Opioid Use Disorders

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KEYWORDS

• Opioids • Opioid use disorder • Heroin • Injection • Prescription opioids • Withdrawal • Overdose

KEY POINTS

- The current epidemic of opioid use and addiction in adolescents and young adults is worsening, including heroin and nonmedical use of prescription opioids.
- Opioid use has devastating consequences for youth and their families, including: progression to full addiction, severe psychosocial impairment, hepatitis C virus and human immunodeficiency virus transmission with injection use, exacerbation of co-occurring psychiatric disorders, overdose, and death.
- Progression of opioid use disorders (OUDs) in youth often follows a characteristic pattern from use of diverted prescription opioid analgesics to sniffed or smoked heroin to injection heroin.
- Opioid overdose is a life-threatening emergency. Respiratory depression should be treated with naloxone, and respiratory support if necessary. Overdose should always be utilized as an opportunity to initiate addiction treatment.
- Opioid withdrawal management (detoxification) is often a necessary, but never sufficient, component of treatment for OUDs. Medications used in the treatment of withdrawal may include buprenorphine, clonidine, and others for relief of symptoms.
- Treatment for OUDs is effective, but treatment capacity is alarmingly limited and underdeveloped.
- Although there is a limited evidence base for youth-specific treatment, emerging consensus supports the incorporation of relapse prevention medications such as buprenorphine and extended-release naltrexone into comprehensive psychosocial treatment including counseling and family involvement.

INTRODUCTION/BACKGROUND

The current epidemic of opioid use disorders (both diverted prescription opioids and heroin) in adolescents and young adults is a growing problem with devastating consequences for youth and their families. Progression from initiation to full addiction is

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common, and often accelerated compared with other substances. Severe psychosocial impairment includes criminal justice involvement, school dropout, unemployment, and co-occurring psychiatric disorders. Medical morbidity includes the well-known sequelae of injection drug use including hepatitis C virus (HCV), human immunodeficiency virus (HIV), injection site infections, and others. Worst of all is the catastrophic mortality associated with overdose, and nearly every community in the country has now unfortunately experienced this tragic loss of life in a young person with an opioid use disorder (OUD).

The term opioids encompasses a class of a large number of drugs, both natural alkaloid compounds derived directly from the resin of the opium poppy (termed opiates, including morphine and heroin), as well as related synthetic compounds (including oxycodone and hydromorphone.) All members of the opioid drug class share common pharmacologic features as agonists of the *mu* opioid receptor. Opioids are highly addictive, with rapid progression to physiologic dependence with tolerance and withdrawal. There is growing evidence to suggest a relationship between increased nonmedical use of prescription opioids and heroin use in the United States,[1] and a significant proportion of adolescents who start with prescription opioids go on to injection heroin use.[2] The progression of use often follows a pattern that maximizes drug bioavailabilty and effect: oral prescription opioids to inhaled prescription opioids to inhaled heroin to injection heroin. Inhalation can encompass either smoking (heating heroin in foil and inhaling the smoke) and nasal snorting (of the powdered heroin); whether a patient smokes or snorts appears to be mostly influenced by peers and regional variations, but neither method is as potent or efficient as injection, which maximizes bioavailability. This phenomenon is more prominent in adolescent than adult opioid users,[3] and accelerates more quickly with an earlier age of first opioid use. This progression is also related to heroin's lower cost and higher potency, because tolerance to opioids builds up rapidly in adolescents, and prescription opiates become prohibitively expensive with increased requirements for amounts of opioids as addiction advances.[4]

Etiologic Factors

Though understanding remains limited, there is increasing knowledge of the multiple factors involved in the etiology of opioid use disorders as a particular class of substance use disorders (SUDs). OUDs share many features in common with addiction as a general process and with other SUDs, but there are several features that are specific to OUDs that may interact to influence vulnerability, progression, and course. These factors range over several domains, including pharmacology, genetics, environmental influences, developmental influences, and comorbidities.

Opioids are all enormously reinforcing, 1 feature of their specific pharmacologic properties. Positive reinforcement is largely mediated by the indirect downstream activation of dopamine receptors, one of the main final common pathways of reward. Although opioids produce somewhat less immediate dopamine release than stimulants, they rank high in the hierarchy of rewarding substances and produce higher levels of positive reinforcement in animal and human self-administration models than almost all substances other than stimulants, as a feature of the intrinsic properties of the opioid receptor. Also prominent and perhaps even more clinically significant in chronic OUDs is the typical negative reinforcement produced by opioid withdrawal once physiologic dependence has occurred. Although the onset of withdrawal following opioid discontinuation varies with the half-life of the particular opioid, it produces a characteristic physiologic syndrome with even brief abstinence or even delay of dosing. Steady exposure to opioids can produce this process of neuroadaptation