



The American College of Obstetricians and Gynecologists

Women's Health Care Physicians

COMMITTEE OPINION

Number 471 • November 2010

(Replaces No. 316, October 2005.)

(Reaffirmed 2017)

Committee on Health Care for Underserved Women Committee on Obstetric Practice

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

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 psychological 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.

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 a high level of nicotine exposure, low birth weight, and shortened gestational age as to mothers who smoke 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 (USPSTF) 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 psychological, 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 Interview-

ing” 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 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 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

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.

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

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

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 the use of nicotine replacement products or other pharmaceuticals for smoking cessation aids during pregnancy and lactation have not been sufficiently evaluated to determine their efficacy or safety (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 all 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, but there is no knowledge as to the safety of varenicline use in pregnancy (27). Bupropion is an antidepressant with only limited data, but there is no known risk of fetal anomalies or adverse pregnancy effects (28). 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 (29, 30). 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.

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.

References

1. Colman GJ, Joyce T. Trends in smoking before, during, and after pregnancy in ten states. *Am J Prev Med* 2003;24:29–35.
2. Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Menacker F, Kirmeyer S, et al. Births: final data for 2006. *Natl Vital Stat Rep* 2009;57(7):1–104.
3. Tong VT, Jones JR, Dietz PM, D'Angelo D, Bombard JM. Trends in smoking before, during, and after pregnancy - Pregnancy Risk Assessment Monitoring System (PRAMS), United States, 31 sites, 2000-2005. Centers for Disease Control and Prevention (CDC). *MMWR Surveill Summ* 2009;58:1–29.

4. U.S. Department of Health and Human Services. The health consequences of smoking: a report of the Surgeon General. Washington, DC: HHS; 2004.
5. McDonald SD, Walker MC, Ohlsson A, Murphy KE, Beyene J, Perkins SL. The effect of tobacco exposure on maternal and fetal thyroid function. *Eur J Obstet Gynecol Reprod Biol* 2008;140:38–42.
6. Castles A, Adams EK, Melvin CL, Kelsch C, Boulton ML. Effects of smoking during pregnancy. Five meta-analyses. *Am J Prev Med* 1999;16:208–15.
7. Spinillo A, Nicola S, Piazzi G, Ghazal K, Colonna L, Baltaro F. Epidemiological correlates of preterm premature rupture of membranes. *Int J Gynaecol Obstet* 1994;47:7–15.
8. Dietz PM, England LJ, Shapiro-Mendoza CK, Tong VT, Farr SL, Callaghan WM. Infant morbidity and mortality attributable to prenatal smoking in the U.S. *Am J Prev Med* 2010;39:45–52.
9. Li YF, Langholz B, Salam MT, Gilliland FD. Maternal and grandmaternal smoking patterns are associated with early childhood asthma. *Chest* 2005;127:1232–41.
10. Sondergaard C, Henriksen TB, Obel C, Wisborg K. Smoking during pregnancy and infantile colic. *Pediatrics* 2001;108:342–6.
11. von Kries R, Toschke AM, Koletzko B, Slikker W, Jr. Maternal smoking during pregnancy and childhood obesity. *Am J Epidemiol* 2002;156:954–61.
12. Hurt RD, Renner CC, Patten CA, Ebbert JO, Offord KP, Schroeder DR, et al. Iqmiq--a form of smokeless tobacco used by pregnant Alaska natives: nicotine exposure in their neonates. *J Matern Fetal Neonatal Med* 2005;17:281–9.
13. Gupta PC, Subramoney S. Smokeless tobacco use, birth weight, and gestational age: population based, prospective cohort study of 1217 women in Mumbai, India [published erratum appears in *BMJ* 2010;340:c2191]. *BMJ* 2004;328:1538.
14. Hegaard HK, Kjaergaard H, Moller LF, Wachmann H, Ottesen B. The effect of environmental tobacco smoke during pregnancy on birth weight. *Acta Obstet Gynecol Scand* 2006;85:675–81.
15. Counseling and interventions to prevent tobacco use and tobacco-caused disease in adults and pregnant women: U.S. Preventive Services Task Force reaffirmation recommendation statement. U.S. Preventive Services Task Force. *Ann Intern Med* 2009;150:551–5.
16. 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.
17. Motivational interviewing: a tool for behavioral change. ACOG Committee Opinion No. 423. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2009;113:243–6.
18. Tomson T, Helgason AR, Gilljam H. Quitline in smoking cessation: a cost-effectiveness analysis. *Int J Technol Assess Health Care* 2004;20:469–74.
19. Ockene J, Ma Y, Zapka J, Pbert L, Valentine Goins K, Stoddard A. Spontaneous cessation of smoking and alcohol use among low-income pregnant women. *Am J Prev Med* 2002;23:150–9.
20. England LJ, Kendrick JS, Wilson HG, Merritt RK, Gargiullo PM, Zahniser SC. Effects of smoking reduction during pregnancy on the birth weight of term infants. *Am J Epidemiol* 2001;154:694–701.
21. Melvin CL, Dolan-Mullen P, Windsor RA, Whiteside HP Jr, Goldenberg RL. Recommended cessation counselling for pregnant women who smoke: a review of the evidence. *Tob Control* 2000;9(suppl 3):III80–4.
22. Mullen PD. How can more smoking suspension during pregnancy become lifelong abstinence? Lessons learned about predictors, interventions, and gaps in our accumulated knowledge. *Nicotine Tob Res* 2004;6(suppl 2):S217–38.
23. Pollak KI, Oncken CA, Lipkus IM, Lyna P, Swamy GK, Pletsch PK, et al. Nicotine replacement and behavioral therapy for smoking cessation in pregnancy. *Am J Prev Med* 2007;33:297–305.
24. Oncken C, Dornelas E, Greene J, Sankey H, Glasmann A, Feinn R, et al. Nicotine gum for pregnant smokers: a randomized controlled trial. *Obstet Gynecol* 2008;112:859–67.
25. Windsor R, Oncken C, Henningfield J, Hartmann K, Edwards N. Behavioral and pharmacological treatment methods for pregnant smokers: issues for clinical practice. *J Am Med Womens Assoc* 2000;55:304–10.
26. Swamy GK, Roelands JJ, Peterson BL, Fish LJ, Oncken CA, Pletsch PK, et al. Predictors of adverse events among pregnant smokers exposed in a nicotine replacement therapy trial. *Am J Obstet Gynecol* 2009;201:354.e1–7.
27. Chantix® (varenicline) tablets: highlights of prescribing information. New York (NY): Pfizer Labs; 2010. Available at: http://media.pfizer.com/files/products/uspi_chantix.pdf. Retrieved July 6, 2010.
28. Use of psychiatric medications during pregnancy and lactation. ACOG Practice Bulletin No. 92. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2008;111:1001–20.
29. U.S. Food and Drug Administration. Information for healthcare professionals: varenicline (marketed as Chantix) and bupropion (marketed as Zyban, Wellbutrin, and generics). Rockville (MD): FDA; 2009. Available at: <http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/DrugSafetyInformationforHeathcareProfessionals/ucm169986.htm>. Retrieved July 6, 2010.
30. Safety of smoking cessation drugs. *Med Lett Drugs Ther* 2009;51:65.

Copyright November 2010 by the American College of Obstetricians and Gynecologists, 409 12th Street, SW, PO Box 96920, Washington, DC 20090-6920. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, posted on the Internet, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Requests for authorization to make photocopies should be directed to: Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400.

ISSN 1074-861X

Smoking cessation during pregnancy. Committee Opinion No. 471. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2010;116:1241–4.