



## Substance Use Disorders

### Tobacco Use Disorder in Pregnancy

#### *Self-Study*

#### **Contributor**

Julia Frew, MD

#### **Learning Objectives**

1. Describe the epidemiology of tobacco use in pregnancy
2. Discuss the risks of tobacco use in pregnancy and lactation
3. Describe treatment options for tobacco use during pregnancy and discuss pros and cons of each
4. Identify tobacco cessation resources available to treatment providers and to people seeking to quit tobacco use

#### **Epidemiology**

- ~14% of US women smoke.
- ~10% of women report smoking in the final three months of pregnancy based on CDC Pregnancy Risk Assessment Monitoring data (PRAMS).
- 0.6-15% of women may be using e-cigarettes (“vaping”) in pregnancy; it is common for women to use both conventional and e-cigarettes. Some pregnant women are unaware that e-cigarettes contain nicotine or can be addictive.
- Up to 45% of women report quitting tobacco prior to their first prenatal visit (Coleman et al, 2015), but many of those who quit relapse during pregnancy.

#### **Effects on Pregnancy/Birth/Offspring**

- Nicotine readily crosses the placenta and binds to fetal neuronal acetylcholine receptors.
- Nicotine appears to harm placental development and function, restricting oxygen and nutrient transfer across the placenta.
- Nicotine reduces uterine artery blood flow and is associated with impaired fetal brain development, delayed fetal lung maturation, and increased risk of sudden infant death syndrome.
- Tobacco use in pregnancy is the largest modifiable risk factor for preterm birth and low birthweight.
- Children whose mothers smoked during pregnancy have higher incidence of ADHD, depressive disorders, reduced cognitive and academic ability, and other neurobehavioral problems and may be at higher risk to become smokers themselves. These outcomes may or may not be associated directly with tobacco exposure as many confounding variables such as maternal mental illness and genetic factors may play important roles.
- Cessation of tobacco use at any point in pregnancy is associated with improved outcomes.
- Women may feel that smoking helps them manage stress during pregnancy and may be reluctant to quit for this reason.
- Electronic cigarette use (“vaping” of nicotine) is associated with similar nicotine levels, low birthweight, and shortened gestational age as smoking, but may be perceived as less harmful among pregnant women. Nicotine’s effect on offspring lung function is likely of greatest concern (Spindel et al., 2016). Little is known about the risks of e-cigarette use in pregnancy in comparison to the risks of cigarette smoking. Women may also “vape” solutions that do not contain nicotine, such as solutions that contain THC.



## Treatment for Tobacco Use Disorder

- Behavioral interventions are recommended by USPSTF for all pregnant women who smoke, yet only 15% will quit with behavioral interventions alone.
- Pharmacotherapy more effective than behavioral interventions alone for non-pregnant adults; not as well established among pregnant women.
- NRT associated with some, but not all, of the negative effects of smoking on pregnancy; therefore, short-term use (6-12 weeks) is recommended to decrease overall nicotine exposure.
- Limited data on the safety and effectiveness of bupropion for smoking cessation in pregnancy, but may help with concerns around depression and weight gain. Bupropion use for smoking cessation in pregnancy was associated with a reduced risk of preterm birth in one longitudinal cohort study.
- Minimal data on the use of varenicline in pregnancy.
- Some women identify electronic cigarette use as a smoking cessation strategy, but there is no robust evidence at this point that the use of these devices actually leads to cessation.

## Tips for Patient Management

- Address smoking during every visit for pregnant, parenting, and reproductive aged women.
- Offer options for support with tobacco cessation.
- Be sure to provide instructions regarding optimal use of NRT:
  - Removing nicotine patch at night may lower risk of adverse effects such as insomnia and strange dreams.
  - “Park” nicotine lozenges or gum between cheek and gums; minimize swallowing during use.
  - Use of sufficient dose maximizes effectiveness.
  - Combine patch and short acting nicotine replacement for breakthrough cravings.
  - NRT in pregnancy is optimally used short-term for the purposes of smoking cessation, rather than on an ongoing basis. Continue to offer counseling and support to women who are using NRT to try to quit smoking with the goal of discontinuing NRT after 6-12 weeks if possible.

## Smoking Cessation Resources

- ACOG Clinician Toolkit:  
<https://www.acog.org/~media/Departments/Tobacco%20Alcohol%20and%20Substance%20Abuse/SCDP.pdf>
- Pregnets Clinician Toolkit (Canada): <http://www.pregnets.org/dl/toolkit.pdf>
- Most states have free QuitLine resources available to all residents
  - 1-800-QUIT-NOW national network of state quitlines
  - [https://www.cdc.gov/tobacco/quit\\_smoking/cessation/pdfs/1800quitnow\\_faq.pdf](https://www.cdc.gov/tobacco/quit_smoking/cessation/pdfs/1800quitnow_faq.pdf)



## References

- Baraona LK, Lovelace D, Daniels JL, Mcdaniel L. Tobacco Harms, Nicotine Pharmacology, and Pharmacologic Tobacco Cessation Interventions for Women. *J Midwifery Womens Health*. 2017;62(3):253-269.
- Barboza J. Pharmaceutical strategies for smoking cessation during pregnancy. *Expert Opin Pharmacother*. 2018;:1-10.
- Coleman T, Chamberlain C, Davey MA, Cooper SE, Leonardi-bee J. Pharmacological interventions for promoting smoking cessation during pregnancy. *Cochrane Database Syst Rev*. 2015;(12):CD010078.
- Patnode CD, Henderson JT, Thompson JH, Senger CA, Fortmann SP, Whitlock EP. Behavioral Counseling and Pharmacotherapy Interventions for Tobacco Cessation in Adults, Including Pregnant Women: A Review of Reviews for the U.S. Preventive Services Task Force. *Ann Intern Med*. 2015;163(8):608-21.
- Scherman A, Tolosa JE, Mcevoy C. Smoking cessation in pregnancy: a continuing challenge in the United States. *Ther Adv Drug Saf*. 2018;9(8):457-474.
- Spindel ER, Mcevoy CT. The Role of Nicotine in the Effects of Maternal Smoking during Pregnancy on Lung Development and Childhood Respiratory Disease. Implications for Dangers of E-Cigarettes. *Am J Respir Crit Care Med*. 2016;193(5):486-94.
- Whittington JR, Simmons PM, Phillips AM, et al. The Use of Electronic Cigarettes in Pregnancy: A Review of the Literature. *Obstet Gynecol Surv*. 2018;73(9):544-549.
- <https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Smoking-Cessation-During-Pregnancy> (accessed January 22, 2019)