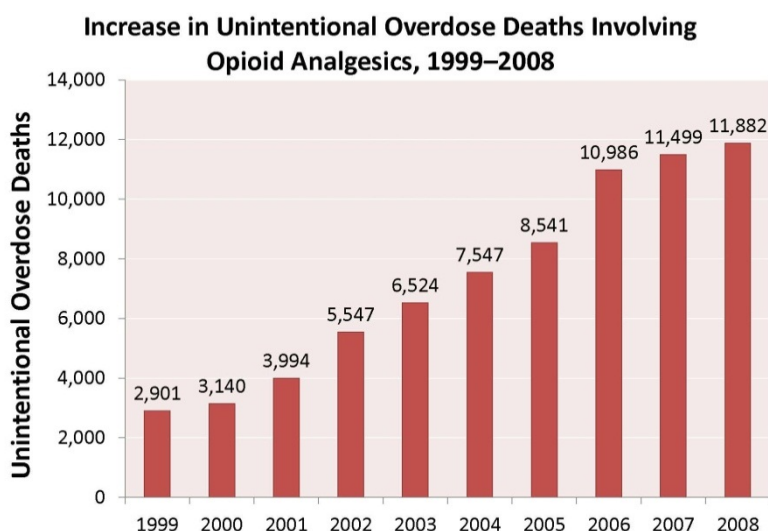


Medication-Assisted Treatment for Opioid Addiction – April 2012

Addiction to opioids (e.g., heroin, morphine, prescription pain relievers) is a serious global problem that affects the health, social, and economic welfare of all societies. An estimated 12–21 million people worldwide abuse opioids, with 1.9 million people in the U.S. addicted to prescription opioid pain relievers in 2010 and 359,000 addicted to heroin. Consequences of this abuse have been devastating and are on the rise. For example, the number of unintentional overdose deaths from prescription pain relievers has soared in the U.S., quadrupling since 1999.

Opioids act on specific receptors in the brain and the body, which also interact with naturally produced substances known as endorphins or enkephalins – important in regulating pain. While prescription pain relievers can be highly beneficial if used as prescribed, opioids as a general class of drugs have a high potential for abuse.



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, accessed through CDC WONDER Online Database, released 2011.

Abuse of opioids, especially heroin, is also linked with the transmission of human immunodeficiency virus (HIV), hepatitis, sexually transmitted infections (STIs), and other blood-borne diseases mostly through the use of unsterile drug paraphernalia, but also through the risky behavior that drug abuse may engender. Thus, treatment of drug abuse not only frees individuals from the vicious cycle of addiction, but can also prevent related adverse health consequences.

Medications – A Critical Component of Opioid Addiction Treatment

Drug abuse changes the way the brain works, resulting in compulsive behavior focused on drug seeking and use, despite sometimes devastating

consequences—the essence of addiction. Therefore, drug abuse treatment must address these brain changes, both in the short and long term. When people addicted to opioids first quit, they undergo withdrawal symptoms, which may be severe (pain, diarrhea, nausea and vomiting). Medications can be helpful in this detoxification stage to ease craving and other physical symptoms, which often prompt relapse. However, this is just the first step in treatment. Medications may also become an essential component of an *ongoing* treatment plan, enabling opioid-addicted persons to regain control of their health and their lives.

Medications developed to treat opioid addiction work through the same receptors as the addictive drug, but are safer and less likely to produce the harmful behaviors that characterize addiction. Three types include (1) agonists, which activate opioid receptors; (2) partial agonists, which also activate opioid receptors but produce a diminished response; and (3) antagonists, which block the receptor, and interfere with the rewarding effects of opioids. Physicians prescribe a particular medication based on a patient's specific medical needs and other factors. Effective medications include:

- **Methadone** (Dolophine or Methadose), a slow-acting, opioid agonist. Methadone is taken orally, so that it reaches the brain slowly, dampening the “high” that occurs with other routes of administration while preventing withdrawal symptoms. Methadone has been in use since the 1960s to treat heroin addiction and is still an excellent treatment option, particularly for patients that do not respond well to other medications; however, it is only available through approved outpatient treatment programs, where it is dispensed to patients on a daily basis.
- **Buprenorphine** (Subutex, Suboxone), a partial opioid agonist. Buprenorphine relieves drug cravings without producing the “high” or dangerous side effects of other opioids. **Suboxone** is a novel formulation, taken orally, that combines buprenorphine with naloxone (an opioid antagonist) to ward off attempts to get high by injecting the medication. If an addicted patient were to inject Suboxone, the naloxone would induce withdrawal symptoms,

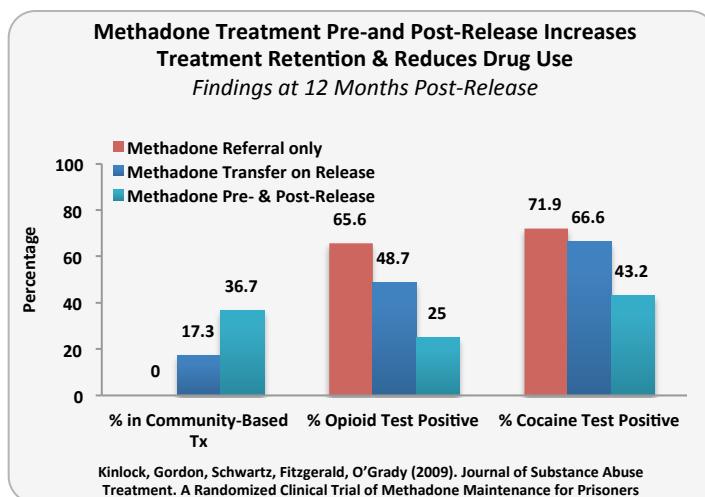
which are averted when taken orally as prescribed. The FDA approved buprenorphine in 2002, making it the first medication eligible to be prescribed by certified physicians through the Drug Addiction Treatment Act. This approval eliminates the need to visit specialized treatment clinics, expanding treatment access.

- **Naltrexone** (Depade, Revia) an opioid antagonist. Naltrexone is not addictive or sedating and does not result in physical dependence; however, poor patient compliance has limited its effectiveness. Recently an injectable long acting formulation of naltrexone called **Vivitrol** received FDA approval for treating opioid addiction. Given as a monthly injection, Vivitrol should improve compliance by eliminating the need for daily dosing. To avoid withdrawal symptoms, Vivitrol should be used only after a patient has undergone detoxification. Vivitrol provides an effective alternative for individuals who are unable to or choose not to engage in agonist-assisted treatment.

Benefits of Medication-Assisted Treatment – Beyond Reducing Drug Use

Scientific research has established that medication-assisted treatment of opioid addiction increases patient retention and decreases drug use, infectious disease transmission, and criminal activity. For example, studies among criminal offenders, many of whom enter the prison system with drug abuse problems, showed that methadone treatment begun in prison and continued in the community upon release extended the time parolees remained in treatment, reduced further drug use, and produced a three-fold reduction in criminal activity.

Investment in medication-assisted treatment of opioid addiction also makes good economic sense. For methadone, every dollar invested in treatment generates an estimated \$4–5 return.



Research Reveals New Strategies for Addiction Medications

NIDA is committed to supporting research to improve opioid addiction treatment, including behavioral therapies, which can be an important component of long-term recovery. Equally important is ensuring that these improvements reach all affected communities.

Improved medications – Probuphine is a long-acting version of buprenorphine that is showing promise in clinical trials. An implant inserted under the skin, Probuphine can deliver medication continuously for 6 months. Like Vivitrol, it aims to prevent abuse and diversion and increase treatment adherence by eliminating the need for daily dosing.

Vaccine research – Vaccines are being developed to help combat a variety of addictions including heroin. A **heroin vaccine**, currently under development, would corral heroin in the bloodstream and prevent it from reaching the brain and exerting its euphoric effects. This approach could guard against relapse and be an effective addition to a comprehensive treatment plan for heroin addiction.

Reaching Into the Community

NIDA is collaborating with SAMHSA and others to accelerate the translation of research discoveries into clinical practice, including the use of medication-assisted treatment. To learn more about these efforts, please visit:

<http://www.drugabuse.gov/publications/nidasamhsa-blending-initiative>

For further information please visit NIDA on the web at www.drugabuse.gov or contact:

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