as ‘black tar heroin.’ In 2011, 4.2 million Americans aged 12 or older (or 1.6 percent) had used heroin at least once in their lives. It is estimated that about 23 percent of individuals who use heroin become dependent on it.”⁵

effects of opiates, and their pain-relieving properties.

Opiates act on many places in the brain and nervous system, including the:

- **limbic system**, which controls emotions. Acting here, opiates can produce feelings of pleasure, relaxation, and contentment.
- **brainstem**, which controls things your body does automatically, like breathing. Opiates can act on the brainstem to slow breathing, stop coughing, and lessen feelings of pain.
- **spinal cord**, which transmits sensations from the body. Opiates also act here to decrease feelings of pain, even following serious injuries.

...If opiates are swallowed as pills, they take longer to reach the brain. If they are injected, they act faster and can produce a quick, intense feeling of pleasure followed by a sense of well-being and a calm drowsiness.⁴

For much of the early and mid 2000s, prescription opiates were a growing concern within the treatment community. Stories describing “doctor shopping” for Percocet, Vicodin, and, to a lesser degree, Oxycodone, were common. It appeared that anyone could get a prescription, or multiple prescriptions, for potentially addictive opiates at any time

and have these prescriptions filled simultaneously. However, with new laws that focused on these illegal practices, prescription opiate abuse appeared to wane. However, reported heroin use has doubled from 2007 to 2012,⁶ which may be the result of a shift from prescription opiate abuse to heroin use. This transition sometimes occurs because people have exhausted their resources (e.g., family or friends willing to share medications, financial resources, medical contacts) and must move to the less expensive heroin in an effort to seek a similar “high.”

As if this were not serious enough, in the last several years, substance use disorder treatment programs and researchers have encountered a new problem that could exacerbate the rate of accidental deaths due to overdose - the pairing of heroin with fentanyl.⁷

According to NIDA,

Fentanyl is a powerful synthetic opiate analgesic similar to but more potent than morphine. It is typically used to treat patients with severe pain, or to manage pain after surgery. It is also sometimes used to treat people with chronic pain who are physically tolerant to opiates. It is a schedule II prescription drug.

...Like heroin, morphine, and other opioid drugs, fentanyl works by binding to the body's opiate receptors, highly concentrated in areas of the brain that control pain and emotions. When opiate drugs bind to these receptors, they can drive up dopamine levels in the brain's reward areas, producing a state of euphoria and relaxation. Medications called opiate receptor antagonists act by blocking the effects of opiate drugs. Naloxone is one such antagonist. Overdoses of fentanyl should be treated immediately with an opiate antagonist.

When prescribed by a physician, fentanyl is often administered via injection, transdermal patch, or in lozenge form. However, the type of fentanyl associated with recent overdoses was produced in clandestine laboratories and mixed with (or substituted for) heroin in a powder form.

Mixing fentanyl with street-sold heroin or cocaine markedly amplifies their potency and potential dangers. Effects include: euphoria, drowsiness, respiratory depression and arrest, nausea, confusion, constipation, sedation, unconsciousness, coma, tolerance, and addiction.⁸

Given the high potency of fentanyl, those who abuse heroin could take their usual dose of heroin and unknowingly inject a drug that is more potent than their systems are accustomed to. Even if the user knows that the heroin is mixed with fentanyl, the user has no way of knowing how much will give the ultimate high or ultimately suppress respiration enough to cause death.

NIDA reports that

A range of treatments including behavioral therapies and medications are effective at

helping patients stop using heroin and return to stable and productive lives.

Medications include buprenorphine and methadone, both of which work by binding to the same cell receptors as heroin but more weakly, helping a person wean off the drug and reduce craving; and naltrexone, which blocks opioid receptors and prevents the drug from having an effect (patients sometimes have trouble complying with naltrexone treatment, but a new long-acting version given by injection [trade name: Vivitrol®] in a doctor's office may increase this treatment's efficacy)⁹

With the expansion of healthcare coverage for millions of additional people across the country due to the Affordable Care Act, it is hoped that more people who need treatment for opioid use disorders will have access to such treatment. Ultimately, access to effective treatment may decrease the number of deaths due accidental overdose as well as other negative drug use/abuse related outcomes.

Footnotes

¹ <http://www.latimes.com/nation/la-na-hoffman-death-20140301,0,40104.story#axzz2vfEhuoLr>

² <http://www.cnn.com/2013/10/02/showbiz/cory-monteith-death-accidental/>

³ http://www.cdc.gov/media/releases/2013/p0220_drug_verdose_deaths.html

⁴ <http://teens.drugabuse.gov/educators/curricula-and-lesson-plans/mind-over-matter/opiates/how-do-opiates-work>

⁵ <http://www.drugabuse.gov/publications/drugfacts/heroin>

⁶ <http://www.latimes.com/nation/la-na-heroin-surge-20140204,0,2467237.story#axzz2sNpBt21L>

⁷ Neither the death of Cory Monteith nor Philip Seymour Hoffman have been linked to heroin laced with fentanyl.

⁸ <http://www.drugabuse.gov/drugs-abuse/fentanyl>

⁹ <http://www.drugabuse.gov/publications/drugfacts/heroin>

The Los Angeles County, Department of Public Health Substance Abuse Prevention and Control (SAPC) support this project. For more information regarding LACES, please consult our web site at: www.laces-ucla.org.