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WOMEN'S HEALTH CARE PHYSICIANS

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Committee on Obstetric Practice

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Health Care for Underserved Women and the Committee on Obstetric Practice.

INTERIM UPDATE: This Committee Opinion is updated as highlighted to reflect a limited, focused change in electronic nicotine delivery systems and in the pharmacotherapy references.

Smoking Cessation During Pregnancy

ABSTRACT: Smoking is the one of the most important modifiable causes of poor pregnancy outcomes in the United States, and is associated with maternal, fetal, and infant morbidity and mortality. The physical and psychologic addiction to cigarettes is powerful; however, the compassionate intervention of the obstetrician–gynecologist can be the critical element in prenatal smoking cessation. An office-based protocol that systematically identifies pregnant women who smoke and offers treatment or referral has been proved to increase quit rates. A short counseling session with pregnancy-specific educational materials and a referral to the smokers' quit line is an effective smoking cessation strategy. The 5A's is an office-based intervention developed to be used under the guidance of trained practitioners to help pregnant women quit smoking. Knowledge of the use of the 5A's, health care support systems, and pharmacotherapy add to the techniques providers can use to support perinatal smoking cessation. The use of alternative forms of nicotine, such as e-cigarettes and vaping, have increased substantially in recent years, but there are little data regarding the health effects of these agents, either in the general population or in pregnant women specifically.

Epidemiology

Increased public education measures and public health campaigns in the United States have led to a decrease in smoking by pregnant women and nonpregnant women of reproductive age (1). Pregnancy appears to motivate women to stop smoking; 46% of prepregnancy smokers quit smoking directly before or during pregnancy (1). Although the rate of reported smoking during pregnancy has decreased from 18.4% in 1990 to 13.2% overall in 2006, for some populations, such as adolescent females and less educated non-Hispanic white and American Indian women, the decrease was less dramatic (2, 3). Smoking during pregnancy is a public health problem because of the many adverse effects associated with it. These include intrauterine growth restriction, placenta previa, abruptio placentae, decreased maternal thyroid function (4, 5), preterm premature rupture of membranes (6, 7), low birth weight, perinatal mortality (4), and ectopic pregnancy (4). An estimated 5–8% of preterm deliveries, 13–19% of term deliveries of infants with low birth weight, 23–34% cases of sudden infant death syndrome (SIDS), and 5–7% of preterm-related infant deaths can

be attributed to prenatal maternal smoking (8). The risks of smoking during pregnancy extend beyond pregnancy-related complications. Children born to mothers who smoke during pregnancy are at an increased risk of asthma, infantile colic, and childhood obesity (9–11). Researchers report that infants born to women who use smokeless tobacco during pregnancy have levels of nicotine exposure, low birth weight, and shortened gestational as high as infants whose mothers smoked during pregnancy (12, 13). Secondhand prenatal exposure to tobacco smoke also increases the risk of having an infant with low birth weight by as much as 20% (14).

Intervention

Cessation of tobacco use, prevention of secondhand smoke exposure and prevention of relapse to smoking are key clinical intervention strategies during pregnancy. Inquiry into tobacco use and smoke exposure should be a routine part of the prenatal visit. The U.S. Preventive Services Task Force recommends that clinicians ask all pregnant women about tobacco use and provide augmented, pregnancy-tailored counseling for those who

smoke (15). The U.S. Public Health Service recommends that clinicians offer effective tobacco dependence interventions to pregnant smokers at the first prenatal visit as well as throughout the course of pregnancy (16).

Addiction to and dependence on cigarettes is both physiologic and psychologic, and cessation techniques have included counseling, cognitive and behavioral therapy, hypnosis, acupuncture, and pharmacologic therapy. Women who indicate that they are not ready to quit smoking can benefit from consistent motivational approaches by their health care providers as outlined in [Committee Opinion No. 423, "Motivational Interviewing"](#) published by the American College of Obstetricians and Gynecologists (17). Patients who are willing to try to quit smoking benefit from a brief counseling session, such as the 5A's intervention (**Box 1**), which has been proved to be effective when initiated by health care providers (16). With appropriate training, obstetrician-gynecologists, other clinicians, or auxiliary health care providers can perform these five steps with pregnant women who smoke (16). Referral to a smoker's quit line may further benefit the patient. Quit lines offer information, direct support, and ongoing counseling, and have been very successful in helping pregnant smokers quit and remain smoke free (18). Most states offer pregnancy-specific services, focusing on the pregnant woman's motivation to quit and providing postpartum follow-up to prevent relapse to smoking. By dialing the national quit line network (1-800-QUIT NOW) a caller is immediately routed to her state's smokers' quit line. Many states offer fax referral access to their quit lines for prenatal health care providers. Health care providers can call the national quit line to learn about the services offered within their states. Examples of effective smoking cessation interventions delivered by a health care provider are listed in **Box 2**.

Although counseling and pregnancy-specific materials are effective cessation aids for many pregnant women, some women continue to smoke (15). These smokers often are heavily addicted to nicotine and should be encouraged at every follow-up visit to seek help to stop smoking. They also may benefit from screening and intervention for alcohol use and other drug use because continued smoking during pregnancy increases the likelihood of other substance use (19). Clinicians also may consider referring patients for additional psychosocial treatment (16). There is insufficient evidence to support the use of meditation, hypnosis, and acupuncture for smoking cessation (16). Although quitting smoking before 15 weeks of gestation yields the greatest benefits for the pregnant woman and fetus, quitting at any point can be beneficial (20). Successful smoking cessation before the third trimester can eliminate much of the reduction in birth weight caused by maternal smoking (20). The benefits of reduced cigarette smoking are difficult to measure or verify. The effort of women who reduce the amount they smoke should be lauded, but these women also should be reminded that quitting entirely brings the best results for

Box 1. Five A's of Smoking Cessation

1. **ASK** the patient about smoking status at the first prenatal visit and follow-up with her at subsequent visits. The patient should choose the statement that best describes her smoking status:
 - A. I have NEVER smoked or have smoked LESS THAN 100 cigarettes in my lifetime.
 - B. I stopped smoking BEFORE I found out I was pregnant, and I am not smoking now.
 - C. I stopped smoking AFTER I found out I was pregnant, and I am not smoking now.
 - D. I smoke some now, but I have cut down on the number of cigarettes I smoke SINCE I found out I was pregnant.
 - E. I smoke regularly now, about the same as BEFORE I found out I was pregnant.

If the patient stopped smoking before or after she found out she was pregnant (B or C), reinforce her decision to quit, congratulate her on success in quitting, and encourage her to stay smoke free throughout pregnancy and postpartum. If the patient is still smoking (D or E), document smoking status in her medical record, and proceed to Advise, Assess, Assist, and Arrange.

2. **ADVISE** the patient who smokes to stop by providing advice to quit with information about the risks of continued smoking to the woman, fetus, and newborn.
3. **ASSESS** the patient's willingness to attempt to quit smoking at the time. Quitting advice, assessment, and motivational assistance should be offered at subsequent prenatal care visits.
4. **ASSIST** the patient who is interested in quitting by providing pregnancy-specific, self-help smoking cessation materials. Support the importance of having smoke-free space at home and seeking out a "quitting buddy," such as a former smoker or nonsmoker. Encourage the patient to talk about the process of quitting. Offer a direct referral to the smoker's quit line (1-800-QUIT NOW) to provide ongoing counseling and support.
5. **ARRANGE** follow-up visits to track the progress of the patient's attempt to quit smoking. For current and former smokers, smoking status should be monitored and recorded throughout pregnancy, providing opportunities to congratulate and support success, reinforce steps taken towards quitting, and advise those still considering a cessation attempt.

Modified from Fiore MC, Jaen CR, Baker TB, Bailey WC, Benowitz NL, Curry SJ, et al. Treating tobacco use and dependence: 2008 update. Clinical Practice Guideline. Rockville (MD): U.S. Department of Health and Human Services, Public Health Service; 2008. Available at: http://www.surgeongeneral.gov/tobacco/treating_tobacco_use08.pdf. Retrieved July 6, 2010.

their health, the health of their fetuses, and ultimately that of their infants (21). Pregnant women who are exposed to the smoking of family members or coworkers should be

Box 2. Examples of Effective Smoking Cessation Interventions With Pregnant Patients ⇄

- Physician advice regarding smoking related risks (2–3 minutes)
- Video tape with information on risks, barriers, and tips for quitting; provider counseling in one 10-minute session; self-help manual; and follow-up letters
- Pregnancy-specific self-help guide and one 10-minute counseling session with a health educator.
- Provide counseling in one 90-minute session plus twice monthly telephone follow-up calls during pregnancy and monthly telephone calls after delivery

given advice on how to address these smokers or avoid exposure.

Approximately 50–60% of women who quit smoking during pregnancy return to smoking within 1 year postpartum, putting at risk their health, that of their infants, and the outcomes of future pregnancies (1). Determining a woman's intention to return to smoking during the third trimester has proved useful at targeting smoking relapse interventions (22). Most pregnant former smokers indicate that they do not intend to smoke. To strengthen their resolve for continued smoking abstinence, a review of tobacco use prevention strategies and identification of social support systems to remain smoke free in the third trimester and postpartum is encouraged (22).

Pharmacotherapy

The U.S. Preventive Services Task Force has concluded that current evidence is insufficient to assess the balance of benefits and harms of nicotine replacement products or other pharmaceuticals for smoking cessation aids during pregnancy (15). There is conflicting evidence as to whether or not nicotine replacement therapy increases abstinence rates in pregnant smokers, and it does not appear to increase the likelihood of permanent smoking cessation during postpartum follow-up of these patients (23, 24). Trials studying the use of nicotine replacement therapy in pregnancy have been attempted, yet many of those conducted in the United States have been stopped by data and safety monitoring committees for either demonstration of adverse pregnancy effects or failure to demonstrate effectiveness (15, 25, 26). Therefore, the use of nicotine replacement therapy should be undertaken with close supervision and after careful consideration and discussion with the patient of the known risks of continued smoking and the possible risks of nicotine replacement therapy. If nicotine replacement is used, it should be with the clear resolve of the patient to quit smoking.

Alternative smoking cessation agents used in the non-pregnant population include varenicline and bupropion.

Varenicline is a drug that acts on brain nicotine receptors. Several small studies evaluating its safety in pregnancy do not find evidence of teratogenicity (27, 28) but data are limited. Bupropion is an antidepressant with only limited data, but there is no known risk of fetal anomalies or adverse pregnancy effects (29). However, both of these medications have recently added product warnings mandated by the U.S. Food and Drug Administration about the risk of psychiatric symptoms and suicide associated with their use (30, 31). Both bupropion and varenicline are transmitted to breast milk. There is insufficient evidence to evaluate the safety and efficacy of these treatments in pregnancy and lactation (16). Furthermore, in a population at risk of depression, medications that can cause an increased risk of psychiatric symptoms and suicide should be used with caution and considered in consultation with experienced prescribers only.

Electronic Nicotine Delivery Systems

The use of alternative forms of nicotine, such as e-cigarettes and vaping, have increased substantially in recent years, but there are little data regarding the health effects of these agents, either in the general population or in pregnant women specifically. There is the perception that these products represent a safer alternative compared with cigarette smoking, because the products of tobacco combustion are not present. However, nicotine in any form poses considerable health risks and has known adverse effects on fetal brain and lung tissue (32).

Electronic nicotine delivery systems are being used by smokers in the belief that they will aid in smoking cessation efforts. In one survey of smokers who called a tobacco cessation help line, nearly two thirds were using electronic nicotine delivery systems and nearly all believed it helped them quit smoking or cut down the number of cigarettes smoked (33). A survey of pregnant smokers found that 14% reported using e-cigarettes to aid in smoking cessation (34). However, a recent review of the use of electronic nicotine delivery systems in non-pregnant patients found no robust evidence that these products aid in smoking cessation (35). The quality of the available evidence is poor, and well-designed trials are needed to understand the health effects of these products; their role, if any, in smoking cessation; and their effects on pregnant women and their fetuses.

Coding

Office visits specifically addressing smoking cessation may be billed, but not all payers reimburse for counseling outside of the global pregnancy care package and some do not cover preventive services at all. Under the health care reform, physicians will be reimbursed for the provision of smoking cessation counseling to pregnant women in Medicaid and in new health plans with no cost sharing for the patient. Health care providers are encouraged to consult coding manuals regarding billing and be aware that reimbursements will vary by insurance carrier.

Resources

The American College of Obstetricians and Gynecologists Resources

American College of Obstetricians and Gynecologists. Smoking cessation during pregnancy: a clinician's guide to helping pregnant women quit smoking. Washington, DC: ACOG; 2002. The guide, pocket reminder card, and slide lecture can be ordered by writing to smoking@acog.org.

American College of Obstetricians and Gynecologists. Need help putting out that cigarette? Washington, DC: ACOG; 2008. This pregnancy-specific smoking cessation workbook for patients is available in English and Spanish from the ACOG bookstore at <http://www.acog.org/bookstore>.

Other Resources

Dartmouth Medical School. Smoking cessation for pregnancy and beyond: learn proven strategies to help your patients quit. Available at: <http://iml.dartmouth.edu/education/cme/Smoking>. Retrieved July 6, 2010.

National Alliance for Tobacco Cessation. BecomeAnEX.org: if you're pregnant, start here. Available at: <http://www.becomeanex.org/pregnant-smokers.php>. Retrieved July 6, 2010. All states offer free smoking cessation telephone quit line services. Dialing 1-800-QUIT NOW will connect the caller to their state quit line.

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