Commentaries

The Impact of the Opioid Epidemic on Children and Adolescents

Erin L. Winstanley, PhD[1]; and Amanda N. Stover, MPH[2]

[1]Department of Behavioral Medicine and Psychiatry, School of Medicine, West Virginia University, Morgantown, WV, United States; and [2]School of Pharmacy, West Virginia University, Morgantown, WV, United States

ABSTRACT

Although an epidemic of opioid-related overdose deaths has continued to increase in the United States for 2 decades, the impact of opioid use disorders (OUDs) on children and families receives minimal attention. The purpose of this commentary was to provide an overview of the impact of the opioid epidemic on children and adolescents, as well as to summarize challenges to improving outcomes for children. Children and adolescents who grow up in households with opioid misuse and OUDs may experience a myriad of adverse consequences, including: increased risk of mental health problems and drug use; accidental opioid poisoning; increased risk of developing a substance use disorder; and family dissolution that results from parents' incarceration, foster care placement, or loss of parent to an opioid overdose. Parental drug use may result in child neglect or deficits in parent–child attachment, and parents with an OUD may be less likely to be reunified with their children. OUD treatment is effective at reducing parental opioid use and improving child outcomes; however, stigma and cross-system collaboration may limit access to treatment and timely reunification of families. Children are the most vulnerable witnesses of the opioid epidemic, and further research is urgently needed to expand prevention interventions. (*Clin Ther*. 2019;41:1655–1662) © 2019 Published by Elsevier Inc.

Keywords: adolescent, children, opioid epidemic, overdose, treatment.

INTRODUCTION

An epidemic of opioid-related overdose deaths has continued to increase in the United States for the past 2 decades, yet its impact on children is rarely mentioned in national discussions or policy initiatives.[1,2] Although there is a large body of research regarding the impact of maternal opioid use on neonate outcomes and neonatal abstinence syndrome, in general, the impact of substance use disorders (SUDs) on children aged >1 year and families receives minimal attention.[2] An estimated 2% of federally funded addiction research focuses specifically on families or children, and only 4% of the information in addiction textbooks focuses on family or child issues.[3] There is even less research that focuses specifically on the impact of opioid use and/or opioid use disorder (OUD) on children and adolescents.

In 2017, there were 47,600 opioid-related overdose deaths in the United States.[4] The number of overdose descendants that are parents is unknown; also unknown is what proportion of individuals diagnosed with OUDs have children living at home. However, the highest rates of overdose deaths in 2017 occurred among individuals aged 25 to 44 years,[5] reflecting prime periods of parenthood. The 2017 National Survey on Drug Use and Health reported that ~8.5% of pregnant women aged 15 to 44 years in the United States used an illicit substance in the past 30 days.[6] From 2009 to 2014, an estimated 2.1 million (2.9%) children aged ≤17 years

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lived in households with at least 1 parent with a SUD.[7] There is limited research on the consequences of parental opioid misuse and OUD on children and adolescent development; the breadth of potential adverse outcomes is based on the broader literature of SUDs among parents.[3] The chronicity of addiction and high rates of relapse may cause instability in children's lives that can result in detrimental consequences that extend into adulthood.

Throughout the present commentary, the term opioid is used to encompass heroin, prescription opioids, and synthetic opioids (eg, illicitly manufactured fentanyl). This article briefly reviews the existing literature on how parental opioid misuse and OUD adversely affect child and adolescent development and health outcomes. This review includes a summary of the consequences, including accidental opioid poisoning, the impact of opioid use on parenting, family environment of drug use, family dissolution, adolescent addiction, the role of treatment for parents and families, and cross-system collaboration.

DISCUSSION

Accidental Opioid Poisoning

Opioid prescriptions in the United States significantly increased during the decade before 2012 and have remained at significantly high rates, with ~70.6 prescriptions dispensed per 100 persons in 2015.[8] Parental opioid use may increase child and adolescent access to these drugs, which can result in accidental poisoning. Between 2000 and 2015, there were 188,468 poison control center reports of child or adolescent prescription opioid exposure.[9] There was a twofold increase in the incidence of pediatric hospitalization for opioid poisonings between 1997 and 2012; the annual incidence rate in 2012 was 3.71 per 100,000 children.[10] The increased rates of opioid prescribing have been paralleled by increasing rates of individuals entering treatment for an OUD.[11] Methadone and buprenorphine are approved by the US Food and Drug Administration for the treatment of OUDs; medications used to treat OUDs are generally referred to as medication-assisted treatment (MAT). Although buprenorphine was only involved in 3.3% of poison control center reports, buprenorphine poisoning frequently (47.1%) required treatment in a health care facility.[9] There have been national and regional efforts to increase the safe storage of prescription opioids and appropriate disposal of unused opioids; however, research suggests that few adults prescribed opioids for medical reasons practice these principles.[12]

Impact of Opioid Use on Parenting

Few studies have specifically measured the impact of parental opioid misuse and OUDs[3]; much is conjecture based on the drug effect of opioids (sedation), as well as the symptoms of opioid withdrawal (irritability/discomfort). A general review of the impact of drug use on children can be found elsewhere.[13] Parents with OUDs may have emotional dysregulation and impaired judgment that affect their ability to care for and protect their children; nonetheless, the published literature has focused on the detrimental effect of opioids on parent–child attachment.[13,14] SUDs are not conducive to stable environments for children, a vital component for normal child development.[15] A key symptom of SUDs is preoccupation with drug seeking, which may cause parents to be distant and less engaged with their children.[16] This scenario in turn can contribute to problems during childhood that influence the formation of adult relationships later in life.[3] These adverse effects are greater when both parents have an OUD because it disrupts parenting and the ability to provide a nuturing environment.[13,17,18]

The impact of opioid use/OUD on parenting style or formation of parent–child attachment is difficult to disentangle from confounding factors. Previous studies have reported that persons with OUDs frequently experienced neglect, maltreatment, and trauma as a child.[19–22] Research suggests that ~80% of patients with SUDs may have experienced childhood trauma.[22] Specifically, adverse childhood experiences are associated with an increased risk of drug use and the development of SUDs.[23] Among patients in treatment for an OUD, 47.7% reported verbal abuse, 36.2% reported experiencing physical abuse, and 19.6% reported experiencing sexual abuse.[21] There are important sex differences in childhood trauma among patients with OUDs, as female subjects have significantly higher rates of childhood sexual abuse.[20] A case-control study found that 72% of the female subjects, compared with 36% of male subjects, with OUDs reported experiencing sexual abuse.[20] Not surprisingly, women receiving treatment for an OUD are more likely to have

comorbid mental health problems (eg, depression), and there is some evidence that previous traumatic experiences may trigger relapse.[24] It is probable that childhood trauma independently increases the risk of an adverse parenting style and/or suboptimal parent–child attachment. Furthermore, the impact of parental opioid use on child development is likely mediated by the involvement of other nondrug-using adults in the child's life.

Child neglect may result from the preoccupation with drug seeking, one of the symptoms of SUDs. Neglect may result in the child having poor hygiene,[13] school absenteeism, poor supervision,[14] unsafe environment, and unsafe adults. Furthermore, children may witness drug-related activity (eg, drug dealing, preparation, use) and be subjected to dangerous drug-related environments.[25] The media has covered stories of adults overdosing in front of children,[26] and there are efforts to teach children and adolescents how to respond to an overdose.[27] The prevalence of overdoses witnessed by children is unknown, although these children may experience secondary trauma, which may elevate their risk of developing a SUD.[28]

Family Environment of Drug Use

Social norms, particularly among adolescents, can shape the environment or context that defines the acceptability of drug use.[29] Families in which children witness drug use and/or drug-related behaviors may result in adolescents' perceptions that drug use is normative. A particularly harmful form of childhood adversity occurs when parents use drugs in the presence of their children.[13,30–32] Children raised in homes where drug use is common are at increased risk of exposure to unsanitary living conditions, witnessing domestic violence, needing hospitalization, and experiencing poverty or homelessness.[33] Worse yet is when parents provide or directly facilitate drug use by their children.[34] Several states have enacted criminal justice–related policies, some of which have severe penalties, for parents who expose their children to illicit substances or environments in which illicit substances are present.[12,35] Similarly, under civil child welfare statutes, substance use/misuse during pregnancy is considered child abuse in 24 states and the District of Columbia.[36] SUDs may progressively affect parental functioning and role fulfillment: as the severity of addiction increases, parents may be less able to protect their children from the negative consequences of their drug use.

Family Dissolution

Although overdose deaths have increased annually since 1999, the number of children in foster care only recently (2012) started to increase.[37] It is unclear whether the increase of children in foster care is directly attributed to the opioid epidemic; however, it is likely to at least be a contributing factor. Between 2011 and 2016, there were increases in the number of child maltreatment reports and substantiated reports. Child welfare agencies have reported that intergenerational drug use is impeding the placement of children with other family members. Furthermore, caseworkers and child welfare administrators have reported that children are remaining in the foster care system for longer durations of time. Thus, foster home placement may be delayed and/or require placement in foster homes farther away from the child's parents.

Approximately one third (32.8%) of mothers in treatment for an OUD have had a child who was removed from the home.[38] Research suggests that parents using heroin are less likely to be reunited with their children compared with parents using alcohol or cocaine.[19,39,40] In a large study of children in foster care, Green et al[41] found that children of mothers who used opioids remained in foster care longer than children of mothers who used alcohol, methamphetamine, or cannabis. Overall, parents with an OUD seem to achieve family reunification slower than parents who use alcohol or other drugs.[39,40,42] It is unclear whether this finding is due to greater stigma associated with OUDs compared with other SUDs,[43,44] lower rates of OUD treatment completion,[40] higher rates of opioid relapse,[45] or greater impairments in parental functioning. Grella et al[39] hypothesized that mothers with OUDs may have greater severity of addiction and lower functioning (eg, less employment, housing instability) that may explain the lower rates of family reunification. However, family reunification is important because parents with custodial care of their children have higher rates of recovery compared with those who have lost care.[46]

Adolescent Opioid Use, Addiction, and Overdose

In 2017, approximately 769,000 (4.2%) adolescents misused prescription opioids and 14,000 (0.1%) used heroin in the past year; an estimated 103,000 (0.4%) adolescents had an OUD in the past year.[6] Early identification of opioid use is critical to preventing addiction and opioid-related morbidity among adolescents. The CRAFFT screening questions is a tool that can be used to screen for nonmedical use of prescription opioids among adolescents, as well as to screen for drug use.[47] Approximately 1.0 million (4.1%) adolescents needed treatment for a SUD in 2017, representing ~1 in 24 adolescents.[6] Research suggests that few adolescents (4%) with an OUD perceived the need for treatment,[48] which underscores the importance of screening, brief intervention, and referral to treatment for adolescents.

The drug overdose death rate among adolescents aged 15 to 19 years more than doubled from 1999 (1.6 per 100,000) to 2007 (4.2 per 100,000), declined by 26% between 2007 and 2014 (3.1 per 100,000), and then increased in 2015 (3.7 per 100,000).[49] Although estimates vary by year and geographic area, in 2016, approximately 60% of drug overdose deaths involved opioids,[50] and 86% were classified as unintentional.[51] The intentionality of an overdose death may be difficult to discern given the high rates of co-occurring SUDs and psychiatric illness,[52] the frequency of overdose as a method of suicide,[53] and the absence of suicide notes.[54] Among children and adolescents hospitalized for an opioid overdose, the proportion that were intentional (suicide) has been increasing over time.[10] In 2015, 13.5% of overdose deaths among adolescents aged 15 to 19 years were classified as suicide.[49] Overdose deaths among adolescent female subjects were more likely to be classified as intentional (21.9%) compared with male subjects (8.7%). A nonfatal overdose is an opportunity to engage adolescents in addiction treatment and reduce their risk of subsequent opioid-related mortality. However, data from a study conducted in Massachusetts found that only 8% of adolescents who had an opioid-related nonfatal overdose received MAT within the subsequent 12 months.[55] Timely treatment of adolescents with OUDs, before they transition into adulthood, is critical; additional research and clinical tools are needed to prevent adolescent overdose.

Role of Parental Treatment

Parents with OUDs may be reluctant to seek treatment for fear of losing custody of their children and/or engaging with child protective services. Children may be a barrier to treatment entry for some parents, particularly if child care is not available and/or if the parent requires inpatient or residential treatment. Conversely, one study found that children may be a motivation for mothers to enter treatment.[38] There are system-level barriers that prevent the successful entry of pregnant women into MAT programs. For example, only 26% of drug courts allow pregnant women to be treated with buprenorphine or methadone,[56] despite evidence showing that duration of MAT treatment is associated with an increased likelihood of family reunification. Moreover, some courts may use drug testing to confirm abstinence from illicit drugs and MAT before parents can be reunified with their children. Because women do the majority of child rearing, it may be important to note sex differences in clinical needs and treatment outcomes among clients being treated for an OUD. A recent systematic review concluded that women have a higher need for co-occurring treatment to address their mental health problems, and although there were few sex differences in treatment outcomes, women treated with buprenorphine may have lower relapse rates compared with male clients.[24]

Even when parents can access treatment for OUDs, it may be for an insufficient duration. Previous research has found that >50% of pregnant women who need SUD treatment receive it only during the postpartum period.[57] This finding highlights the need for programs that can provide ongoing services to ensure that parents achieve long-term recovery, which is pivotal for early childhood development.

Family Treatment

Although some programs may only integrate psychoeducational counseling to improve parenting skills, there are family-based treatment strategies that improve outcomes for parents and children.[13] The most effective family-based treatment approaches combine clinic-based counseling and home visits. For OUDs, recovery rates are shown to be better for people who receive MAT; this in turn

reduces parental use and improves family-level outcomes.[3] Families may be reluctant to embrace MAT if they perceive it as drug replacement; medications are often combined with psychosocial counseling.[58]

Cross-System Collaboration

Rural areas hardest hit by the opioid epidemic[59] often have limited access to buprenorphine treatment,[60] and clients in rural areas may encounter long waiting lists for MAT.[61] Nationally, there is insufficient capacity to meet the demand for MAT treatment,[62] and there are even fewer family-friendly treatment programs.[37] Parents with OUDs frequently have co-occurring psychiatric and medical conditions that complicate service delivery, particularly when treatment requires coordinated medication management. Parent–child reunification may be contingent upon parental engagement in OUD treatment and/or abstinence, while stigmatizing perceptions of MAT within drug courts and child welfare agencies can prevent access.[36] The ramifications of limited MAT access are significant because these medication are known to prevent overdose deaths,[63] and opioid abstinence rates may be <10% without medication.[64] Radel et al[37] note the need for multisystem agreement on parental progress toward recovery and for increasing the timeliness of family reunification or permanent placement. A total of 19 states have established state-funded SUD treatment programs that deliver services for pregnant women, with 17 states and the District of Columbia providing pregnant women priority access to treatment programs and 10 states prohibiting treatment programs from discriminating against them.[36] In addition, 18 states have enacted policies requiring health care providers to refer pregnant women to SUD treatment and, in some cases, to child protective agencies.[36,65]

Final Considerations

Navigation across the criminal justice, addiction treatment, and child welfare systems may be particularly challenging to individuals struggling with an OUD. Parents may experience shame from not being able to protect their children from their addiction. Children are the most vulnerable witnesses of the opioid epidemic, and compassion fatigue may be eroding communities' ability to effectively respond. Structural barriers and MAT stigma reduce access to effective treatment, while cross-system collaboration is difficult to coordinate. A recent analysis of media coverage of medication to treat OUD found that 15.6% of the national news stories between 2007 and 2016 reported infant or children exposure or neonatal abstinence syndrome.[66] Consequently, parents with OUDs, particularly mothers, may encounter even greater stigma.[19]

The overdose epidemic is dynamic, and the drugs involved have changed over time.[50] In recent years, there is increasing concern about methamphetamine-related overdose.[37] As concurrent opioid and methamphetamine use increases in some geographic areas, there may be increased risks of child exposure to toxic chemicals used in methamphetamine production.

CONCLUSIONS

Studies have found that children of parents with SUDs are at increased risk for abuse or neglect; involvement in the child welfare system; emotional, mental health, and academic problems; deficits in social skills; and overall impairment in functioning.[3,13,67] However, there has been limited national and international research that focuses specifically on how opioid misuse and OUDs affect children and adolescents. The majority of studies focus on maternal prenatal opioid exposure and neonatal abstinence syndrome, whereas less is known about early childhood development and the long-term adversities faced by children who witness a parent's overdose. There is a critical urgent need to expand OUD treatment, particularly family-based modalities, and to improve cross-system collaboration to reduce instability in children's lives. Parents need integrated long-term support and services to ensure sustained recovery, and adolescent prevention services need to be adequately funded to stop the cycle of opioid addiction.

CONFLICTS OF INTEREST

The authors have indicated that they have no conflicts of interest regarding the content of this article.

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REFERENCES

1. Orford J, Velleman R, Natera G, Templeton L, Copello A. Addiction in the family is a major but neglected contributor to the global burden of adult ill-health. *Social Sci Med*. 2013;78:70–77. Elsevier.
2. White WL, Daley D. *"Calling Attention to Opioid-Affected Families and Children." William L. White Blog, July 1, 2016*; 2016. http://www.williamwhitepapers.com/blog/2016/07/calling-attention-to-opioid-affected- families-and-children-william- white- and-dr- dennis- c-daley.html. Accessed May 13, 2019. Accessed.
3. Daley DC, Smith E, Balogh D, Toscaloni J. *Forgotten but Not Gone: The Impact of the Opioid Epidemic and Other Substance Use Disorders on Families and Children*. vol. 20. Commonwealth; 2018.
4. Hedegaard H, Bastian BA, Trinidad JP, Spencer M, Warner M. Drugs most frequently involved in drug overdose deaths: United States, 2011–2016. *NVSS*. 2018;67:1–13.
5. Centers for Disease Control and Prevention: National Center for Health Statistics. Drug Overdose Deaths in the United States, 1999–2017. https://www.cdc.gov/nchs/products/databriefs/db329.htm. Accessed May 13, 2015. Updated November 29, 2018.
6. Substance Abuse and Mental Health Services Administration. *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health (HHS Publication No. SMA 18-5068, NSDUH Series H-53)*. Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration; 2018. https://www.samhsa.gov/data/. Last accessed May 14 2019.
7. Lipari RN, Van Horn SL. Children living with parents who have a substance use disorder. *The CBHSQ Report. Rockville (MD): Substance Abuse and Mental Health Services Administration (US)*. 2017 Aug 24.
8. Guy GP, Zhang K, Bohm MK, et al. Vital signs: changes in opioid prescribing in the United States, 2006–2015. *MMWR*. 2017;66:697–704.
9. Allen JD, Casavant MJ, Spiller HA, Chounthirath T, Hodges NL, Smith GA. Prescription opioid exposures among children and adolescents in the United States: 2000–2015. *Pediatrics*. 2017;139. e20163382.
10. Gaither JR, Leventhal JM, Ryan SA, Camenga DR. National trends in hospitalizations for opioid poisonings among children and adolescents, 1997 to 2012. *JAMA Pediatr*. 2016;170:1195–1201.
11. Volkow ND, Frieden TR, Hyde PS, Cha SS. Medication-assisted therapies—tackling the opioid-overdose epidemic. *N Engl J Med*. 2014;370:2063–2066.
12. Kennedy-Hendricks A, Gielen A, McDonald E, McGinty EE, Shields W, Barry CL. Medication sharing, storage, and disposal practices for opioid medications among US adults. *JAMA Intern Med*. 2016;176: 1027–1029.
13. Barnard M, McKeganey N. The impact of parental problem drug use on children: what is the problem and what can be done to help? *Addiction*. 2004;99:552–559.
14. Feder KA, Letourneau EJ, Brook J. Children in the opioid epidemic: addressing the next generation's public health crisis. *Pediatrics*. 2019;143. pii: e20181656.
15. Suchman N, Marjukka P, Mayes L. *Parenting and Substance Abuse: Developmental Approaches to Intervention*. New York: Oxford University Press; 2013.
16. Salo S, Flykt M. In: Suchman Nancy, Pajulo Marjukka, Mayes Linda, eds. *The impact of parental addiction on child development. Parenting and Substance Abuse: Developmental Approaches to Intervention*. New York: Oxford University Press; 2013:195–210.
17. Conners NA, Bradley RH, Mansell LW, et al. Children of mothers with serious substances abuse problems: an accumulation of risks. *Am J Drug Alcohol Abuse*. 2004;29: 743–758.
18. Solis J, Shadur JM, Burns AR, Hussong AM. Understanding the diverse needs of children whose parents abuse substances. *Curr Drug Abuse Rev*. 2012;5: 135–137.
19. Mirick RG, Steenrod SA. Opioid use disorder, attachment, and parenting: key concerns for practitioners. *Child Adolesc Soc Work J*. 2016;33:547–557.
20. Conroy E, Degenhardt L, Mattick RP, Nelson EC. Child maltreatment as a risk factor for opioid dependence: comparison of family characteristics and type and severity of child maltreatment with a matched control group. *Child Abuse Negl*. 2009;33:343–352.
21. Stein MD, Conti MT, Kenney S, et al. Adverse childhood experience effects on opioid use initiation, injection drug use, and overdose among persons with opioid use disorder. *Drug Alcohol Depend*. 2017;179:325–329.
22. Sansone RA, Whitecar P, Wiederman MW. The prevalence of childhood trauma among those seeking buprenorphine treatment. *J Addict Dis*. 2009;28:64–67.

23. LeTendre ML, Reed MB. The effect of adverse childhood experience on clinical diagnosis of a substance use disorder: results of a nationally representative study. *Subst Use Misuse*. 2017;52:689–697.
24. Huhn AS, Berry MS, Dunn KE. Review: sex-based differences in treatment outcomes for persons with opioid use disorder. *Am J Addict*. 2019:1–16.
25. Mitchell KJ, Nolte K, Turner HA, Hamby S, Jones LM. Exposure to medication overdose as an adversity in childhood. *J Pediatr Nurs*. 2018;38:127–132.
26. Hoffman C. The mental impact of children witnessing parent overdose. *Fox News*; October 19, 2016. https://fox43.com/2016/10/19/the-mental-impact-of-children-witnessing-parents-overdose/. Accessed May 13, 2019. Accessed.
27. Feldman NNJ. *May require that students learn to administer OD-reversing drug. Newsworks Tonight*; July 11, 2018. https://whyy.org/segments/n-j-may-require-that-students-learn-to-administer-od-reversing-drug/. Last accessed March 27 2019.
28. Ellis J, Dowrick C, Lylod-Williams M. The long-term impact of early parental death: lessons from a narrative study. *J R Soc Med*. 2013;106:57–67.
29. Hawkins JD, Catalano RF, Miller JY. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychol Bull*. 1992;112:64.
30. Famularo R, Kinscherff R, Fenton T. Parental substance abuse and the nature of child maltreatment. *Child Abuse Neglect*. 1992;16:475–483.
31. Giordano PC. *Legacies of Crime: A Follow-Up of the Children of Highly Delinquent Girls and Boys*. New York: Cambridge University Press; 2010.
32. Taylor MF, Marquis R, Coall DA, Wilkinson C. Substance misuse-related parental child maltreatment: intergenerational implications for grandparents, parents, and grandchildren relationships. *J Drug Issues*. 2017;47:241–260.
33. Coall DA, Hilbrand S, Hertwig R. Predictors of grandparental investment decisions in contemporary Europe. *PLoS One*. 2014;9:1–10.
34. DeLisi M, Drury AJ, Elbert MJ. Parent exposure to drugs: a "new" adverse childhood experience with devastating behavioral consequences. *J Drug Issues*. 2018;49:91–105.
35. Paltrow LM, Cohen DS, Carey CA. Governmental responses to pregnant women who use alcohol or other drugs. Philadelphia, PA: women's Law Project and National Advocates for Pregnant Women. *Depaul J Health Care Law*. 2005;8:461. https://via.library.depaul.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1165&context=jhcl.
36. Guttmacher Institute. *Substance Use during Pregnancy*; 2017. https://www.guttmacher.org/state-policy/explore/substance-use-during-pregnancy. Last accessed May 14 2019.
37. Radel L, Baldwin M, Crouse G, Fhertner R, Waters A. Substance use, the opioid epidemic, and the child welfare system: key findings from a mixed methods study. *ASPE Res Brief*. 2018. https://aspe.hhs.gov/system/files/pdf/258836/SubstanceUseChildWelfareOverview.pdf. Last accessed May 23 2019.
38. Taplin S, Mattick RP. The nature and extent of child protection involvement among heroin-using mothers in treatment: high rates of reports, removals at birth and children in care. *Drug Alcohol Rev*. 2015;34:31–37.
39. Grella CE, Needell B, Shi R, Hser Y. Do drug treatment services predict reunification outcomes of mothers and their children in child welfare? *J Subst Abuse Treat*. 2009;36:278–293.
40. Choi S, Ryan JP. Co-occurring problems for substance abusing mothers in child welfare: matching services to improve family reunification. *Child Youth Serv Rev*. 2007;29:1395–1410.
41. Green BL, Furrer CJ, Worcel SD, Burrus SWM, Finigan MW. How effective are family treatment drug courts? Results from a 4-site national study. *Child Maltreat*. 2007;12:43–59.
42. Brook J, McDonald TP, Gregoire T, Press A, Hindman B. Parental substance abuse and family reunification. *J Soc Work Pract Addict*. 2010;10:393–412.
43. Banwell C, Bammer G. Maternal habits: narratives of mothering, social position and drug use. *Int J Drug Policy*. 2010;17:504–513.
44. Pihkala H, Sandlund M. Parenthood and opioid dependence. *Subst Abuse Rehabil*. 2015;6:33.
45. Hser YI, Evans E, Grella C, Ling W, Anglin D. Long-term course of opioid addiction. *Harv Rev Psychiatry*. 2015;23:76–89.
46. Comiskey CM. A 3-year longitudinal study comparing drug treatment outcomes for opioid users with and without children in their custodial care at intake. *J Subst Abuse Treat*. 2013;44:90–96.
47. McCabe SE, West BT, Teter CJ, Cranford JA, Ross-Durow PL, Boyd CJ. Adolescent nonmedical users of prescription opioids: brief screening and substance use disorders. *Addict Behav*. 2012;37:651–656.
48. Wu L, Blazer DG, Li T, Woody GE. Treatment use and barriers among adolescents with prescription opioid use disorder. *Addict Behav*. 2011;36:1233–1239.
49. Curtin SC, Tejada-Vera B, Warner M. *Drug Overdose Deaths Among Adolescents Aged 15-19 in the United States: 1999–2015*. NCHS Data Brief; 2017:282.
50. Hedegaard H, Minino AM, Warner M. *Drug Overdose Deaths in the*

United States, 1999–2017. vol. 329. NCHS Data Brief; 2018.
51. Hedegaard H, Warner M, Minino AM. *Drug Overdose Deaths in the United States, 1999-2016*. NCHS Data Brief; 2017:1–8.
52. Bohnert ASB, Roeder K, Ilgen MA. Unintentional overdose and suicide among substance users: a review of overlap and risk factors. *Drug Alcohol Depend*. 2010;110:183–192.
53. Kapusta ND, Tran US, Rockett IRH, et al. Declining autopsy rates and suicide misclassification: a cross-national analysis of 35 countries. *Arch Gen Psychiatry*. 2011;68:1050–1057.
54. Rockett IRH, Caine ED, Connery HS, et al. Discerning suicide in drug intoxication primacy of suicide notes and psychiatric history. *PLOS One*. 2018;13.
55. Chatterjee A, Larochelle MR, Xuan Z, et al. Non-fatal opioid-related overdoses among adolescents in Massachusetts 2012–2014. *Drug Alcohol Depend*. 2019;194:28–31.
56. Hall MT, Wilfong J, Huebner RA, Posze L, Willauer T. Medication-assisted treatment improves child permanency outcomes for opioid-using families in the child welfare system. *J Subst Abuse Treat*. 2016;71:63–67.
57. Wolfe EL, Guydish JR, Santos A, Delucchi KL, Gleghorn A. Drug treatment utilization before, during and after pregnancy. *J Subst Use*. 2007;12:27–38.
58. Kmiec J, Cornelius J, Douaihy A. In: Douaihy Antoine, Daley Dennis, eds. *Pharmacotherapy of substance use disorders. Substance use disorders: pittsburgh pocket psychiatry*. New York: Oxford University Press; 2013:169–212.
59. Rossen LM, Khan D, Warner M. Trends and geographic patterns in drug-poisoning death rates in the US, 1999–2009. *Am J Prev Med*. 2013;45:e19–e25.
60. Andrilla CHA, Coulthard C, Larson EH. Barriers rural physicians face prescribing buprenorphine for opioid use disorders. *Ann Fam Med*. 2017;15:359–362.
61. Sigmon SC. Access to treatment for opioid dependence in rural America: challenges and future directions. *JAMA Psychiatry*. 2014;71:359–360.
62. Jones CM, Campopiano M, Baldwin G, McCance-Katz E. National and state treatment need and capacity for opioid agonist medication-assisted treatment. *Am J Public Health*. 2015;105:e55–e63.
63. Larochelle MR, Bernson D, Land T, et al. Medication for opioid use disorder after nonfatal opioid overdose and association with mortality. *Ann Intern Med*. 2018;169:137–145.
64. Weiss RD, Potter JS, Fiellin DA, et al. Adjunctive counseling during brief and extended buprenorphine-naloxone treatment for prescription opioid dependence: a 2-phase randomized clinical trial. *Arch Gen Psychiatry*. 2011;68:1238–1246.
65. Jarlenski M, Hogan C, Bogen DL, Chang JC, Bodnar LM, Van Nostrand E. Characterization of U.S. state laws requiring health care provider reporting of perinatal substance use. *Women's Health Issues*. 2017;27:264–270.
66. Kennedy-Hendricks A, Levin J, Stone E, McGinty EE, Gollust SE, Barry CL. News media reporting on medication treatment for opioid use disorder amid the opioid epidemic. *Health Aff*. 2019;38:643–651.
67. Andreas-Burdzovic J, O'Farrell T. Longitudinal associations between fathers' heavy drinking patterns and children's psychosocial adjustment. *J Abnorm Child Psychol*. 2007;35:1–16.

Address correspondence to: Erin L. Winstanley, PhD, Department of Behavioral Medicine and Psychiatry, West Virginia University, 930 Chestnut Ridge Rd, Morgantown, WV 26505, United States. E-mail: erin.winstanley@hsc.wvu.edu