The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ASAM American Society of Addiction Medicine

ACOG COMMITTEE OPINION

Number 711 • August 2017

(Replaces Committee Opinion Number 524, May 2012)

Committee on Obstetric Practice
American Society of Addiction Medicine

The Society of Maternal–Fetal Medicine endorses this document. This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Obstetric Practice in collaboration with committee members Maria A. Mascola, MD, MPH; Ann E. Borders, MD, MSc, MPH; and the American Society of Addiction Medicine member Mishka Terplan, MD, MPH.

Opioid Use and Opioid Use Disorder in Pregnancy

ABSTRACT: Opioid use in pregnancy has escalated dramatically in recent years, paralleling the epidemic observed in the general population. To combat the opioid epidemic, all health care providers need to take an active role. Pregnancy provides an important opportunity to identify and treat women with substance use disorders. Substance use disorders affect women across all racial and ethnic groups and all socioeconomic groups, and affect women in rural, urban, and suburban populations. Therefore, it is essential that screening be universal. Screening for substance use should be a part of comprehensive obstetric care and should be done at the first prenatal visit in partnership with the pregnant woman. Patients who use opioids during pregnancy represent a diverse group, and it is important to recognize and differentiate between opioid use in the context of medical care, opioid misuse, and untreated opioid use disorder. Multidisciplinary long-term follow-up should include medical, developmental, and social support. Infants born to women who used opioids during pregnancy should be monitored for neonatal abstinence syndrome by a pediatric care provider. Early universal screening, brief intervention (such as engaging a patient in a short conversation, providing feedback and advice), and referral for treatment of pregnant women with opioid use and opioid use disorder improve maternal and infant outcomes. In general, a coordinated multidisciplinary approach without criminal sanctions has the best chance of helping infants and families.

Recommendations and Conclusions

The American College of Obstetricians and Gynecologists (ACOG) makes the following recommendations and conclusions:

- Early universal screening, brief intervention (such as engaging the patient in a short conversation, providing feedback and advice), and referral for treatment of pregnant women with opioid use and opioid use disorder improve maternal and infant outcomes.
- Screening for substance use should be part of comprehensive obstetric care and should be done at the first prenatal visit in partnership with the pregnant woman. Screening based only on factors, such as poor adherence to prenatal care or prior adverse pregnancy outcome, can lead to missed cases, and may add to stereotyping and stigma. Therefore, it is essential that screening be universal.
- Routine screening should rely on validated screening tools, such as questionnaires, including 4Ps, NIDA Quick Screen, and CRAFFT (for women 26 years or younger).
- For chronic pain, practice goals include strategies to avoid or minimize the use of opioids for pain management, highlighting alternative pain therapies such as nonpharmacologic (eg, exercise, physical therapy, behavioral approaches), and nonopioid pharmacologic treatments.

- For pregnant women with an opioid use disorder, opioid agonist pharmacotherapy is the recommended therapy and is preferable to medically supervised withdrawal because withdrawal is associated with high relapse rates, which lead to worse outcomes. More research is needed to assess the safety (particularly regarding maternal relapse), efficacy, and long-term outcomes of medically supervised withdrawal.
- Infants born to women who used opioids during pregnancy should be monitored by a pediatric care provider for neonatal abstinence syndrome, a drug withdrawal syndrome that opioid-exposed neonates may experience shortly after birth.
- Given the unique needs of pregnant women with an opioid use disorder, health care providers will need to consider modifying some elements of prenatal care (such as expanded sexually transmitted infection [STI] testing, additional ultrasound examinations to assess fetal weight if there is concern for fetal growth abnormalities, and consultations with various types of health care providers) in order to meet the clinical needs of the patient's particular situation.
- Before prescribing opioids for their patients, obstetrician–gynecologists and other health care providers should ensure that opioids are appropriately indicated; discuss the risks and benefits of opioid use and review treatment goals; and take a thorough history of substance use and review the Prescription Drug Monitoring Program to determine whether patients have received prior opioid prescriptions.
- Breastfeeding should be encouraged in women who are stable on their opioid agonists, who are not using illicit drugs, and who have no other contraindications, such as human immunodeficiency virus (HIV) infection. Women should be counseled about the need to suspend breastfeeding in the event of a relapse.
- Access to adequate postpartum psychosocial support services, including substance use disorder treatment and relapse prevention programs, should be made available.
- Contraceptive counseling and access to contraceptive services should be a routine part of substance use disorder treatment among women of reproductive age to minimize the risk of unplanned pregnancy.

Background

Opioid use in pregnancy has escalated dramatically in recent years, paralleling the epidemic observed in the general population. In 2012, U.S. health care providers wrote more than 259 million prescriptions for opioids, twice as many as in 1998 (1). Rates of admission to substance use disorder treatment programs for misuse of prescription opioids more than quadrupled between 2002 and 2012 (2, 3), and rates of death associated with opioid analgesics rose nearly 400% between 2000 and 2014 (4). Along with the increase in misuse of prescription opioids, there has been a sharp rise in rates of heroin use. Overdose deaths that involve heroin increased more than 300% in less than 5 years, from just above 3,000 in 2010 to more than 10,500 in 2014 (5).

In 2007, 22.8% of women who were enrolled in Medicaid programs in 46 states filled an opioid prescription during pregnancy (6). In a study looking at hospital discharge diagnostic codes, antepartum maternal opioid use increased nearly fivefold from 2000 to 2009 (7). The rising prevalence of opioid use in pregnancy has led to a sharp increase in neonatal abstinence syndrome from 1.5 cases per 1,000 hospital births in 1999 to 6.0 per 1,000 hospital births in 2013, with an associated $1.5 billion in related annual hospital charges. States with the highest rates of opioid prescribing also have the highest rates of neonatal abstinence syndrome (8). In addition, maternal mortality reviews in several states have identified substance use as a major risk factor for pregnancy-associated deaths (9, 10).

Defining Opioid Use Disorder

Opioid use disorder is a pattern of opioid use characterized by tolerance, craving, inability to control use, and continued use despite adverse consequences. Opioid use disorder is a chronic, treatable disease that can be managed successfully by combining medications with behavioral therapy and recovery support (5), which enables those with opioid use disorder to regain control of their health and their lives. Short-term treatment programs aimed at abstinence are associated with high relapse rates (11) and generally do not facilitate patients' stable long-term recovery (5). This underscores the importance of availability and access to ongoing care in opioid treatment programs.

A diagnosis is based on specific criteria such as unsuccessful efforts to cut down or control use, as well as use resulting in social problems and a failure to fulfill obligations at work, school, or home (12). The *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5), replaced the terms opioid abuse and opioid dependence with the term opioid use disorder. The DSM-5 outlines 11 main symptoms of opioid use disorder and defines the severity of the disorder based on the number of recurring symptoms experienced within a 12-month period. Severity is classified as mild (two to three symptoms), moderate (four to five symptoms), and severe (six or more symptoms) (13). The abuse and dependence terminology do not correlate precisely to the new categories of mild, moderate, and severe opioid use disorder. Although this diagnostic terminology has changed, much of the prior research, recommendations, and regulatory requirements in this field rely on the

previous terminology, such as abuse and dependence; therefore, those terms are still used when referencing those sources.

Role of the Obstetrician–Gynecologist and Other Obstetric Care Providers

Patients who use opioids during pregnancy represent a diverse group, and it is important to recognize and differentiate between opioid use in the context of medical care (for chronic pain or for addiction), opioid misuse, and untreated opioid use disorder. To combat the opioid epidemic, all health care providers need to take an active role. Appropriate prescribing of opioid medications is vitally important. Before prescribing opioids for their patients, obstetrician–gynecologists and other health care providers should do the following:

- Ensure that opioids are appropriately indicated. For women, including pregnant women, with an opioid use disorder, opioid agonist pharmacotherapy is the recommended therapy. For chronic pain, practice goals include strategies to avoid or minimize the use of opioids for pain management, highlighting alternative pain therapies such as nonpharmacologic (eg, exercise, physical therapy, behavioral approaches) and nonopioid pharmacologic treatments.
- Discuss the risks and benefits of opioid use and review treatment goals with the patient at the outset. This discussion should include the risk of becoming physiologically dependent on opioids and, in the case of pregnant women, the possibility of an infant developing neonatal abstinence syndrome (NAS) (see Neonatal Abstinence Syndrome). However, health care providers should not hesitate to prescribe opioids based on a concern for neonatal abstinence syndrome alone.
- Take a thorough history of substance use and review the Prescription Drug Monitoring Program, currently operational in 49 states and the District of Columbia. The Prescription Drug Monitoring Program is a valuable resource to determine whether patients have received prior opioid prescriptions or other high-risk medications such as benzodiazepines, and should be consulted when patients request opioid pain medication or when opioid misuse is suspected. This resource (available at www.pdmpassist.org/content/state-profiles) can guide safe prescribing and help identify patients who suffer from opioid misuse or opioid use disorder and who would benefit from treatment. Several states now require that health care providers use Prescription Drug Monitoring Programs before prescribing certain controlled substances.
- Before initiating opioid therapy for chronic pain for reproductive-aged women, clinicians should discuss family planning and how long-term opioid use might affect care during a future pregnancy.
- Finally, a cautious approach to prescribing opioids should be balanced with the need to address pain in the pregnant woman. Pregnancy should not be a reason to avoid treating acute pain because of concern for opioid misuse or NAS.

Obstetric care providers need to be knowledgeable about the medical, social, and legal consequences that can accompany opioid use by pregnant women. Pregnancy provides an important opportunity to identify and treat women with substance use disorders. Identifying patients with substance use disorders using validated screening tools, offering brief interventions (such as engaging a patient in a short conversation, providing feedback and advice), and referring for specialized care, as needed, are essential elements of care (14) (Box 1). Additionally, it is important to advocate for this often-marginalized group of patients, particularly in terms of working to improve availability of treatment and to ensure that pregnant women with opioid use disorder who seek prenatal care are not criminalized. Finally, obstetric care providers have an ethical responsibility to their pregnant and parenting patients with substance use disorder to discourage the separation of parents from their children solely based on substance use disorder, either suspected or confirmed (15). In states that mandate reporting, policy makers, legislators, and physicians should work together to

Box 1. SBIRT: Screening, Brief Intervention, and Referral to Treatment ⇦

Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based practice used to identify, reduce, and prevent problematic use and dependence on alcohol and other substances. The SBIRT model was impelled by an Institute of Medicine (now known as the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine) recommendation that called for community-based screening for health risk behaviors, including substance use.

Screening—A health care professional assesses a patient for risky substance use behaviors using standardized screening tools. Screening can occur in any health care setting.

Brief Intervention—A health care professional engages a patient showing risky substance use behaviors in a short conversation, providing feedback and advice.

Referral to Treatment—A health care professional provides a referral to brief therapy or additional treatment to patients who screen in need of additional services.

Data from SAMHSA-HRSA Center for Integrated Health Solutions. SBIRT: Screening, Brief Intervention, and Referral to Treatment. Available at: http://www.integration.samhsa.gov/clinical-practice/SBIRT. Retrieved March 20, 2017.

retract punitive legislation and identify and implement evidence-based strategies outside the legal system to address the needs of women with addictions (16).

Physiology and Pharmacology of Opioid Use

Opioids diminish the intensity of pain signals and are generally prescribed for the treatment of pain, although cough and diarrhea are other indications for their use. Opioids have the additional effect of causing a sense of euphoria, which can lead to their misuse (17). Opioid use disorder may develop with repetitive use of any opioid, particularly in individuals with an underlying genetic vulnerability. Heroin is a rapidly acting opioid that may be injected, smoked, or nasally inhaled (18). Heroin has a short half-life, and to avoid opioid withdrawal symptoms, a physically dependent heroin user will need to take multiple doses daily. Prescribed opioids such as codeine, fentanyl, morphine, methadone, oxycodone, meperidine, hydromorphone, hydrocodone, propoxyphene, and buprenorphine all have the potential for misuse. These products may be swallowed, injected, nasally inhaled, smoked, chewed, or used as suppositories (19). The onset and intensity of effect will vary based on how the drug was taken and the formulation; however, all have the potential for causing respiratory depression, overdose, and death. The risk of respiratory depression, overdose, and death is greater for full opioid agonists (such as fentanyl) than for partial agonists (such as buprenorphine). Injection of opioids also carries the risk of cellulitis and abscess formation at the injection site, sepsis, endocarditis, osteomyelitis, hepatitis B, hepatitis C, and HIV infection. Sharing of snorting implements also has been identified as a risk factor for hepatitis C and other virus transmission in a group of pregnant women with hepatitis C (20).

Regular, long-term use of any opioid leads to predictable physiological dependence, which results in symptoms of withdrawal upon discontinuation of the drug. Typical symptoms of opioid withdrawal include generalized pain, muscle pain, nausea, diarrhea, sweating, rhinorrhea, tearing, dilated pupils, tremor, gooseflesh, restlessness, and anxiety. With short-acting opioids, such as heroin, withdrawal symptoms may develop within 4–6 hours of use, peak at 1–3 days, and gradually subside over a period of 5–7 days. For long-acting opioids, such as methadone, withdrawal symptoms usually begin within 24–36 hours of use and may last for several weeks. Unlike alcohol withdrawal, opioid withdrawal is rarely associated with severe morbidity and can be readily treated.

Effects of Opioid Use on Pregnancy and Pregnancy Outcome

The safety of opioids during early pregnancy has been evaluated in a number of observational studies. Earlier reports have not shown an increase in risks of birth defects after prenatal exposure to oxycodone, propoxyphene, or meperidine (21, 22). An association between first-trimester use of codeine and congenital abnormalities has been found in some studies (23–25) but not in others (26, 27). The authors of one retrospective study observed an increased risk of several birth defects with the use of prescribed opioids by women in the month before pregnancy or during the first trimester (25). Another recent observational study found a possible association between use of opioids in the first trimester and neural tube defects, although not with codeine use specifically (28). However, methodological problems with these studies exist, with potential for recall bias and confounding. The observed birth defects remain rare and represent a minute increase in absolute risk. A recent meta-analysis that compared methadone and buprenorphine found no difference between the groups with respect to congenital malformations. In addition, the incidence of anomalies reported were similar to what would be expected in the general population (29). Overall, concern about a potential small increased risk of birth defects associated with opioid agonist pharmacotherapy during pregnancy should be weighed against the clear risks associated with the ongoing misuse of opioids by a pregnant woman.

During pregnancy, chronic untreated addiction to heroin is associated with lack of prenatal care, increased risk of fetal growth restriction, abruptio placentae, fetal death, preterm labor, and intrauterine passage of meconium (30). Additionally, untreated addiction is associated with engagement in high-risk activities, such as prostitution, trading sex for drugs, and criminal activities. Such behaviors expose women to STIs, violence, and legal consequences, including loss of child custody, criminal proceedings, or incarceration.

Pregnant women with opioid use disorder often suffer from co-occurring mental health conditions, particularly depression, history of trauma, posttraumatic stress disorder, and anxiety. More than 30% of pregnant women enrolled in a substance use treatment program screened positive for moderate to severe depression, and more than 40% reported symptoms of postpartum depression (31). In addition, they are at increased risk of use of other substances, including tobacco, marijuana, and cocaine (32). These women also often suffer from poor nutrition, and many have disrupted support systems leading to social service needs. Identifying these problems during pregnancy with referral for specialized multidisciplinary care is important to achieve optimal care for these women.

Screening for Opioid Use and Opioid Use Disorder in Pregnancy

Screening for substance use should be a part of comprehensive obstetric care and should be done at the first prenatal visit in partnership with the pregnant woman.

Substance use disorders affect women across all racial and ethnic groups and all socioeconomic groups, and affect women in rural, urban, and suburban populations. Screening based only on factors such as poor adherence to prenatal care or prior adverse pregnancy outcome can lead to missed cases, and may add to stereotyping and stigma (33). Therefore, it is essential that screening be universal. Before pregnancy and in early pregnancy, all women should be routinely asked about their use of alcohol and drugs, including prescription opioids and other medications used for nonmedical reasons. To begin the conversation, the patient should be informed that these questions are asked of all pregnant women to ensure they receive the care they require. Maintaining a caring and nonjudgmental approach, as well as screening when the patient is alone, are important and will yield the most inclusive disclosure. Obstetric care providers should protect patient autonomy, confidentiality, and the integrity of the patient–physician relationship to the extent allowable by laws regarding disclosure of substance use disorder (available at www.guttmacher.org/state-policy/explore/substance-abuse-during-pregnancy). Physicians should be aware that reporting mandates vary widely and should be familiar with the legal requirements within their state or community (15). Routine screening should rely on validated screening tools, such as questionnaires including 4Ps, NIDA Quick Screen, and CRAFFT (for women 26 years or younger) (Box 2) (34–36). These tools have been well studied and demonstrate high sensitivity for detecting substance use and misuse. They can be used in direct interview format by physicians as well as nonphysicians and can be streamlined into clinical practice by using computer-based approaches (33).

Urine drug testing has also been used to detect or confirm suspected substance use, but should be performed only with the patient's consent and in compliance with state laws. Pregnant women should be informed of the potential ramifications of a positive test result, including any mandatory reporting requirements (15, 16). Routine urine drug screening is controversial for several reasons. A positive drug test result is not in itself diagnostic of opioid use disorder or its severity. Urine drug testing only assesses for current or recent substance use; therefore, a negative test does not rule out sporadic substance use. Also, urine toxicology testing may not detect many substances, including synthetic opioids, some benzodiazepines, and designer drugs. False-positive test results can occur with immune-assay testing and legal consequences can be devastating to the patient and her family. Health care providers should be aware of their laboratory's test characteristics and request that confirmatory testing with mass spectrometry and liquid or gas chromatography be performed as appropriate. Some centers have implemented universal urine toxicology screening for pregnant patients, with one study finding improved rates of detection of maternal substance use compared with standard methods (37). However, this

Box 2. Clinical Screening Tools for Prenatal Substance Use and Abuse ⇦

4 Ps*

Parents: Did any of your parents have a problem with alcohol or other drug use?

Partner: Does your partner have a problem with alcohol or drug use?

Past: In the past, have you had difficulties in your life because of alcohol or other drugs, including prescription medications?

Present: In the past month have you drunk any alcohol or used other drugs?

Scoring: Any "yes" should trigger further questions.

NIDA Quick Screen†

Screen Your Patients

Step 1. Ask patient about past year drug use—the NIDA Quick Screen

Step 2. Begin the NIDA-Modified ASSIST

Step 3. Determine risk level

Conduct a Brief Intervention

Step 4. Advise, Assess, Assist and Arrange

CRAFFT—Substance Abuse Screen for Adolescents and Young Adults‡

C Have you ever ridden in a CAR driven by someone (including yourself) who was high or had been using alcohol or drugs?

R Do you ever use alcohol or drugs to RELAX, feel better about yourself, or fit in?

A Do you ever use alcohol or drugs while you are by yourself or ALONE?

F Do you ever FORGET things you did while using alcohol or drugs?

F Do your FAMILY or friends ever tell you that you should cut down on your drinking or drug use?

T Have you ever gotten in TROUBLE while you were using alcohol or drugs?

Scoring: Two or more positive items indicate the need for further assessment.

*Ewing H. A practical guide to intervention in health and social services with pregnant and postpartum addicts and alcoholics: theoretical framework, brief screening tool, key interview questions, and strategies for referral to recovery resources. Martinez (CA): The Born Free Project, Contra Costa County Department of Health Services; 1990.

†National Institute on Drug Abuse. Resource guide: screening for drug use in general medical settings. Available at: https://www.drugabuse.gov/publications/resource-guide-screening-drug-use-in-general-medical-settings/nida-quick-screen. Retrieved March 8, 2017.

‡Center for Adolescent Substance Abuse Research, Children's Hospital Boston. The CRAFFT screening interview. Boston (MA): CeSAR; 2009. Available at: http://www.ceasar.org/CRAFFT/pdf/CRAFFT_English.pdf. Retrieved April 28, 2017.

study did not use validated verbal screening tools in the comparison group, which limits the usefulness of these results. Additional research is needed to better understand the effects of universal urine screening on maternal and neonatal outcomes. For these reasons, validated verbal screening tools such as those discussed previously are the preferred method for initial screening. History-taking and verbal screening tools provide the opportunity for the prenatal care provider to offer a brief intervention (such as engaging a patient in a short conversation, providing feedback and advice), to educate patients and use principles of motivational interviewing to bring about a desire to change high risk behaviors, when appropriate (33). More severe substance use disorders warrant a referral to specialized treatment.

Obstetric care providers should be knowledgeable about local resources for substance use treatment. Enlisting the help of social service agencies to facilitate patient referral and communicating with substance use treatment health care providers optimize patient care.

Treatment

Opioid Agonist Pharmacotherapy

Since the 1970s, opioid agonist pharmacotherapy (also referred to as medication-assisted treatment), with methadone in combination with counseling and behavioral therapy, has been the standard treatment of heroin addiction during pregnancy (30). In later years, pharmacotherapy with either methadone or buprenorphine has been used for treatment of opioid use disorder (30, 38) in pregnant women.

The rationale for opioid agonist pharmacotherapy during pregnancy is multifold. Opioid agonist pharmacotherapy prevents opioid withdrawal symptoms and is shown to prevent complications of nonmedical opioid use by reducing relapse risk and its associated consequences. It also improves adherence to prenatal care and addiction treatment programs. Opioid agonist pharmacotherapy in combination with prenatal care has been demonstrated to reduce the risk of obstetric complications (30, 39). Neonatal abstinence syndrome is an expected and treatable condition that can follow prenatal exposure to opioid agonists and requires collaboration with the pediatric care team for care of the infant.

Health care providers of addiction treatment should be familiar with the federal regulations regarding Confidentiality of Alcohol and Drug Abuse Patient Records. These regulations require specific elements (42 CFR Part 2) for written consent to disclose patient information (40). A list of local treatment programs for opioid use disorder can be found at the Substance Abuse and Mental Health Services Administration's website (http://dpt2.samhsa.gov/treatment/directory.aspx) (41).

Methadone

Methadone is dispensed on a daily basis by a registered opioid treatment program and should be part of comprehensive treatment, including addiction counseling, family therapy, nutritional education, and other medical and psychosocial services as indicated for pregnant women with opioid use disorder. Maternal methadone dosages are managed by addiction treatment specialists within registered opioid treatment programs, and communication between the obstetric team and the opioid treatment program facilitates good care. The methadone dosage may need to be adjusted throughout the pregnancy to avoid withdrawal symptoms, which include drug cravings, abdominal cramps, nausea, insomnia, irritability, and anxiety. Methadone has significant pharmacokinetic interactions with many other medications, such as antiretroviral agents, and can prolong the QTc interval in a dose-related fashion, which should be considered before new medications are introduced.

If a woman has been treated with a stable methadone dose before pregnancy, pharmacokinetic and physiologic changes that occur during pregnancy may require dose adjustments, especially in the third trimester (42). Because of metabolic changes in pregnancy, a single daily dosage may not control withdrawal symptoms over a 24-hour period. Rapid metabolism often develops during pregnancy, especially in the third trimester and in these cases, split dosages may be optimal (43). Not all women require dose increases during pregnancy, and dosage adjustments should be made on a clinical basis.

If a woman begins treatment with methadone while pregnant, her dosage should be titrated until she is asymptomatic in accordance with safe induction protocols. An inadequate maternal methadone dosage may result in mild to moderate opioid withdrawal signs and symptoms that may cause fetal stress and maternal drug cravings (43), which increase the likelihood of relapse and treatment discontinuation.

Several studies have examined the extent to which the maternal methadone dosage is related to the severity of neonatal abstinence syndrome. A systematic literature review and meta-analysis concluded that the incidence and duration of neonatal abstinence syndrome do not differ based on the maternal dosage of methadone treatment (44); therefore, attempts to minimize the methadone dose are not indicated as low doses are not consistently associated with milder or shorter NAS symptoms. Interestingly, some studies find lower rates of NAS when split dosing regimens of methadone are used (43).

In most situations, pregnant women initiate methadone induction in a licensed outpatient opioid treatment program. Some obstetric services initiate opioid agonist therapy with methadone or buprenorphine in an inpatient setting. Although this may allow closer monitoring of medication response, it is not always necessary or available. In cases when a pregnant woman initiates methadone treatment as an inpatient, an arrangement should be made before discharge for next-day admission to an opioid treatment program so that there are no missed days. Patients started on buprenorphine as an inpatient

may receive a prescription until their appointment with a licensed buprenorphine prescriber. Identification of the ongoing buprenorphine provider and scheduling of an appointment should be done before discharge.

With the exception of buprenorphine, it is currently illegal for a physician to write a prescription for any other opioids, including methadone, for the treatment of opioid use disorder outside of a licensed opioid treatment program (where medications are dispensed) (45). Buprenorphine is the only opioid agonist currently approved for the treatment of opioid use disorder by prescription in an office-based setting (46). However, methadone and buprenorphine may be dispensed in a hospital setting by physicians without waivers. Prescribers should be familiar with federal regulations (available at www.gpo.gov/fdsys/pkg/CFR-2016-title21-vol9/xml/CFR-2016-title21-vol9-sec1306-07.xml) and state regulations regarding prescribing of medications for the treatment of opioid use disorder.

Buprenorphine

Recent evidence supports the use of buprenorphine for opioid use disorder treatment during pregnancy. Buprenorphine acts on the same mu-opioid receptors as heroin and morphine (47), but functions as a partial rather than full agonist, making overdose less likely (48). Other advantages of buprenorphine over methadone include fewer drug interactions, the ability to be treated on an outpatient basis without the need for daily visits to an opioid treatment program, and evidence of less need for dosage adjustments throughout pregnancy. In addition, several trials demonstrate evidence of less-severe neonatal abstinence syndrome (49). The disadvantages, compared with methadone, include rare reports of hepatic dysfunction, the lack of long-term data on infant and child effects, potentially more risks associated with induction because of the risk of precipitated withdrawal, and an increased risk of diversion (ie, sharing or sale) of prescribed buprenorphine (50).

Buprenorphine is available as a monoproduct or in a combined formulation with naloxone, an opioid antagonist, used to reduce diversion because buprenorphine combined with naloxone causes severe withdrawal symptoms when injected. However, naloxone is not orally active, so withdrawal symptoms do not occur when used sublingually as directed (47). The buprenorphine monoproduct has been recommended during pregnancy to avoid any potential prenatal exposure to naloxone, especially if injected (50). However, recent studies that evaluated the use of the combination product buprenorphine with naloxone found no adverse effects, and outcomes were similar when compared with buprenorphine alone (51, 52). The use of the combination product during pregnancy will likely expand as more safety data are accumulated.

The buprenorphine monoproduct has a higher potential for misuse, such as intravenous injection and diversion, and a higher street value when compared with the combination product. Thus, all patients should be monitored for the risk of diversion of their medication, especially if the monoproduct is prescribed. Unlike methadone, which may be administered only through tightly controlled programs, buprenorphine may be prescribed for the treatment of opioid use disorder by trained and U.S. Drug Enforcement Administration-approved health care providers in a medical office setting, which potentially increases the availability of treatment and decreases the stigma (47). The Substance Abuse and Mental Health Services Administration publishes a directory of health care providers registered to prescribe buprenorphine (www.samhsa.gov/medication-assisted-treatment/physician-program-data/treatment-physician-locator). There are currently more than 37,000 health care providers from a variety of specialties who are trained and able to prescribe buprenorphine in the United States (53).

Patients considered for treatment with buprenorphine instead of methadone need to be able to self-administer the drug safely and maintain adherence to their treatment regimen. Compared with opioid treatment programs, the less stringent structure of office-based treatment with buprenorphine may make it inappropriate for some patients who require more intensive structure and supervision (54).

If the pregnant woman is already receiving therapy with methadone, she should not transition to buprenorphine because of the significant risk of precipitated withdrawal. There is not a similar risk of withdrawal when transitioning from buprenorphine to methadone. The potential risk of unrecognized, adverse long-term outcomes with buprenorphine use, which is inherent with use of any relatively new medications during pregnancy, should always be taken into consideration. The U.S. Food and Drug Administration has recently approved a long-acting buprenorphine implant that provides low-to-moderate doses of buprenorphine for up to 6 months for treatment of opioid use disorder in patients stable on the sublingual form. To date, there are no data on the use of the implant in pregnant women.

Medically Supervised Withdrawal

For pregnant women with an opioid use disorder, opioid agonist pharmacotherapy is the recommended therapy and is preferable to medically supervised withdrawal because withdrawal is associated with high relapse rates (55–57), ranging from 59% to more than 90% (58), and poorer outcomes. Relapse poses grave risks, including communicable disease transmission, accidental overdose because of loss of tolerance, obstetric complications, and lack of prenatal care. If a woman does not accept treatment with an opioid agonist, or treatment is unavailable, medically supervised withdrawal can be considered under the care of a physician experienced

in perinatal addiction treatment and with informed consent; however, to be successful, it often requires prolonged inpatient care and intensive outpatient behavioral health follow up. In some areas, access to opioid agonist pharmacotherapy is limited, and efforts should be made to improve availability of local resources. Early case reports raised concern that withdrawal from opioids during pregnancy could lead to fetal stress and fetal death (59, 60). More recent studies find no clear evidence of an association between a medically supervised withdrawal and fetal death or preterm delivery, but long-term follow up data of these women are lacking (61–63), particularly in terms of relapse rates. More research is needed to assess safety (particularly regarding maternal relapse), efficacy, and long-term outcomes of medically supervised withdrawal.

Naltrexone

Naltrexone is a nonselective opioid receptor antagonist that in therapeutic doses blocks the euphoric effects of opioids and has been used to help nonpregnant patients with opioid use disorder in their effort to maintain abstinence. Although the oral form demonstrates poor adherence, the more recently approved injectable long-acting form is more effective than placebo in maintaining abstinence (64). To date, information regarding its use in pregnancy is limited to small case series and case reports, with normal birth outcomes reported (58). However, significant concerns exist regarding unknown fetal effects, as well as risk of relapse and treatment dropout with subsequent return to opioid use and risk of overdose (64). Research on naltrexone treatment during gestation poses ethical and logistic challenges but is needed to inform the use of this treatment in pregnant patients. A recent survey among pregnant women enrolled in a comprehensive substance use treatment program demonstrated a strong interest in considering antagonist treatment during pregnancy (65). The decision whether or not to continue naltrexone treatment for a woman already using naltrexone before pregnancy should involve a careful discussion with the patient that compares the limited safety data versus the potential risk of relapse with treatment discontinuation.

Naloxone

Naloxone is a short-acting opioid antagonist that can rapidly reverse the effects of opioids and can be life-saving in the setting of opioid overdose. Although induced withdrawal may possibly contribute to fetal stress, naloxone should be used in pregnant women in the case of maternal overdose in order to save the woman's life.

Naloxone can be administered intravenously or subcutaneously by health care or emergency medical professionals. Additionally, an autoinjectable form and prepackaged nasal spray can be administered by family members or other bystanders when overdose is suspected (66). Patients at risk of overdose, such as those with long-term use or high doses of opioids, may benefit from having a naloxone kit available at all times. Many states authorize prescribing naloxone to a third party, such as a family member or caregiver, who may be able to assist in an overdose (www.drugabuse.gov/related-topics/naloxone; www.prescribetoprevent.org).

Antepartum, Intrapartum, and Postpartum Care

Antepartum Care

Elements of prenatal care for women with opioid use or use disorder will depend on each patient's situation and comorbid conditions. Several issues to consider include the following:

- Testing for STIs and other infectious agents such as HIV, hepatitis B and C, chlamydial infection, gonorrhea, syphilis, and tuberculosis should be considered. Repeat testing in the third trimester may be indicated if the woman is considered at increased risk. Hepatitis B vaccination is recommended for pregnant women who are HBsAg negative but at high risk of hepatitis B infection.
- Screening for depression and other behavioral health conditions should be conducted.
- In addition to an ultrasound examination for fetal assessment in mid-second trimester, consideration should be given to first-trimester ultrasonography for best determination of the estimated due date and an interval ultrasonographic assessment of fetal weight later in pregnancy if there is concern for fetal growth abnormalities.
- Consultations with anesthesia, addiction medicine specialists, pain management specialists, pediatrics, maternal–fetal medicine, behavioral health, nutrition, and social services should be conducted as needed.
- Because breastfeeding should be encouraged in women who are stable on their opioid agonists, who are not using illicit drugs, and who have no other contraindications (see Postpartum Care), obstetrician–gynecologists and other obstetric care providers should provide anticipatory breastfeeding guidance during the antepartum period (67).
- Close communication between the obstetric care provider and pediatric team before delivery is necessary for optimal management of the neonate. Neonatal consultation, if available, can be considered prenatally to discuss postdelivery care of the infant.
- Use of other substances, particularly tobacco use, is common in women with opioid use disorder. Screening for and discussion about this and other substances is important, and cessation services should be offered.

Intrapartum Care

Women taking methadone or buprenorphine who are in labor should have their maintenance opioid agonist dose continued and should receive additional pain relief (68, 69). Epidural or spinal anesthesia should be offered, when appropriate, for management of pain in labor or for delivery. Opioid agonist–antagonist drugs such as butorphanol, nalbuphine, and pentazocine should be avoided because they can precipitate acute withdrawal in patients taking an opioid agonist. Some patients who are physiologically dependent on opioids may not disclose their substance use and health care providers may, therefore, not be aware of their opioid use. Because of this, some units have opted to remove these medications from their formularies because of inadvertent precipitation of withdrawal. Buprenorphine should not be administered to a patient who takes methadone. Pediatric staff should be notified of all infants exposed to opioids to ensure appropriate screening for neonatal abstinence syndrome.

In general, patients taking methadone or buprenorphine will require higher doses of opioids to achieve analgesia than other patients because they are tolerant to their maintenance treatment dose. One study showed that after cesarean delivery, women who took buprenorphine required 47% more opioid analgesic than women who did not take buprenorphine, but adequate pain relief was achieved with short-acting opioids and antiinflammatory medication (70). Injectable nonsteroidal antiinflammatory agents, such as ketorolac, also are highly effective in postpartum and postcesarean delivery pain control. Daily doses of methadone or buprenorphine should be maintained during a woman's labor and postpartum hospital stay to prevent withdrawal, and patients should be advised of this plan in advance in order to reduce anxiety. Dividing the usual daily treatment dose of buprenorphine or methadone into three or four doses every 6–8 hours may provide partial pain relief; however, additional analgesia will be required (68). The pain management of intrapartum and postpartum patients on opioid agonist therapies can be challenging because of their increased drug tolerance and hypersensitivity to pain. When resources are available, a consultation with an anesthesiologist can be beneficial in pregnant women with substance use disorder or chronic opioid use to formulate a pain management plan tailored to the individual patient. A multimodal pain control approach with neuraxial analgesia and nonsteroidal antiinflammatory drugs and acetaminophen typically is needed to provide effective intrapartum and postpartum pain relief (69, 71).

Postpartum Care

Breastfeeding is beneficial in women taking methadone or buprenorphine and has been associated with decreased severity of neonatal abstinence syndrome symptoms, less need for pharmacotherapy, and a shorter hospital stay for the infant (72). In addition, breastfeeding contributes to attachment between a woman and her infant, facilitates skin-to-skin care, and provides immunity to the infant. Breastfeeding should be encouraged in women who are stable on their opioid agonist, who are not using illicit drugs, and who have no other contraindications, such as HIV infection (73, 74). Women should be counseled about the need to suspend breastfeeding in the event of a relapse. The American Academy of Pediatrics recommends breastfeeding for women taking methadone and buprenorphine regardless of maternal dose, as transfer of these medications into breast milk is minimal (75). In nursing women, the ultra-rapid conversion of codeine to morphine can result in high and unsafe levels of morphine in blood and breast milk. The U.S. Food and Drug Administration has strengthened the label warning to state that breastfeeding is not recommended while using medicines containing codeine or tramadol because of the potential for serious adverse effects in the infant due to opioid overdose (76). However, if a codeine-containing medication is considered the preferred choice, the risk and benefits of this drug and the reasoning behind the FDA warning should be discussed with each family.

Although most pregnant women who take methadone will experience dosage increases during pregnancy, and a need for dosage reduction might be expected postpartum, one study demonstrated little need for immediate postpartum methadone dosage reduction (77). Significant dose reductions postpartum should not be done routinely but should be titrated to signs and symptoms of sedation, particularly at the peak of the dose (2–6 hours). Most women taking buprenorphine will not experience large dosage adjustments during their pregnancies and most may continue the same dosages after delivery (77). Other medications that can produce sedation (eg, benzodiazepines, zolpidem, antihistamines) should be used with caution, as they may add to the risk of maternal respiratory depression (78).

Women with substance use disorder should continue their opioid agonist pharmacotherapy postpartum. The postpartum period represents a time of increased vulnerabilities, and women with opioid use disorder relapse far more often in the postpartum period compared with during pregnancy (79). Triggers for relapse may include loss of insurance and access to treatment, demands of caring for the new baby, sleep deprivation, and threat of loss of child custody. Psychiatric disorders such as depression, anxiety, bipolar disorder, and posttraumatic stress disorder are prevalent among women with opioid use disorder. Screening for postpartum depression should be routine, and assessing for other comorbid mental health conditions should be considered if there is a prior history or if concern exists (78, 80). Substance use and overdose are increasingly found to be major contributing factors to pregnancy-associated deaths in the United States (9, 10). Access to adequate postpartum psychosocial support services, including substance use disorder treatment and relapse prevention programs, should be

made available (81). In addition, postpartum women with opioid use disorder should receive overdose training and preferably, coprescribing of naloxone for overdose prevention (82).

Unintended pregnancy rates among women with substance use disorders are approximately 80%, considerably higher than in the general population. Use of reliable contraception is also lower among this group of women when compared with a nondrug-using comparison population (83). Therefore, discussion of a full range of contraceptive options should begin prenatally with these patients. In particular, obstetric care providers should counsel women about the option of immediate postpartum long-acting reversible contraception, which has few contraindications and is highly effective and convenient (84).

Neonatal Abstinence Syndrome

Neonatal abstinence syndrome is a drug withdrawal syndrome that may result from chronic maternal opioid use during pregnancy and is an expected and treatable condition seen in 30–80% of infants born to women taking opioid agonist therapies (43, 85). Neonatal abstinence syndrome is characterized by disturbances in gastrointestinal, autonomic, and central nervous systems, leading to a range of symptoms including irritability, high-pitched cry, poor sleep, and uncoordinated sucking reflexes that lead to poor feeding. In infants exposed to methadone, symptoms of withdrawal may begin anytime in the first 2 weeks of life, but usually appear within 72 hours of birth and may last several days to weeks (30). Infants exposed to buprenorphine who develop neonatal abstinence syndrome generally develop symptoms within 12–48 hours of birth that peak at 72–96 hours and resolve by 7 days (50). Recent evidence indicates that other substances such as nicotine, selective serotonin reuptake inhibitors, and benzodiazepines may increase the incidence and severity of neonatal abstinence syndrome (72). Use of validated screening assessments such as the Finnegan Scale to diagnose neonatal abstinence syndrome and protocols that standardize treatment using methadone or morphine have been associated with improved outcomes for these infants (72). Each nursery should develop an evidence-based written policy to assess and treat an infant with neonatal abstinence syndrome, and women should be informed of key components of these policies (eg, any delayed discharge of the infant or reporting requirements). Families should be encouraged to visit and care for their infants and women should be supported in their effort to breast feed their infants, if appropriate. Several perinatal collaborative quality initiatives have developed valuable resources for health care providers and patients to optimize the diagnosis and treatment of neonatal abstinence syndrome and promote collaboration between obstetric and neonatal care providers (www.opqc.net/patients-providers/%20NAS; https://public.vtoxford.org/quality-education/nas-universal-training-program/) (86).

Long-Term Infant Outcome

Long-term outcomes of infants with in utero opioid exposure have been evaluated in several observational studies. A major challenge in assessing these outcomes is isolating the effects of opioid agonists from other confounding factors such as use of other substances (tobacco, alcohol, nonmedical drugs) and exposure to environmental and other medical risk factors (eg, low socioeconomic status, poor prenatal care) (87). For the most part, studies have not found significant differences in cognitive development between children up to 5 years of age exposed to methadone in utero and control groups matched for age, race, and socioeconomic status, although scores were often lower in both groups compared with population data (88). Preventive interventions that focus on supporting the woman and other caregivers in the early and ongoing parenting years, enriching the early experiences of children and improving the quality of the home environment are likely to be beneficial (89).

Conclusion

Early universal screening, brief intervention (such as engaging a patient in a short conversation, providing feedback and advice), and referral for treatment of pregnant women with opioid use and opioid use disorder improve maternal and infant outcomes. Contraceptive counseling and access to contraceptive services should be a routine part of substance use disorder treatment among women of reproductive age to minimize the risk of unplanned pregnancy. Pregnancy in women with opioid use disorder should be co-managed by the obstetric care provider and a health care provider with addiction medicine expertise, and appropriate 42 CFR Part 2-compliant consent for release of information should be obtained from the patient to allow exchange of information between the health care providers. Given the unique needs of pregnant women with an opioid use disorder, health care providers will need to consider modifying some elements of prenatal care (such as expanded STI testing, additional ultrasound examinations to assess fetal weight if there is concern for fetal growth abnormalities, and consultations with various types of health care providers) in order to meet the clinical needs of the patient's particular situation. Continuity of care, including ensuring consistent daily dosing of buprenorphine or methadone, is critical to success. For women, including pregnant women, with an opioid use disorder, opioid agonist pharmacotherapy is the recommended therapy and is preferable to medically supervised withdrawal because withdrawal is associated with higher relapse rates, which lead to worse outcomes. More research is needed to assess the safety (particularly regarding maternal relapse), efficacy, and long-term outcomes of medically supervised withdrawal. Infants born to women who used opioids during pregnancy should be monitored by a pediatric care provider for neonatal abstinence syndrome. Multidisciplinary long-term follow-up should

include medical, developmental, and social support. In general, a coordinated multidisciplinary approach without criminal sanctions has the best chance of helping infants and families. Obstetric care providers have an ethical responsibility to their pregnant and parenting patients with substance use disorder to discourage the separation of parents from their children solely based on substance use disorder, either suspected or confirmed.

For More Information

The American College of Obstetricians and Gynecologists has identified additional resources on topics related to this document that may be helpful for ob-gyns, other health care providers, and patients. You may view these resources at www.acog.org/More-Info/OpioidUseinPregnancy.

These resources are for information only and are not meant to be comprehensive. Referral to these resources does not imply the American College of Obstetricians and Gynecologists' endorsement of the organization, the organization's website, or the content of the resource. The resources may change without notice.

References

1. Centers for Disease Control and Prevention. Opioid painkiller prescribing: where you live makes a difference. Available at: https://www.cdc.gov/vitalsigns/opioid-prescribing. Retrieved March 7, 2017. ⇦
2. Substance Abuse and Mental Health Services Administration. Drug Abuse Warning Network, 2011: national estimates of drug-related emergency department visits. HHS Publication No. (SMA) 13-4760, DAWN Series D-39. Rockville (MD): SAMHSA; 2013. Available at: https://www.samhsa.gov/data/sites/default/files/DAWN2k11ED/DAWN2k11ED/DAWN2k11ED.pdf. Retrieved March 8, 2017. ⇦
3. Compton WM, Jones CM, Baldwin GT. Relationship between nonmedical prescription-opioid use and heroin use. N Engl J Med 2016;374:154–63. ⇦
4. National Center for Health Statistics. NCHS data on drug-poisoning deaths. NCHS Factsheet. Available at: https://www.cdc.gov/nchs/data/factsheets/factsheet_drug_poisoning.htm. Retrieved March 8, 2017. ⇦
5. National Institute on Drug Abuse. America's addiction to opioids: heroin and prescription drug abuse. Bethesda (MD): NIDA; 2014. Available at: https://www.drugabuse.gov/about-nida/legislative-activities/testimony-to-congress/2016/americas-addiction-to-opioids-heroin-prescription-drug-abuse. Retrieved March 8, 2017. ⇦
6. Desai RJ, Hernandez-Diaz S, Bateman BT, Huybrechts KF. Increase in prescription opioid use during pregnancy among Medicaid-enrolled women. Obstet Gynecol 2014;123:997–1002. ⇦
7. Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatal abstinence syndrome and associated health care expenditures: United States, 2000–2009. JAMA 2012;307:1934–40. ⇦
8. Patrick SW, Davis MM, Lehmann CU, Cooper WO. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012 [published erratum appears in J Perinatol 2015;35:667]. J Perinatol 2015;35:650–5. ⇦
9. Virginia Department of Health. Pregnancy-associated deaths from drug overdose in Virginia, 1999-2007: a report from the Virginia Maternal Mortality Review Team. Richmond (VA): VDH; 2015. Available at: http://www.vdh.virginia.gov/content/uploads/sites/18/2016/04/Final-Pregnancy-Associated-Deaths-Due-to-Drug-Overdose.pdf. Retrieved March 8, 2017. ⇦
10. Maryland Department of Health and Mental Hygiene. Maryland maternal mortality review 2016 annual report. Baltimore (MD): DHMH; 2016. Available at: http://healthymaryland.org/wp-content/uploads/2011/05/MMR_Report_2016_clean-copy_FINAL.pdf. Retrieved March 8, 2017. ⇦
11. McLellan AT, Lewis DC, O'Brien CP, Kleber HD. Drug dependence, a chronic medical illness: implications for treatment, insurance, and outcomes evaluation. JAMA 2000;284:1689–95. ⇦
12. Centers for Disease Control and Prevention. Opioid Basics. Injury Prevention & Control: Opioid Overdose. Available at: https://www.cdc.gov/drugoverdose/opioids/index.html. Retrieved March 17, 2017. ⇦
13. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington (VA): APA; 2013. ⇦
14. Motivational interviewing: a tool for behavior change. ACOG Committee Opinion No. 423. American College of Obstetricians and Gynecologists. Obstet Gynecol 2009;113:243–6. ⇦
15. Alcohol abuse and other substance use disorders: ethical issues in obstetric and gynecologic practice. Committee Opinion No. 633. American College of Obstetricians and Gynecologists. Obstet Gynecol 2015;125:1529–37. ⇦
16. Substance abuse reporting and pregnancy: the role of the obstetrician–gynecologist. Committee Opinion No. 473. American College of Obstetricians and Gynecologists. Obstet Gynecol 2011;117:200–1. ⇦
17. Schuckit MA. Treatment of opioid-use disorders. N Engl J Med 2016;375:357–68. ⇦
18. National Institute on Drug Abuse. What is heroin and how is it used? Available at: https://www.drugabuse.gov/publications/research-reports/heroin/what-heroin. Retrieved March 8, 2017. ⇦
19. National Institute on Drug Abuse. Commonly abused drug charts. Available at: https://www.drugabuse.gov/drugs-abuse/commonly-abused-drugs-charts. Retrieved March 8, 2017. ⇦
20. Fernandez N, Towers CV, Wolfe L, Hennessy MD, Weitz B, Porter S. Sharing of snorting straws and hepatitis C virus infection in pregnant women. Obstet Gynecol 2016;128:234–7. ⇦
21. Bracken MB, Holford TR. Exposure to prescribed drugs in pregnancy and association with congenital malformations. Obstet Gynecol 1981;58:336–44. ⇦
22. Jick H, Holmes LB, Hunter JR, Madsen S, Stergachis A. First-trimester drug use and congenital disorders. JAMA 1981;246:343–6. ⇦

23. Rothman KJ. Causes. Am J Epidemiol 1976;104:587–92. ⇦
24. Zierler S, Rothman KJ. Congenital heart disease in relation to maternal use of Bendectin and other drugs in early pregnancy. N Engl J Med 1985;313:347–52. ⇦
25. Broussard CS, Rasmussen SA, Reefhuis J, Friedman JM, Jann MW, Riehle-Colarusso T, et al. Maternal treatment with opioid analgesics and risk for birth defects. National Birth Defects Prevention Study. Am J Obstet Gynecol 2011;204:314.e1–11. ⇦
26. Shaw GM, Malcoe LH, Swan SH, Cummins SK, Schulman J. Congenital cardiac anomalies relative to selected maternal exposures and conditions during early pregnancy. Eur J Epidemiol 1992;8:757–60. ⇦
27. Nezvalova-Henriksen K, Spigset O, Nordeng H. Effects of codeine on pregnancy outcome: results from a large population-based cohort study. Eur J Clin Pharmacol 2011;67:1253–61. ⇦
28. Yazdy MM, Mitchell AA, Tinker SC, Parker SE, Werler MM. Periconceptional use of opioids and the risk of neural tube defects. Obstet Gynecol 2013;122:838–44. ⇦
29. Zedler BK, Mann AL, Kim MM, Amick HR, Joyce AR, Murrelle EL, et al. Buprenorphine compared with methadone to treat pregnant women with opioid use disorder: a systematic review and meta-analysis of safety in the mother, fetus and child. Addiction 2016;111:2115–28. ⇦
30. Center for Substance Abuse Treatment. Medication-assisted treatment for opioid addiction during pregnancy. In: Medication-assisted treatment for opioid addiction in opioid treatment programs. Treatment Improvement Protocol (TIP) Series, No. 43. Rockville (MD): Substance Abuse and Mental Health Services Administration; 2005. p. 211–24. ⇦
31. Holbrook A, Kaltenbach K. Co-occurring psychiatric symptoms in opioid-dependent women: the prevalence of antenatal and postnatal depression. Am J Drug Alcohol Abuse 2012;38:575–9. ⇦
32. Jones HE, Heil SH, O'Grady KE, Martin PR, Kaltenbach K, Coyle MG, et al. Smoking in pregnant women screened for an opioid agonist medication study compared to related pregnant and non-pregnant patient samples. Am J Drug Alcohol Abuse 2009;35:375–80. ⇦
33. Wright TE, Terplan M, Ondersma SJ, Boyce C, Yonkers K, Chang G, et al. The role of screening, brief intervention, and referral to treatment in the perinatal period. Am J Obstet Gynecol 2016;215:539–47. ⇦
34. Ewing H. A practical guide to intervention in health and social services with pregnant and postpartum addicts and alcoholics: theoretical framework, brief screening tool, key interview questions, and strategies for referral to recovery resources. Martinez (CA): The Born Free Project, Contra Costa County Department of Health Services; 1990. ⇦
35. Chang G, Orav EJ, Jones JA, Buynitsky T, Gonzalez S, Wilkins-Haug L. Self-reported alcohol and drug use in pregnant young women: a pilot study of associated factors and identification. J Addict Med 2011;5:221–6. ⇦
36. National Institute on Drug Abuse. Resource guide: screening for drug use in general medical settings. Available at: https://www.drugabuse.gov/publications/resource-guide-screening-drug-use-in-general-medical-settings/nida-quick-screen. Retrieved March 8, 2017. ⇦
37. Wexelblatt SL, Ward LP, Torok K, Tisdale E, Meinzen-Derr JK, Greenberg JM. Universal maternal drug testing in a high-prevalence region of prescription opiate abuse. J Pediatr 2015;166:582–6. ⇦
38. Substance Abuse and Mental Health Services Administration. A collaborative approach to the treatment of pregnant women with opioid use disorders. HHS Publication No. (SMA) 16-4978. Rockville (MD): SAMHSA; 2016. Available at: https://ncsacw.samhsa.gov/files/Collaborative_Approach_508.pdf. Retrieved March 8, 2017. ⇦
39. Jones HE, Martin PR, Heil SH, Kaltenbach K, Selby P, Coyle MG, et al. Treatment of opioid-dependent pregnant women: clinical and research issues. J Subst Abuse Treat 2008;35:245–59. ⇦
40. Substance Abuse and Mental Health Services Administration. Frequently asked questions: applying the substance abuse confidentiality regulations to health information exchange (HIE). Rockville (MD): SAMHSA; 2010. Available at: https://www.samhsa.gov/sites/default/files/faqs-applying-confidentiality-regulations-to-hie.pdf. Retrieved March 8, 2017. ⇦
41. Substance Abuse and Mental Health Services Administration. Opioid treatment program directory. Available at: http://dpt2.samhsa.gov/treatment/directory.aspx. Retrieved March 8, 2017. ⇦
42. Pond SM, Kreek MJ, Tong TG, Raghunath J, Benowitz NL. Altered methadone pharmacokinetics in methadone-maintained pregnant women. J Pharmacol Exp Ther 1985;233:1–6. ⇦
43. McCarthy JJ, Leamon MH, Willits NH, Salo R. The effect of methadone dose regimen on neonatal abstinence syndrome. J Addict Med 2015;9:105–10. ⇦
44. Cleary BJ, Donnelly J, Strawbridge J, Gallagher PJ, Fahey T, Clarke M, et al. Methadone dose and neonatal abstinence syndrome-systematic review and meta-analysis. Addiction 2010;105:2071–84. ⇦
45. American Society of Addiction Medicine. The ASAM national practice guideline for the use of medications in the treatment of addiction involving opioid use. Chevy Chase (MD): ASAM; 2015. Available at: http://www.asam.org/docs/default-source/practice-support/guidelines-and-consensus-docs/asam-national-practice-guideline-supplement.pdf. Retrieved March 8, 2017. ⇦
46. Drug addiction treatment act of 2000, Pub. L. No. 106-310 § 3502, 114 Stat. 1223–7. (2000). Available at: https://www.gpo.gov/fdsys/pkg/PLAW-106publ310/pdf/PLAW-106publ310.pdf. Retrieved March 8, 2017. ⇦
47. Fudala PJ, Bridge TP, Herbert S, Williford WO, Chiang CN, Jones K, et al. Office-based treatment of opiate addiction with a sublingual-tablet formulation of buprenorphine and naloxone. Buprenorphine/Naloxone Collaborative Study Group. N Engl J Med 2003;349:949–58. ⇦
48. Mozurkewich EL, Rayburn WF. Buprenorphine and methadone for opioid addiction during pregnancy. Obstet Gynecol Clin North Am 2014;41:241–53. ⇦
49. Minozzi S, Amato L, Bellisario C, Ferri M, Davoli M. Maintenance agonist treatments for opiate-dependent pregnant women. Cochrane Database of Systematic Reviews 2013, Issue 12. Art. No.: CD006318. ⇦

50. Johnson RE, Jones HE, Fischer G. Use of buprenorphine in pregnancy: patient management and effects on the neonate. Drug Alcohol Depend 2003;70:S87–101. ⇦
51. Debelak K, Morrone WR, O'Grady KE, Jones HE. Buprenorphine + naloxone in the treatment of opioid dependence during pregnancy-initial patient care and outcome data. Am J Addict 2013;22:252–4. ⇦
52. Wiegand SL, Stringer EM, Stuebe AM, Jones H, Seashore C, Thorp J. Buprenorphine and naloxone compared with methadone treatment in pregnancy. Obstet Gynecol 2015; 125:363–8. ⇦
53. Substance Abuse and Mental Health Services Administration. Medication-assisted treatment: physician and program data. Available at: https://www.samhsa.gov/programs-campaigns/medication-assisted-treatment/physician-program-data. Retrieved March 8, 2017. ⇦
54. Alto WA, O'Connor AB. Management of women treated with buprenorphine during pregnancy. Am J Obstet Gynecol 2011;205:302–8. ⇦
55. Jones HE, O'Grady KE, Malfi D, Tuten M. Methadone maintenance vs. methadone taper during pregnancy: maternal and neonatal outcomes. Am J Addict 2008;17:372–86. ⇦
56. Reddy UM, Davis JM, Ren Z, Greene MF. Opioid use in pregnancy, neonatal abstinence syndrome, and childhood outcomes: executive summary of a joint workshop by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, American College of Obstetricians and Gynecologists, American Academy of Pediatrics, Society for Maternal–Fetal Medicine, Centers for Disease Control and Prevention, and the March of Dimes. Opioid Use in Pregnancy, Neonatal Abstinence Syndrome, and Childhood Outcomes Workshop. Obstet Gynecol 2017;130:10–28. ⇦
57. Jones HE, Terplan M, Meyer M. Medically assisted withdrawal (detoxification): considering the mother–infant dyad. J Addict Med 2017;11:90–2. ⇦
58. Saia KA, Schiff D, Wachman EM, Mehta P, Vilkins A, Sia M, et al. Caring for pregnant women with opioid use disorder in the USA: expanding and improving treatment. Curr Obstet Gynecol Rep 2016;5:257–63 ⇦.
59. Rementeria JL, Nunag NN. Narcotic withdrawal in pregnancy: stillbirth incidence with a case report. Am J Obstet Gynecol 1973;116:1152–6. ⇦
60. Zuspan FP, Gumpel JA, Mejia-Zelaya A, Madden J, Davis R. Fetal stress from methadone withdrawal. Am J Obstet Gynecol 1975;122:43–6. ⇦
61. Luty J, Nikolaou V, Bearn J. Is opiate detoxification unsafe in pregnancy? J Subst Abuse Treat 2003;24:363–7. ⇦
62. Bell J, Towers CV, Hennessy MD, Heitzman C, Smith B, Chattin K. Detoxification from opiate drugs during pregnancy. Am J Obstet Gynecol 2016;215:374.e1–6. ⇦
63. Welle-Strand GK, Skurtveit S, Tanum L, Waal H, Bakstad B, Bjarko L, et al. Tapering from methadone or buprenorphine during pregnancy: maternal and neonatal outcomes in Norway 1996–2009. Eur Addict Res 2015;21:253–61. ⇦
64. Jones HE, Chisolm MS, Jansson LM, Terplan M. Naltrexone in the treatment of opioid-dependent pregnant women: the case for a considered and measured approach to research. Addiction 2013;108:233–47. ⇦
65. Jones HE. Acceptance of naltrexone by pregnant women enrolled in comprehensive drug addiction treatment: an initial survey. Am J Addict 2012;21:199–201. ⇦
66. Substance Abuse and Mental Health Services Administration. SAMHSA opioid overdose prevention toolkit. Rockville (MD): SAMHSA; 2016. Available at: http://store.samhsa.gov/shin/content//SMA16-4742/SMA16-4742.pdf. Retrieved March 8, 2017. ⇦
67. Optimizing support for breastfeeding as part of obstetric practice. Committee Opinion No. 658. American College of Obstetricians and Gynecologists. Obstet Gynecol 2016;127:e86–92. ⇦
68. Meyer M, Wagner K, Benvenuto A, Plante D, Howard D. Intrapartum and postpartum analgesia for women maintained on methadone during pregnancy. Obstet Gynecol 2007;110:261–6. ⇦
69. Jones HE, O'Grady K, Dahne J, Johnson R, Lemoine L, Milio L, et al. Management of acute postpartum pain in patients maintained on methadone or buprenorphine during pregnancy. Am J Drug Alcohol Abuse 2009;35:151-6. ⇦
70. Jones HE, Johnson RE, Milio L. Post-cesarean pain management of patients maintained on methadone or buprenorphine. Am J Addict 2006;15:258–9. ⇦
71. Obstetric analgesia and anesthesia. ACOG Practice Bulletin No. 177. American College of Obstetricians and Gynecologists. Obstet Gynecol 2017;129:e73–89. ⇦
72. Bagley SM, Wachman EM, Holland E, Brogly SB. Review of the assessment and management of neonatal abstinence syndrome. Addict Sci Clin Pract 2014;9:19. ⇦
73. Wojnar-Horton RE, Kristensen JH, Yapp P, Ilett KF, Dusci LJ, Hackett LP. Methadone distribution and excretion into breast milk of clients in a methadone maintenance programme. Br J Clin Pharmacol 1997;44:543–7. ⇦
74. Reece-Stremtan S, Marinelli KA. ABM clinical protocol #21: guidelines for breastfeeding and substance use or substance use disorder, revised 2015. Breastfeed Med 2015;10: 135–41. ⇦
75. Sachs HC. The transfer of drugs and therapeutics into human breast milk: an update on selected topics. Committee on Drugs. Pediatrics 2013;132:e796–809. ⇦
76. U.S. Food and Drug Administration. FDA Drug Safety Communication: FDA restricts use of prescription codeine pain and cough medicines and tramadol pain medicines in children; recommends against use in breastfeeding women. Silver Spring (MD): FDA; 2017. Available at: https://www.fda.gov/Drugs/DrugSafety/ucm549679.htm. Retrieved June 2, 2017. ⇦
77. Jones HE, Johnson RE, O'Grady KE, Jasinski DR, Tuten M, Milio L. Dosing adjustments in postpartum patients maintained on buprenorphine or methadone. J Addict Med 2008;2:103–7. ⇦
78. Jones HE, Deppen K, Hudak ML, Leffert L, McClelland C, Sahin L, et al. Clinical care for opioid-using pregnant and postpartum women: the role of obstetric providers. Am J Obstet Gynecol 2014;210:302–10. ⇦
79. Gopman S. Prenatal and postpartum care of women with substance use disorders. Obstet Gynecol Clin North Am 2014;41:213–28. ⇦

80. Screening for perinatal depression. Committee Opinion No. 630. American College of Obstetricians and Gynecologists. Obstet Gynecol 2015;125:1268–71. ⇦

81. Johnson RE, Jones HE, Jasinski DR, Svikis DS, Haug NA, Jansson LM, et al. Buprenorphine treatment of pregnant opioid—dependent women: maternal and neonatal outcomes. Drug Alcohol Depend 2001;63:97–103. ⇦

82. American Society of Addiction Medicine. Public policy statement on the use of naloxone for the prevention of opioid overdose deaths. Chevy Chase (MD): ASAM; 2016. Available at: http://www.asam.org/docs/default-source/public-policy-statements/use-of-naloxone-for-the-prevention-of-opioid-overdose-deaths-final.pdf?sfvrsn=4. Retrieved March 8, 2017. ⇦

83. Terplan M, Hand DJ, Hutchinson M, Salisbury-Afshar E, Heil SH. Contraceptive use and method choice among women with opioid and other substance use disorders: A systematic review. Prev Med 2015;80:23–31. ⇦

84. Immediate postpartum long-acting reversible contraception. Committee Opinion No. 670. American College of Obstetricians and Gynecologists. Obstet Gynecol 2016;128:e32–7. ⇦

85. Jones HE, Finnegan LP, Kaltenbach K. Methadone and buprenorphine for the management of opioid dependence in pregnancy. Drugs 2012;72:747–57. ⇦

86. Ohio Perinatal Quality Collaborative. Neonatal abstinence syndrome and maternal addiction. Available at: https://opqc.net/patients-providers/%20NAS. Retrieved March 8, 2017. ⇦

87. Logan BA, Brown MS, Hayes MJ. Neonatal abstinence syndrome: treatment and pediatric outcomes. Clin Obstet Gynecol 2013;56:186–92. ⇦

88. Kaltenbach K, Finnegan LP. Developmental outcome of children born to methadone maintained women: a review of longitudinal studies. Neurobehav Toxicol Teratol 1984;6:271–5. ⇦

89. Hans SL. Developmental consequences of prenatal exposure to methadone. Ann N Y Acad Sci 1989;562:195–207. ⇦

ISSN 1074-861X

The American College of Obstetricians and Gynecologists
409 12th Street, SW, PO Box 96920, Washington, DC 20090-6920

Opioid use and opioid use disorder in pregnancy. Committee Opinion No. 711. American College of Obstetricians and Gynecologists. Obstet Gynecol 2017;130:e81–94.