

Understanding the needs of families during the opioid crisis

Stephen W. Patrick

TAKEAWAYS

Traditional models of caring for opioid-exposed infants are inefficient and expensive; better outcomes can be achieved with newer models that keep mother and infant together and out of intensive-care settings after birth.

Treatment should focus on all substance use, not just use of opioids.

Most people who need treatment are not getting it.

Context matters; both community characteristics and individual exposure to trauma are correlated with opioid use disorder.



**Institute for
Research on
Poverty**

UNIVERSITY OF WISCONSIN-MADISON

irp.wisc.edu

The September 2019 Annual Poverty Research and Policy Forum, “Human Services Programs and the Opioid Crisis,” was convened by the Institute for Research on Poverty at the University of Wisconsin–Madison, in partnership with the Office of Human Services Policy, Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services. The forum focused on how the opioid crisis has affected the delivery of human services, and what role those services can play in ameliorating the negative effects of opioid misuse on individuals, families, and communities. This article summarizes the keynote presentation given by Dr. Stephen Patrick, a neonatologist at Monroe Carnell Jr. Children’s Hospital at Vanderbilt University.

Human services programs provide essential services to families and individuals who are struggling with opioid and other substance use disorders. In this article I review the history of the opioid crisis in the United States, discuss neonatal abstinence syndrome, identify some key issues to keep in mind when considering the opioid crisis, and then consider policy implications.

A brief history of opioids in the United States

1827	Pharmaceutical company Merck developed morphine for pain relief and the treatment of opium addiction and alcoholism.
1829	Merck introduced heroin as a safe and non-addictive alternative to morphine.
Early 1900s	American Medical Association approved heroin for general use and recommended that it be used in place of morphine.
1996	Purdue Pharma began manufacturing OxyContin in the United States; the American Pain Society launched the “Pain as the Fifth Vital Sign” campaign.
1998	Federation of State Medical Boards published “Model Guidelines for the Use of Controlled Substances for the treatment of Pain.”
1999	Rise in prescription opioid overdose deaths begins.
2007	Purdue Pharma, the maker of OxyContin, pleaded guilty to criminal charges that they misled doctors, regulators, and patients about the drug’s risk of addiction and potential to be abused, agreeing to a \$600,000,000 settlement.
2010	Rise in heroin overdose deaths begins.
2013	Rise in synthetic opioid overdose deaths begins.
2019	After continued involvement in lawsuits related to the opioid epidemic, Purdue Pharma filed for Chapter 11 bankruptcy.

In 1827, the pharmaceutical company Merck developed the drug morphine for pain relief and the treatment of opium addiction and alcoholism. While morphine was indeed an effective pain reliever, it was also highly addictive. Two years later, Merck introduced heroin, marketing it as a safe and nonaddictive alternative to morphine. In the early 1900s, the American Medical Association approved heroin for general use and recommended that it be used in place of morphine.¹

Skipping ahead to 1980, a letter to the editor published in the *New England Journal of Medicine* concluded that “despite widespread

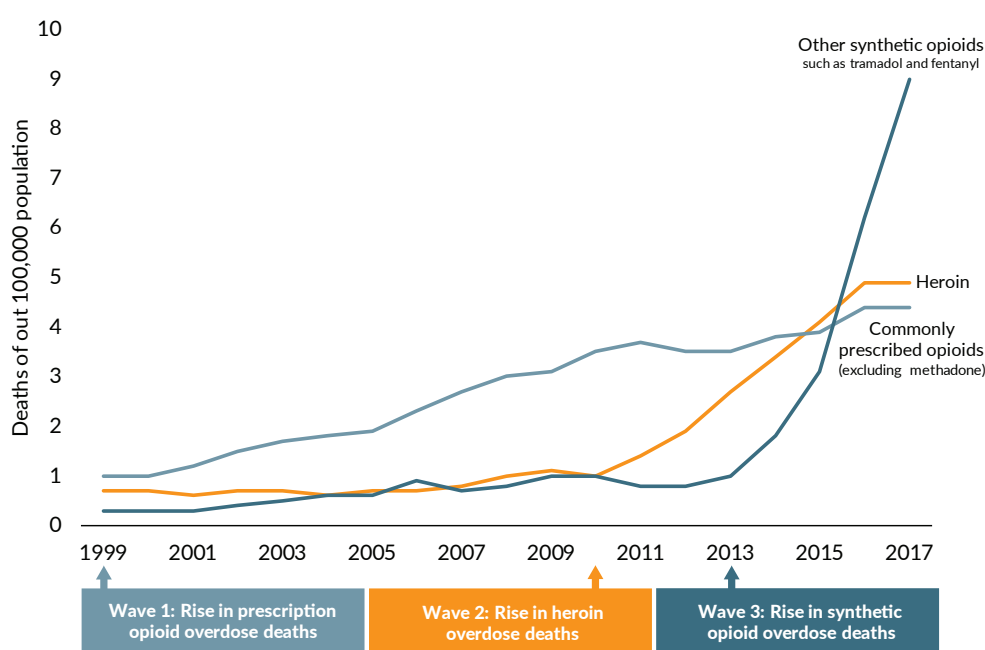
use of narcotic drugs in hospitals, the development of addiction is rare in medical patients with no history of addiction.”² This statement was based on an analysis of data on patients who had been treated with opioids in a hospital setting. This letter has since been misrepresented as evidence that narcotics can be prescribed for home use without risk of addiction. The frequency with which this letter has been cited as support for the safe prescription of narcotics for use in a home setting began to increase in the late 1980s, with a particularly large spike in 1996, when Purdue Pharma began manufacturing OxyContin in the United States.³

Also in the mid-1990s, The American Pain Society began to promote the idea of evaluating pain as a vital sign, with the hope that this would lead to pain being appropriately evaluated and then managed.⁴ This was followed by the 1998 publication of “Model Guidelines for the Use of Controlled Substances for the Treatment of Pain” by the Federation of State Medical Boards.⁵ The idea of routinely assessing pain caught on rapidly, and became standard in hospitals and clinics across the country. With an increased awareness among clinicians about their patients’ pain levels, the level of opioid prescribing rose, tripling over the period from 1999 to 2015. It has since decreased somewhat, although the United States still uses four times as many opioids as Europe.⁶

In early 2000, the negative effects of widespread opioid prescribing became more visible, including the tripling of the rate of opioid misuse among young adults between the ages of 18 and 25, and an increase in the ease of obtaining opioids, through internet sales.⁷ In 2007, Purdue Pharma, the maker of OxyContin, pleaded guilty to criminal charges that they misled doctors, regulators, and patients about the drug’s risk of addiction and potential to be abused, agreeing to a \$600,000,000 settlement. The company has continued to be involved in lawsuits related to the opioid epidemic, and filed for Chapter 11 bankruptcy in September 2019.

Trends in opioid-related overdose deaths over the past two decades are illustrated in Figure 1. The rise in overdose deaths from commonly prescribed opioids began in 1999, and has

Figure 1. The rise of opioid-related overdose deaths in the United States has occurred to date in three waves; first with prescription opioids, then with heroin, and most recently with synthetic opioids.



Note: Deaths are classified using the International Classification of Diseases, 10th Revision.

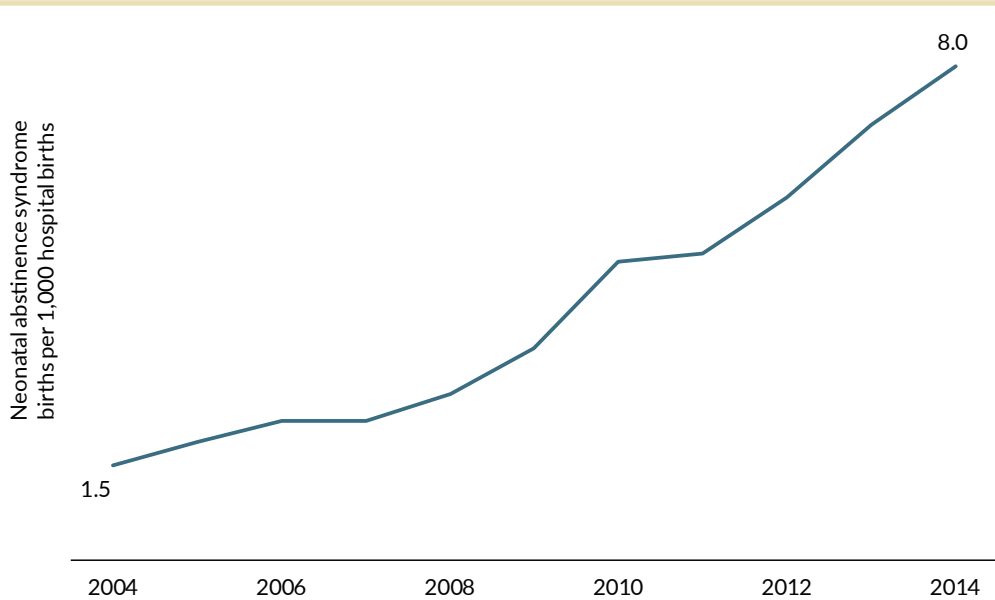
Source: Mortality data from National Center for Health Statistics, National Vital Statistics System.

continued to rise fairly steadily since then. This was followed by a sharp rise in heroin overdose deaths beginning in 2010; the rate of heroin overdose deaths is now very similar to that of prescription opioids. Beginning in 2013, overdose deaths from other synthetic opioids such as illicitly produced fentanyl have risen precipitously, and now significantly outpace overdose deaths from the other two categories of opioids. As the opioid crisis has evolved, it becomes more complex, and some of the strategies needed to address it become more complex as well.

Neonatal abstinence syndrome

As a neonatologist, my view of the opioid crisis is through the lens of pregnant women and infants. Neonatal abstinence syndrome (NAS) is a withdrawal syndrome experienced by substance-exposed infants after birth. NAS generally follows an opioid exposure, although other drugs such as alcohol, benzodiazepines such as Valium, and barbituates such as phenobarbital can also result in withdrawal syndromes. Around 40 to 80 percent of infants exposed to heroin or methadone develop NAS. My colleagues and I have documented the rise of NAS in the United States, as shown in Figure 2. From 2000 through 2014, the rate of NAS rose from just over one per 1,000 hospital births to over eight per 1,000 births.⁸ On average in the United States, a baby with NAS is born every 15 minutes.

Figure 2. The incidence of neonatal abstinence syndrome more than quintupled between 2000 and 2014.



Source: T. N. A. Winkelman, N. Villapiano, K. B. Kozhimannil, M. M. Davis, and S. W. Patrick, "Incidence and Costs of Neonatal Abstinence Syndrome Among Infants With Medicaid: 2004–2014," *Pediatrics* 141, No. 4 (2018): e20173520.

NAS is expensive to treat; hospital costs for an infant that has opioid withdrawal and is covered by Medicaid are about five times higher than for an infant without NAS.⁹ We estimate that NAS has resulted in approximately \$2 billion in excess hospital costs among Medicaid-financed deliveries over the 10-year period from 2004 to 2014.¹⁰

The goal of NAS treatment is to control withdrawal, minimizing the risk of complications such as seizures. As shown in the text box, models of care for achieving this goal are

Models of care are shifting toward keeping mother and baby together.



Traditional (and common)	Newer care models
Routinely separate mother & baby, place baby in neonatal intensive care unit	Keep mother & baby together and out of neonatal intensive care unit when possible
Breastfeeding not allowed, or inconsistent	Breastfeeding encouraged and supported
Focus on medications, instead of care process	Focus on care process, not just medications
Lack of trauma-informed processes	Engage staff in trauma-informed care
Provider burn-out common	Greater provider & patient satisfaction
Long lengths of treatment & stay	Reduced stay
Care not standardized	Use standardized protocols

shifting. The traditional and common model involves separating mother and infant, and placing the baby in a neonatal intensive care units (NICU). Mother and infant are treated separately, and breastfeeding is either not allowed or allowed inconsistently. The treatment involves using opioids such as morphine and methadone, which are tapered off over a period of time. This emphasis is on choosing the optimal medication for treatment rather than the optimal care process. Evidence shows a strong relationship between trauma, particularly adverse childhood experiences, and addiction.¹¹ The traditional approaches to the care of pregnant women and infants affected by the opioid crisis does not recognize the role of trauma; traditional care models also tend to separate mom and baby and are inconsistent in their approaches. As a result, families may feel unheard and separate from their infants' care, care is not standardized, and lengths of stay for infants can be very long, lasting two to three months.

In contrast, newer care models keep mothers and infants together, and out of the NICU whenever possible. Treatment includes the mother, and breastfeeding—which appears to decrease the severity of drug withdrawal, and improve outcomes for both mothers and infants—is encouraged and supported when indicated. These models focus on the process and not just the medication; engage staff in trauma-informed care; use standardized protocols; have much shorter lengths of stay; and provide greater levels of satisfaction among both providers and patients.

An example of this new approach to NAS is Team Hope, an interdisciplinary team from the Vanderbilt University Medical Center and the Monroe Carrell Jr. Children's Hospital formed in September 2017 that seeks to provide evidence-based care for opioid-exposed infants. The team includes physicians, nurses, social workers, child life specialists, lactation consultants, and care providers from the Departments of Pediatrics and Obstetrics and Gynecology. Over a two-year period, 231 near-term infants with opioid exposure were treated by the team. Only 24 percent were diagnosed with NAS, in part because of early deployment of resources to prevent the development of symptoms. Nineteen percent of infants were given morphine to treat severe withdrawal. The median length of hospital stay across all infants was five days, with a median stay of 13 days for those diagnosed with NAS—dramatically shorter than the months-long stays that can occur with traditional models. The team is now looking to improve the transition to home, by connecting families to services such as home nurse visitation and early intervention.

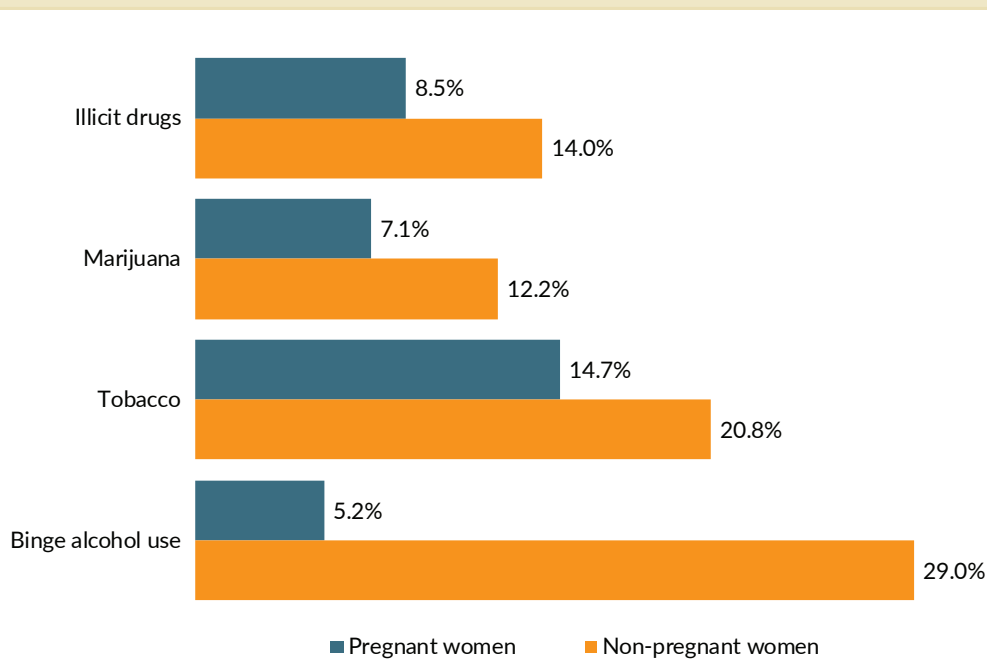
Putting the opioid crisis in context

Next, I want to step back slightly from the details of the opioid crisis and look at the bigger picture.

Opioids are not the only substance of concern

First, it is important to note that opioids are not the sole concern; it is also important to consider other substance use. For example, alcohol use during pregnancy is the number one preventable cause of developmental delay in children. Figure 3 shows the proportion of women between the ages of 15 and 44 who reported using substances in the previous month, according to the 2017 National Survey on Drug Use and Health. Use of illicit drugs was reported by 8.5 percent of pregnant women and 14 percent of nonpregnant women. The great majority of this drug use was marijuana rather than opioids or other drugs. Over 5 percent of pregnant women reported binge drinking—drinking five or more drinks on the same occasion. The rate of binge drinking among nonpregnant women in the same age group was nearly 30 percent. Understanding and addressing other substance use among women of childbearing age is important to assuring healthy mothers and infants.

Figure 3. More than 8 percent of pregnant women reported illicit drug use in the past month and over 50 percent reported binge alcohol use.



Note: Figure shows substance use for women between the ages of 15 and 44. Binge alcohol use is defined as drinking four or more drinks on the same occasion on at least one day over the past 30 days.

Source: Substance Abuse and Mental Health Services Administration, Center for Behavioral Statistics and Quality, 2017 National Survey on Drug Use and Health.

Accessing treatment is difficult

As Figure 4 shows, the great majority of people who need substance use treatment do not receive it. Accessing treatment is both difficult and expensive. For example, a “secret shopper” study—where people pretending to have a heroin dependency called providers trying to get treatment—found that about 60 percent of those who said they could pay cash

were offered an appointment; the rate was about 50 percent for those who said they were on Medicaid.¹² In rural settings, the rates were somewhat lower. Overall, median wait times for an initial appointment were five to six days, and the median cash cost of an appointment was \$250.

The literature is clear that the use of medications for opioid use disorder improves outcomes for mothers and children.¹³ Pregnant women who are treated with medications have decreased risk of overdose death or of contracting HIV or hepatitis C, the pregnancy is also more likely to go to term, and infants have higher birth weights. Despite this evidence, many pregnant women in the United States who could benefit from these medications do not receive them, in part because providers are less likely to treat pregnant women. For example, a study of treatment access for pregnant women in four Appalachian states found that only about half of providers who prescribe medications for opioid use disorder accepted pregnant patients.¹⁴

Community characteristics matter

Economic characteristics of communities are correlated with rates of opioid use. For example, my colleagues and I found that a 2 percentage-point increase in long-term unemployment in remote rural counties was associated with a 34 percent higher rate of NAS.¹⁵ A higher proportion of manufacturing jobs in these counties was also associated with higher NAS rates. This could be in part the result of higher rates of injury, chronic pain, and disability experienced by many manufacturing workers, factors that may contribute to greater opioid use for pain relief. Our study also found that access to mental health providers was lacking in 91 percent of remote rural counties, 86 percent of metro-adjacent rural counties, and 78 percent of metropolitan counties. Counties with a shortage of mental health providers had higher rates of NAS.¹⁶

Individuals' exposure to trauma matters

Trauma is common in women with opioid use disorder. For example, a study of women in treatment for substance abuse found that three-quarters reported sexual abuse, three-quarters reported emotional abuse, and half reported physical abuse.¹⁷ Adverse childhood experiences are also common among people with substance use disorders.¹⁸ For example, adults with six or more adverse childhood experiences are eight times more likely to have lifetime substance dependence and 10 times more likely to have ever injected a drug, compared to those with no adverse childhood experiences.¹⁹

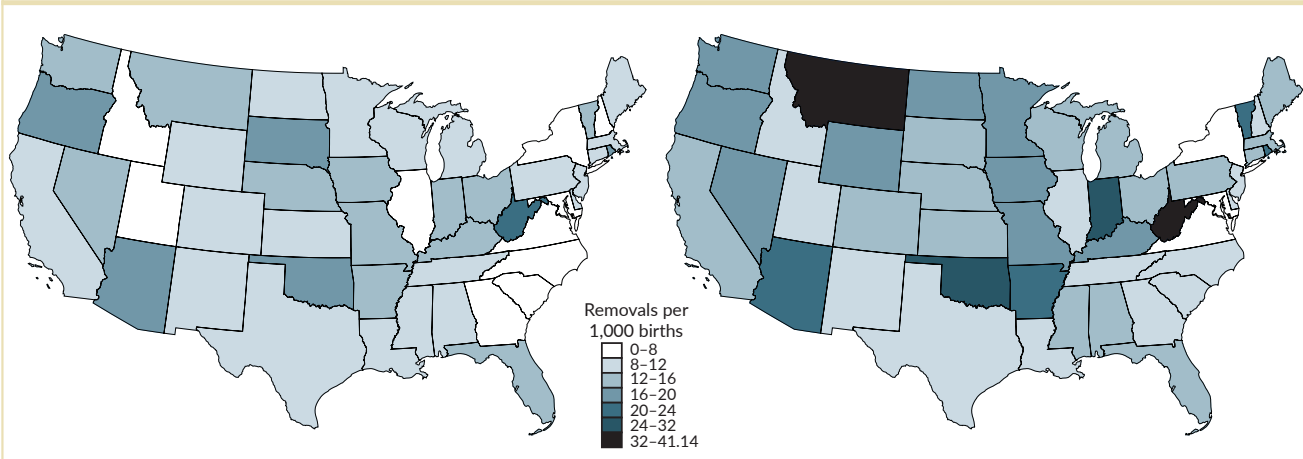
Figure 4. Of the 21.2 million Americans who needed substance use treatment in 2018, only 11 percent received it.



Note: Each figure represents 100,000 people needing treatment. Lighter color represents those receiving treatment.

Source: Substance Abuse and Mental Health Services Administration, Center for Behavioral Statistics and Quality, 2018 National Survey on Drug Use and Health.

Figure 5. The proportion of infants removed from the home and placed in foster care is rising in many states.



Source: Vanderbilt University Medical Center. Accessed on February 20, 2020: <https://www.vumc.org/childhealthpolicy/childwelfare>

Policy implications

There are a number of ways in which human services programs can partner with health systems in order to improve outcomes for families affected by opioid use disorder.

Pregnant women can be connected to treatment well before birth. Training and bonding can occur during the birth hospitalization. Recovery support can be provided to parents—both mothers and fathers. Other concerns such as mental health issues could be assessed during the hospital stay so that concurrent treatment could begin. Post-discharge needs such as more frequent pediatrician follow-up, Early Head Start, and programs for economic stability could be identified, and a follow-up plan put into place.

Finally, it is important to note that in many states, the proportion of infants removed from the home and placed in the foster care system is rising (Figure 5). Recent federal legislation specifies what is to happen in “Plans of Safe Care.” I think that this model, which specifies coordinating care with multiple human services agencies (see text box) holds promise in bringing agencies together to improve family outcomes.

While the scope of the current crisis is unprecedented, I believe that it can be a vehicle to make improvements in the provision of human services that will be enduring for generations to come. ■



Stephen W. Patrick is Associate Professor of Pediatrics and Health Policy at Vanderbilt University.

- ¹*The Journal of the American Medical Association*, May 8, 1920, 1318.
- ²J. Porter and H. Jick, “Addiction Rare in Patients Treated with Narcotics,” letter to the editor, *New England Journal of Medicine* 302, No. 2 (January 10, 1980): 123.
- ³P. T. M. Leung, E. M. Macdonald, I. A. Dhalla, and D. N. Juurlink, “A 1980 Letter on the Risk of Opioid Addiction,” letter to the editor, *New England Journal of Medicine* 376, No. 22 (June 1, 2017): 2194–2195.
- ⁴J. N. Campbell, Presidential address to the American Pain Society, *Pain Forum* 5 (1996): 85–88.
- ⁵Federation of State Medical Boards of the United States, Inc., “Model Policy for the Use of Controlled Substances for the Treatment of Pain,” *Journal of Pain & Palliative Care Pharmacotherapy* 19, No. 2 (2005): 73–78.
- ⁶A. Schuchat, D. Houry, and G. P. Guy, Jr., “New Data on Opioid Use and Prescribing in the United States,” *Journal of the American Medical Association* 318, No. 5 (2017): 425–426.
- ⁷G. Harris, “Two Agencies to Fight Online Narcotics Sales,” *New York Times*, October 18, 2003. Available at: <https://www.nytimes.com/2003/10/18/business/two-agencies-to-fight-online-narcotics-sales.html>
- ⁸T. N. A. Winkelman, N. Villapiano, K. B. Kozhimannil, M. M. Davis, and S. W. Patrick, “Incidence and Costs of Neonatal Abstinence Syndrome Among Infants With Medicaid: 2004–2014,” *Pediatrics* 141, No. 4 (2018): e20173520.
- ⁹Winkelman et al., “Incidence and Costs of Neonatal Abstinence Syndrome.”
- ¹⁰Winkelman et al., “Incidence and Costs of Neonatal Abstinence Syndrome.”
- ¹¹See, for example, S. R. Dube, V. J. Felitti, M. Dong, D. P. Chapman, W. H. Giles, and R. F. Anda, “Childhood Abuse, Neglect, and Household Dysfunction and the Risk of Illicit Drug Use: The Adverse Childhood Experiences Study,” *Pediatrics* 111, No. 3 (2003): 564–572.
- ¹²T. Beetham, B. Saloner, S. E. Wakeman, M. Gaye, and M. L. Barnett, “Access to Office-Based Buprenorphine Treatment in Areas With High Rates of Opioid-Related Mortality: An Audit Study,” *Annals of Internal Medicine* 171, No. 1 (2019): 1–9.
- ¹³See, for example, C. A. Fullerton et al., “Medication-Assisted Treatment with Methadone: Assessing the Evidence,” *Psychiatric Services* 65, No. 2 (2014): 146–157.
- ¹⁴S. W. Patrick, M. B. Buntin, P. R. Martin, T. A. Scott, W. Dupont, M. Richards, and W. O. Cooper, “Barriers to Accessing Treatment for Pregnant Women with Opioid Use Disorder in Appalachian States,” *Substance Abuse* 40, No. 3 (2019): 353–362.
- ¹⁵S. W. Patrick, L. J. Faherty, and A. W. Dick, “Association Among County-Level Economic Factors, Clinician Supply, Metropolitan or Rural Location, and Neonatal Abstinence Syndrome,” *JAMA* 321, No. 4 (2019): 385–393.
- ¹⁶Patrick et al., “Association Among County-Level Economic Factors, Clinician Supply, Metropolitan or Rural Location, and Neonatal Abstinence Syndrome.”
- ¹⁷S. S. Covington, “Women and Addiction: A Trauma-Informed Approach,” *Journal of Psychoactive Drugs* 40, Supplement 5 (2008): 377–385.
- ¹⁸J. Topitzes, D. J. Pate, N. D. Berman, and C. Medina-Kirchner, “Adverse Childhood Experiences, Health, and Employment: A Study of Men Seeking Job Services,” *Child Abuse & Neglect* 61 (2016): 23–34.
- ¹⁹S. R. Dube, V. J. Felitti, M. Dong, D. P. Chapman, W. H. Giles, and R. F. Anda, “Childhood Abuse, Neglect, and Household Dysfunction and the Risk of Illicit Drug Use: The Adverse Childhood Experiences Study,” *Pediatrics* 111, No. 3 (2003): 564–72.

Men and opioid use disorder

The article by Stephen Patrick focuses on human services responses to the opioid crisis for pregnant women and their newborn children, the author's area of expertise. Here we note select research findings about how the opioid crisis affects men, especially vis-à-vis its effects on women (not just pregnant or postpartum women).

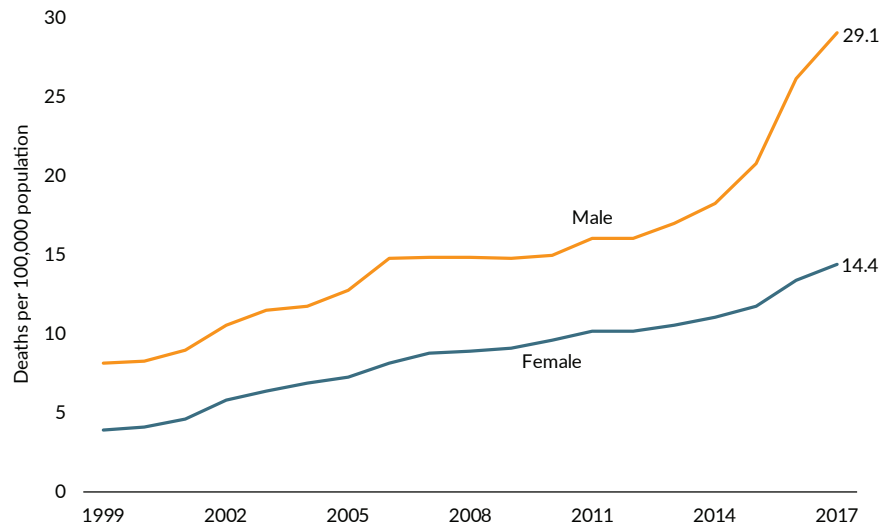
Men are more likely than women to misuse opioids. While men who misuse opioids are less likely than women with the disorder to overdose, the drug overdose death rate for men is nonetheless much higher than that for women due to their higher usage rates overall (Figure 1).

For men, opioid use appears to be related to employment more often than for women. An analysis by Alan Krueger found that the increase in opioid prescriptions between 1999 and 2015 could account for about 43 percent of the observed decline in men's labor force participation over the same period, compared to 25 percent of the observed decline in women's labor force participation.¹ Krueger surmised that many of those who are out of work may find it difficult to return because of their reliance on pain medication.

Those who enter substance abuse treatment typically have multiple concurrent issues that require treatment providers to interact with other systems, such as housing and homelessness services and the criminal justice system. Many men receive substance abuse treatment while incarcerated, and the justice system is a large source of referrals to treatment for men. Homelessness has also been associated with substance abuse disorders, and men make up about four-fifths of homeless individuals who are in treatment for substance abuse. Many programs struggle to meet their needs.² Pressures to meet a societal ideal of masculinity—particularly being economically successful—may also make it more difficult for some men to seek help for substance misuse.³

Finally, the role of fathers as well as mothers must be considered in looking at the effects of opioids on families. For example, a study by the Urban Institute looks at the experiences of some home visiting programs in engaging low-income fathers.⁴ Successful strategies include learning fathers' work schedules, arranging visits during off hours, and having male home visitors.

Figure 1. The drug overdose death rate in the United States is significantly higher for men compared to women.



Source: Mortality data from the National Center for Health Statistics, National Vital Statistics System.

¹A. B. Krueger, "Where Have All the Workers Gone? An Inquiry into the Decline of the U.S. Labor Force Participation Rate," The Brookings Institution, September 7, 2017. Available at: <https://www.brookings.edu/bpea-articles/where-have-all-the-workers-gone-an-inquiry-into-the-decline-of-the-u-s-labor-force-participation-rate/>

²Substance Abuse and Mental Health Services Administration (SAMHSA), "A Treatment Improvement Protocol: Addressing the Specific Behavioral Health Needs of Men," TIP 56, 2013. Available at: <https://store.samhsa.gov/system/files/sma14-4736.pdf>

³SAMHSA, "Addressing the Specific Behavioral Health Needs of Men."

⁴M. E. Gearing, H. E. Peters, H. Sandstrom, and C. Heller, "Engaging Low-Income Fathers in Home Visiting: Approaches, Challenges, and Strategies," OPRE Report #2015-104, Submitted by Urban Institute to the Office of Planning, Research and Evaluation, Administration for Children and Families, US Department of Health and Human Services. Available at: <https://www.urban.org/sites/default/files/publication/76121/2000538-Engaging-Low-Income-Fathers-in-Home-Visiting-Approaches-Challenges-and-Strategies.pdf>