

PREGNANT WOMEN AND SUBSTANCE USE

Overview of Research & Policy in the United States

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Bridging the Divide:

A Project of the Jacobs Institute of Women's Health

February 2017

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INTRODUCTION

This paper examines the current literature and policy implications of substance use and substance use disorders among pregnant and parenting women. While this is not meant to serve as an exhaustive literature review on this topic, it seeks to describe: current research on health effects of substance use and substance use disorders on pregnant women¹ and their children; policies and programs that help ensure that pregnant women who use substances have access to the highest quality healthcare, including prenatal care; the current barriers to accessing treatment for substance use disorders for pregnant women, including those who are incarcerated; and the impact of laws and policies regarding substance use on pregnant women and families.

Strong evidence exists about the harmful effects of certain kinds of substance use, such as heavy drinking and smoking, while pregnant. Less is known about the maternal and fetal effects of moderate alcohol intake or of some other individual substances, such as cannabis, and it is difficult to develop a strong evidence base on their effects. It would be unethical for researchers to ask study participants to take drugs while pregnant in order to study their impacts, and it is challenging to attribute outcomes to specific drugs when so many women who use substances are using multiple substances simultaneously and also facing poverty, violence, and other known risk factors for poor health outcomes. Yet policies addressing substance use often assume that any and all substance use during pregnancy is harmful and establish harsh penalties that can discourage women who need treatment from receiving it, as well as create barriers to other services that could improve the health and well-being of pregnant and parenting women and their families. Thus, it is important to examine current research in this area and to create policies based on such research.

In the United States, policies regarding substance use have often developed in the absence of complete knowledge or appropriate consideration of the likely negative outcomes of criminalization. For example, when the Eighteenth Amendment instituted a prohibition on the production and sale of alcohol in 1920, lawmakers' intent was to decrease dangerous behavior that accompanied consumption of alcohol, but the next decade saw the development of a substantial black market for alcohol and a concomitant increase in organized crime. After just over a decade, the federal government reversed the policy in light of these unanticipated consequences. In modern times, a growing number of policymakers, advocates, and scholars have declared the country's current efforts to prohibit use of specific drugs a failure, as the toll from drug-trafficking violence has climbed and harsh penalties have fallen disproportionately on poor and minority drug users. Additionally, research has found that some drugs, such as cannabis, are associated with moderate benefits, and many states have decriminalized, and even legalized, cannabis use.

In contrast to punitive measures, a public health approach to substance use emphasizes harm reduction and treatment. It recognizes that, while substance use may have negative consequences,

¹ For simplicity, we use "pregnant women" throughout this paper to refer to those who are, or are biologically capable of becoming, pregnant. This may include individuals who do not identify as women.

imposing legal punishments on people with substance use disorders often leads to worse outcomes. It considers the sociocultural and neurological factors that put some populations at risk of substance use disorder and exacerbate substances' toll. Such a public health approach is especially important when addressing substance use disorder in women who are pregnant. Effective treatment can set women and their infants on a path to better health, while punitive approaches – including charging women with child abuse for using substances while pregnant, and/or removing their children from them – can create trauma and stress as well as barriers that make it less likely women will receive any healthcare services, including not only treatment for substance use itself but also other services that benefit maternal and infant health, such as prenatal care.

SUBSTANCE USE DISORDERS AND PREGNANT WOMEN

Not all substance use is problematic. For example, alcohol in moderation can be beneficial, whereas years of heavy drinking may cause substantial health damage, and driving while intoxicated is a major public health hazard. However, substance use disorders can have both long- and short-term impacts on the health of women and families.

The diagnostic criteria for substance use disorders² (SUDs) address impaired control, social impairment, risky use, tolerance, and withdrawal, and patients may be diagnosed with mild, moderate, or severe SUD depending on the number of criteria they meet (American Psychiatric Association [APA], 2013). (See Box 1 for more details.) Approximately 8% of U.S. individuals have a substance use disorder (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014a).

To address substance use disorder appropriately, it is useful to understand how addictive drugs affect the human brain. Addiction is a chronic disease of the brain, and develops as repeated drug administration triggers changes to portions of the brain involved with rewards and impulsivity. These changes make people's brains respond more to drug cues and less to non-drug rewards, while increasing sensitivity to stressful stimuli and weakening the ability to self-regulate (Volkow & Morales, 2015). Such changes make it especially difficult to stop using substances, even when people recognize the harmful effects of continued use.

Research has consistently found strong associations between substance use disorders and other mental health conditions, particularly anxiety and depression (Jane-Llopis & Matytsina, 2006). In the U.S., those with SUDs are up to 4.5 times more likely to also receive a diagnosis of another psychiatric disorder, compared to those without SUDs (Chen et al., 2011). Services for these co-occurring disorders are a recommended component of substance abuse treatment (SAMHSA, 2009).

² The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) uses the term “substance use disorders” (SUD) rather than “substance abuse” or “substance dependence,” which both appeared in the previous edition of the DSM (Wisner, Sit, Altemus, et al., 2017).

Studies have found that between one- and two-thirds of women diagnosed with a substance use disorder had histories of childhood physical and/or sexual assault. Among women with substance use disorders, studies have found that 30-59% had post-traumatic stress disorder (PTSD), in contrast to approximately 11% of women in the general population. For some women, substance use may be a form of “self-medicating” in response to trauma (Najavits, Weiss, & Shaw, 1997). Unaddressed trauma significantly increases the risk of SUD, as well as other diseases, and current research programs are underway to develop and disseminate trauma-informed care approaches to better serve those who have experienced trauma (SAMHSA, 2014b).

It is important to note that not all women who use substances during pregnancy have a substance use disorder, and evidence does not support the widely held assumption that all substance use during pregnancy carries a risk of adverse health outcomes in infants. However, use of some substances during pregnancy, including heavy alcohol use and some prescription drugs (used as prescribed or used illicitly), can affect a developing fetus. Pregnant women should be informed about the potential for negative outcomes associated with substance use both during and outside of pregnancy, without being pressured or coerced into either continuing or terminating pregnancies.

Reducing substance use can often benefit women’s long-term health as well as the health of their infants. In fact, pregnant women are often highly motivated to stop using substances (Center for Substance Abuse Treatment, 2009; Hull, May, Farrell-Moore, & Svikis, 2010; Jessup & Brindis, 2005), and many cease or reduce their substance use with little or no formal treatment (Jackson & Shannon, 2013; Jessup & Brindis, 2005). However, it is important to distinguish some substance use from a substance use disorder. Women with substance use that meets disorder criteria may find it especially difficult to reduce or stop substance use without treatment (Terplan et al., 2012).

CRIMINALIZATION AND OTHER PUNITIVE POLICIES

The history of the U.S. response to crack cocaine should serve as a cautionary tale when considering responses to the current opioid crisis and other new and ongoing SUD epidemics. In the 1980s, the U.S. government shifted drug control efforts from health to criminal justice and focused particular public attention on the use of crack cocaine. At the same time media outlets warned of an epidemic of “crack babies” suffering from severe damage due to their mothers’ drug use while pregnant. Subsequent research has debunked this myth. A 2011 meta-analysis published in JAMA concluded “there is no convincing evidence that prenatal cocaine exposure is associated with developmental toxic effects that are different in severity, scope, or kind from the sequelae of multiple other risk factors” (Frank et al., 2001).

The demonization of women who used crack while pregnant resonated with the public and created the political will to support policymakers’ efforts to impose a range of damaging policies, as Glenn explains:

“However devoid of empirical evidence, it was nevertheless a story of such powerful cultural resonance that it heavily contributed to the demonization of the poor urban underclasses: Americans who experience systemic poverty and joblessness and whose existence has never been captured by national unemployment statistics. This demonization in turn provided political support for increased law enforcement surveillance, an end to the Aid to Families with Dependent Children program, racially disparate extreme mandatory minimum sentencing legislation, and the continued support for a criminal justice approach to addressing substance abuse that by all accounts has failed to achieve its goals.” (Glenn, 2014)

A similar dynamic is at work today with respect to policy efforts to address opioid use. Women who use opioids while pregnant are being demonized amidst media reports on neonatal abstinence syndrome (NAS) (Copeland, 2014; Thomson-Deveaux, 2014) – although some commenters have noted that the depictions of mothers who used opioids in pregnancy, many of whom are White, are not as harsh as the descriptions of the mostly African-American mothers who used crack while pregnant (Cadet, 2012; Holloway, 2016). In this case, unlike the reporting on the effects of crack on infant health, NAS is an identified medical condition that requires appropriate treatment when it occurs. When treatment is available, there is good evidence that infants can recover safely and go on to good health (Finnegan, 2016). The existence of NAS, however, can be used to justify punitive policies that can result in women being incarcerated, forcibly detained in treatment facilities, or losing their children. Such policies are not limited to opioid use, and stigma and the fear of such consequences can discourage women from seeking care, including effective SUD treatment when needed (Finkelstein, 1994; Howell, Heiser, & Harrington, 1999; Roberts & Nuru-Jeter, 2010; Roberts & Pies, 2011; Schempf & Strobino, 2009; Stone, 2015).

Policy responses that fail to distinguish, or blur the line, between substance use and dependence risk imposing treatment on healthy individuals (i.e., treatment may not be medically appropriate) and violating the autonomy and legal rights of pregnant and parenting women. Similarly, responses that fail to consider the reason a pregnant woman or parent is using the substance and what her alternatives might be could inadvertently put the woman, her pregnancy, and her children at risk for greater harm. Pregnant women too often find themselves caught up in controversial policy debates, and women of color and poor women in particular are most affected by punitive state laws seeking control over a woman’s pregnancy. These laws often backfire, discouraging effective public health approaches and negatively affecting reproductive autonomy. A public health approach that emphasizes treatment access and harm reduction over punitive measures improves the likelihood of healthier outcomes for women and their children.

It is also important to consider substance use policies for pregnant women in the context of racial discrimination that has plagued broader drug policies in the U.S. Until recently, federal penalties for crack cocaine were 100 times harsher than those for powder cocaine (ACLU, 2007), even though they are pharmacologically the same drug. Urban communities of color, where crack cocaine is more common than the powder form, suffered far more severely as law enforcement targeted their

neighborhoods disproportionately and as those convicted of crack possession served longer prison terms than those sentenced for powder cocaine possession. These communities have borne a disproportionate share of the misery from the war on drugs (Drug Policy Alliance, 2016). These policies also perpetuate a vicious cycle, as those who are incarcerated and have substance use disorders often cannot access effective treatments for their conditions.

Current efforts to address opioid-related problems have included greater recognition of the need for treatment. Whether this change reflects lessons learned from problematic past policies or is driven by policymakers who respond differently to the current epidemic because many of those with opioid use disorders are White, it is a positive development and promotes a public health approach to this problem.

BOX 1. DIAGNOSING SUBSTANCE USE DISORDER

The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) provides criteria for diagnosing individual substance use disorders — e.g., Alcohol Use Disorder, Opioid Use Disorder, etc. “The essential feature of a substance use disorder is a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems,” the DSM-5 explains (APA, 2013).

The diagnosed severity of a SUD depends on how many in a list of 12 criteria a substance user meets. Two or three symptoms indicate a mild SUD, four or five a moderate SUD, and six or more a severe SUD. Criteria include taking the substance in larger amounts or for longer than originally intended; making multiple unsuccessful attempts to discontinue use; failing to fulfill major role obligations at work, school, or home due to substance use; and continuing to use the substance “despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated” by the substance (APA, 2013).

The final two criteria on the list of 12 address tolerance and withdrawal, but the DSM-5 notes that these criteria are not considered to be met for individuals using the substance under medical supervision (APA, 2013). A person prescribed an opioid for chronic pain and experiencing tolerance and/or withdrawal related to its use would not be considered to have a substance use disorder unless she met other criteria.

A PUBLIC HEALTH APPROACH: PREVENTION

It is worth considering what *preventive* strategies, drawing on the principles and learnings of public health, would look like, in contrast to policies that focus on law enforcement and punishment. These strategies could include prevention, early intervention, and treatment of substance use disorders in women of reproductive age. A prevention approach would be designed to address root causes rather than symptoms by developing and instituting policies and programs to help address the personal challenges that might lead women to seek “relief” by using substances in the first place, including the stresses of mental illness; trauma, including physical and emotional abuse; and the challenges of

living in poverty. It would measure success in terms of improved health outcomes for individuals and communities. The SAMHSA Continuum of Care diagram (below) illustrates a more holistic approach to behavioral health, which spans from community health promotion through recovery.

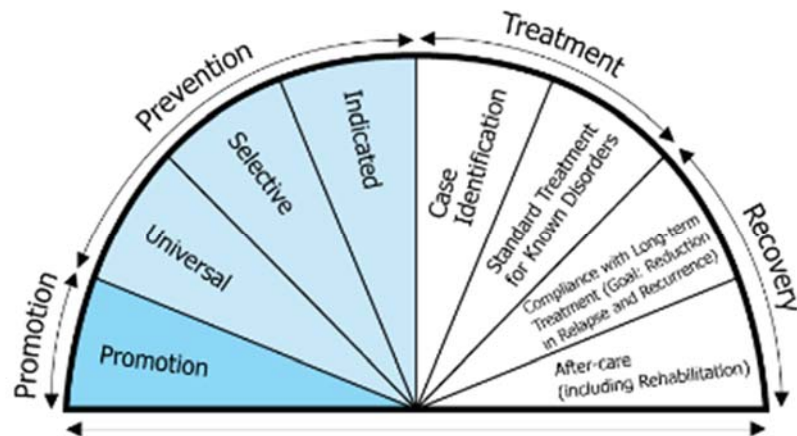


Figure 1. Behavioral Health Continuum of Care Model. Reprinted from SAMHSA. (2016). Prevention of Substance Abuse and Mental Illness. Retrieved from <https://www.samhsa.gov/prevention>.

OVERVIEW OF SUBSTANCES ADDRESSED IN THIS PAPER

Four classes of substances will be reviewed in this paper: Stimulants such as cocaine and methamphetamine; cannabis; opioids and opiates; and alcohol. These substances vary in their availability, legal status, and health impact on pregnant women and their children. The studies described in this paper only include human subjects. We review information on maternal effects and fetal/neonatal effects for each type of substance before addressing treatment and policy approaches. We do not discuss tobacco because extensive research on the health effects of tobacco use during pregnancy and policy approaches to this public health concern are thoroughly reviewed elsewhere (Banderali et al., 2015; B. D. Holbrook, 2016).

RESEARCH CHALLENGES

Clear, accurate data on maternal and fetal effects of substance use during pregnancy can be difficult to acquire because of ethical guidelines; criminalization of substance use, especially use while pregnant or parenting; and the common use of self-reported data, which can be affected by stigma and punitive policies. Pregnant women are considered a “vulnerable population” by the U.S. Department of Health and Human Services, so research regarding pregnant women is subject to special regulation requiring additional protection for the women. Additionally, there is an ethical problem with asking participants to maintain use of a drug that is known to cause any kind of negative side effect in the fetus, without seeking a less harmful alternative or making attempts to wean or quit. The gold standard of research, a randomized controlled trial, is impossible because it would be requiring some of the women in the study to take drugs that are presumed to harm fetuses.

Self-reported data is also very common in these studies, and this data can be inaccurate, particularly in cases when the study participants have reason to withhold or misrepresent the behavior being studied, as is the case with illicit drug use. For example, a pregnant woman may underreport any drug use, fearing judgment or legal action by the researcher. One study found only a 66% agreement between maternal reporting of drug use and positive results on meconium tests (a biological marker of drug use during pregnancy) (ElSohly et al., 1999; Lester et al., 2001). Many studies note that participants may be using more than one drug during their pregnancy or during the study period, which also makes it difficult to draw conclusions about any one specific drug.

It is also important to note that the existing knowledge base about the effects of substance use during pregnancy is limited by the kind of research that is conducted and published. Studies designed to identify potential benefits of substance use are rarely, if ever, funded. Studies of substance use during pregnancy that find no harm to a fetus or infant may be less likely to be published than those identifying harms (Koren, Graham, Shear, & Einarson, 1989).

COCAINE AND METHAMPHETAMINE (STIMULANTS)

Stimulants are a class of drug that includes cocaine, methamphetamine, caffeine, and some prescription drugs. In 2014, 1.6 million people in the U.S. used stimulants for non-medical purposes (Center for Behavioral Health Statistics and Quality, 2015a).³ In data from 2013, cocaine users began using at an average of 20.4 years old, and methamphetamine users at 18.9 years (SAMHSA, 2014c).

Stimulants work by increasing dopamine levels in the brain (National Institute of Drug Abuse [NIDA], 2014a). Dopamine is the chemical in the brain associated with pleasure, attention, and movement (NIDA, 2014a). At low levels (as with prescription medication), the increased dopamine can be beneficial, and can be used to treat ADHD, obesity, or asthma. The low levels mimic the slow release of dopamine that occurs naturally in the human body.

At higher levels (as with stimulants taken for non-medical or recreational purposes), the high levels of dopamine can cause euphoria, increased energy, confidence, and arousal (NIDA, 2014a; SAMHSA, 2016d). The higher doses may lead to negative drug effects, including increased heart rate, increased blood pressure, increased body temperature, decreased hunger, irregular heartbeat, and even seizures (SAMHSA, 2016c).

Cocaine is a nervous system stimulant derived from the coca plant. Cocaine powder can be snorted or it may be dissolved into water and injected. “Crack” cocaine is smoked. Methamphetamine is another powerful stimulant drug typically made in illegal laboratories using combinations of other stimulants and household products. It may take the form of pills or powders (regular methamphetamine) or glassy rocks (crystal methamphetamine), and may be taken orally, smoked, snorted, or injected (SAMHSA, 2016d). Chronic use of cocaine or methamphetamine can lead to loss of appetite and significant weight loss (Riezzo, Fiore, De Carlo, et al., 2012). In addition to being addicted to methamphetamine, chronic abusers may exhibit symptoms that can include significant anxiety, confusion, insomnia, mood disturbances, and violent behavior. They also may display a number of psychotic features, including paranoia, visual and auditory hallucinations, and delusions (NIDA, 2013). Long-term cocaine use is linked with increased risk of stroke (Fonseca & Ferro, 2013) and seizures. Studies also suggest that a wide range of cognitive functions such as sustaining attention, impulse inhibition, memory, and performing motor tasks may be affected (Spronk, van Wel, Ramaekers, & Verkes, 2013).

³ A note on sampling from the survey: “Estimated numbers of people refer to people aged 12 or older in the civilian, noninstitutionalized population in the United States. The numbers do not sum to the total population of the United States because the population for NSDUH does not include people aged 11 years old or younger, people with no fixed household address (e.g., homeless or transient people not in shelters), active-duty military personnel, and residents of institutional group quarters, such as correctional facilities, nursing homes, mental institutions, and long-term hospitals” (Center for Behavioral Health Statistics and Quality, 2015a). This may be an underestimate.

MATERNAL EFFECTS

Although some studies have documented a greater prevalence of health problems in pregnant women who use certain substances, particularly stimulants, these health problems may also be caused by other health factors that may be more prevalent in women who are more likely to use such drugs, rather than the drugs themselves.

Rates of placental abruption (premature separation of the placenta from the inside wall of the uterus) are higher in women who have used cocaine during their pregnancies (Rosenak, Diamant, Yaffe, & Hornstein, 1990), as are the rates of placental hemorrhages (especially when cocaine is taken with methamphetamine, another stimulant) (Oro & Dixon, 1987). Both events can be dangerous for the mother, and may end in fetal loss (Ananth & Wilcox, 2001). Cocaine use also leads to higher blood pressure, which is one of the biggest risks to maternal health during a pregnancy and may affect the mother after pregnancy as well.

Mothers who used cocaine during their pregnancies may be at slightly higher risk for mood disorders postpartum. One study found that maternal psychological distress postpartum was 20% higher in women who used cocaine than in their non-using high-risk counterparts (Singer et al., 2002). A smaller study credits the depressed mood of postpartum cocaine-using mothers to a lower level of circulating oxytocin (Light et al., 2004).

Maternal and fetal effects of methamphetamine are like those of cocaine, as both are the same class of drugs and affect the body in a similar way. It is not clear whether methamphetamines alone can cause pregnancy complications, such as placental hemorrhages and raised blood pressure (Oro & Dixon, 1987). Studies have found that up to 89% of women who use methamphetamine also use other drugs concurrently – including legal drugs such as alcohol and tobacco (Della Grotta et al., 2010; Good, Solt, Acuna, Rotmensch, & Kim, 2010) — both of which have been shown to increase a woman’s risk of experiencing pregnancy complications.

Amphetamine use can reduce breast milk supply (Anderson, 1991). The American College of Obstetricians and Gynecologists (ACOG) recommends that women who are using amphetamines do not breastfeed for two main reasons: the concentration of amphetamines are higher in breast milk than in plasma, and street drugs often include unknown substances that may further harm both the mother and child (ACOG, 2011).

FETAL/NEONATAL EFFECTS

The fetal and neonatal effects of cocaine, as with many other illegal drugs, are difficult to measure due to ethical considerations of researchers, self-reported data, and confounding effects of other concurrent exposures, including other drugs a woman may take and aspects of her environment. Moreover, the published research may reflect some bias because research that found no adverse effects has been shown to be significantly less likely to be accepted for

publication (Koren, Graham, Shear, & Einarson, 1989).

In the literature, cocaine use is most often associated with fetal growth decrements and has shown dose-response outcomes (Behnke & Smith, 2013; Schempf, 2007). Cocaine use during the period of pregnancy where the brain and nervous system are developing may result in permanent changes to the brain and nervous system (Stanwood & Levitt, 2004). Studies have linked cocaine use to underdevelopment in the parts of the brain that regulate attention and executive functioning (Frank, Augustyn, Knight, Pell, & Zuckerman, 2001).

Methamphetamine use is associated with babies that are small for their gestational age (ACOG, 2011; Eriksson, Jonsson, Steneroth, & Zetterström, 2008; Smith et al., 2003). Methamphetamine exposure in utero may result in smaller brain volume, which affects attention and memory. One small study found that children exposed to methamphetamine in utero had smaller brain volumes in the part of the brain responsible for sustained attention and verbal memory. The children also scored lower on tests of attention, visual motor integration, verbal memory, and long-term spatial memory (L. Chang et al., 2004).

LONG-TERM EFFECTS OF CRACK COCAINE: NOT WHAT WAS FEARED

Because of the “crack baby” myth of the late 1980s, more long-term data exist for gestational cocaine exposure than many other drugs. Researchers have generally concluded that the fear of long-lasting health and development implications for children born to mothers who use cocaine is unfounded. Many studies of children whose mothers used cocaine during pregnancy involved women in poverty or using public assistance. One of the first researchers to investigate the long-term effect of in-utero cocaine exposure, Hallum Hurt, noted that “poverty is a more powerful influence on the outcome of inner-city children than gestational exposure to cocaine” (Farah et al., 2006; FitzGerald, 2013).

A systematic review of 31 studies found women who used cocaine during pregnancy were significantly more likely to experience preterm birth and to give birth to infants who had low birthweight or were small for their gestational age. The researchers also found that infants born to a mother who used cocaine had early gestational age at delivery (approximately 1.5 weeks earlier) and reduced birthweight (approximately 1 pound lighter) (Gouin, Murphy, & Shah, 2011).

An earlier systematic review of 36 studies assessing the neonatal impact of maternal cocaine use found little evidence of long-lasting negative impacts when controlling for other factors, including maternal alcohol and tobacco use. The review found that neonatal and long-term effects of cocaine were largely exaggerated. After controlling for confounders across studies, the most consistent effects of cocaine were fetal growth decrements and below optimal neonatal state regulation and motor performance (Frank et al., 2001). Differences in infant movement and temperature regulation were only observed up to seven months of age.

Another review of 31 studies found that compared to non-drug-exposed infants, cocaine-exposed infants had higher rates of major malformations, low birthweight, prematurity, placental abruption, premature rupture of membrane (PROM), and lower mean birthweight, length, and head circumference (Addis, Moretti, Ahmed Syed, Einarson, & Koren, 2000). However, importantly, most of the negative effects were not observed when cocaine-exposed infants were compared to infants exposed to other illicit drugs. The researchers here concluded that only the risk of placental abruption and premature rupture of membranes were statistically associated with cocaine use itself.

Hurt and others have published many studies on a cohort of low-SES children, approximately half of whom were exposed to cocaine in utero, at different stages throughout their lives. Overall, the children do not differ in their health, development, or academic achievement. Children at two-and-a-half years old showed no differences in language development compared to their peers (Hurt, Malmud, Betancourt, Brodsky, & Giannetta, 1997). At four years old, the case and control groups did not differ in IQ scores (Hurt, Malmud, Betancourt, Braitman, Brodsky, & Giannetta, 1997). No neurological differences were associated with gestational cocaine exposure at six years old (Hurt, Giannetta, Brodsky, Malmud, & Pelham, 2001). Children had similar rates of successful grade progression through grades 1-4 and similar GPAs, as well as similar rates of reading below grade level and having below average standardized test scores (Hurt, Brodsky, Roth, Malmud, & Giannetta, 2005). At 10 years old, the children showed subtle problems in attention and impulse control that may be associated with maternal cocaine use in utero. Although the discrepancies were relatively minor, the researchers noted that “exposed children [were] at higher risk of developing significant behavioral problems as cognitive demands increase” (Savage, Brodsky, Malmud, Giannetta, & Hurt, 2005). Compared to their non-exposed peers, adolescents exposed to cocaine in utero showed no evidence of the exposure affecting inhibitory control, working memory, or receptive language, but exposure was associated with slightly worse incidental face memory and word memory (Betancourt et al., 2011). A different study of the same cohort of teenagers showed no difference in pre-frontal cortex activation on functional magnetic resonance imaging (fMRI) scans (Hurt et al., 2008).

OPIOIDS AND OPIATES

Opioids are a class of drug typically used for pain relief whose effect on the body is similar to that of opium, a narcotic substance derived from a specific poppy plant. Opiates are drugs derived from opium. At one time “opioids” referred only to synthetic opiates (drugs created to emulate opium but chemically different). Now the term “opioid” is used for the entire family of opiates (including natural, synthetic, and semi-synthetic), which bind to opioid receptors in the brain and body (NIDA, 2016).

The following prescription pain relievers are opioids:

- Codeine and hydrocodone (brand name Vicodin®)
- Fentanyl (brand names Actiq®, Duragesic®, Sublimaze®)

- Morphine (brand names Kadian®, Avinza®)
- Oxycodone (brand names OxyContin®, Percocet®)
- Tramadol (brand names ConZip®, Ryzolt®, Ultram®)

Heroin is a drug made from the opioid morphine. In some countries it is available legally, by prescription from a healthcare provider, but not in the United States. Heroin can be injected, smoked, swallowed, or sniffed. All routes of administration deliver the drug to the brain very rapidly, which contributes to its health risks and to its high risk for addiction (NIDA, 2014b). When it enters the liver, heroin is converted back into morphine, which binds to molecules on cells known as opioid receptors. These receptors are located in many areas of the brain (and elsewhere in the body), especially those involved in the perception of pain and in reward. Opioid receptors are also located in the brain stem, which controls automatic processes critical for life, such as blood pressure, arousal, and respiration.

Heroin overdoses, which often result from using heroin in combination with another drug, involve a suppression of breathing. This can reduce the amount of oxygen that reaches the brain, a condition called hypoxia. Hypoxia can have short- and long-term psychological and neurological effects, including coma and permanent brain damage.

According to the Substance Abuse and Mental Health Services Administration (SAMHSA), opioids also have “great potential for misuse” (SAMHSA, 2016b). In 2014, 1.9 million people had a substance use disorder involving prescription pain relievers and 586,000 had a substance use disorder involving heroin (Center for Behavioral Health Statistics and Quality, 2015a). The prescription-to-heroin path is described as resulting from easier heroin availability when individuals are unable to obtain their preferred prescription opioid (Compton, Jones, & Baldwin, 2016).

Researchers are investigating the long-term effects of repeated opioid use on the brain. One result is tolerance, in which more of the drug is needed to achieve the same intensity of effect. Another result is dependence, characterized by the need to continue use of the drug to avoid withdrawal symptoms. Studies have shown heroin use to cause some deterioration of the brain’s white matter, which may affect decision-making abilities, the ability to regulate behavior, and responses to stressful situations (Darke, 2013; NIDA, 2014b).

Heroin use is associated with fatal overdose, miscarriage, and infectious diseases such as hepatitis and HIV (NIDA, 2014c). Chronic users may develop collapsed veins, infection of the heart lining and valves, abscesses, constipation and gastrointestinal cramping, and liver or kidney disease. Pulmonary complications, including various types of pneumonia, may result from the poor health of the user as well as from heroin’s effects on breathing. In addition to the effects of the drug itself, street heroin often contains toxic contaminants or additives that can clog blood vessels leading to the lungs, liver, kidneys, or brain, causing temporary or permanent damage to vital organs (NIDA, 2014b).

Rates of heroin use and heroin overdose have been increasing in the U.S. In 2014, 435,000 people over age 12 in the U.S. used heroin (Center for Behavioral Health Statistics and Quality, 2015a). Prescription opioids are the leading cause of fatal drug overdoses, with nearly 30,000 deaths in 2014 (accounting for three-fifths of all fatal drug overdoses) (Centers for Disease Control and Prevention [CDC], 2015a). Multiple first responder agencies have encouraged or required personnel to carry Naloxone (brand name Narcan®) to treat opioid overdoses in emergency situations.

MATERNAL EFFECTS

Opioid use in pregnancy includes the appropriate use of opioid medication under a prescriber's care, the misuse of opioid prescription medication, and the use of heroin. The social circumstances associated with illicit drug use put a pregnant woman, particularly a low-income pregnant woman without adequate financial resources to obtain drugs safely, at risk of engaging in activities such as prostitution, theft, and violence. Such activities often expose women to sexually transmitted infections and violence. Punitive responses to opioid use put pregnant women at additional risk for harm in the form of legal consequences, including loss of child custody, criminal proceedings, or incarceration (ACOG & American Society of Addiction Medicine [ASAM], 2012).

Pregnant women who misuse substances are also at high risk for malnourishment (Finnegan, 2016), often lacking adequate obstetric care (NIDA, 2014b) and remaining in a violent environment (Jansson et al., 1996). Among pregnant women who continue intravenous heroin consumption, the risks of medical complications such as infectious diseases, endocarditis, abscesses, and sexually transmitted infections are increased (Winklbaur et al., 2008).

FETAL/NEONATAL EFFECTS

Prenatal opioid exposure may be associated with increased risk of low birth-weight, intrauterine growth restriction, neonatal withdrawal, and negative newborn neurobehavioral outcomes (Behnke & Smith, 2013). Infants prenatally exposed to opioids, including methadone or buprenorphine within the context of addiction treatment, may experience neonatal abstinence syndrome (NAS) (Kennedy-Hendricks, McGinty, & Barry, 2016). Multiple studies have found an association between first-trimester use of codeine and congenital heart defects. Infants born with NAS also are more likely to exhibit intrauterine growth restriction, lower birth weight, and smaller head circumference, and to be smaller for gestational age (Wendell, 2013). (See Box 2 for more details.)

Compared to the relative effects of alcohol, cocaine, or benzodiazepine abuse during pregnancy, opioids do not disturb the development of the fetus or harm living cells (Winklbaur et al., 2008). These findings support treatment protocols that avoid detoxification. In their 2014 study, Whiteman and colleagues found maternal opioid use during pregnancy was associated with increased odds of threatened preterm labor, early onset delivery, and stillbirth (Whiteman et al., 2014).

BOX 2. NEONATAL ABSTINENCE SYNDROME

Neonatal Abstinence Syndrome (NAS) occurs when a child born to a substance-using mother develops a passive dependency to the substance, and expresses symptoms once the supply of the drug is cut off after birth (Finnegan, 2016).

NAS is usually apparent within the first 24-72 hours after birth. These symptoms are temporary and generally last a few weeks.

NAS symptoms fall into four clinical categories: central nervous system signs (including irritability, crying, tremors, and seizures), gastrointestinal signs (including vomiting and diarrhea), respiratory signs (including abnormal or rapid breathing), and autonomic nervous system signs (including sneezing, tearing, yawning, and sweating) (Finnegan, 2016).

Several factors affect whether an infant will experience NAS, including separation from the mother and genetics. NAS can occur in the infants of women who are currently undergoing medication-assisted treatment and are no longer using drugs illicitly. Prescription opioid dependency medication, such as methadone, also can cause the infant to experience NAS (Finnegan, 2016).

ALCOHOL

Although alcohol is legal for those 21 or over, it can still be a dangerous substance with excessive use. In 2014, approximately one-fourth of people 12 or older were binge alcohol users (defined as having five or more drinks in one sitting in the last month) (Center for Behavioral Health Statistics and Quality, 2015a), and approximately 6% of people were heavy alcohol users (defined as having five or more binge days in the last month). More than one-third of young adults (ages 18-25) in 2014 were binge alcohol users, and approximately 1 in 10 were heavy alcohol users (Center for Behavioral Health Statistics and Quality, 2015a). Binge drinking is linked to worse health effects than moderate drinking, and nearly one-fourth of people aged 12 or older have had a binge drinking episode within the last month of being surveyed (Center for Behavioral Health Statistics and Quality, 2015a).

MATERNAL EFFECTS

Research shows that women start to have alcohol-related problems at lower drinking levels than men do (McGarry & Cyr, 2005). Alcohol interferes with the brain's communication pathways, and can affect the way the brain looks and works. These disruptions can change mood and behavior, and make it harder to think clearly and move with coordination.

Data from prenatal clinics and postnatal studies suggest that 20-30% of women do drink at some time during pregnancy (Pruett, Waterman, & Caughey, 2013). In 2016, the CDC released a report on women's contraceptive use and drinking habits, which was used to calculate how many women were "at risk of exposing their developing baby to alcohol because they are drinking, sexually active, and not using birth control to prevent pregnancy" (CDC, 2016). This report was generally interpreted through the media as a recommendation that women at risk for pregnancy who are not using birth control consume no alcohol. A director quoted in the report says, "[women] may not be aware that drinking any alcohol at any stage of pregnancy can cause a range of disabilities for their child" (CDC, 2016). Many criticized the advice as being overly broad, impractical, or suggesting that women's reproductive roles take precedence above other aspects of their lives. Some noted that the absence of an established safe level of drinking does not mean that no such level exists, but that research to date has not identified it.

FETAL/NEONATAL EFFECTS

Prenatal alcohol exposure is a leading preventable cause of birth defects and neurodevelopmental abnormalities in the United States. Alcohol has teratogenic potential, meaning that it can disturb fetal development, especially affecting the fetal central nervous system with potentially severe life-long consequences (Winklbaur et al., 2008). This disruption can cause a range of developmental, cognitive, and behavioral problems, which can appear at any time during childhood and last a lifetime. The most profound effects of prenatal alcohol exposure are brain damage (including anatomic and structural changes and decrease in size) and the resulting impairments in behavioral and cognitive functioning (Pruett et al., 2013).

Growth restriction is one of the hallmarks of prenatal alcohol exposure and must be present to establish a diagnosis of Fetal Alcohol Syndrome. It is important to note that most infants born with alcohol exposure do not have FAS. However, even a moderate amount of alcohol use during pregnancy is associated with a decrease in size at birth (Behnke & Smith, 2013). Fetal alcohol syndrome is an umbrella term describing the range of effects that can occur in an individual prenatally exposed to alcohol. The main features of Fetal Alcohol Syndrome are microcephaly (with severe brain effects); prenatal and growth restriction; and facial anomalies. The overall effects of fetal alcohol exposure are designated as Fetal Alcohol Spectrum Disorder (FASD), with FAS as the "tip of the iceberg" (Kowalsky & Verhoef, 1999). Prenatal alcohol exposure is linked with significant attention problems in children as well as adaptive behavior problems spanning early childhood to adulthood (Shankaran et al., 2007), including disrupted school experiences, delinquent and criminal behavior, and substance abuse.

BOX 3. FETAL ALCOHOL SPECTRUM DISORDERS

Fetal alcohol spectrum disorders (FASDs) are a group of conditions that can occur in a person whose mother drank alcohol during pregnancy (CDC, 2015b). These effects can include physical problems and problems with behavior and learning. Often, a person with an FASD has a mix of these problems. Different terms are used to describe FASDs, depending on the type of symptoms.

The term fetal alcohol effects (FAE) was previously used to describe intellectual disabilities and problems with behavior and learning in a person whose mother drank alcohol during pregnancy. In 1996, the Institute of Medicine (IOM) replaced FAE with the terms alcohol-related neurodevelopmental disorder (ARND) and alcohol-related birth defects (ARBD) (Stratton, Howe, & Battaglia, 1996).

- **Fetal Alcohol Syndrome (FAS):** FAS represents the most involved end of the FASD spectrum. Fetal death is the most extreme outcome from drinking alcohol during pregnancy. People with FAS might have abnormal facial features, growth problems, and central nervous system (CNS) problems. People with FAS can have problems with learning, memory, attention span, communication, vision, or hearing. They might have a mix of these problems. People with FAS often face difficulties in school and trouble getting along with others.
- **Alcohol-Related Neurodevelopmental Disorder (ARND):** People with ARND might have intellectual disabilities and problems with behavior and learning. They might do poorly in school and have difficulties with math, memory, attention, judgment, and poor impulse control.
- **Alcohol-Related Birth Defects (ARBD):** People with ARBD might have problems with the heart, kidneys, or bones or with hearing. They might have a mix of these.

MARIJUANA (CANNABIS)

Marijuana (including hashish, or hash, a compressed or purified form of the cannabis plant) was the most commonly used illicit drug in 2014, and it is typically smoked or ingested. In one study, over 80% of all people who used at least one type of drug for non-medical purposes in the last month used marijuana (Center for Behavioral Health Statistics and Quality, 2015a). The usage rate in individuals 12 and over has increased to 48.4%, up from 5.8-6.2% from 2002-2007 (Center for Behavioral Health Statistics and Quality, 2015a).

The primary active compound in marijuana is trans-delta-9-tetrahydrocannabinol (D9-THC, or simply THC). THC attaches to cannabinoid receptors located throughout the body. The

cannabinoid receptor most associated with the feeling of being “high” is primarily located in the brain. The levels of active compounds are measured in state-regulated marijuana dispensaries, but are typically unknown in marijuana bought on the street.

Twenty-six states and the District of Columbia currently have laws legalizing marijuana in some form. Three other states will soon join them after recently passing measures permitting use of medical marijuana (Governing.com, 2016).

MATERNAL EFFECTS

Women who use marijuana during pregnancy tend to be younger and of lower parity, and to have higher rates of cigarette smoking, alcohol, caffeine, and illicit drug use during pregnancy than mothers who do not use marijuana (Fergusson, Horwood, & Northstone, 2002). Cannabinoids may have a relaxant effect on a woman’s myometrium (a layer of muscle in the uterus) while she is pregnant, although it has not been found to affect rates of premature labor (Dennedy et al., 2004). Women have reported cannabis as being effective against morning sickness during pregnancy (Westfall, Janssen, Lucas, & Capler, 2006).

FETAL/NEONATAL EFFECTS

Conner et al. utilized a meta-analysis of 31 studies to provide insight into the fetal and neonatal effects of marijuana. Although the unadjusted data showed a correlation between marijuana use and low birthweight, there was no statistically significant increased risk of low birthweight when the researchers controlled for use of tobacco and other confounders (Conner et al. 2016). An earlier analysis of studies of infant outcomes and maternal marijuana use was unable to conclude that maternal marijuana use caused lower birthweight, morphologic abnormalities, or abnormal neurobehavioral outcomes (Day & Richardson, 1991). This analysis found mixed evidence for all three measures, but none was consistent enough to establish a causal relation. Another study of approximately 12,000 pregnant women, 600 of them marijuana users, found that marijuana use was not associated with increased risk of perinatal mortality or morbidity. The researchers found an association between marijuana use during pregnancy and low infant birthweight, but the association was not statistically significant after controlling for other confounding factors (Fergusson et al., 2002). However, frequent and regular use of cannabis throughout pregnancy may be associated with small but statistically detectable decrements in birthweight. Several studies were complicated by women’s use of other drugs when the researchers were trying to find a relationship for marijuana alone. There is no proven causal link for any effect of prenatal cannabis exposure.

BOX 4. PREGNANT WOMEN IN RESEARCH

Pregnant women are typically not included in the prescription drug research process, due to ethical concerns. The Code of Federal Regulations includes ten requirements for involving pregnant women as research participants, including conditions of reducing risk to the mother and child, proving direct benefit to the mother, performing scientifically appropriate preclinical studies (e.g., studies on pregnant animals or nonpregnant women), and having researchers take no part in the decision of whether or not to terminate the pregnancy (Research Involving Pregnant Women or Fetuses, 2009). However, the dearth of studies involving pregnant women is problematic for pregnant or breastfeeding women and their babies, particularly for studies of new drugs under development where there is limited clinical experience with this group to give indications of safety. Some, including Lyerly et al., identify the four main reasons why an ethical obligation exists to *include* pregnant women in clinical research: women's need for effective treatment during pregnancy, fetal safety, doctors' unease in prescribing needed medications, and broader issues of justice and access to benefits of research participation (Lyerly, Little, & Faden, 2008).

The U.S. Food & Drug Administration (FDA) offers a master list of Pregnancy Exposure Registries used to track information about prescription drugs and vaccines that may affect pregnancies. A pregnant woman who is currently taking prescription drug(s) or currently has a medical condition may sign up for the registry, and will intermittently be asked about her status during the pregnancy and her and her baby's status postpartum. Studies using registry data are particularly useful for medical conditions that require ongoing or episodic treatment, such as asthma, epilepsy, or hypertension (FDA CDER 2004).

INTERVENTIONS AND COMPONENTS

Many evidence-based methods of SUD treatment exist and are offered in SUD treatment programs. The most effective treatments will be culturally appropriate, women-centered, and meet women’s complex needs. These include treating other physical and mental health conditions and providing support to reduce common barriers to treatment, such as challenges with childcare and transportation. Research has shown that harm reduction strategies, aimed at reducing the negative consequences of drug use, can also be a valuable component of treatment for people with substance use disorders. Box 7, from SAMHSA’s 2009 Treatment Improvement Protocol, shows recommended services to include in treatment options for women. Such comprehensive services for pregnant women with SUD have been recommended for decades (Finnegan, Hagan, and Kaltenbach, 1991). However, it can be difficult for women, and pregnant women in particular, to find and access treatment programs designed to meet their needs. These difficulties can be compounded for women who are un- or under-insured.

Pharmacologic treatment options are rare, except for opioid use disorders. No drugs are currently approved by FDA to treat cocaine, methamphetamine, or cannabis addiction. The drugs that are approved to treat alcohol addiction – Acamprosate, Disulfiram, and Naltrexone – have not been tested in samples of pregnant women, and are not widely recommended, as the benefits have not been clearly established for all. Pregnant women have not been participants in the large-scale studies of buprenorphine and methadone, but both drugs have been tested in pregnant women and found to have low risks. However, these drugs may cause Neonatal Abstinence Syndrome in the infant (referred to as “neonatal opioid withdrawal syndrome” in the FDA label).

BOX 5. INTERVENTION DEFINITIONS

The following types of interventions may be used together or separately as parts of comprehensive treatment approaches. This is not an exhaustive list of treatment options.

Cognitive Behavioral Therapy (CBT) – CBT focuses on helping clients identify and avoid situations in which they are likely to use substances and to “cope more effectively with the variety of situations, feelings, and behaviors related to their substance abuse” (SAMHSA, 1999).

Community Reinforcement Approach (CRA) – CRA works to reduce the reinforcement clients receive from substance use and increase reinforcement from alternative activities that are incompatible with substance use. Alternatives can include vocational, family, social, and recreational activities, and programs may make access to such activities contingent on remaining drug-free (SAMHSA, 1999).

Contingency Management – Based on analysis of the situations surrounding substance use, contingency management associates evidence of substance use with negative consequences and abstinence-promoting

behaviors with positive reinforcers. For instance, some programs reward participants with vouchers that have monetary value when they submit drug-free urine samples (SAMHSA, 1999).

Medication-Assisted Therapy (MAT) – The term “MAT” typically refers to using methadone or buprenorphine as part of treatment for opioid use disorder; this is the standard of care for opioid use disorder in pregnancy. Medication can also be part of treatment for other SUDs, although research involving pregnant women is insufficient on medications other than methadone and buprenorphine.

Motivational Interviewing – Often used in brief interventions, motivational interviewing involves using a gentle, empathic style to “constructively and compassionately explore ambivalence about change and motivation for recovery” (SAMHSA, 2009).

Screening, Brief Intervention, and Referral to Treatment (SBIRT) – Healthcare providers screen patients for substance use disorders. For those who screen positive, the same providers deliver a brief intervention – such as counseling or motivation interviewing – and provide a referral for additional treatment (SAMHSA, 2009). Brief interventions “aim to investigate a potential problem and motivate an individual to begin to do something about [her] substance abuse” (SAMHSA, 1999). However, research calls into question the efficacy of SBIRT (e.g., Glass et al., 2015; Saitz, 2015), and routine screening of pregnant women for substance use risks increasing child protective services (CPS) referrals without achieving a meaningful increase in the number of women who receive effective SUD treatment (Roberts & Nuru-Jeter, 2012).

12-Step Programs and Other Support Groups – Programs such as Alcoholics Anonymous (AA) are peer-facilitated groups that offer support for establishing abstinence, developing recovery skills, and maintaining recovery, although there is limited evidence of the effectiveness for women. AA was established by, and primarily for, men, and the model’s limited focus on cultural and social issues relevant to women’s substance use may serve as a barrier for some women. Women-only support groups and self-help programs, such as the Women for Sobriety program for alcohol-dependent women, are alternatives to AA’s 12-step model (SAMHSA, 2009).

SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT (SBIRT)

SBIRT is a recommended approach for providers to use with pregnant women (Center for Substance Abuse Treatment, 2009; Wisner, Sit, et al., 2017), but evidence to support its use in pregnant women and other populations is lacking. For instance, in 2013 the U.S. Preventive Services Task Force (USPSTF) “found adequate evidence that brief behavioral counseling interventions are effective in reducing heavy drinking episodes in adults engaging in risky or hazardous drinking” but reported that evidence in pregnant women was more limited and that the evidence was insufficient to make a recommendation on brief interventions for adolescents (Moyer, 2013). However, a systematic review and meta-analysis of brief alcohol interventions in medical settings found a lack of evidence that they increase the use of alcohol-related services (Glass et al., 2015). Saitz warns that the evidence of brief alcohol interventions on clinically important outcomes is limited, and that SBIRT may have limited effectiveness in patients with the most unhealthy use of alcohol and those

who are ambivalent about change (Saitz, 2015). The USPSTF is in the process of updating its recommendations on screening and behavioral counseling interventions for unhealthy alcohol use in pregnant women (U.S. Preventive Services Task Force, 2016).

ACOG stresses the importance of applying routine screening equally to all people using validated questionnaires or conversations with patients (ACOG, 2015). Brief interventions can consist of a provider advising a patient to stop drug use while pregnant, or involve psychoeducational counseling. Referrals to inpatient or outpatient care should be based on the severity of the condition and patient needs (Wisner et al., 2017) – e.g., women who meet the criteria for SUD may benefit from referral to a comprehensive treatment program. Directly scheduling an appointment for a woman to see a specific treatment provider (direct linkage) can double the chances of the woman seeing the provider in question (Haug, Duffy, & McCaul, 2014; Howell & Chasnoff, 1999).

Some researchers and advocates caution that it can be harmful to use SBIRT routinely with pregnant women in the absence of evidence of its effectiveness for this population. If SBIRT is not leading to women receiving effective treatment, then the screening essentially functions as surveillance for reporting women to child protective services rather than as a path to better health (Roberts & Nuru-Jeter, 2012). Screening may also result in women who disclose substance use being forcibly detained in treatment facilities (Eckholm, 2013).

DETOXIFICATION

Detoxification from alcohol or addictive drugs has typically involves three to five days in an inpatient setting, with medical treatment for symptoms of withdrawal (Center for Substance Abuse Treatment, 2009). The setting and duration of detoxification can vary based on the substance in question and the expected severity of withdrawal. Pregnant patients who are undergoing detoxification should do so slowly and in consultation with an obstetrician. An expert panel convened by SAMHSA suggests “that for alcohol, sedative-hypnotic, and opioid withdrawal syndromes, hospitalization (or some form of 24-hour medical care) is often the preferred setting for detoxification” (Center for Substance Abuse Treatment, 2006). However, not all communities offer detoxification services, and those available may not treat pregnant women because they lack the necessary obstetrical support (Center for Substance Abuse Treatment, 2009). As discussed in “Opioids and Opiates” section below, detoxification is not advised for pregnant women with opioid dependence.

HARM REDUCTION

Harm reduction approaches focus on reducing drug-related harm without requiring complete cessation of substance use. The Society of Obstetricians and Gynecologists of Canada practice guidelines state, “Perinatal healthcare providers can make a significant impact on improving pregnancy outcomes by providing non-judgmental supportive care within a harm reduction model to address substance use issues and social determinants of health” (Wong et al., 2011). Needle

exchanges are perhaps the best-known example of harm reduction in the public health discipline, allowing injection drug users to reduce their risk of acquiring HIV and other diseases transmitted with shared needles. For pregnant women who use substances, harm reduction could include reducing the amount of substance used or the frequency of use. Treatment programs can be developed using harm reduction principles, and clients can receive harm reduction therapy, a form of psychotherapy that focuses on setting and modifying goals that involve reducing harm. Clients may aim for or achieve abstinence but are not required to do so under this approach. Rothschild writes of harm reduction therapy, “No longer is the focus solely and absolutely on the substance misuse. The therapy, like any other, involves a whole, complex person who is facing challenges in life, one of which may be substance misuse” (Rothschild, 2010).

Studies have addressed a few different harm reduction approaches to caring for pregnant women who use substances. A study at Kaiser Permanente Northern California (KPNC) investigated outcomes among pregnant women who used alcohol in three different conditions. One intervention group received KPNC’s Early Start services (involving integrated substance abuse treatment and prenatal care), and the other received Early Start services plus a drink size assessment and intervention that encouraged women to reduce their drinking if they could not abstain entirely. Researchers found no significant differences in birth outcomes between the Early Start group and the Early Start Plus group, which received the harm reduction message (Armstrong et al., 2009). A 2015 review concluded, “Comprehensive, integrated multidisciplinary services for pregnant women with substance use disorder aimed at harm reduction are showing positive results,” and encourages additional research (Kramlich & Kronk, 2015).

TREATMENT PROGRAM COMPONENTS

Treatment programs vary in structure and in the interventions they use. Some components may be especially important in allowing women to access and complete the program.

In a systematic review of randomized controlled trials of psychosocial interventions for pregnant women enrolled in treatment programs for illicit drug use, Terplan and colleagues found 14 studies that compared psychosocial interventions to controls. Nine studies involved interventions using contingency management, which includes positive reinforcement (such as vouchers) to reward desired behaviors, and five studies addressed motivational interviewing interventions, in which client-centered counseling helps participants improve their readiness to change. Overall, the authors of this review did not find differences in mothers’ retention or treatment when comparing intervention and control groups, but they did find that neonates born to contingency management participants spent fewer days in the hospital. However, the authors caution that the included trials rarely captured maternal and infant outcomes of interest, and that the overall quality of evidence was only low to moderate. Terplan and colleagues stress the need to develop a better evidence base on psychosocial treatments for pregnant women with illicit substance use disorders (Terplan, Ramanadhan, Locke, Longinaker, & Lui, 2015).

While the large majority of SUD treatment facilities may accept women as clients, a minority offer programs specifically tailored to women (Terplan, McNamara, & Chisolm, 2012). Research shows that women are more likely to enroll and remain in treatment when they use women-centered programs, so the availability of such programs influences the likelihood of treatment success (Haug et al., 2014). Allowing women to bring their children with them to residential treatment programs can remove a barrier to treatment and have a positive effect on retention and recovery (Ashley, Marsden, & Brady, 2003; Center for Substance Abuse Treatment, 2009; Hughes et al., 1995; Stevens, Arbitter, & Glider, 1989; Szuster, Rich, Chung, & Bisconer, 1996; Wobie, Eyler, Conlon, Clarke, & Behnke, 1997). Availability of childcare and other services designed to reduce common treatment barriers are also important for women's ability to enter and continue treatment (American Society of Addiction Medicine [ASAM], 2011; Brown, Vartivarian, & Alderks, 2011; Heslin, Gable, & Dobalian, 2015; Lester, Andreozzi, & Appiah, 2004; SAMHSA, 2009; Terplan, McNamara, & Chisolm, 2012). Comprehensive case management for both medical and social needs can improve attendance and outcomes (Haug et al., 2014; SAMHSA, 2009).

Generally, women may have childcare or work responsibilities that make entry into residential programs impracticable. Findings from an exploratory study using national Treatment Episode Data Set (TEDS) data from 2006-2010 suggest that for pregnant women with children, outpatient programs may be especially effective because participants have better access to childcare and the ability to remain at home with their children. Sahker and colleagues examined the proportion of pregnant women who successfully completed treatment in eight different service settings (detox—hospital inpatient, detox—freestanding residential, detox—ambulatory, rehab—hospital residential, rehab—short-term residential, rehab—long-term residential, intensive outpatient, and non-intensive outpatient) to the proportion of non-pregnant women with successful completion. For seven of the eight settings, a larger percentage of non-pregnant women successfully completed the treatment (though not all differences were statistically significant). The only setting for which a greater proportion of pregnant women completed treatment was the non-intensive outpatient setting (45% of pregnant women vs. 41% of non-pregnant women) (Sahker, McCabe, & Arndt, 2016). Even though outpatient treatment may be more feasible for pregnant women, and potentially more effective than it is for non-pregnant women, some insurers may cover only residential treatments or otherwise exclude outpatient treatment programs (American Congress of Obstetricians and Gynecologists, 2015).

BOX 6. FDA DRUG LABELING FOR MEDICATION USE DURING PREGNANCY

The current FDA labeling for medication use during pregnancy and breastfeeding utilizes three subsections to provide information for several relevant populations. The subsections are “Pregnancy,” “Lactation,” and “Females and Males of Reproductive Potential.” The FDA news release describing the labeling explains each category further:

*The **Pregnancy** subsection will provide information relevant to the use of the drug in pregnant women, such as dosing and potential risks to the developing fetus, and will require information about whether there is a registry that collects and maintains data on how pregnant women are affected when they use the drug or biological product. Information in drug labeling about the existence of any pregnancy registries has been previously recommended but not required until now.*

*The **Lactation** subsection will provide information about using the drug while breastfeeding, such as the amount of drug in breast milk and potential effects on the breastfed child.*

*The **Females and Males of Reproductive Potential** subsection will include information about pregnancy testing, contraception and about infertility as it relates to the drug. This information has been included in labeling, but there was no consistent placement for it until now.*

The “Pregnancy” and “Lactation” subsections will also include three subheadings: “risk summary,” “clinical considerations” and “data.” These subheadings will provide more detailed information regarding, for example, human and animal data on the use of the drug, and specific adverse reactions of concern for pregnant or breastfeeding women. (FDA, 2014)

Under the previous (and longstanding) labeling rules, drugs were placed in one of five categories — A, B, C, D, or X — depending on research findings (or lack thereof). An “A” designation meant that human studies did not find adverse effects in pregnant women or their babies, while and “X” designation meant that studies in humans or animals found a risk of problems to the baby and/or that there were no situations in which the potential benefits of the drug would outweigh the risks. The B, C, and D categories were for drugs with varying levels of evidence. **Most drugs are still categorized as “C,” often due only to lack of robust evidence on the effect of the drug on pregnancy, due to ethical considerations for including pregnant women in studies such as randomized controlled trials.** Sandra Kweder, M.D, deputy director of the Office of New Drugs in FDA’s Center for Drug Evaluation and Research, described the letter system as “overly simplistic,” and noted that many people understood the rankings as a grading system that over-simplified the product risk (FDA, 2014). The current labeling encourages doctors and pregnant or breastfeeding women to have better conversations about specific risks on a case-by-case basis, and to acknowledge where any gaps in the research may exist.

ACCESSIBILITY OF TREATMENT

In 2014, the most recent year for which SAMHSA has published findings from its National Survey of Substance Abuse Treatment Services (N-SSATS), only 44% (6,212 of 14,152) of treatment facilities offered programs specifically for adult women, and only 20% (2,795) offered programs for pregnant or postpartum women. The percentage of facilities with programs for pregnant/postpartum women varied from fewer than 10% of facilities in Hawaii (14 out of 177) and Montana (6 out of 69) to more than 30% in Delaware (12 out of 39), South Carolina (35 out of 110), and Vermont (16 out of 47) (SAMHSA, 2013).

The facilities that offer programs for pregnant women may or may not be the same ones offering the many other services that help meet women's needs. Out of all facilities, only 25% offered residential treatment in 2014. Sixty percent of facilities accepted Medicaid payments, and 47% offered treatment at no charge for clients who cannot pay. In 2014, services were available in American Sign Language at 29% of facilities, and in languages other than English at 44%. Just 3% offered residential beds for clients' children (SAMHSA, 2013).

In a study of facilities that offered women-centered drug treatment (not specific to pregnant women) between 2002 and 2009, Terplan and colleagues (2015) found that those with programs for women were more likely than those not offering women-centered services to also offer childcare, housing assistance, domestic violence counseling, transportation assistance, and residential beds for children. Even so, fewer than half offered these services, which can reduce women's barriers to treatment (Terplan, Longinaker, & Appel, 2015).

Terplan and colleagues also found that facilities were less likely to provide women-centered services if they were located in nonmetropolitan areas or in the Midwest or South. Medicaid funded facilities were more likely to offer programs for women, while those that reported accepting Medicare and military insurance were less likely to do so (Terplan, Longinaker, et al., 2015). In an analysis of 2012 N-SSATS data, Heslin and colleagues (2015) examined the ownership types of treatment facilities, and found that local, county, or community facilities were most likely to offer programs exclusively for women, while Veterans Administration (VA) facilities were the least likely. They also examined key services that can facilitate women's access to treatment: childcare; domestic violence services; trauma counseling; assistance obtaining social services such as the Special Supplemental Nutrition Assistance Program for Women, Infants, and Children (WIC); employment assistance; housing assistance; transportation; and residential beds for children. In this analysis, they found VA facilities and local/county/community facilities offered the same mean number of key service (3.57), with only tribal-owned facilities offering more (3.72), and private for-profit facilities offering substantially fewer (2.70). They also found facilities offering more programs to special populations were more likely to have programs or groups exclusively for women and to provide key services, and that facilities in urban areas were more likely to offer an array of key services (Heslin et al., 2015).

Brown and colleagues (2011) analyzed 2008 N-SSATS data to explore the availability of childcare at outpatient treatment facilities that accepted women. Out of 7,447 facilities, only 484 (7%), offered childcare. Three-quarters of the 484 facilities accepted Medicaid, and 76% offered free treatment; 69% were non-profit, and 20% were operated by a government agency. More than half of the childcare-providing facilities were located in metropolitan areas. Facilities that accepted only women were far more likely (three times higher odds) to provide childcare than were those accepting both women and men, but even so, only approximately one-quarter of these women-only facilities made childcare available to clients (Brown et al., 2011).

BOX 7: SERVICES NEEDED IN WOMEN'S SUBSTANCE ABUSE TREATMENT

Source: Center for Substance Abuse Treatment (SAMHSA), *Substance Abuse Treatment: Addressing the Specific Needs of Women*, 2009

The following services are recommended by the [SAMHSA Center for Substance Abuse and Treatment] consensus panel and reinforced by some State standards (CSAT 2007), and these services may be warranted across the continuum of care beginning with early intervention and extending to continuing care services. More than ever, services need to be tailored to women's needs and to address the specific hardships they often encounter in engaging treatment services. Promising practices designed to treat women with substance use disorders include comprehensive and integrated clinical and community services that are ideally delivered at a one-stop location.

Note: This list does not incorporate the customary services that are provided in standard substance abuse treatment, but rather services that are more reflective of women's needs.

Medical Services

- Gynecological care
- Family planning
- Prenatal care
- Pediatric care
- HIV/AIDS services
- Treatment for infectious diseases, including viral hepatitis
- Nicotine cessation treatment services

Health Promotion

- Nutritional counseling
- Educational services about reproductive health
- Wellness programs
- Education on sleep and dental hygiene
- Education about STDs and other infectious diseases; e.g., viral hepatitis and HIV/AIDS
- Preventive healthcare education

Psychoeducation

- Sexuality education
- Assertiveness skills training
- Education on the effects of alcohol and other drugs on prenatal and child development
- Prenatal education

Gender-Specific Needs

- Women-only programming; e.g., is the patient likely to benefit more from a same-sex versus

mix-gender program due to trauma history, pattern of withdrawal among men, other issues.
Lesbian services

Cultural and Language Needs

Culturally appropriate programming
Availability of interpreter services or treatment services in native language

Life Skills

Money management and budgeting
Stress reduction and coping skills training

Family and Child-Related Services

Childcare services, including homework assistance in conjunction with outpatient services
Children's programming, including nurseries and preschool programs
Family treatment services including psychoeducation surrounding addiction and its impact on family functioning
Couples counseling and relationship enrichment recovery groups
Parent/child services, including developmentally age-appropriate programs for children and education for mothers about child safety; parenting education; nutrition; children's substance abuse prevention curriculum; and children's mental health needs, including recreational activities, school, and other related activities

Comprehensive Case Management

Linkages to welfare system, employment opportunities, and housing
Integration of stipulations from child welfare, TANF, probation and parole, and other systems
Intensive case management, including case management for children
Transportation services
Domestic violence services, including referral to safe houses
Legal services
Assistance in establishing financial arrangements or accessing funding for treatment services
Assistance in obtaining a GED or further education, career counseling, and vocational training, including job readiness training to prepare women to leave the program and support themselves and their families
Assistance in locating appropriate housing in preparation for discharge, including referral to transitional living or supervised housing

Mental Health Services

Trauma-informed and trauma-specific services
Eating disorder and nutrition services
Services for other co-occurring disorders, including access to psychological and pharmacological treatments for mood and anxiety disorders
Children's mental health services

Disability Services

Resources for learning disability assessments
Accommodations for specific disabilities
Services to accommodate illiteracy
Services to accommodate women receiving methadone treatment

Staff and Program Development

Strong female role models in terms of both leadership and personal recovery
Peer support
Adequate staffing to meet added program demands
Staff training and gender-competence in working with women

Staff training and program development centered upon cultural/ethnic influences on parenting styles, attitudes toward discipline, children's diet, level of parenting supervision, and adherence to medical treatment
Flexible scheduling and staff coordination (Brown 2000)
Adequate time for parent-child bonding and interactions
Administrative commitment to addressing the unique needs of women in treatment
Staff training and administrative policies to support the integration of treatment services with clients on methadone maintenance
Culturally appropriate programming that matches specific socialization and cultural practices for women

TREATMENT FOR SPECIFIC SUBSTANCE USE DISORDERS

COCAINE AND METHAMPHETAMINES

For women who are dependent on cocaine and have young children, promising behavioral treatments include contingency management (which provides immediate rewards such as vouchers for abstinence), cognitive behavioral therapy, and the community reinforcement approach (which promotes engagement in activities that can be rewarding alternatives to cocaine use) (Schottenfeld, Moore, & Pantalon, 2011). One study found pregnant women who met criteria for cocaine abuse were more likely to complete intensive outpatient treatment than traditional outpatient treatment, although additional research is needed (Haug et al., 2014).

A randomized trial compared the community reinforcement approach with and without contingency management to a 12-step facilitation program with and without contingency management among cocaine-dependent women who were pregnant or had young children. Schottenfeld and colleagues found no significant differences between community reinforcement and 12-step facilitation, but they did find the contingency management approach to be associated with a significantly higher proportion of cocaine-negative urine tests during treatment and more consecutive weeks of documented abstinence from cocaine (Schottenfeld et al., 2011).

A study involving pregnant heroin- or cocaine-dependent pregnant women from a Baltimore SUD treatment facility randomly assigned participants to usual care or to community reinforcement-based treatment (RBT), which involves individual counseling plus support for housing, recreation, and employment skills training that is contingent on abstinence. The authors found that RBT participants remained in treatment longer, and their infants spent fewer days hospitalized after birth (H. E. Jones, O'Grady, & Tuten, 2011).

OPIOIDS AND OPIATES

Opioid detoxification is not recommended during pregnancy, because withdrawal can lead to fetal distress or death, and even medically supervised withdrawal is associated with a high rate of relapse (ACOG & ASAM, 2012). Instead, women should continue to use methadone or buprenorphine under a provider's care. Methadone and buprenorphine are related compounds used in Medication Assisted Treatment (MAT) that suppress and reduce cravings for opioids while preventing

withdrawal symptoms (SAMHSA, 2015). In choosing between methadone and buprenorphine, one consideration is that methadone may only be dispensed in daily doses from specific treatment facilities, while only specially credentialed providers can prescribe buprenorphine. “Compared with methadone clinics, the less stringent structure of buprenorphine treatment may make it inappropriate for some patients who require more intensive structure and supervision,” ACOG and ASAM note in a committee opinion (ACOG & ASAM, 2012). The need to visit a clinic daily may also present logistical barriers to patients with childcare or transportation challenges.

While less research has been completed on buprenorphine than methadone for use during pregnancy, the two appear to have similar effectiveness (Wisner et al., 2017). A review and meta-analysis of comparison studies found infants born to women who took buprenorphine were larger at birth and less likely to be treated for NAS than those born to women who took methadone (Brogly, Saia, Walley, Du, & Sebastiani, 2014). A randomized controlled trial that assigned 175 pregnant women with opioid dependence to either methadone or buprenorphine found that the buprenorphine-exposed infants required less NAS treatment and shorter hospital stays than methadone-exposed infants; however, women in the buprenorphine group were more likely to discontinue treatment, largely due to dissatisfaction (H. E. Jones et al., 2010).

A 2016 review and meta-analysis of studies comparing the two substances found a lower risk of preterm birth and greater birthweight in buprenorphine-exposed infants, but concluded, “evidence is currently insufficient to establish superior safety of either opioid agonist during pregnancy for all maternal, fetal and child outcomes” (Zedler et al., 2016). Jones and colleagues recommend, “Medication choices for each opioid-dependent patient during pregnancy need to be made on a patient-by-patient basis, taking into consideration the patient’s opioid dependence history, previous and current treatment experiences, medical circumstances and treatment preferences” (H. E. Jones, Finnegan, & Kaltenbach, 2012).

ALCOHOL

Alcohol use and alcohol use disorders are common in the general population. Given the relatively strong evidence of the negative effects of alcohol on a fetus and on the child, more research into treatment programs that work for pregnant women should be prioritized.

For alcohol treatment in the general population, a combination of medication and psychosocial therapy may be more effective than either form of treatment alone. Physicians are advised to refer patients with alcohol use disorder for pharmacotherapy; case monitoring; individual, group, or family/couples counseling and therapy; other psychosocial services, such as vocational counseling; or mutual-help groups such as Alcoholics Anonymous (SAMHSA, 2010). FDA has approved the medications Acamprosate, Disulfiram, Oral Naltrexone, and Extended-Release Injectable Naltrexone to treat alcohol use disorder; all were classified as Category C for pregnancy under the previous FDA labeling system, meaning women should not take them unless the benefits outweigh

the risks. SAMHSA advises against using Disulfiram in pregnant women and recommends Acamprosate for pregnant and nursing women with caution (SAMHSA, 2010).

Brief interventions for alcohol use disorder (AUD) have shown mixed levels of effectiveness in the literature. One systematic review concluded brief interventions for AUD may increase abstinence and decrease alcohol consumption during the pregnancy (Stade et al., 2009). Another systematic review found that single-session face-to-face brief interventions positively affected the maintenance of alcohol abstinence during pregnancy (Gilinsky, Swanson, & Power, 2011). However, the same review noted that women who continue to drink during pregnancy may require more intense intervention to reduce or eliminate alcohol consumption during pregnancy. Individual studies of brief interventions for pregnant women have shown more specific results. In one study, women who underwent brief interventions (10-15 minute sessions) were more likely to report abstinence after the intervention and to have lower fetal mortality than their peers who only received screening (O'Connor & Whaley, 2007). Chang and colleagues found brief interventions reduced alcohol consumption most significantly in women who had a high consumption rate before the intervention, and in women who had supportive partners (G. Chang et al., 2005).

Outpatient care for AUD is very common, and is typically delivered in once- or twice-weekly sessions. Outpatient care is typically delivered through different counseling methods, including 12-step facilitation, cognitive-behavioral therapy, motivational interviewing, contingency management, or behavioral couples therapy (Haug et al., 2014). Although all have theory to support their effectiveness, they have not been studied sufficiently in pregnant women with AUD. Inpatient services and trauma interventions have also not been evaluated specifically in women with AUD (Haug et al., 2014).

MARIJUANA

Insufficient research is available regarding the treatment of pregnant women with cannabis use disorder. For adults with a diagnosis of cannabis dependence, SAMHSA recommends Brief Marijuana Dependence Counseling, a nine-session intervention program that includes elements of motivational enhancement therapy, cognitive behavioral therapy, and case management (Steinberg et al., 2005). Cannabis users tend not to seek treatment in traditional settings (Steinberg et al., 2005). However, interventions have shown promise in producing significant, though modest, reductions in marijuana use. One of the largest cannabis-focused studies, the Marijuana Treatment Project, tested the effectiveness of using motivational enhancement therapy, cognitive behavioral therapy, and individual counseling for cannabis users wishing to decrease use. The study showed that 13% of 450 participants who underwent a nine-week intervention were abstinent from cannabis at a nine-month follow-up exam (Stephens, Babor, Kadden, & Miller, 2002). Another study with 291 participants compared the effects of group-based cognitive behavioral therapy, shorter-term individual counseling with motivational enhancement therapy, and no intervention (control). At a 16-month follow-up, 29% and 28% of each treatment group reported being abstinent from cannabis in the last

90 days. The control group was given the therapy treatment at four months, so no follow-up data are available from the control group (Stephens, Roffman, & Curtin, 2000).

TREATMENT FOR POSTPARTUM AND PARENTING WOMEN

Women who stop substance use while pregnant are at high risk of relapse to substances of abuse in the postpartum period (Gopman, 2014). This time presents many triggers for relapse in women recovering from substance use disorders, including hormonal changes, sleep deprivation, and other stresses and demands of parenting (Gopman, 2014; SAMHSA, 2009). A retrospective chart review study of women enrolled in a substance abuse treatment program revealed that rates of postpartum depression were higher in this population compared to non-users. Nearly one-third of the sample had a history of depression before beginning the treatment program. The authors concluded that their results support prior findings of depression being one of the largest predictors of postpartum depression. Their recommendation was that doctors perform routine screenings for perinatal and postpartum depression in their patients who use substances, as they are at higher risk (A. Holbrook & Kaltenbach, 2012).

Studies have found that deaths among women who are pregnant or who have recently given birth are often due to overdoses. This may be related to biological factors, drug potency, or other issues. A California study that followed pregnant or parenting women admitted to substance treatment programs between 2000 and 2002 found that 194 of the 4,447 study participants had died by the end of 2010, which translated to a mortality risk more than eight times higher than that of women of comparable ages in the general population. Overdose was the most common cause of mortality, accounting for 29% of the deaths (Hser, Kagihara, Huang, & Messina, 2012). An analysis of deaths occurring in Philadelphia women during or in the one year following pregnancy found that 18 of the 85 deaths, or more than one-fifth, were due to drug overdoses (Mehta, Bachhuber, Hoffman, & Srinivas, 2016). An examination of 385 deaths linked to toxicology reports in Florida women during or in the year after pregnancy found 47, or 12%, were due to overdoses, with 70% of the overdoses caused by prescription drugs (Hardt et al., 2013).

An analysis of responses to the 1996-1998 National Household Survey on Drug Abuse found that 93% of those who were using illicit drugs when they recognized their pregnancies reported being abstinent by the third trimester; however, due to post-pregnancy relapse, the net pregnancy-related reduction in illicit drug use was only 24% (Ebrahim & Gfroerer, 2003). Among women enrolled in a study that compared psychological treatments for substance use (heavy use of tobacco or alcohol, or any use of marijuana or cocaine) in pregnancy, 80% of those who were abstinent in the last month of pregnancy resumed use of at least one substance in the two years after delivery, particularly within the first three months (Forray & Foster, 2015).

SAMHSA's Treatment Improvement Protocol on treatment for women with substance abuse recommends that services clients used prenatally should be continued, if not intensified, during the

postpartum period. The protocol recommends relapse prevention education, with an emphasis on identifying potential triggers and planning for appropriate responses, in the context of a full program of recovery activities. The protocol notes, “Alumnae groups and in-home visitation programs have assisted women with relapse prevention and family preservation” (SAMHSA, 2009). However, many SUD treatment programs are not tailored to pregnant and postpartum women, and a minority of programs offer childcare and other such supports that can make them accessible for women in the postpartum period. (See “Accessibility of Treatment” section, page 28.)

Postpartum women may also be concerned about breastfeeding their infants while using substances, including methadone or buprenorphine as part of opioid-assisted therapy. ACOG and ASAM note that breastfeeding is compatible with opioid-assisted therapy (ACOG & ASAM, 2012). The American Academy of Pediatrics (AAP) also advises that women on methadone maintenance may still breastfeed, regardless of dosage (American Academy of Pediatrics, 2012). Breastfeeding’s skin-to-skin contact may diminish some neonatal abstinence syndrome and motivate mothers to maintain abstinence (Gopman, 2014). AAP advises, “Street drugs such as PCP (phencyclidine), cocaine, and cannabis can be detected in human milk, and their use by breastfeeding mothers is of concern, particularly regarding the infant’s long-term neurobehavioral development and thus are contraindicated” (AAP, 2012). AAP recommends women limit alcohol consumption (e.g., two ounces of liquor, eight ounces of wine, or two beers) and wait two hours after ingestion to breastfeed (AAP, 2012).

USE OF TREATMENT SERVICES BY PREGNANT WOMEN

The existing public data on the numbers of pregnant women who need, seek, or receive SUD treatment services are sparse and insufficient.

SAMHSA’s reports on findings from its National Survey on Drug Use and Health (NSDUH) contain limited data on pregnant women and treatment, though their statistics on women and treatment give an indication of the gap between treatment needs and availability. According to SAMHSA, 7.7 million women or girls age 12 and older met DSM-IV criteria for substance dependence or abuse in 2014, but only 1.4 million of them reported receiving substance use treatment in any form (including self-help groups). Of women and girls age 12 and older, only 11% of those who needed treatment received it from a specialty facility, a category that includes drug and alcohol rehabilitation facilities, mental health centers, or inpatient hospital units. It is worth noting that not all of those who met the criteria for needing treatment perceived a need for treatment; among those who needed but did not receive treatment, 92% did not perceive a need for treatment (Center for Behavioral Health Statistics and Quality, 2015b).

There are limited data on the number of pregnant women needing substance use treatment. In an analysis of 2002-2006 data from the NSDUH, Terplan and colleagues (2012) found that pregnant women were less likely than non-pregnant women to report alcohol or illicit drug use during the

previous month (14% vs. 51%), but among those who did report substance use, pregnant women were significantly more likely to meet the DSM-IV criteria for substance abuse or dependence (30% vs 18%). The authors note that this finding supports the observation that although women often reduce or eliminate substance use while pregnant, those who continue to use substances during pregnancy are likely to do so because they have more problematic use that is harder to address without treatment. There was no significant difference between groups in the likelihood of receiving treatment for abuse or dependence (Terplan et al., 2012).

Although medication-assisted therapy (MAT) using methadone or buprenorphine is the standard of care for opioid use disorders in pregnancy, many pregnant women who could benefit from MAT do not receive it. Martin and colleagues (2015) found that substance abuse treatment facilities served substantially more pregnant women reporting prescription opioid abuse in 2012 than in 1992 (6,087 in 2012, up from just 321 in 1992). However, the percentage of treated pregnant women who received medication assisted treatment — the standard of care for opioid treatment during pregnancy — remained disconcertingly low, at 37% in both 2008 and 2012. The low rate of MAT use reflects lack of access to such therapies in general, the authors concluded (Martin, Longinaker, & Terplan, 2015). Similarly, an analysis of data on 2012 substance use treatment episodes across the U.S. by Angelotta and colleagues found that slightly less than half of pregnant women with opioid use disorders received MAT (Angelotta, Weiss, Angelotta, & Friedman, 2016).

TOO FEW PROVIDERS

For women with opioid use disorders, methadone may only be dispensed in daily doses from specialized treatment facilities (methadone clinics), while physicians can prescribe and dispense buprenorphine from their offices only if they complete eight hours of training and receive SAMHSA approval of a waiver (SAMHSA, 2016a). In the first year of practicing with a waiver, physicians may prescribe to as many as 30 patients; after that, they may request a revised waiver to increase their patient limit. The second, higher limit increased in mid-2016 from 100 patients to 275 (Medication Assisted Treatment for Opioid Use Disorders, 2016). While this higher limit is welcome to physicians who had reached their limits and had to turn patients away (ASAM Staff, 2016), it does not address the issue of the number of physicians who are able to provide buprenorphine, particular in rural or other underserved parts of the country.

In February 2017, SAMHSA's website showed that fewer than 25,000 physicians had waivers to prescribe buprenorphine to up to 30 patients, while fewer than 3,000 could prescribe to 275 (SAMHSA, 2017). Studies have found that 44-66% of physicians with waivers actually prescribe buprenorphine. An analysis of 2012 data found that opioid abuse or dependence rates were higher than buprenorphine treatment capacity rates in 48 states (Maine and Vermont were the exceptions) (C. M. Jones, Campopiano, Baldwin, & McCance-Katz, 2015). A study of buprenorphine treatment availability in Washington State found the lowest provider-to-population ratio in rural areas (Kvamme, Catlin, Banta-Green, Roll, & Rosenblatt, 2013).

CARE FOR INCARCERATED PREGNANT WOMEN

Women account for a growing share of the population of U.S. prisons and jails, and approximately 9,000 adult women are pregnant when entering federal and state correctional facilities and local jails each year.⁴ Among women in state prisons, 74% of those with a mental health problem met criteria for substance abuse or dependence, as did 54% of those without a mental health problem (James & Glaze, 2006). A study of women in county jails found that 53% met the criteria for substance use disorder, and 20% had both a SUD and serious mental illness (Nowotny, Belknap, Lynch, & DeHart, 2014). In a survey of the medical directors of state and federal Departments of Corrections, only 55% reported that their prison systems make methadone available to inmates, and only 14% offer buprenorphine. For treatment following release, 45% reported that they provide referrals to community-based methadone clinics, and 29% give referrals to providers who prescribe buprenorphine (Nunn et al., 2009).

Incarcerated pregnant women face substantial challenges to obtaining both appropriate prenatal care and treatment for substance use disorders (Gopman, 2014). They typically face inadequate nutrition, compromised rest, and minimal psychosocial support and education. Separation from children can cause intense grief and exacerbate existing mental health conditions. Some prisons require that women be shackled or otherwise restrained while in labor or giving birth, and this can amplify distress (Ferszt & Clarke, 2013). Women who are pregnant upon release from a correctional facility may face interruptions in prenatal care (Gopman, 2014).

In addition to improving care for incarcerated women, correctional systems can avoid increasing pregnant women's risks of poor outcomes by not incarcerating women solely based on illegal substance use, if the woman is pregnant. ASAM (2011) warns, "Incarceration of pregnant women as a means of preventing fetal exposure to alcohol and other drug use may compromise both maternal and fetal health and inhibit the pregnant woman's opportunity to receive effective treatments to address her long-term recovery from her substance-related disorder" (ASAM, 2011).

⁴ In 2004, the percentage of incarcerated women who are pregnant at intake was 4% in state prisons, 3% in federal prisons (Maruschak, 2008), and 5% in jails (Maruschak, 2006). Applying these percentages to the 2014 correctional population figures (97,189 women in state correctional facilities and 14,169 women in federal facilities; Carson, 2015) suggests more than 4,000 women are pregnant when they enter state or federal correctional facilities. Another 98,600 women were in jail in 2012 (Minton & Zeng, 2015), of whom nearly 5,000 would likely have been pregnant. The estimated total of 9,000 incarcerated pregnant women does not include pregnant adolescents in juvenile detention facilities.

Substance use by pregnant women brings together two areas of social policy that have each proven highly controversial over the last several decades. Pregnant women – particularly women of color and poor women who are most affected by the mechanisms of state control – have been subjected to a clash of forces where the war on drugs intersects with the protracted battles over abortion and reproductive autonomy. Although alcohol policy stands apart from the war on drugs in significant ways, when it comes to pregnant women, there are substantial commonalities that extend across both alcohol and other criminalized drug use.

Punitive measures associated with violating laws prohibiting possession of controlled substances apply across the population, such as fines, loss of a driver’s license, and incarceration. In addition, laws and policies that subject pregnant women who use substances to extra scrutiny have ramifications related to parenting rights and responsibilities, including court-ordered separation of mothers from their children. When a pregnant woman’s drug test results or evidence of drug or alcohol exposure in a newborn are used in child welfare proceedings, the stated reason may be protection of the child; however, there is no requirement to show that the woman’s use of a drug has caused actual or potential harm to the child (Miranda et al., 2015). Furthermore, a diagnosis of NAS does not equal harm or abuse to a child; for an infant born to a woman who was prescribed MAT during her pregnancy, NAS is a side effect of a medication that was being used appropriately to treat a SUD (Finnegan, 2016).

The laws and policies that apply this *pregnancy-specific* scrutiny to a woman’s substance use have critical implications for questions that are central to debates over pregnant women’s rights, including what interest, if any, the state has in protecting a fetus and at what point in pregnancy; and whether there is any legal, public health, or other justification for treating the interests of a pregnant woman as distinct from the interests of her future child.

Research reviewing the history of social policy related to drug use notes, “Once the fetus became the central protagonist there was a significant shift in social perception. The concept of harming the fetus by using drugs during pregnancy resulted in sanctions by both the criminal justice system and the child protective system” (Lester et al., 2004). Concerns about harm to the fetus and future children has also been a powerful motivator behind laws aimed at consumption of alcohol by pregnant women. A review of recent CDC health guidelines for pregnancy and alcohol, for example, cited critics’ observation that “the guidelines focus entirely on the well-being of the developing fetus while disregarding women’s rights as autonomous beings [...] and ignoring structural factors that contribute to fetal exposure to alcohol.” This review also notes that, as with drug policy, the pressures to control pregnant women’s drinking are greatest for low-income women and women of color (Seiler, 2016). The inequitable impact on low-income women and women of color makes it more difficult to ensure that these groups receive access to substance use treatment, prenatal care, and human rights.

The tension between efforts to address the intersection of substance use and pregnancy with punitive measures and those that focus on improving access to evidence-based care and treatment for pregnant women and infants is at the center of many current state and federal policy debates on substance use. Laws and policies discussed here include measures on education about the dangers of substance use while pregnant; testing of pregnant women and infants for indicators of drug exposure and reporting of results; criminalization and punishment of pregnant women for use of substances; access to treatment for substance use disorders; and increased investment in research to build the evidence base.

The social policy implications of these state efforts to address problems and concerns related to pregnant women and substance use, however, go beyond education, testing, prosecution, and treatment. These laws and policies have a far-reaching impact in the lives of women, children, families, and communities – not only on access to care and health outcomes, but also on family formation and separation, housing, education, voting rights, and employment.

These policies are implemented in criminal justice and child welfare systems where the ongoing legacy and reality of racism undermines the even-handed application of laws and policies. Thus, punitive measures have a disparate impact by race and ethnicity, with people of color disproportionately experiencing the most serious harmful effects, including family separation and incarceration. Describing the full cascade of consequences that flows from the laws and policies discussed below is beyond the scope of this paper; however, we recognize that the state's increased scrutiny of pregnant women's decisions and behavior may have effects that extend long past the duration of a pregnancy.

EDUCATION

Public education about the dangers of alcohol consumption during pregnancy is the most broadly visible manifestation of laws and policies targeting pregnant women's substance use. The Alcoholic Beverage Labeling Act is a federal law (27 U.S. Code § 215) requiring that the labels of all alcoholic beverages sold or distributed in the United States include the following language, under the heading GOVERNMENT WARNING: "According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects." In addition, 24 states have established laws mandating that warning signs about the risks associated with drinking during pregnancy be posted in places where alcoholic beverages are sold and in healthcare facilities treating pregnant women (Alcohol Policy Information System, 2016).

These laws are designed to inform the public, not restrict or control behavior; they do not require or authorize establishments that post the signs or individuals employed by those establishments to prevent pregnant women from purchasing or consuming alcoholic beverages, but some businesses and individuals have attempted to take that next step. In 2016, New York City responded to reports of such pregnancy prohibition policies by issuing guidelines stating that restaurants and bars that

refuse to fill alcoholic beverage orders from pregnant women may be guilty of pregnancy discrimination under the City's Human Rights law. A lawyer working for a trade group representing bars in New York argued that the City's new guidelines make things difficult for people who take seriously the warnings about the dangers of alcohol consumption during pregnancy that state law requires the bars to post (McPhate, 2016).

UNINTENDED PREGNANCY AMONG SUBSTANCE USE DISORDER TREATMENT PATIENTS

One strategy to reduce negative outcomes from substance use during pregnancy is to ensure that women who use substances have access to high-quality family planning services that enable them to avoid unintended pregnancies. Women undergoing treatment for SUDs have reported that family planning is a concern (Robinowitz, Muqueeth, Scheibler, Salisbury-Afshar, & Terplan, 2016). Women with SUDs are less likely to use contraception (Terplan, Hand, Hutchinson, Salisbury-Afshar, & Heil, 2015) and more likely to have an unintended pregnancy (Heil et al., 2011) than their non-using peers. Women who use drugs are also more likely to rely on condoms for contraception rather than more effective methods (including birth control pills, injectable contraception, IUDs, implants, and tubal ligation) (Terplan, Hand, et al., 2015). In focus groups and interviews with providers and women clients from three Baltimore SUD treatment centers, Robinowitz and colleagues found that women were open to using contraception and receiving family planning education and services while receiving SUD treatment, but that they had difficulty accessing services while in treatment (Robinowitz et al., 2016). In addition to improving access to family planning services for the population, including family planning in SUD treatment programs could help clients avoid unintended pregnancies.

Effective preventive strategies would ensure that access to contraception and family planning services be provided through programs that are fully voluntary, non-coercive, and grounded in meeting women's own needs and preferences. Although some forms of contraception such as long-acting reversible contraceptive (LARC) methods are more effective at preventing pregnancy, the decision to use a LARC must be made between a woman and her healthcare provider without pressure to discourage the woman from becoming pregnant (Strasser, Borkowski, Couillard, Allina, & Wood, 2016). Ideally, family planning services would be an integrated part of a woman's healthcare that also addresses any psychological challenges or mental health issues and includes prenatal care once a woman is ready to become pregnant. In one recent study, the majority of participants (83% of women and 58% of men) in a substance use disorder treatment programs said they were more likely to use contraception if it were available through the treatment program (Terplan, Lawental, Connah, & Martin, 2016). Family planning should also include services to help women who want to have children in the near future achieve healthy pregnancies and births.

One program that emphasizes contraception to prevent substance-exposed pregnancies is CHOICES, an intervention using brief motivational interviewing with women who could become pregnant and who consume more than five drinks in a day or more than eight drinks per week. In a randomized trial at sites in Florida, Texas, and Virginia, participants received either information only

or information plus five counseling sessions — four motivational interviewing sessions and one contraceptive counseling visit with a healthcare provider. Women in both groups had reduced binge drinking after nine months, with a larger proportion of the intervention group reporting no binge episodes in the previous 90 days (58%, vs. 47% of the control group). At nine months, 57% of the intervention group and 39% of the control group reported effective use of contraception (using contraception consistently and according to published guidelines for the use of that method) during vaginal intercourse over the past 90 days (Floyd et al., 2007).

Access to abortion care is also an important aspect of healthcare services for pregnant women who have substance use disorders. Women who use substances and do not want to be pregnant may be delayed in seeking termination because they are unaware of the pregnancy, because they lack access to abortion services, or because they face financial barriers to care. On the other hand, women must not be coerced into having an abortion by arrest or threat of arrest, or pressured to have an abortion based on unsupported beliefs about the harm of drugs they might have taken during pregnancy. Rather, women should receive accurate information to help them characterize and understand the risks of any substances they have used and whether any future actions can ameliorate the effects, as well as non-directive options counseling and referral to appropriate providers and other supports.

One recent trend in state abortion restrictions are laws that ban abortions after 20 weeks' gestation. These laws are especially problematic for women who do not realize they are pregnant until several weeks have passed and encounter delays when they decide to seek abortion care. Studies that compared women who received abortions in the second trimester to those who received them in the first trimester have found that those receiving the later abortions are more likely to use drugs and/or alcohol regularly (Drey et al., 2006; Foster & Kimport, 2013). The impacts of these laws can be compounded by other state laws that directly or indirectly add delays, either through mandatory waiting periods before receiving an abortion or by prohibiting Medicaid or private insurers from covering abortion services.

The purported concern for maternal or fetal health that state policymakers profess when enacting restrictions on abortion access does not always appear to drive enactment of policies that help pregnant women with substance use disorders obtain treatment. As of February 2017, 19 states had created or funded programs specifically targeted at pregnant women, and 16 plus the District of Columbia require that pregnant women receive priority access in general programs. Missing from the list of states that have taken one or both of these steps are several states with laws that restrict abortion access. For instance, South Dakota and Texas have all passed laws banning abortions after 20 weeks post-fertilization and do not allow Medicaid coverage of most abortions. These states also consider substance abuse during pregnancy to be child abuse, but have not created targeted treatment programs for pregnant women or granted them priority access to treatment (Authors' analysis of data from Guttmacher Institute, 2017a, 2017b, 2017c).

POLICIES DESIGNED TO INCREASE ACCESS TO TREATMENT

There are both federal and state laws intended to make it easier to get substance use disorder treatment by reducing cost barriers to services and increasing the availability and accessibility of care. The Affordable Care Act (ACA) resulted in a dramatic expansion of coverage for treatment, and the Mental Health Parity and Addiction Equity Act requires that coverage for substance use treatment cannot have more restrictions (such as cost-sharing or visit limits) than other medical coverage (U.S. Department of Labor, 2010). Additionally, policymakers have attempted to use funding incentives to increase the availability of treatment that meets the needs of pregnant and parenting women (CAPTA Reauthorization Act, 2010).

The ACA requires all health insurance plans offered in its marketplaces to cover substance use disorder treatment. The law's ban on imposing pre-existing condition exclusions and on setting yearly or lifetime dollar limits on coverage apply to substance use disorder conditions and services. The ACA requirement to cover substance use disorder treatment also applies to the benefits available to people who become eligible for Medicaid as a result of the law's expansion of that program. For people insured through traditional Medicaid, coverage of substance use disorder treatment is optional and varies by state.

However, while some state Medicaid programs ease access by including treatment medications, such as methadone and buprenorphine, on their preferred drug lists, other states require steps such as prior authorization that can create barriers to use. In a 2014 report on Medicaid policies in the 50 states and District of Columbia, SAMHSA reported that only 31 include methadone on their preferred drug list; 13 require prior authorization to obtain it, and 10 limit the quantity beneficiaries can get. Availability of buprenorphine was even more limited, with 48 Medicaid programs requiring prior authorization and 11 imposing lifetime limits — a move incompatible with appropriate treatment of a chronic disease (SAMHSA, 2014a).

Medicare does pay for treatment of alcoholism and substance use disorders for disabled women who may be pregnant, in both inpatient and outpatient settings, though there are some limits on the coverage (Medicare Interactive, n.d.).

LIMITS TO ACCESS

Even with such coverage, however, people seeking treatment may have difficulty using private insurance, Medicaid, or Medicare to pay for services because many SUD treatment programs do not accept those payment options. According to an annual census of substance abuse treatment facilities conducted by SAMHSA, as of 2014, only 33% accepted Medicare, 60% accepted Medicaid, and 67% accepted private insurance (SAMHSA, 2013). A substantial percentage of programs offer treatment without charge to people who cannot afford to pay: 20% of programs operated by private, for-profit facilities reported this option, and it was more common at those operated by non-profit organizations and federal, state, local, and tribal governments (SAMHSA, 2013).

Beyond cost, access is also determined by availability of appropriate programs. Historically, few programs were designed to address the needs of pregnant and parenting women, but there have been some advances in recent years. Federal grants currently are available to public and private non-profit programs that provide treatment for substance use disorders to pregnant and postpartum women. States that give pregnant women priority access to treatment programs are eligible for additional allocations of grants for prevention and treatment of substance abuse (Alcohol Policy Information System, 2015c). Programs funded through these grants may be residential or provide outpatient services from residential facilities, and if residential they must allow the minor children of a woman to reside with her if she requests it. To be eligible for these grants, a program must provide individual, group, and family counseling for substance use disorders, as appropriate, to each woman admitted to the program. They must also make available a set of supplemental services that includes, among others: prenatal and post-natal healthcare; pediatric healthcare, counseling and comprehensive social services for the infants and children of women admitted; therapeutic, comprehensive childcare during the times when a woman is unavailable due to her own treatment services; parenting training; and reasonable efforts to support and preserve the family unit, including family reunification with children in kinship or foster care arrangements, where safe and appropriate. Additionally, programs that receive these federal grants must be operated at a location that is accessible to low-income pregnant and postpartum women, and services must be provided in the language and the cultural context that is most appropriate (CAPTA Reauthorization Act, 2010).

In 19 states, there are now drug treatment programs that are specifically targeted to pregnant women, and 12 states give pregnant women priority admission to general drug treatment programs (National Association of State Alcohol and Drug Abuse Directors, 2016). To date, we have found little documentation on how priority access is determined. Additionally, four states (Iowa, Kansas, Missouri, and Oklahoma) have taken the step of prohibiting drug treatment programs that receive public funds from discriminating against pregnant women (Guttmacher Institute, 2016a). In 17 states, there are laws requiring that pregnant and postpartum women who abuse alcohol be given priority access to treatment (Alcohol Policy Information System, 2015c).

In July 2016, Congress passed the Comprehensive Addiction and Recovery Act (CARA), which specifically authorizes grants to state agencies to carry out pilot programs for non-residential treatment of pregnant and postpartum women with SUDs. It also aims to make medication-assisted treatment for SUDs more accessible by expanding prescribing authority for buprenorphine, which was previously limited to specially certified physicians, to nurse practitioners and physician assistants who are certified and receive a waiver (CARA, 2016). It misses the opportunity to improve access for pregnant patients who are receiving care from nurse midwives, however, because it does not include them. If Congress goes on to provide funding for the programs CARA authorizes, it will significantly expand access to addiction treatment services and overdose reversal medications.

POLICIES CREATING BARRIERS TO TREATMENT

Policies designed to make treatment accessible are not sufficient, however, to overcome the substantial barriers erected by mandated testing and reporting or by prosecution practices. Research has identified pregnant women's fears of prosecution and loss of child custody as a significant barrier to bringing women into treatment programs for substance use (Finkelstein, 1994; Howell, Heiser, & Harrington, 1999). The threat of criminal charges or removal of children based on pregnancy and substance use can interfere with women's ability to receive timely, high-quality care for their pregnancies, potentially negatively affecting the health of infants and children born to those women who were not able to get prenatal care.

The impact of removing children from women who have SUDs into foster care needs further research, especially given the chronic underfunding of many social services. Current evidence on the effectiveness of foster care in improving child outcomes is mixed. Stability for foster children can help predict their behavioral well-being (Rubin, O'Reilly, Luan, & Localio, 2007). One study found that "children assigned to investigators with higher removal rates are more likely to be placed in foster care themselves, and they have higher delinquency rates, teen birth rates, and lower earnings," (Doyle, 2007) and noted children (especially older children) fare better when they can remain at home (Doyle, 2007). However, another study found that once children were removed from the home, the ones who reunified with their families had higher rates of self-destructive behavior, substance use, and problems with law enforcement than the children who did not reunify (Tausig, Clyman, & Landsverk, 2001). Early intervention work has shown promise in improving permanent placement outcomes in younger children (Fisher, Burraston, & Pears, 2005), but is not a standard requirement of foster care.

RESEARCH ON POLICY BARRIERS TO PRENATAL CARE AND TREATMENT

Researchers can find it challenging to isolate the effects of substance use and related punitive measures on women's use of prenatal care because women with substance use disorders often experience multiple conditions (poverty, limited transportation, depression, housing instability, etc.) that are also associated with receiving less prenatal care than advised. Nonetheless, findings from accumulating research suggest punitive measures may interfere with women's receipt of timely, high-quality care. Early prenatal care is recommended for the best possible maternal and infant outcomes (CDC, 2011), and policies that have the effect of discouraging women from promptly receiving prenatal care can result in missed opportunities to resolve concerns and connect women to appropriate services.

IMPACT ON PRENATAL CARE

Schempf and Strobino (2009) analyzed medical records, urine toxicology screens administered at delivery, and postpartum surveys from 812 low-income women who delivered at the Johns Hopkins Hospital in Baltimore. They found that women who used cocaine and opiates during pregnancy

were more than six times more likely than those not using drugs to have received no prenatal care or only one prenatal care visit, and that “fear of being reported to the police or child welfare authorities was related strongly to a lack of prenatal care” (Schempf & Strobino, 2009).

Roberts and colleagues conducted interviews and focus groups with a racially and ethnically diverse sample of 38 low-income pregnant and parenting women who used alcohol and/or drugs. In the county where the study took place, all public prenatal providers conducted universal alcohol and drug screening with supplementary urine testing. Participants cited several reasons for attending prenatal care, including “to make sure the baby’s okay,” obtaining prenatal vitamins, reassurance of the baby’s health, and doing something right to compensate for effects of drug use (Roberts & Pies, 2011). They also, however, consistently described feeling “guilt” or “shame” upon being identified as using substances during pregnancy, and many feared provider reactions and viewed providers as a source of punishment rather than protection (Roberts & Pies, 2011).

Some women who stopped using drugs during pregnancy told researchers that urine tests motivated them to abstain from drug use, but some delayed starting prenatal care, skipped appointments, used alcohol instead of other drugs, and used other women’s urine in order to avoid the consequences they feared (Roberts & Nuru-Jeter, 2010). The consequences they reported worrying about included “being arrested, forced to have an abortion, terminated from a prenatal care program, and reported to CPS” (Roberts & Nuru-Jeter, 2010). The authors report that “most women feared that attending prenatal care while using drugs would lead to CPS reports and losing their children” (Roberts & Pies, 2011). A few attended prenatal care despite this fear, because they prioritized their babies’ health or aimed to build a track record that would increase their chances of keeping their babies and reuniting with children already removed. Most of the participants, however, either avoided prenatal care or attempted to stop using drugs before attending – and in some cases, this resulted in women delaying prenatal care entry until their third trimester or delivering without prenatal care at all (Roberts & Nuru-Jeter, 2010; Roberts & Pies, 2011).

Participants in this study also described several barriers to prenatal care that are common among low-income women regardless of substance use, including lack of transportation and health insurance, financial barriers, homelessness, and bureaucratic barriers to insurance and appointment scheduling. Some women noted ways in which drug use could exacerbate these barriers or make it harder to resolve them (Roberts & Nuru-Jeter, 2010).

Similarly, in interviews with 30 pregnant or recently pregnant Midwestern women who used substances while pregnant, Stone found that the most common strategy reported for avoiding detection of substance use was avoidance of care. In addition, some participants hid their pregnancies or isolated themselves from friends, family members, or others who they feared might report their substance use to authorities (Stone, 2015).

IMPACT ON TREATMENT

In interviews with pregnant women who used marijuana before or during their pregnancies, Jarlenski and colleagues (2016) found dissatisfaction with social workers who focused on punitive measures – namely, involvement of the child welfare agency if women tested positive for substance use upon delivery – rather than explaining the potential effects of marijuana use on infants’ health or offering resources to assist with quitting. The authors report, “Several women indicated that knowledge of specific health effects would have a powerful impact on their decision to stop marijuana use in pregnancy. In contrast, information about legal consequences seemed to motivate women to have a ‘clean’ urine test at delivery rather than consider the health consequences of perinatal marijuana use for themselves or their infants” (Jarlenski, Tarr, Holland, Farrell, & Chang, 2016).

Some recent research with pregnant women who have opioid disorders suggests, not surprisingly, that in states with laws or policies allowing them to bring either criminal or civil charges for child neglect or abuse against women who use substances during pregnancy, women with opioid use disorders are less likely to receive appropriate care. Angelotta and colleagues found that women were less likely to receive medication-assisted treatment (MAT) if their states had prenatal child abuse laws. The authors also note, “Methadone maintenance is not covered by Medicaid in the majority of states with prenatal child abuse laws, compounding the problem of access to the standard of care treatment” (Angelotta et al., 2016). In states without prenatal child abuse laws and with Medicaid coverage of methadone, 63% of pregnant women received MAT; in states with prenatal child abuse laws and no Medicaid coverage of methadone, just 19% did. The authors urge: “Given that the ostensible purpose of laws that allow pregnant women to be charged with child abuse for illicit drug use in pregnancy is to encourage substance abuse treatment and reduce maternal and fetal harms and these laws were associated with lower use of the standard of care, the utility of prenatal child abuse laws should be reconsidered by state policymakers” (Angelotta et al., 2016).

MANDATORY TESTING AND REPORTING

In keeping with the findings of this social science research, medical experts warn about the harmful effects of mandatory testing or reporting of substance use during pregnancy. ACOG and ASAM both oppose requirements for mandatory testing or reporting of substance use by pregnant women. In order to preserve the physician-patient relationship, ASAM urges “laws or regulations should not require physicians to violate confidentiality by reporting their pregnant patients with current or past history of substance use to legal authorities and/or child welfare services in the absence of evidence of child abuse or neglect” (ASAM, 2011). ACOG warns that such laws “may unwittingly result in pregnant women concealing substance use from their obstetricians or even forgoing prenatal care entirely” (ACOG, 2015). Universal lab testing for substance use is counterproductive because concealing use is preferable to opting out of prenatal care.

FEDERAL AND STATE LAWS ON TESTING AND REPORTING

Despite the conclusions of research in this area and the opposition of medical experts, policymakers often look to testing and reporting laws as a solution when faced with concerns about how substance use may harm infants. There are both federal and state laws encouraging use of testing and reporting of substance use during pregnancy.

In 2003, Congress amended the federal Child Abuse Prevention and Treatment Act (CAPTA), the program that awards federal grants to states for their child protective services systems, to make a state's eligibility for those funds contingent on adoption of policies and procedures intended to address the needs of infants "identified as being affected by illegal substance abuse or withdrawal symptoms resulting from prenatal drug exposure." To be eligible to receive a CAPTA grant, a state must have policies and procedures in place for providers involved in the delivery or care of such infants to notify child protective services, to make referrals for appropriate services, and to develop a plan of safe care for those infants. The law also states, however, that the requirement for notification of child protective services does not establish a definition in federal law of child abuse and does not require prosecution. This is important because, while lawmakers included this provision in a statute that addresses child abuse, medical experts agree that withdrawal symptoms in an infant are not evidence of harm or abuse by the mother.

Some states already had such laws in place prior to 2003, but CAPTA created a financial incentive to establish these policies, though it did not provide states with additional funds for the services they assert that children affected by maternal drug use will need. Critics of that direction have acknowledged that the author of the provision "had the laudable goal of ensuring that children receive necessary services" but observe that the policy requires providers to participate in a reporting practice that pregnant women may experience as punitive (Weber, 2007). This has several consequences that raise concerns: it may compromise the relationship between the provider and the pregnant patient that is needed to address substance use problems, if they exist; the opportunity for intervention that it offers occurs too late, after the optimal time has passed to protect the fetus's health; and "it promotes the unproven theory that instituting coercive measures after the child's birth will produce a lasting ameliorative effect on the health of drug dependent women and their children" (Weber, 2007).

The reporting provision of CAPTA has also been criticized as unsuccessful on its own terms by those who point out that it fails to ensure the safety of children because the law does not provide states with specific standards for substance exposure screening or assessment of substance-exposed infants. As a result, states have interpreted the provision differently, and there is considerable variation in their protocols for determining whether an infant has been exposed to drugs and in the actions they require providers to take when a drug exposure is identified. In an ACOG Committee Opinion discussing the role of the obstetrician-gynecologists in reporting substance use during pregnancy, the authors remark on the differing standards, noting that "South Carolina relies on a single positive drug test result, Florida mandates reporting infants that are 'demonstrably, adversely

affected’ by prenatal drug exposure, and in Texas, an infant must be ‘addicted’⁵ to an illegal substance at birth” (ACOG, 2015).

In four states – Iowa, Kentucky, Minnesota, and North Dakota – healthcare professionals are required to test infants for prenatal drug exposure if they suspect that the woman who gave birth used drugs while pregnant (Miranda, Dixon, & Reyes, 2015). In all of those states except Kentucky, and in 15 other states, healthcare professionals must report as civil child abuse what lawmakers have termed “drug abuse” by a pregnant women (Guttmacher Institute, 2016b).

BOX 8. DEFINING CHILD ABUSE

Though Congress explicitly declined to define a test result from a pregnant woman or new mother showing substance use as child abuse, there are 18 states where substance “abuse” during pregnancy is considered child abuse under the state’s civil child welfare laws. In certain states, being pregnant and using a controlled substance may result in a criminal child abuse conviction. And even where it is not treated criminally, in states where a positive drug test can be used as evidence in civil child welfare proceedings it may have very serious repercussions, including separation of the child from the parent.

In Indiana, the law requiring drug testing and reporting applies only to women and infants who are eligible for Medicaid, making the targeting of poor women explicit in statute. Research findings of racial disparities in reporting of substance use during pregnancy to child welfare authorities (Chasnoff, Landress, & Barrett, 2012; Roberts & Nuru-Jeter, 2012) suggest that, even where there is no statutory focus on a sub-population, the impact of these laws falls more heavily on women of color. On the other end of the spectrum, seven states actually prohibit the use of prenatal screenings or toxicology tests in criminal prosecution of a woman for causing harm to a fetus or child (Alcohol Policy Information System, 2015b).

To address concerns about unauthorized punitive responses to drug use by pregnant women, Tennessee established the Safe Harbor Act in 2013, with the stated intention of encouraging pregnant women with prescription drug use problems to seek treatment early in their pregnancies. It promises to give pregnant women priority spots in drug treatment programs and protects a woman’s parental rights if she enters treatment and remains in compliance with both treatment and prenatal care throughout her pregnancy. The limited availability of appropriate drug treatment programs for pregnant women likely limits the positive impact of the law. Furthermore, it was

⁵ Although the word “addicted” is used in the Texas legislation, medical experts agree that it is incorrect and stigmatizing to refer to babies as addicted rather than recognizing they are experiencing transient symptoms unrelated to any compulsive substance seeking behavior, which is a key component of addiction.

undermined even more significantly by Tennessee’s enactment a year later of the country’s only law explicitly authorizing punishment of pregnant women for the crime of “fetal assault,” with special provisions focusing on pregnant women who used opioids. This law, in effect, created a crime of drug use for only one class of persons in Tennessee – pregnant women. Although the criminalization law was short-lived (as a result of strong local and national education activism and investigative media reports, the legislature allowed it to lapse after two years), any attempt to assess the effect of the Safe Harbor Act would likely be confounded by the later law’s counter-effect. No other state has yet enacted a law similar to the Safe Harbor Act.

LEGAL SUBSTANCE USE: ALCOHOL AND MARIJUANA (IN SOME STATES)

Laws on reporting alcohol use during pregnancy have been enacted in 36 states, with 32 of them mandating reporting and 20 of those mandates being linked to child welfare agency referral. As with laws mandating reporting of drug use during pregnancy, there is substantial protocol variation across states, with reporting triggered in some states by observation of alcohol-related effects in a newborn and in others simply by knowledge or beliefs about the behavior of a pregnant woman. For example, healthcare providers in Arizona are required to report when they believe a newborn “may be affected by the presence of alcohol,” while in Minnesota there is a mandate to report if a healthcare or social service provider, other than those providing prenatal and other health services to a pregnant woman, believes that the woman has consumed alcohol “in any way that is habitual or excessive” (Seiler, 2016).

As legal restrictions on marijuana use have eased in many states, questions are arising about appropriate use of THC exposure testing and the consequences of positive results. In Colorado, for example, where recreational use of marijuana is legally permissible for adults over 21, some hospitals test infants for THC exposure and state law requires that healthcare providers notify child welfare authorities of positive test results. The state law on marijuana use does not impose special restrictions during pregnancy, and there are anecdotal reports that use during pregnancy to treat nausea is common. This can result in women being reported for actions that are not prohibited. The Colorado Department of Health & Environment has published guidance for healthcare providers, advising that patients should be informed during prenatal visits that although marijuana use is legal in the state for adults over 21, this “doesn’t mean it is safe for pregnant moms or babies.” The guidance also suggests telling patients that some hospitals test babies after birth for drugs and that state law requires notification when a baby tests positive for THC at birth (Colorado Department of Public Health & Environment, 2015).

CRIMINALIZATION, PROSECUTION, AND DETENTION

Tennessee is the only state to have enacted a law making drug use during pregnancy a crime, and it allowed the law to expire in July 2016 only two years after passage. The law sparked widespread opposition from doctors, women, and advocates who argued that it was dangerous and harmful,

driving pregnant women away from prenatal care and drug treatment. Although public discussion largely focused on use of the law to address concerns about NAS, in practice it was also used against pregnant women who used other drugs, including the first woman charged under the law who tested positive for methamphetamine, a drug that does not cause NAS. The one woman who is still being charged under the law was initially charged with attempted murder for trying to end her pregnancy with a coat hanger.

Even without laws that so explicitly prohibit pregnant women's drug use, however, states use laws in other ways that make pregnant women subject to prosecution and punishment over and above what applies to a non-pregnant person. Investigative journalists examining the topic of drug use during pregnancy found that at least 45 states have tried to prosecute women for exposing their fetuses to drugs (Miranda et al., 2015).

While attempts to prosecute women may be uncommon in some states, in others, state officials are actively working to make such prosecutions standard. In Alabama, as a result of state court rulings, drug use while pregnant is treated as chemical endangerment of a child, and in South Carolina the courts have determined that the word "child" in its criminal laws includes viable fetuses, making every law using that term, including the state's child endangerment law and its homicide by child abuse laws, applicable to pregnant women.

In addition, in three states (Minnesota, Oklahoma, and South Dakota) use of certain drugs or "abuse" of alcohol during pregnancy is grounds for civil commitment, and in Wisconsin being pregnant and using alcohol or a controlled substance provides a basis for detention or arrest under state civil child protection laws. Proponents argue these laws are necessary to protect the fetus. While these women are not initially incarcerated in prison or jail, they may be involuntarily detained in an inpatient treatment program by order of a court and may face incarceration if they refuse treatment through contempt proceedings. In Oklahoma and South Dakota, the law gives the state authority to involuntarily commit a pregnant woman who is "abusing" alcohol to a treatment facility. In Minnesota, the law includes an early intervention path for mandated treatment up to 90 days and an option for judicial commitment of 6-12 months; the early intervention option may consist of day treatment, medical compliance monitoring, and hospitalization up to 21 days (Alcohol Policy Information System, 2015a). In Wisconsin, the law gives the state authority to detain a woman for the entire duration of her pregnancy (Miranda et al., 2015).

The rules of civil and criminal procedure allow leeway for courts and child welfare authorities to serve as a bulwark against scientifically unfounded prosecutions or threats to parental rights, but the previously discussed review of arrests of and interventions on pregnant women found that in many cases "the courts failed to act as judicial gatekeepers to ensure, as they are required to do, that medical and scientific claims are in fact supported by expert testimony based on valid and reliable scientific evidence" (Paltrow & Flavin, 2013). In the absence of such gatekeeping, reproductive health, rights, and justice advocates rightly observe that the laws in place today on substance use during pregnancy threaten the human rights and reproductive autonomy not only of pregnant

women but also of anyone perceived as having the capacity to get pregnant. In addition, these policies pose an imminent danger to the health and well-being of infants and children whose care and family life may be disrupted by the application of policy that runs counter to the scientific evidence (Paltrow & Flavin, 2013).

In October 2016, the United Nations Working Group on Arbitrary Detention expressed concern about U.S. policies that permit the confinement of pregnant women suspected of drug or alcohol use, explaining, “This form of deprivation of liberty is obviously gendered and discriminatory in its reach and application.” The Working Group urged that such policies be replaced with “alternative measures that protect women without jeopardizing their liberty” and that federal authorities take steps to maximize the ability of healthcare. Federal funding, they suggested, could be made contingent on the elimination of state or local practices that threaten maternal health by authorizing involuntary detention (United Nations Working Group on Arbitrary Detention, 2016).

RECENT FEDERAL ACTIONS

Congress recently took up this issue again, driven generally by legislators’ desire to address the problems associated with increased use of opioids and specifically by a media report on the uneven application of the federal Child Abuse Prevention and Treatment Act (CAPTA) requirements around the country (Wilson & Shiffman, 2015). The Comprehensive Addiction and Recovery Act (CARA), discussed earlier in this section, includes provisions amending CAPTA’s eligibility criteria so that, in order to receive grants, states must engage in more rigorous monitoring of provider reporting and referrals of infants determined to be affected by substance use at birth (CARA, 2016). CARA also added new state reporting mandates, requiring states to produce an annual data report on how many substance-exposed infants were identified and for how many infants a plan of safe care was developed. Additionally, it established a more defined oversight role for the U.S. Department of Health & Human Services (HHS), requiring HHS to ensure that each state’s policies and procedures meet certain requirements; like CAPTA, CARA directs HHS to issue guidance to states regarding the requirements and best practices for the development and implementation of plans of safe care. And, finally, it expanded the law to include infants found to be affected by alcohol use during pregnancy, a condition that was not addressed when the reporting requirement was first enacted in 2003.

While women’s health advocates agree that the imprecision of the current CAPTA reporting requirements created confusion, and the discretion it allowed resulted in policies being applied with racial and socioeconomic bias (Weber, 2007), the 2016 reforms making the federal requirements more specific and increasing federal oversight of their application have also sparked concerns. Noting that the CAPTA provisions have been in place for more than a decade and have never been evaluated by a formal research study, critics of the new law cautioned against taking steps to enhance the law’s requirements without first determining the impact of the mandatory reporting approach. They point to the strong opposition of medical experts to mandated reporting and the body of

evidence that it undermines the relationship between providers and patients and creates barriers to high-quality and timely care that are necessary both to protect the health of the pregnant woman and to promote the health of the infant at birth and beyond.

For all of these reasons, advocates had urged Congress instead to amend the CARA legislation so that it would: move states toward evidence-based, child-protective, and medically appropriate policies; discourage states from adopting punitive practices that drive women away from care; ensure that states are able to provide service referrals for the child and the family without a conclusion that abuse or neglect has occurred; and require states to report on the location, economic status, and race of infants identified as affected by maternal substance use so that it is possible to monitor and guard against any discriminatory application of the law. They further suggested that states should be given the option of reporting to a state health agency that has a focus on maternal and child health, rather than to child protective services systems, which conduct investigations into charges of abuse and neglect and wield the threat of family separation. CARA was signed into law in July 2016, however, without addressing those recommendations.

Congress has also attempted to address the uncertainties about treatment for women during pregnancy and for infants by including in legislation a number of directives to mobilize federal agencies in the effort to assess the evidence, identify gaps in knowledge, and develop resources to support evidence-based care and treatment. In late 2015, the Protecting Our Infants Act (POIA) became law, directing HHS to develop a strategy to determine the most appropriate treatment for pregnant women with opioid use disorders and the most appropriate treatment and management of infants with NAS (Protecting Our Infants Act, 2015). The agency is working to catalogue what is known about the long-term effects of prenatal opioid exposure on children, and to develop recommendations for safely reducing opioid use by pregnant women and treating opioid dependence and NAS. POIA also authorized CDC to provide technical assistance to states to improve the availability and quality of data collection and surveillance activities regarding NAS.

In addition, Senator Bob Casey of Pennsylvania has requested that the Government Accountability Office (GAO) investigate and report on how child welfare agencies are dealing with NAS and on state compliance with CAPTA reporting requirements. And when CARA was enacted, it directed the GAO to produce an additional report on NAS, including information on its prevalence in the United States; Medicaid coverage for treatment of infants with NAS; treatment settings, costs, and reimbursement methodologies associated with NAS treatment; and best practices for treating infants with NAS.

In contrast to policy responses that focus on testing, reporting, and punitive measures, these efforts could create the foundation for an evidence-based policy approach. For example, SAMHSA is working with a steering committee comprised of representatives from 14 federal agencies to produce a summary of current research establishing the most appropriate interventions for the treatment of pregnant and parenting women with opioid use disorder and their infants. In August 2016, they published a draft of this document, titled *Advancing the Care of Pregnant and Parenting Women with Opioid*

Use Disorder and their Infants: A Foundation for Clinical Guidance. They received public comments on the draft and are expected to produce a final document in 2017.

The 2016 U.S. Surgeon General's Report *Facing Addiction in America* identifies pregnant women as a population that should receive early intervention, which can serve as a bridge between prevention and treatment services, for problematic substance use. The report explains, "Early intervention consists of providing information about substance use risks, normal or safe levels of use, and strategies to quit or cut down on use and use-related risk behaviors, and facilitating patient initiation and engagement in treatment when needed" (U.S. Department of Health and Human Services, 2016).

Finally, in December 2016 Congress passed and President Obama signed the 21st Century Cures Act, which includes an authorization of \$1 billion for state grants to address opioid use (21st Century Cures Act, 2016). If Congress includes those dollars in its appropriations, it will result in a substantial increase in funds available for state efforts. The law states that the grants will be used for activities that supplement efforts undertaken by state agencies responsible for substance abuse prevention and treatment. It explicitly notes that this may include "public health-related activities" such as prescription drug monitoring programs, evaluation to identify effective prevention strategies, training for healthcare practitioners, and access to healthcare services including treatment programs. There is, however, no explicit requirement that the needs of pregnant or parenting women be addressed.

IMPACT ON WOMEN OF COLOR AND LOW-INCOME WOMEN

Mandatory reporting of positive drug tests to child protective services raises serious equity concerns, because research has found that cases involving mothers or children of color are referred to child protective services at higher rates than those involving White children (Ellsworth, Stevens, & D'Angio, 2010; Osterling, Andrade, & Austin, 2008; Roberts & Nuru-Jeter, 2012). Punitive policies also disproportionately burden women who use public social and health services, because they are more likely to be tested and to have positive test results reported to authorities (Stone, 2015).

In a 1990 study using data from Pinellas County, Florida, Chasnoff and colleagues reported Black women were ten times more likely than White women to be reported to health authorities at delivery, even though the prevalence of alcohol and drug use was similar at the women's first prenatal care visits. To reduce disparities, they proposed universal screening at prenatal care (Chasnoff et al., 2012). Since then, however, research has cast doubt on the efficacy of such universal screening to eliminate disparities.

In a 2012 study, Roberts and Nuru-Jeter considered the possible pathways through which universal screening at prenatal visits might be expected to improve equity. One is to make surveillance more equitable, which could shrink or eliminate disparities by resulting in more referrals of White women to child protective services. The other is to use screening as a first step to effective treatment, which

could result in fewer women using substances later in pregnancy and, consequently, fewer referrals at delivery. The authors used data from a California county where prenatal care providers serving Medicaid-covered and privately insured pregnant women conduct universal screening, and tested these two potential explanations by examining the proportions of White, Black, and Hispanic women in the following groups: those identified in prenatal care as using substances; those who entered substance treatment; and those who were referred to CPS at delivery for maternal alcohol or drug use. One might expect the racial/ethnic breakdown to remain approximately equal at each of these three points, but Roberts and Nuru-Jeter found that more White than Black women than expected entered treatment, and more Black infants than expected were reported to CPS. Their findings show that it is a mistake to assume identification of substance use in prenatal care results in effective treatment. “Ensuring that women receive treatment and services during pregnancy is a necessary pre-condition for screening to function as support and not primarily as surveillance,” the authors conclude (Roberts & Nuru-Jeter, 2012).

Results from the Kaiser Permanente Northern California (KPNC) “Early Start” program suggest that when universal screening is coupled with integrated substance abuse and prenatal care treatment, perinatal outcomes may improve. At KPNC, women identified through screening as being at risk for substance use during pregnancy are referred to an Early Start Specialist in the same clinic, who conducts an in-depth psychosocial assessment, and receive a brief intervention session. Based on assessment findings, women are offered counseling or other services along with prenatal care. Not all women who screened positive received Early Start treatment, the authors note, explaining that “some patients do not participate in Early Start due to factors such as entering prenatal care late, scheduling and transportation problems, motivation, issues of fear and potential stigmatization.” A study of 49,985 female KPNC members who completed screening questionnaires between 1999 and 2003 found significantly lower rates of neonatal-assisted ventilation, preterm delivery, and low birthweight in the group that screened positive and received treatment, compared to the group that screened positive and did not receive treatment. The authors conclude, “Early Start’s replicable model of integrating substance abuse treatment with prenatal care is cost-effective and significantly decreases negative birth outcomes as well as maternal morbidity,” (Goler, Armstrong, Taillac, & Osejo, 2008). However, the fact that a substantial proportion of the members who screened positive did not receive Early Start treatment (1,359 out of 3,432, or 40%) demonstrates that screening alone is insufficient for reducing adverse neonatal outcomes. The best way to reduce disparities in CPS reporting may be to eliminate barriers to treatment use and ensure effective treatments are available to serve all women in need.

FUTURE DIRECTIONS

Over many decades, the United States has struggled to identify effective strategies for responding to problems caused by use of substances from alcohol to marijuana to various forms of cocaine, and today the public focus of the struggle is concentrated on opioids and methamphetamine use. If the goal is to achieve the best possible health outcomes for pregnant women and their children, research clearly demonstrates that punitive approaches have not worked, while public health models that incorporate harm reduction strategies and ensuring access to appropriate services show promise.

It is important to recognize that, due to the limited and evolving scientific knowledge about prenatal exposure, much of the policy related to substance use by pregnant women has “been made in a climate of scientific uncertainty” (Lester et al., 2004). As researchers gain a deeper understanding of the complex and interacting causes of conditions frequently attributed to prenatal drug and alcohol exposure, the challenge of establishing a solid evidence base for these laws and policies grows. Yet the laws are already on the books, and these policies and practices are being applied to pregnant women in spite of the shaky basis of the underlying science.

To improve SUD treatment options for pregnant women, more research is needed to identify the most effective treatments, including psychosocial and pharmacological treatments, for pregnant women who use different substances or substance combinations. Studies should investigate the role of partners and family-centered interventions, as well as the contributions of Medicaid coverage expansions to timely receipt of appropriate treatment. Additional research into the long-term effects of buprenorphine and other pharmacological SUD treatments on fetuses can allow women and their healthcare providers to make better-informed decisions about treatment options.

While pregnant women who want to reduce or stop substance use should have information about, and unimpeded access to, effective and affordable treatment programs, future research should not be limited to treatment. It is also critical to build understanding of how social and economic conditions contribute to harmful use of alcohol and drugs so that future policies can address those causes, creating opportunities to intervene upstream. Furthermore, research should investigate additional factors that make use of alcohol and drugs more harmful to some, including potentially inadequate nutrition.

In addition, there is a need for further research into the impact of punitive measures on women’s health and use of care, including quantitative and qualitative research involving different geographic, racial/ethnic, and socioeconomic groups of women to fill gaps in the current literature.

Despite the primacy of stated concerns for the health and safety of the fetus and of future children, many laws and policies about substance use by pregnant women do not require actual evidence of harm, and cases are frequently brought based on claims that the pregnant woman’s behavior created a risk of harm (Paltrow & Flavin, 2013). As mentioned above, however, associations with negative outcomes does not always translate into actual harm. And when laws and policies lead to

interventions by child protective service agencies, “There’s little evidence to suggest that such interventions result in better outcomes” (National Advocates for Pregnant Women, 2015). In fact, there is an “extraordinary consensus by public health organizations, medical groups, and experts that such actions undermine rather than further maternal, fetal, and child health” (Paltrow & Flavin, 2013).

Research over decades by healthcare professionals caring for substance-using pregnant women and their children shows that even evidence of drug exposure in a newborn is not proof of lasting harm or proof that the best interests of the child will be served by removing it from parental custody. Just as studies conducted when crack cocaine use was at its peak showed that, with appropriate support, children born with cocaine in their systems consistently did better on normal infant development measures when left with their mothers than when placed in foster care, research today shows that the best practices for decreasing severity and duration of symptoms experienced by infants exposed prenatally to opiates who experience neonatal abstinence syndrome is for them to be held and, when possible, breastfed by mothers (Abrahams et al., 2007; Welle-Strand et al., 2013).

There are some concerns, however, that research to assess opioid use by pregnant women and NAS in infants holds the potential to increase punitive and criminal actions against pregnant women who use, or are suspected of using, drugs. Critics point to the experience of Tennessee, which implemented a NAS monitoring system that was intended to develop health-centered policies and practices. Although the state Department of Health explicitly rejected punitive responses when it created the monitoring system, the data collected was ultimately used by the state legislature to justify enacting a law that criminalized substance use specifically during pregnancy (Sangoi, Ainsworth, & National Advocates for Pregnant Women, 2015). Developing effective, equitable, and balanced policies that protect the health and rights of women and their children that are based on good evidence and data will remain a challenge both to researchers and policymakers.

CONCLUSION

This paper has explored some of the existing research and current policies regarding substance use for pregnant and parenting women. It is not meant to be an exhaustive literature review but rather an overview of current evidence and its impact on policy. Exchange of accurate scientific and clinical information between researchers and policy-makers has the potential to ensure that policies are grounded in the best available evidence. Making the connection between policy and science is critical if we are to promote women’s health through improved access to high-quality healthcare.

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