CLINICAL

EPIDEMIOLOGY OF OPIOID ABUSE AND ADDICTION

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Opioid addiction, such as heroin and prescription pain medication, is a growing problem in the United States and internationally. Knowledge and respect for the epidemiology of opioid abuse and addiction, its consequences, and the role of the ED prescriber and nurse in reducing the risk and sequelae of opioid abuse and addiction is critical to reduce the incidence of adverse outcomes and deaths. This article will consider briefly the historical perspectives, the epidemiology, and the causes and risk factors of opioid abuse and review select evidence-based approaches that ED providers and nurses may implement to minimize the risk of opioid abuse and addiction by reducing inappropriate prescribing of opioids, implementing stronger prescription monitoring programs, improving access to substance abuse programs, and expanding training in the recognition of overdose and access to emergency overdose treatments.

The first historical reference of the cultivation of the poppy and the extraction of opium, the "plant of happiness," dates to the Sumerian culture in 5000 BCE.[1] Since then, opioids have taken on many forms and many names, such as scopolamine in Asia Minor, meconium in Greece, *formulas galenicas* in Rome, *somniferous spongia* in Europe, and the laudanum of Sydenham that was used in Europe and North America until the beginning of the twentieth century.[1] In 1805, the active component of opium was isolated and named in honor of the Greek god of dreams, Morpheus.[1] Throughout the history of opioid use, many people have recognized the medicinal benefit for the relief of pain, just as others have experienced dangerous addictions resulting in escalating abuse and, in some cases, death.

During the Vietnam era, when soldiers returning from combat struggled with heroin addiction, the medical community started to frame opioid addiction in terms of a medical epidemic,[2] similar to the spread of an infectious disease. Heroin use was described as "contagious," spreading from peer to peer, especially among new users, with the greatest concentration in areas of high unemployment, crime, deteriorating housing, poor or absent neighborhood leadership, and areas with a large influx of people living in poverty.[3] Public health officials applied the fundamentals of epidemiology to combat the spread as though heroin addiction was a contagious disease. Early identification of new outbreaks and involvement of all diseased persons in treatment prevents the spread of the disorder to others.[3] Since the early 1970s, the medical understanding of substance abuse has changed substantially, from personal weakness to a biochemical and medical problem. The demographics of those who experience substance abuse disorders have changed somewhat, but the concept of treating heroin abuse and addiction as an epidemic and a significant public health concern stands true today.

As pervasive as the heroin epidemic may be, it cannot be considered in isolation. Rather, heroin use and prescription drug abuse are inextricably linked.[4] The odds of heroin abuse and addiction are greatest among people who report abuse or dependence on opioid pain relievers in the past year.[5] The Centers for Disease Control and Prevention (CDC) reports that past misuse of prescription opioids, especially within the past year, ranks among the strongest risk factors for heroin abuse and overdose,[6] perhaps as a result of the decreased availability of medicinal opioids and the resulting transition to heroin.[7] As prescribing restrictions increase for opioid analgesics used for chronic pain, there has been a decrease in overdose and hospitalization related to prescription opioids and an increase in overdose and hospitalization related to heroin.[8]

Prescription opioids continue to be the leading cause of poisoning death in the United States[8] and represent more deaths than heroin and cocaine combined.[9] Beyond the morbidity and mortality directly related to the opioids, the incidence of hospitalizations and complications related to opioid abuse, especially when used intravenously, such as cellulitis, abscesses, bacteremia, sepsis, endocarditis, and osteomyelitis,[10] increased by 72.4% between 2002 and 2012, with a total cost of $15 billion for opioid abuse and dependence hospitalizations and $700 million related to associated infections in 2012.[11] As a precursor to heroin abuse and addiction, the medical overuse and nonmedical use of prescription opioids, such as taking medications differently than prescribed or using opioids obtained through nonmedical sources, are ideal targets for public health interventions.

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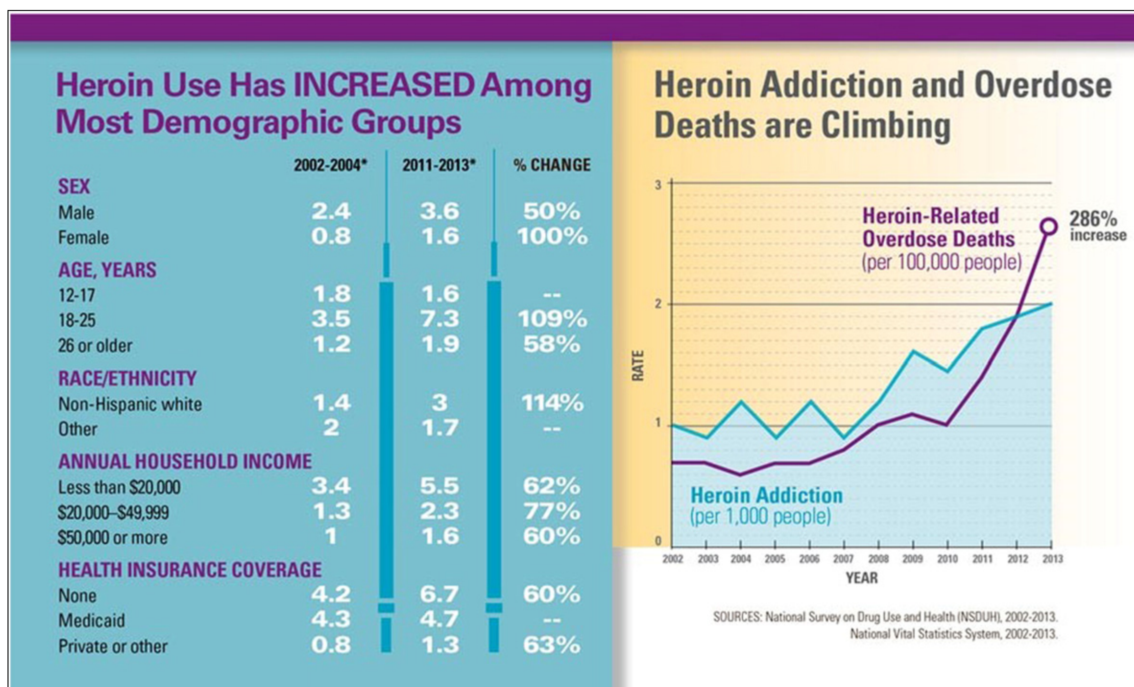

FIGURE
Heroin use and addiction rates. From http://www.cdc.gov/vitalsigns/heroin/.

Descriptive Epidemiology and Rates

From 2011-2013, the number of people who reported using heroin in the past year was 2.6 people per 1000 population, an increase of 62.5% from 2002-2004. Meanwhile, the death rate increased sharply, 285%, from 0.7 deaths per 100,000 population in 2002-2004 to 2.7 deaths per 100,000 population in 2011-2013.[5] New heroin use is highest among males, persons ages 18 to 25 years, non-Hispanic whites, persons with an annual household income of less than $20,000 and residing in large urban areas, persons with no health insurance or who receive Medicaid, and persons with a past-year history of abuse or dependence on alcohol, marijuana, cocaine, or opioid pain medications.[5] Overall, heroin use increased among almost all demographics, illustrated in the Figure.[12] The Table shows average annual rates of past-year heroin use and a multivariable logistic regression analysis of demographic and substance use characteristics associated with past-year heroin abuse or dependence.[5] The demographics for prescription opioid abuse are similar to the demographics of nonprescription heroin abuse and dependence.[13] Although these descriptors reflect the demographic at highest risk of using heroin or prescription opioids for nonmedical purposes, it should be noted that the gap between males and females and other demographic measures is closing, and identifying people at risk for and abusing opioids requires considering males and females, of any age and ethnicity, from any socioeconomic background, and who live in suburban or rural areas.[14]

Causes and Risk Factors

A number of factors may lead someone to abuse opioids, including heroin. It may begin as experimentation, imitating friends, or succumbing to peer pressure. In many cases, it begins with the prescribed use of opioids and evolves to the user taking the medications differently than prescribed or deteriorates to obtaining opioids prescribed to someone else.[15] The prescription of opioids has increased tremendously during the past 2 decades in response to pressures to adequately manage pain and the incorporation of patient satisfaction into reimbursement structures.[16] Of patients who present to their providers with pain or a pain-related diagnosis, 20% will receive an opioid prescription.[17] Patients receive more opioids today for common surgical procedures, orthopedic injuries, and dental procedures that may have been managed with non-opioid therapies just a few years ago.[15] More than 10% of patients who initiate treatment with opioids will progress to chronic use of greater than 3 months with greater potential for escalating dosing and potential for abuse.[15] The use of opioids for the treatment of chronic pain appears to be a main factor in

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