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Obstetrician-Gynecologists' practice patterns related to opioid use during pregnancy and postpartum - United States, 2017

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Abstract

Objective: To describe obstetrician-gynecologists' practices and attitudes related to opioid use among pregnant and postpartum women.

Study Design: A 2017 cross-sectional survey assessed U.S. obstetrician-gynecologists' (n=462; response rate=34%) practices (management) and attitudes (knowledge, preparedness, confidence, barriers, and resources needed) related to opioid use among pregnant and postpartum women. Modified Poisson regression determined adjusted prevalence ratios (aPR) for advising medication assisted therapy (MAT) for pregnant women with opioid use disorder (OUD) by knowledge, confidence, and preparedness.

Results: Of respondents, 33% usually or always advised MAT to pregnant women with OUD. Confidence in treating pregnant women who use opioids (aPR: 1.3, 95% CI: 1.0-1.8) and knowledge that substance use services were covered under the Affordable Care Act (aPR: 1.4, 95% CI: 1.1-1.8) were associated with advising MAT.

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Conflicts of Interest

The authors report no conflict of interest.

Conclusion: Evidence suggests that efforts are needed to enhance physician confidence to manage pregnant and postpartum patients who use opioids, which may increase optimal care of this patient population.

Introduction

Opioid use and opioid use disorder during pregnancy are not only associated with adverse maternal outcomes such as co-substance use, and obstetrical morbidities and mortality, but also with infant outcomes such as neonatal abstinence syndrome (NAS), preterm birth, and stillbirth (1, 2). Opioid use disorder, as defined by the current Diagnostic and Statistical Manual of Mental Disorders (DSM-5), is “... a problematic pattern of opioid use leading to clinically significant impairment or distress....” characterized by meeting at least 2 of 11 defined criteria (e.g., craving or strong desire or urge to use) within a 12 month period (3). The prevalence of maternal opioid use disorder has increased significantly from 1.5 to 6.5 per 1,000 hospital deliveries from 1999 to 2014 (4). Rates of NAS, which is primarily a result of in-utero opioid exposure, have increased in parallel from 1.2 to 8.0 per 1,000 deliveries from 2000 to 2014 (1, 5). Appropriate management of women who use opioids and women with opioid use disorder is important for pregnancy and postpartum health and birth outcomes for the maternal and infant dyad.

In 2017, the American College of Obstetricians and Gynecologists (ACOG) and the American Society of Addiction Medicine (ASAM) published recommendations for screening and management of pregnant and postpartum women with opioid use and opioid use disorder (6). During pregnancy, screening is recommended for opioid use and opioid use disorder, other substance use, and co-occurring mental health conditions (6). For chronic pain, ACOG/ASAM advise physicians to avoid or minimize the use of opioids for pain management (6); thus, any use of opioids during pregnancy, even use as prescribed, may require specialized care. ACOG and ASAM guidelines acknowledge that medication-assisted treatment (MAT), also referred to as opioid agonist pharmacotherapy, “...with either methadone or buprenorphine has been used for treatment of opioid use disorder in pregnant women.”(6) As more safety data become available, use of the combination of buprenorphine and naloxone during pregnancy may increase (6). The preferred management of opioid use disorder during and after pregnancy is MAT (6) as it is associated with an increased likelihood of adherence to prenatal care and addiction treatment programs (6), retention of maternal guardianship (7), and a reduction in the risk of obstetric complications (8, 9) and perinatal adverse outcomes (7). Abrupt cessation or tapering of opioids can result in severe withdrawal symptoms and is associated with high rates of relapse (6, 8). Little is known about the current management of pregnant women with opioid use disorder, including how often MAT is advised and how often screening for comorbidities occurs. In addition, it is unclear how management of opioid use disorder during pregnancy is affected by physicians’ perceptions of preparedness and how confident they are to treat pregnant women who use opioids. The Affordable Care Act of 2010 included provisions that require Medicaid-insured individuals receive coverage for comprehensive substance use services, including both counseling and pharmacotherapy; this would include women receiving Medicaid coverage during their pregnancy. It is unknown whether physician-reported knowledge of this coverage provision is associated with management of opioid use disorder during pregnancy.

ACOG and ASAM recommendations specific to the postpartum period for women with opioid use disorder include promoting continuation of MAT, counseling on contraception, and encouraging women on MAT without other contraindications to breastfeed (6). For all women, the postpartum period may be an optimal time to counsel and provide contraception to those who desire it to avoid negative outcomes related to short birth intervals (10, 11). Absent contraindications, breastfeeding is encouraged for all maternal and infant dyads as it offers immunity and supports maternal and infant attachment (12). For women on MAT, breastfeeding is associated with decreased severity of their infants' withdrawal signs (i.e., NAS) and is one of many nonpharmacologic treatment strategies to reduce an infant's need for pharmacotherapy (13-15). Scant information exists on whether physicians are counseling postpartum contraception or breastfeeding for women with opioid use disorder. In addition, barriers experienced by physicians when treating pregnant and postpartum women for opioid use disorder and physician's opinions on what resources are needed to improve treatment have not been documented on a national scale.

In a preceding analysis, we investigated uptake of ACOG's universal substance use screening recommendations and found that 79% of respondents reported frequently screening for substance use among their pregnant patients (16). We also found that 55% and 61% of obstetrician-gynecologists perceived that screening for medical and non-medical use of prescription opioids, respectively, is a high priority for their practices. In the present analysis, we describe the management of pregnant and postpartum women with opioid use disorder, as defined in our survey and as reported by obstetrician-gynecologists, and whether their confidence in treating women who use opioids, their perceived preparedness to prescribe MAT for pregnant women with opioid use disorder, and their knowledge of service coverage are associated with advising MAT. In addition, we describe physicians' perceived barriers to screening and treatment, and perceived resources needed to improve treatment. Findings from this study can guide efforts for education, training, and support for physicians to effectively manage opioid use among pregnant and postpartum women to improve their treatment and health outcomes.

Materials and Methods

Survey Design

Investigators from ACOG and the Centers for Disease Control and Prevention (CDC) collaboratively developed a cross-sectional survey to assess obstetrician-gynecologists' reported experiences, opinions, and practices regarding women's substance use during pregnancy and postpartum. Specifically, the survey included questions about frequency and method of substance use screening (e.g., alcohol, tobacco, marijuana, illicit substances), which are reported elsewhere (16), and questions on practices, knowledge, perceptions of preparedness and confidence for managing opioid use among pregnant and postpartum women, and potential resources needed for and barriers to effective treatment of opioid use disorder, which are reported on in this manuscript. ACOG received local IRB approval; survey completion was considered consent to participate. Additional methodological details regarding survey design and participants can be found elsewhere (16).

Measures

Survey questions relevant to the current analysis included: (a) management of pregnant and postpartum women with opioid use disorder, where respondents were asked to consider “How do you manage pregnant patients who have opioid use disorders (illicit use or nonmedical use of prescription opioids)?”; b) confidence in treating pregnant women who use opioids; (c) perceptions of preparedness to screen for opioid use disorder, conduct brief interventions with those who use opioids, educate on effects of opioids and on breastfeeding, use resources, and prescribe MAT for pregnant and postpartum women with opioid use disorder (d) a medical practice’s priority of screening for medical and non-medical use of prescription opioids; (e) knowledge of the Affordable Care Act provision for plans to cover comprehensive substance use services for pregnant women on Medicaid; and (f) perceived barriers to screening and treating pregnant and postpartum women with opioid use disorder and resources needed to improve treatment. Questions and categorization of responses can be found in Table 1.

Statistical Analyses

Frequencies were calculated of respondents’ self-reported management, confidence and perceptions of preparedness, practice’s screening priority for medical and non-medical use of prescription opioids, and perceived barriers and resources needed to improve treatment for opioid use disorder. Pearson chi-squared tests were used to assess associations between perceptions of preparedness and confidence in treating pregnant women who use opioids. Our outcome of interest, advising of MAT, was defined as usually or always advising methadone or buprenorphine, due to evolving evidence related to use of the combination of buprenorphine and naloxone during pregnancy. Poisson regression with a robust error variance, or Modified Poisson Regression, was used to determine the association between advising MAT for pregnant women with opioid use disorder and confidence in treating pregnant women who use opioids, perceived preparedness for prescribing MAT, practice priority for screening for medical and non-medical use of prescription opioids, and knowledge of the coverage of comprehensive substance use services, controlling for physician characteristics (sex, race, board certification, and years of practice), patient population (percentage of patient’s race identified as white, and Medicaid enrollees), and practice characteristics (practice type, average number of new pregnant patients per month, region, and location). A 2-tailed probability of less than 0.05 was considered statistically significant. Data were analyzed with SAS software (version 9.4; SAS Institute Inc., Cary, NC).

Results

The overall response rate was 34% (N = 462). Respondents had a mean of 20 years in practice, 63% were female, and 12% were board certified in maternal-fetal medicine (data reported elsewhere) (16). More than 72% of respondents indicated that over a quarter of their patients were insured by Medicaid (16).

Management of Pregnant and Postpartum Women with Opioid Use Disorder

For pregnant women with opioid use disorder, most respondents indicated that they usually or always advise opioid cessation (55%), sometimes advise methadone or buprenorphine maintenance (36%–41%), and never or rarely advise inpatient, monitored withdrawal (58%) or buprenorphine and naloxone together (48%) (Table 2). Most respondents indicated they usually or always screen for alcohol/tobacco, depression, anxiety, and intimate partner violence (>75%) and never or rarely conduct brief interventions or motivational interviews (52%). Almost all respondents reported usually or always informing these women about the fetal effects of opioids (93%).

For postpartum women with opioid use disorder, most respondents indicated that they usually or always advise opioid cessation (68%), sometimes advise methadone or buprenorphine (40%–45%), and rarely or never advise inpatient, monitored withdrawal (48%) (Table 2). Most respondents reported that they usually or always recommend breastfeeding for those on MAT (53%), counsel on effective contraceptive methods (96%), refer the women to a treatment program or facility (59%) or addiction specialist (61%), and sometimes refer the women to psychiatry (42%).

Perceptions of Preparedness, Confidence in Treating, and Knowledge of Comprehensive Treatment Provision Insurance Coverage

A high proportion of respondents felt prepared to screen pregnant (82%) and postpartum (75%) women for opioid use disorder and educate pregnant (89%) and breastfeeding (72%) patients about the effects of opioids on their fetus or baby (data not shown). Most respondents felt prepared to conduct brief intervention with pregnant women who use opioids (66%) and use resources to refer patients who need an opioid cessation program (65%). Fewer respondents felt prepared to prescribe MAT to pregnant (22%) and nonpregnant (17%) women (data not shown).

Overall, 37% of respondents felt confident in treating pregnant women who use opioids (data not shown). Respondents who reported feeling confident treating pregnant women who use opioids were significantly more likely than their counterparts to feel prepared to conduct brief interventions with those who use opioids (85% vs. 54%, $P < 0.001$), use resources to refer women who need an opioid cessation program (88% vs. 50%, $P < 0.001$), and prescribe MAT for pregnant women with opioid use disorder (40% vs. 11%, $P < 0.001$) (data not shown).

A quarter of respondents knew of the Affordable Care Act provision for coverage of comprehensive substance use services for Medicaid-insured individuals, which would include pregnant women. Most respondents did not know (71%) or incorrectly stated that the provision did not exist (4%) (data not shown).

Advising MAT

Overall, nearly 33% reported usually or always advising some form of MAT to their pregnant patients with opioid use disorder (Table 2). After controlling for physician, patient population, and practice characteristics, respondents who felt confident in treating pregnant

women who use opioids were 1.3 times as likely to advise MAT for their pregnant patients with opioid use disorder as respondents who did not feel confident treating these women (95% CI: 1.0, 1.8, $P=0.04$) (Table 3). Respondents who were knowledgeable about the Affordable Care Act provision requiring pregnant women on Medicaid to receive coverage for comprehensive substance use services were 1.4 times as likely to advise MAT for their pregnant patients as those who were not knowledgeable about this provision (95% CI: 1.1, 1.8) (Table 3). No significant difference was seen in advising MAT by perceived preparedness to prescribe MAT for patients (aPR: 1.1, 95% CI: 0.8, 1.5) or perceived practice priority for screening for medical and non-medical use of prescription opioids (aPR: 0.8, 95% CI: 0.6, 1.1) (Table 3).

Barriers to Screening and Treating and Resources Needed to Improve

The most frequently reported barriers to screening and treating pregnant and postpartum women for opioid use disorder were patient denial or resistance (62%), a lack of facilities or resources for treatment of opioid use disorder once identified (58%), patient's inability to pay (51%), and time limitations during patient visits (51%) (Figure 1). Less than 20% of respondents reported that state reporting laws and concerns about patient confidentiality issues were barriers to screening and treatment. The most frequently chosen responses for resources needed to improve treatment of opioid use disorder in clinical practice were: (a) referral resources and treatment facilities for pregnant and postpartum women with opioid use disorder (85%); (b) patient information about adverse reproductive outcomes associated with opioids (65%); and (c) specific standardized screening questionnaires for substance use during pregnancy (64%) (Figure 2).

Comment

Among a national sample of obstetrician-gynecologists, approximately one third and one quarter of respondents reported advising MAT for their pregnant and postpartum patients, respectively, with opioid use disorder. Half of physicians frequently advised cessation among pregnant women with opioid use disorder. After adjustment for other factors, confidence in treating pregnant women who use opioids was associated with higher prevalence of advising MAT. Findings suggest a need to educate and increase the confidence of physicians to provide MAT both during and after pregnancy to ensure optimal outcomes for both mother and baby, and to reduce relapse and overdoses. Unmet treatment needs remain high among women, ranging from 81% to 95% across states (17). As obstetricians and gynecologists are often the first contact into care for pregnant women, increasing capacity at prenatal clinics to provide MAT may be an important strategy to address opioid use disorder among this population. Training resources are available online for the appropriate management and treatment of pregnant and postpartum women who have opioid use disorder (<https://www.cdc.gov/drugoverdose/training/pregnancy/>) and on buprenorphine waivers (<https://www.samhsa.gov/medication-assisted-treatment/training-resources/buprenorphine-physician-training>). However, simply increasing the number of buprenorphine waived providers may not necessarily increase the number of women treated (18). Additional ways to increase physician confidence and MAT integration into obstetric practices may include the use of provider warm lines to deliver real time support to

the clinic and assistance linking obstetric practices with addiction treatment. The Massachusetts Child Psychiatry Access Program for Moms, is an innovative example of building capacity within perinatal primary care providers to address perinatal mental health and substance use through the provision of near-time telephonic clinical consultations from perinatal psychiatrist colleagues, as well as provision of trainings, tool kits, and referrals to community resources (19). Obstetrician-gynecologists frequently screen for substance use (16). Taking patient histories and using verbal screening tools provide the opportunity for the prenatal care clinician to offer brief intervention or motivational interviewing (6, 20). Brief behavioral counseling interventions have been shown to be effective in reducing drinking (21, 22), smoking (23, 24), and illicit drug use (25) during pregnancy and to improve pregnancy outcomes (26). However, more than half of respondents in our study reported a low frequency of conducting brief intervention or performing motivational interviewing or cognitive behavioral therapy, potentially due to the time-consuming nature of these activities or referral to treatment centers or addiction specialists. Almost all respondents frequently informed their pregnant patients about the fetal effects of opioid use during pregnancy; however, two thirds of respondents identified needing patient information about adverse reproductive outcomes associated with opioids. In addition, respondents cited patient denial or resistance as the most commonly reported barrier to screening and treatment. Thus, intervention strategies that address how physicians can create open patient provider dialogues with their patients may be important to consider.

Nearly all respondents reported, for the postpartum period, frequently counseling their patients on effective postpartum contraceptive methods (96%), but only half of respondents reported frequent recommendation of breastfeeding to their patients on MAT (53%). The low rate of breastfeeding recommendation may be due to the increased likelihood that women with opioid use disorder have contraindications, such as HIV (6). ACOG encourages physicians to discuss with their patients, preferably during the prenatal period, all contraceptive options and to encourage breastfeeding if a woman is stable on MAT, not using illicit substances, and HIV negative (6). Continuing education and training may increase use of brief interventions and encouragement of breastfeeding, if appropriate.

Six out of ten physicians reported always referring postpartum patients with OUD to treatment services. Additionally, lack of treatment facilities and referral resources was the second most common perceived barrier reported. Most physicians cited that they needed referral resources and treatment facilities to improve treatment of women with opioid use disorder. In combination, these findings may reflect a perceived lack of available treatment centers or a missing linkage between prenatal care and addiction treatment. ACOG guidelines state that obstetrician-gynecologists should be knowledgeable about local resources for substance use treatment and that proper case communication with physicians at substance treatment facilities can optimize patient care (6). It is uncommon for US medical centers and obstetrician-gynecologist practices to have the resources to support in-house perinatal addiction treatment programs (27), but there is growing recognition for the need of improved coordinated care and wrap around services. Warm lines and state perinatal access programs may assist in referrals and connection to treatment facilities. The Opioid Use Disorder, Maternal Outcomes, and Neonatal Abstinence Syndrome Initiative Learning Community is one example of public health efforts to address discontinuity of care. States

teams participating in this collaborative are composed of state Medicaid medical director, behavioral, mental health, or alcohol and drug abuse director, Title V director, and a provider or facility champion (28). These state teams are working to implement strategies such as: development of a MAT provider network map for pregnant and postpartum women with OUD, implementation of a care bundle to address OUD, and waiving prior authorization prescribing requirements for MAT (28). Furthermore, state or regional perinatal quality collaboratives (multidisciplinary state or regional teams composed of obstetrician-gynecologists, neonatologists, pediatricians, hospital leaders, patient representatives, and community organizations) may be useful in standardizing protocols that promote continuous care for pregnant and postpartum women and their infants across hospitals and outpatient clinics. Additionally, state chapters of professional organizations may wish to provide joint trainings so that members have opportunities to establish ongoing relationships.

About half of our respondents identified reimbursement by insurance for screening and treatment, and access to phone consultation to ask questions, as useful resources. Increasing awareness of the Affordable Care Act provision for comprehensive substance use coverage among Medicaid-insured individuals, which includes women receiving coverage for their pregnancy, may be beneficial as only a quarter of respondents were aware of this provision. Several states are exploring strategies to address the increased risk of overdose in the postpartum period and the need for continuity of care. These strategies include: providing and reimbursing integrated wraparound services for pregnant and postpartum women and their infants, and working with insurers, including Medicaid to ensure full insurance coverage up to 1 year postpartum (28). However, a study of MAT providers, opioid treatment programs, and outpatient buprenorphine providers in four Appalachian states found that opioid treatment programs were less likely to treat pregnant women and accept either Medicaid or private insurance (29). Thus, addressing reimbursement and payment structure through novel reimbursement mechanisms such as the unbundling of prenatal care from addiction treatment (if provided at the same time and space by the same provider), or value based payment for the prescription of MAT may be important to consider.

This study provides information on participating obstetrician-gynecologists' practices related to opioid use during pregnancy and postpartum. There are a few limitations. First the 34% response rate may result in nonresponse bias, and our results may not be generalizable to all ACOG members. However, nonresponse bias may be less problematic among physician populations. Second, self-reported behaviors and management practices may be inflated because of social desirability bias (30). Third, wording of some survey questions might not have been sufficiently precise to capture compliance with ACOG/ASAM guidelines. For example, opioid use disorder was defined for respondents as including illicit opioid use or non-medical use of prescription opioids and thus differed from current diagnostic criteria (3). Respondents' interpretations of the survey's language about opioid use disorder might have affected response selections. Physicians choosing responses to describe their practices related to patients with illicit opioid use or non-medical use of prescription opioids might have underreported their true practice of usually or always advising MAT for opioid use disorder as defined in the DSM-5. Similarly, the survey did not define "confidence in providing treatment", but rather left the interpretation of this concept to the respondent. Fourth, our estimates may underestimate usually or always advising MAT

because we defined MAT conservatively and did not include combination buprenorphine and naloxone. Further, physicians may refer their patients with opioid use disorder to a treatment program or addiction specialist and might not reflect the care actually received by women. Additionally, this survey did not ask physicians specifically about peripartum pain management or discharge opioid prescribing for women with OUD. The postpartum period is a time of increased vulnerabilities for OUD recurrence, overdose and overdose death, risks that are mitigated by medication continuation (31). Finally, these data were collected in 2017 and may not reflect recent efforts to improve management of opioid use disorder among pregnant and postpartum women.

In summary, most of the responding obstetrician-gynecologists reported that some of their management of opioid use disorder among pregnant and postpartum women aligned with ACOG/ASAM guidelines: screening for other substances and mental health conditions, discussing the fetal effects of opioids, and counseling on postpartum contraception. However, findings appear to indicate there are key improvement opportunities for obstetrician-gynecologists regarding advising MAT, using brief interventions, and advising breastfeeding, where appropriate. Evidence from this study suggests that efforts are needed to enhance physician confidence to manage pregnant and postpartum patients who use opioids, which may increase optimal care of this patient population.

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References

1. 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(18):1934-40. [PubMed: 22546608]
2. Maeda A, Bateman BT, Clancy CR, Creanga AA, Leffert LR. Opioid abuse and dependence during pregnancy: temporal trends and obstetrical outcomes. *Anesthesiology*. 2014;121(6):1158-65. [PubMed: 25405293]
3. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 5th ed. Arlington, VA: American Psychiatric Publishing; 2013.
4. Haight SC, Ko JY, Tong VT, Bohm MK, Callaghan WM. Opioid Use Disorder Documented at Delivery Hospitalization - United States, 1999-2014. *MMWR Morbidity and mortality weekly report*. 2018;67(31):845-9. [PubMed: 30091969]
5. Winkelman TNA, Villapiano N, Kozhimannil KB, Davis MM, Patrick SW. Incidence and Costs of Neonatal Abstinence Syndrome Among Infants With Medicaid: 2004-2014. *Pediatrics*. 2018;141(4).
6. American College of Obstetricians and Gynecologists. Committee Opinion No. 711: Opioid Use and Opioid Use Disorder in Pregnancy. *Obstetrics and gynecology*. 2017;130(2):e81-e94. [PubMed: 28742676]

7. Meyer M, Benvenuto A, Howard D, Johnston A, Plante D, Metayer J, et al. Development of a substance abuse program for opioid-dependent nonurban pregnant women improves outcome. *Journal of addiction medicine*. 2012;6(2):124–30. [PubMed: 22517450]
8. Center for Substance Abuse Treatment. Medication-Assisted Treatment for Opioid Addicted in Opioid Treatment Programs Inservice Training. HHS Publication No. (SMA) 09-4341. Rockville, MD: Substance Abuse and Mental Health Services Administration 2008.
9. Jones HE, Martin PR, Heil SH, Stine SM, Kaltenbach K, Selby P, et al. Treatment of Opioid Dependent Pregnant Women: Clinical and Research Issues. *Journal of substance abuse treatment*. 2008;35(3):245–59. [PubMed: 18248941]
10. American College of Obstetricians and Gynecologists. Committee Opinion No. 670: Immediate postpartum long-acting reversible contraception. *Obstetrics and gynecology*. 2016(128):e32–7. [PubMed: 27454734]
11. Centers for Disease Control and Prevention (CDC). Update to CDC’s U.S. Medical Eligibility Criteria for Contraceptive Use, 2010: revised recommendations for the use of contraceptive methods during the postpartum period. *MMWR Morbidity and mortality weekly report*. 2011;60(26):878–83. [PubMed: 21734635]
12. The American Academy of Pediatrics (AAP). Breastfeeding and the use of human milk. *Pediatrics*. 2012;129(3):e827–41. [PubMed: 22371471]
13. Wojnar-Horton R, Kristensen J, Yapp P, Ilett K, Dusci L, Hackett L. Methadone distribution and excretion into breast milk of clients in a methadone maintenance programme. *British journal of clinical pharmacology*. 1997;44(6):543–7. [PubMed: 9431829]
14. Reece-Stremtan S, Marinelli KA, Academy of Breastfeeding Medicine. ABM clinical protocol# 21: guidelines for breastfeeding and substance use or substance use disorder, revised 2015. *Breastfeeding Medicine*. 2015;10(3):135–41. [PubMed: 25836677]
15. Bagley SM, Wachman EM, Holland E, Brogly SB. Review of the assessment and management of neonatal abstinence syndrome. *Addiction science & clinical practice*. 2014;9(1):19. [PubMed: 25199822]
16. Ko JY, Tong VT, Haight SC, Terplan M, Stark L, Snead C, et al. Obstetrician-gynecologists’ practices and attitudes on substance use screening during pregnancy In review, *Journal of Perinatology*. 2019.
17. Terplan M, Longinaker N, Appel L. Women-Centered Drug Treatment Services and Need in the United States, 2002-2009. *Am J Public Health*. 2015;105(11):e50–4. [PubMed: 26378825]
18. Sigmon SC. The Untapped Potential of Office-Based Buprenorphine TreatmentOffice-Based Buprenorphine TreatmentLetters. *JAMA psychiatry*. 2015;72(4):395–6. [PubMed: 25671806]
19. Byatt N, Straus J, Stopa A, Biebel K, Mittal L, Moore Simas TA. Massachusetts Child Psychiatry Access Program for Moms: Utilization and Quality Assessment. *Obstetrics and gynecology*. 2018;132(2):345–53. [PubMed: 29995727]
20. American College of Obstetricians and Gynecologists. ACOG Committee Opinion No. 423: Motivational Interviewing: A Tool for Behavioral Change. *Obstetrics & Gynecology*. 2009;113(1):243–6. [PubMed: 19104391]
21. O’Connor MJ, Whaley SE. Brief Intervention for Alcohol Use by Pregnant Women. *American Journal of Public Health*. 2007;97(2):252–8. [PubMed: 17194863]
22. Chang G, McNamara TK, Orav EJ, Koby D, Lavigne A, Ludman B, et al. Brief intervention for prenatal alcohol use: a randomized trial. *Obstetrics and gynecology*. 2005;105(5 Pt 1):991–8. [PubMed: 15863535]
23. Bowden JA, Oag DA, Smith KL, Miller CL. An integrated brief intervention to address smoking in pregnancy. *Acta obstetrica et gynecologica Scandinavica*. 2010;89(4):496–504. [PubMed: 20367428]
24. Ferreira-Borges C Effectiveness of a brief counseling and behavioral intervention for smoking cessation in pregnant women. *Preventive medicine*. 2005;41(1):295–302. [PubMed: 15917025]
25. Farr SL, Hutchings YL, Ondersma SJ, Creanga AA. Brief interventions for illicit drug use among peripartum women. *American journal of obstetrics and gynecology*. 2014;211(4):336–43. [PubMed: 24721261]

26. 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. *American journal of obstetrics and gynecology*. 2016;215(5):539–47. [PubMed: 27373599]
27. Goodman D Improving Access to Maternity Care for Women with Opioid Use Disorders: Colocation of Midwifery Services at an Addiction Treatment Program. *Journal of midwifery & women's health*. 2015;60(6):706–12.
28. Kroelinger CD, Rice ME, Cox S, Hickner HR, Weber MK, Romero L, et al. State Strategies to Address Opioid Use Disorder Among Pregnant and Postpartum Women and Infants Prenatally Exposed to Substances, Including Infants with Neonatal Abstinence Syndrome. *MMWR Morbidity and mortality weekly report*. 2019;68(36):777–83. [PubMed: 31513558]
29. P SW, Buntin MB, M PR, Scott TA, Dupont W, R M, et al. Barriers to accessing treatment for pregnant women with opioid use disorder in Appalachian states. *Substance abuse*. 2018:1–7.
30. Adams AS, Soumerai SB, Lomas J, Ross-Degnan D. Evidence of self-report bias in assessing adherence to guidelines. *International journal for quality in health care : journal of the International Society for Quality in Health Care*. 1999;11(3):187–92.
31. Schiff DM, Nielsen T, Terplan M, Hood M, Bernson D, Diop H, et al. Fatal and Nonfatal Overdose Among Pregnant and Postpartum Women in Massachusetts. *Obstetrics and gynecology*. 2018;132(2):466–74. [PubMed: 29995730]

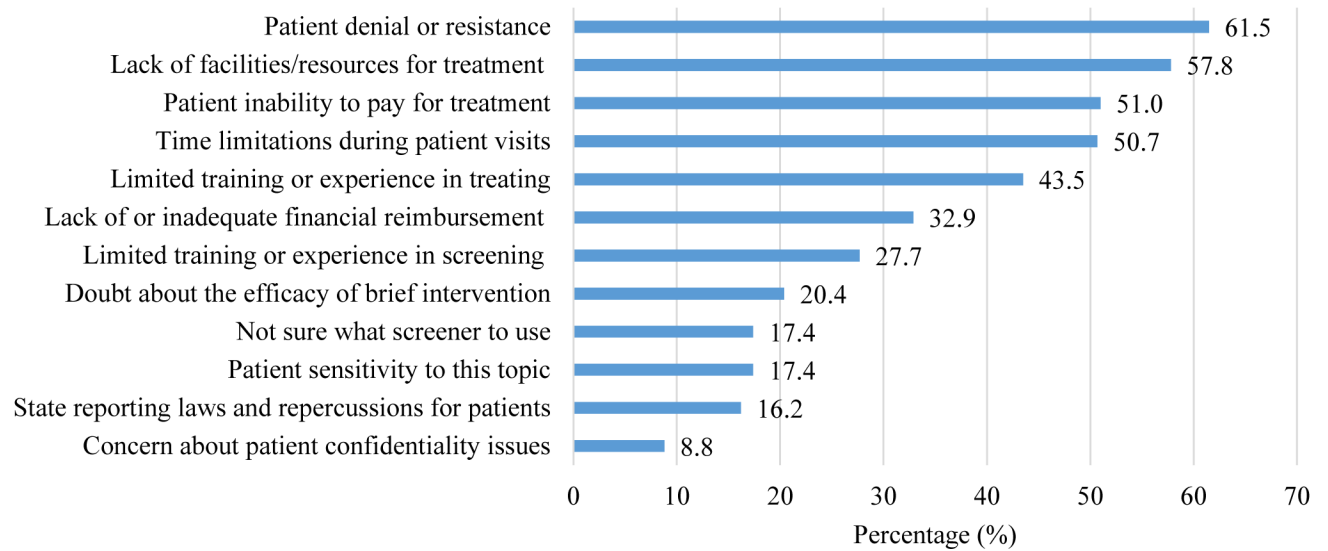


Figure 1. Major barriers to screening and treating pregnant and postpartum patients for opioid use disorder¹ (n = 340); Survey of American College of Obstetricians and Gynecologists Members, 2017

¹ Participants were asked: To what extent are the following potential barriers to screening and treating pregnant and postpartum patients for opioid use disorder?

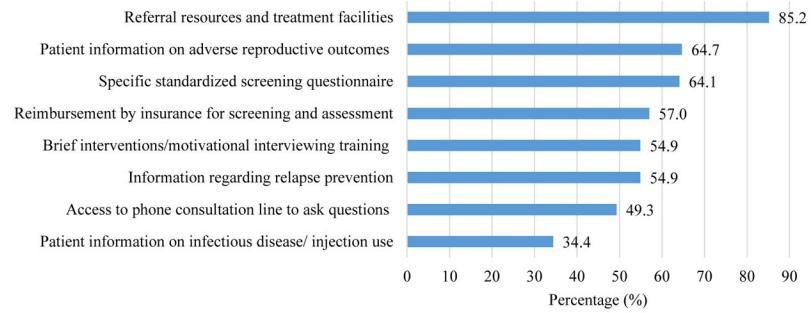


Figure 2. Resources needed to improve treatment for pregnant and postpartum patients with opioid use disorder¹ (n = 337); Survey of American College of Obstetricians and Gynecologists Members, 2017

¹ Participants were asked: What resources do you need to improve treatment of opioid use disorder in your clinical practice? Check all that apply.

Table 1.

American College of Obstetricians and Gynecologists survey questions, 2017

Theme	Question	Answer options	Categorization
I. Management of patients	How do you manage pregnant patients who have opioid use disorders (illicit use or nonmedical use of prescription opioids)?		
	1 Advise opioid cessation.		
	2 Advise inpatient, monitored withdrawal.		
	3 Advise methadone maintenance.		
	4 Advise buprenorphine maintenance.		
	5 Advise buprenorphine/naloxone maintenance.		
	6 Conduct brief intervention/motivational interviewing/cognitive behavioral therapy.	A. Never B. Rarely	Never/Rarely
	7 Screen for alcohol or tobacco use.		
	8 Screen for depression.		
	9 Screen for anxiety or use of benzodiazepines.		
	10 Screen for intimate partner violence.		
	11 Inform about fetal effects (e.g., neonatal abstinence syndrome).		
	How do you manage postpartum patients who have opioid use disorders (illicit use or nonmedical use of prescription opioids)?	C. Sometimes	Sometimes
	1 Advise opioid cessation.		
	2 Advise inpatient, monitored withdrawal.		
	3 Advise methadone maintenance.		
	4 Advise buprenorphine maintenance.		
	5 Advise buprenorphine/naloxone maintenance.		
	6 Recommend breastfeeding if on opioid-assisted therapy.	D. Usually E. Always	Usually/Always
	7 Counsel on effective contraceptive methods (e.g., long-acting reversible contraceptives, oral contraceptives).		
	8 Refer to a treatment program or facility.		
	9 Refer to an addiction specialist.		
	10 Refer to psychiatry.		
II. Confidence in treating Patients Using Opioids	Do you feel confident that you can appropriately treat your pregnant patients who are using the following substances? 1. Opioids	A. Not confident B. Somewhat confident	Not confident
		C. Confident D. Very confident	Confident
	In general, how prepared do you feel to do the following in your clinical practice:	A. Very unprepared B. Unprepared	Unprepared
III. Perceptions of preparedness	1 Screen pregnant patients for opioid use disorder?		
	2 Conduct brief interventions with pregnant patients who use opioids?		
	3 Educate pregnant patients about the effects of opioids on their fetus or baby.	C. Prepared D. Very prepared	Prepared
	4 Use resources to refer patients who need an opioids cessation program.		
	5 Prescribe opioid-assisted therapy for pregnant patients.		

Theme	Question	Answer options	Categorization
	6	Screen postpartum patients for opioid use disorder.	
	7	Educate breastfeeding patients about the effects of opioids on their infant.	
	8	Prescribe opioid-assisted therapy for nonpregnant patients.	
IV. Priority of screening	To what extent is any routine screening of the following among pregnant patients in your practice a priority?		A. Not a priority B. Moderate priority
	1	Prescription opioid use.	Not high priority
	2	Nonmedical use of prescription opioids (i.e., using opioids for reasons other than prescribed).	
V. Knowledge	Does the Affordable Care Act include a provision that requires pregnant patients on Medicaid receive coverage for comprehensive substance use services, including both counseling and pharmacotherapy?		A. I do not know. B. No
			C. Yes
VI. Barriers and resources	To what extent are the following potential barriers to screening and treating pregnant and postpartum patients for opioid use disorder?		A. Not a barrier B. Minor barrier
	1	Time limitations during patient visits.	C. Major barrier
	2	Concern about patient confidentiality issues.	
	3	Patient sensitivity to this topic (e.g., fear of offending patients).	
	4	Patient denial or resistance.	
	5	Doubt about the efficacy of brief intervention.	
	6	Limited training or experience in screening for opioids.	
	7	Limited training or experience in treating opioid use disorder.	
	8	Lack of facilities or resources for treatment of opioid use disorder, once identified.	
	9	Lack of or inadequate financial reimbursement for opioid screening, assessment, and counseling.	
	10	Patient inability to pay for treatment.	
	11	State reporting laws and repercussions.	
	12	Not sure what screener to use.	
13	Other (please specify).		
What resources do you need to improve treatment of opioid use disorder in your clinical practice? Check all that apply.			
1	Patient information regarding adverse reproductive outcomes associated with opioids.		
2	Patient information regarding infectious disease associated with use by injection.		
3	Referral resources and treatment facilities for pregnant and postpartum patients with opioid use disorder.		
4	Access to phone consultation line to ask questions regarding opioid use disorders in pregnant patients.		
5	Information regarding relapse prevention for patients who seek treatment for addiction in pregnancy.		
6	Specific standardized screening questionnaire for substance use during pregnancy.		
7	Training and advice on brief interventions or motivational interviewing.		
8	Reimbursement by insurance for screening and assessment.		
9	Other (please specify).		

Table 2.

Management of pregnant¹ and postpartum² patients with opioid use disorder; Survey of American College of Obstetricians and Gynecologists Members, 2017

	Frequency of management			
		Always/Usually	Sometimes	Rarely/Never
Pregnant patients¹	N	N (%)	N (%)	N (%)
Advise opioid cessation	402	222 (55.2)	85 (21.1)	95 (23.6)
Advise inpatient, monitored withdrawal	387	60 (15.5)	104 (26.9)	223 (57.6)
Advise methadone maintenance	400	131 (32.8)	165 (41.3)	104 (26.0)
Advise buprenorphine maintenance	396	128 (32.3)	141 (35.6)	127 (32.1)
Advise buprenorphine and naloxone maintenance	392	81 (20.7)	125 (31.9)	186 (47.5)
Conduct brief intervention/motivational interviewing/cognitive behavioral therapy	395	101 (25.6)	87 (22.0)	207 (52.4)
Screen for alcohol or tobacco use	338	314 (92.9)	17 (5.0)	7 (2.1)
Screen for depression	406	360 (88.7)	35 (8.6)	11 (2.7)
Screen for anxiety or use of benzodiazepines	404	329 (81.4)	56 (13.9)	19 (4.7)
Screen for intimate partner violence	406	315 (77.6)	63 (15.5)	28 (6.9)
Inform about fetal effects (e.g., neonatal abstinence syndrome)	407	377 (92.6)	20 (4.9)	10 (2.5)
Postpartum patients²	N	N (%)	N (%)	N (%)
Advise opioid cessation	395	267 (67.6)	65 (16.5)	63 (16.0)
Advise inpatient, monitored withdrawal	382	65 (17.0)	133 (34.8)	184 (48.2)
Advise methadone maintenance	388	98 (25.3)	175 (45.1)	115 (29.6)
Advise buprenorphine maintenance	382	90 (23.6)	154 (40.3)	138 (36.1)
Advise buprenorphine and naloxone maintenance	381	77 (20.2)	154 (40.4)	150 (39.4)
Recommend breastfeeding if on opioid-assisted therapy	383	201 (52.5)	90 (23.5)	92 (24.0)
Counsel on effective contraceptive methods	398	383 (96.2)	13 (3.3)	2 (0.5)
Refer to a treatment program or facility	387	230 (59.4)	121 (31.3)	36 (9.3)
Refer to addiction specialist	393	239 (60.8)	101 (25.7)	53 (13.5)
Refer to psychiatry	389	149 (38.3)	164 (42.2)	76 (19.5)

¹Participants were asked: How do you manage pregnant patients who have opioid use disorders (illicit use or nonmedical use of prescription opioids)?

²Participants were asked: How do you manage postpartum patients who have opioid use disorders (illicit use or nonmedical use of prescription opioids)?

Table 3.

Characteristics associated with physicians usually or always advising MAT (methadone or buprenorphine) to pregnant patients with opioid use disorder¹ (n = 265); Survey of American College of Obstetricians and Gynecologists Members, 2017

Physician characteristics	aPR² (95% CI)
Confident in treating pregnant patients using opioids ³	1.3 (1.0, 1.8)
Feels prepared to prescribe MAT for pregnant patients ⁴	1.1 (0.8, 1.5)
High practice priority to screen for medical use and non-medical use of prescription opioids ⁵	0.8 (0.6, 1.1)
Knowledge of comprehensive substance use ACA provision ⁶	
Not knowledgeable about provision	Ref.
Knowledgeable about provision	1.4 (1.1, 1.8)
Physician female sex	1.0 (0.7, 1.3)
Physician white race or ethnicity	1.1 (0.8, 1.7)
Maternal-fetal medicine board-certified	1.0 (0.7, 1.4)
Years since residency completed	
20 years	Ref.
< 20 years	1.0 (0.8, 1.4)
Patient population characteristics	aPR² (95% CI)
Patients white race or ethnicity	
0%–25%	Ref.
26%–50%	1.2 (0.8, 1.9)
51%–100%	1.1 (0.7, 1.7)
Patients on Medicaid	
0%–25%	Ref.
26%–50%	1.8 (1.2, 2.7)
51%–100%	1.5 (1.0, 2.3)
Practice characteristics	aPR² (95% CI)
Practice type	
Solo practice	1.2 (0.8, 1.8)
Nonsolo practice	Ref.
Number of pregnant patients per month	
<15	Ref.
15	1.2 (0.9, 1.6)
US region	
Midwest	Ref.
Northeast	1.3 (0.9, 1.8)
South	1.0 (0.7, 1.5)

Physician characteristics	aPR ² (95% CI)
West	1.1 (0.7, 1.6)
Location	
Urban	Ref.
Suburban	0.9 (0.6, 1.3)
Mid-sized town/rural/military	1.2 (0.9, 1.8)

ACA: Affordable Care Act; aPR: adjusted prevalence ratio; MAT: medication-assisted treatment

¹ Participants were asked: How do you manage pregnant patients who have opioid use disorders (illicit use or nonmedical use of prescription opioids)?

² aPR estimated by using Poisson regression with a robust error variance, adjusted for physician, patient population, and practice characteristics.

³ Participants were asked: Do you feel confident that you can appropriately treat your pregnant patients who are using the following substances?

⁴ Participants were asked: In general, how prepared do you feel to do the following in your clinical practice: Prescribe opioid-assisted therapy for pregnant patients

⁵ Participants were asked: To what extent is any routine screening of the following among pregnant patients in your practice a priority

⁶ Participants were asked: Does the Affordable Care Act include a provision that requires pregnant patients on Medicaid receive coverage for comprehensive substance use services, including both counseling and pharmacotherapy?

Bold aPR indicates significant at $P < 0.05$.