



The American College of Obstetricians and Gynecologists

Women's Health Care Physicians

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This information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

Tobacco Use and Women's Health

ABSTRACT. Tobacco use negatively affects every organ system and is the most prevalent cause of premature death for adults within the United States. Compared with women who are nonsmokers, women who smoke cigarettes have greater risks of reproductive health problems, many forms of gynecologic cancer and other types of cancer, coronary and vascular disease, chronic obstructive lung disease, and osteoporosis. Brief behavioral counseling and the use of evidence-based smoking cessation aids are effective strategies for achieving smoking cessation even for very heavy smokers. The trained obstetrician-gynecologist is well positioned to screen and counsel all patients on tobacco use and to advocate for smoke-free environments. Smoking cessation counseling is often reimbursed by health insurers. Tobacco use has deleterious effects on women through all stages of life. Tools are available for obstetrician-gynecologists to screen for and treat tobacco abuse and give the appropriate coding for smoking cessation counseling.

Epidemiology

Despite the evidence of the negative effects of tobacco use, the Centers for Disease Control and Prevention reports 18% of women older than 18 years smoked cigarettes in 2009 (1). This rate of smoking has remained essentially unchanged over the past 5 years, thus falling short of the Healthy People 2010 goal of a smoking rate of 12% or less (2). More than 80% of current smokers began their addiction to tobacco before age 18 years (3). Tobacco use by women is most prevalent among women who have attained lower levels of education, are poor, and are white or of mixed race (1).

From 2000 to 2004, the United States spent \$193 billion on annual tobacco use health-related economic losses with one half dedicated to direct medical costs and the other half to lost productivity (4). The money spent by U.S. private and public entities on the adverse effects of tobacco use is twice the amount of tobacco sales (4).

Forms of Tobacco

In recent years, tobacco products have changed and others have been developed or gained popularity. There are many flavors of cigarettes, cigars, and other forms of tobacco that are available for sale and marketed primarily to young and minority users. In fact, menthol cigarettes increase the likelihood and degree of nicotine addiction in new smokers and makes smoking cessation more diffi-

cult, particularly for some African Americans who believe health benefits are associated with smoking menthol cigarettes (5). Smokeless tobacco products are mistakenly believed to be a safer and may be a more convenient alternative to cigarettes when smoking is prohibited. One form of smokeless tobacco popular with young women is "snus," a flavored self-contained tobacco pouch that is placed between the cheek and gum and does not require spitting. Other smoking alternatives include a gel strip impregnated with nicotine that melts on the tongue and an electronic or e-cigarette, a battery powered device that heats cartridges of liquid containing nicotine to create a mist, which users inhale. Hookahs, or tobacco water pipes, have become popular among youth and young adults. Inhalation when using a hookah is deeper and smoking sessions are longer than with a typical cigarette, resulting in higher concentration of toxins after hookah smoking compared with cigarette smoking (6). Evidence indicates that changing tobacco delivery devices and cigarette designs, including low-tar and light variations, have not reduced overall disease risk among smokers (7). Although the U.S. Food and Drug Administration is moving toward requiring disclosure and regulation, currently tobacco companies are not required to divulge the additive content of tobacco products. It is widely known that alkaloids are added to tobacco to increase the absorption of nicotine and, therefore, add to the addictive nature of the product (8).

Health Effects of Tobacco Use on Women

Because of the negative effects of tobacco use on fertility and fetal development, there is a focus on smoking cessation in consideration of women's reproductive health. However, the sequelae of tobacco use have negative health effects on a woman through all stages of her life. Approximately 90% of cases of lung cancer are caused by smoking or exposure to tobacco smoke. Lung cancer has surpassed breast cancer as the leading cause of cancer death in women (9). Colon cancer is the third leading cause of cancer deaths in women, and there is a dose-related increased risk of colon cancer in smokers (10). Women who smoke are also at an increased risk of gynecologic cancer. Cigarette smoking has been identified as a risk factor in the development of mucinous epithelial ovarian cancer (11). There is a linear relationship between premenopausal tobacco use and breast cancer, particularly if smoking is initiated before the birth of the first child (12). Smoking also contributes to the progression of cervical intraepithelial neoplasia, and both active and passive smoking have been linked to squamous cell carcinoma of the cervix in women seropositive for HPV-16 or HPV-18 (13, 14). Smoking also has been linked to cancer of the bladder, kidney, and pancreas (15).

Tobacco is the single greatest modifiable risk factor for cardiovascular disease and the leading cause of death in women in the United States (9). Women who smoke have a sixfold increased risk of myocardial infarction when compared with nonsmoking women (16). Tobacco use causes endothelial damage and platelet aggregation, contributing to thrombosis in smokers (17). The antiestrogen effect of tobacco use accelerates menopause. This premature menopause increases the risk of cardiovascular disease and increases the risk of osteoporotic fracture independent of bone mineral density score (17–19). Furthermore, the risk of stroke is almost doubled in individuals who smoke (17).

Role of the Obstetrician–Gynecologist

Screening and Intervention

Tobacco use screening and cessation counseling is rated among the three most effective and efficacious preventive health actions that can be undertaken in a clinical setting, receiving a Grade A rating from the U.S. Preventive Services Task Force (20, 21). Each visit to the obstetrician–gynecologist is an opportunity for intervention. The clinician can make a difference with minimal (less than 3 minutes) intervention. Even when patients are not willing to make a quit attempt, clinician-delivered brief interventions enhance motivation and increase the likelihood of future attempts (22). In addition, tobacco users are being primed to consider quitting by a wide range of societal and environmental factors as well as through the availability of effective tobacco cessation aids.

The nicotine in tobacco products is highly addictive. Symptoms of physical dependence can result after less than 1 week of smoking initiation, especially in youth (23). When smoked or ingested through oral mucosa, nicotine rapidly increases blood levels of dopamine, thereby affecting the channels controlling reward and pleasure. Tobacco cessation for those dependent on nicotine is often uncomfortable causing one to experience vasomotor, gastrointestinal, and mood altering symptoms. It takes an average of seven quit attempts for the average smoker to quit smoking and stay abstinent for 1 year. However, patient adherence to physician smoking cessation advice is better than that for diet change and increasing physical activity (24).

The “5 A’s” intervention model is an evidence-based model successfully used by the busy clinician to address patient smoking. The 5 A’s are: Ask, Advise, Assess, Assist, and Arrange.

1. **ASK** about tobacco use in any form or amount and document this in the patient record. This can be accomplished through questions on the patient visit intake form with a question such as: “Circle the tobacco products (cigarettes, cigars, smokeless tobacco, hookah, or electronic cigarettes) used during the past year.” Any use would require a further question on amount and frequency of use.

2. **ADVISE** patients who smoke to quit in a clear, strong, and personalized manner. It is best to incorporate in the advice any clinical findings that may be influenced by the patient's tobacco use. All of the elements of the 5A's need not be delivered by one individual or during a single office visit; however, it is important that the primary clinician give the personalized advice to quit smoking. For example:

I see that you are smoking two or three cigarettes a day. As your obstetrician–gynecologist, I want you to know that your smoking, even in small amounts, increases your risk of cervical and breast cancer, and may be contributing to your menstrual irregularities. You don't have to stop on your own. If you are willing, I can help you stop smoking. What do you think about that?

3. **ASSESS** the patient's willingness to make a quit attempt. Ask if she is willing at this time to set a date to stop using tobacco. Reducing smoking or switching to another form of tobacco should not be considered a goal.

4. **ASSIST** in the quit attempt for those who are willing. As a health care provider, you may offer medication and provide or refer a patient for counseling or additional treatment. The woman who is willing to try to quit smoking needs to develop a quit plan. A direct referral to the Smokers' Quitline (1-800-QUIT NOW) is a great place to start. In addition, there are excellent materials avail-

able from the American College of Obstetricians and Gynecologists as well as the American Cancer Society (www.acs.org) that will help her set a quit date, encourage her to tell her friends and family about her quit intent to garner support, counsel her to anticipate challenges to her quit attempt, and encourage her to remove tobacco products from her environment.

For those who are unwilling or not ready to quit at this time provide motivational messages to increase future attempts to quit and explore their possible fears and concerns with smoking cessation or demoralization caused by a past relapse (25). Continue to ask and advise about smoking status at every encounter and assess their willingness to make an attempt to quit.

5. **ARRANGE** follow-up. If the patient is willing to attempt to stop smoking, have someone from the office staff call her within a week of the date she chooses to quit

to support and encourage her in her attempt. Flag her record and make sure to verbally ask her about smoking at subsequent visits. If she has been successful with smoking cessation, praise her progress. If she slips back to tobacco use, encourage her to quit immediately, reviewing her personalized rationale for staying smoke-free and offering additional smoking cessation aids.

Medications and Other Evidence-Based Smoking Cessation Aids

In addition to counseling, all smokers making a quit attempt should be offered medication to improve quit success and reduce withdrawal symptoms (Table 1) (22). Those who should not routinely use medication for smoking cessation are pregnant women, adolescents, smokeless tobacco users, and light smokers. The medications can be used individually or combined, and they can

Table 1. Smoking Cessation Aids

Method	6-Month Abstinence Rate (%)	Cost*/Duration	Where Available
Patient desire	8		
Physician advice	10.2		
Group or individual counseling	14–17	Low to very high cost depending on provider	Health centers Public health programs Private counselor
Telephone counseling (Smokers' Quitline)	16	Free	1-800-QUIT NOW
Nicotine gum, patch, or lozenge	19–26	\$150–\$300 6–14 weeks	Over-the-counter
Nicotine inhaler or nasal spray	25–27	\$150–\$300 Up to 6 months	Requires prescription
Combined nicotine replacement therapies	24–36	\$150–\$400 Up to 6 months	Over-the-counter Requires prescription
Bupropion	24	\$150–\$300 Up to 14 weeks	Requires prescription
Varenicline	33	\$250–\$400 Up to 14 weeks	Requires prescription
Clonidine	25	Less than \$150 Up to 12 weeks	Requires prescription
Nortriptyline	22.5	Less than \$150 Up to 12 weeks	Requires prescription
Combined counseling and medication	28–32	\$150 and up	
Hypnosis	Insufficient evidence	Greater than \$300	Not covered by insurance
Acupuncture	9	Greater than \$300	Not covered by insurance

*Cost of a course of treatment. This may be covered by insurance unless otherwise indicated in the patient's health insurance policy.

Data from Fiore MC, Jean 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.

be used as an addition to cognitive behavioral counseling. Medications include nicotine replacement therapy products such as gum, patches, lozenges, inhalers, and nasal sprays. Some of the nicotine replacement therapy products are sold over-the-counter, whereas the inhaler and nasal spray require a prescription. Other effective prescription medications include the antidepressant, bupropion, and varenicline, which block the pleasant effects of smoking from the brain. A combination of nicotine replacement therapy products or nicotine replacement therapy plus bupropion may be used to prevent physical withdrawal from nicotine and to quell sudden urges to smoke. The prescribing obstetrician–gynecologist needs to be aware of the black box label warning on bupropion and varenicline in regard to suicide ideation. Patients should be counseled and monitored for abrupt mood changes. The U.S. Food and Drug Administration has issued a warning concerning an increase in cardiovascular events for those individuals with cardiovascular disease who use varenicline. Nortriptyline and clonidine are used as second-line smoking cessation aids. Both have adverse effects that often prove to be undesirable. A downloadable, comprehensive, and patient-centered chart of evidence-based smoking cessation interventions with effectiveness ratings can be found at <http://whatworkstoquit.tobacco-cessation.org/NTCCguide.pdf>. Hypnotherapy, acupuncture, and the use of herbal remedies have not proved to be effective for achieving smoking cessation (22).

Addressing Roadblocks to Smoking Cessation

As with other behavioral health issues, there are roadblocks to smoking cessation. Many are particularly relevant to women, including fear of weight gain, inability to deal with negative mood and anxiety, the influence of other tobacco users, difficulty in concentration, and other withdrawal symptoms. Smoking cessation medications greatly decrease withdrawal symptoms and reduce anxiety and mood swings. Approximately one half of those who stop smoking gain weight and most will gain fewer than 10 pounds (22). Those who use bupropion tend to not gain weight rapidly following cessation. For others who do gain weight, the health care provider must stress the benefits of cessation and offer advice on physical activity and a modified eating plan. To reduce the urge of smoking, temporary changes in routine such as brushing teeth directly after eating, taking a walk instead of a smoke, wearing mittens, or buffing fingernails when talking on the phone, are simple effective strategies. In addition, the Smokers' Quitline offers free supportive counseling at timed intervals during a quit attempt.

Developing Systems for Addressing Tobacco Use

Training for smoking cessation and other behavioral counseling greatly enhances clinician confidence, efficiency, and the effectiveness of the intervention. Active

training is particularly helpful in working with patients on denial, ambivalence, and relapse. Adding tobacco use questions and a brief intervention screen to the electronic medical record enhances the performance of screening and counseling across a practice. Offices instituting or revising their electronic medical records should include a template on tobacco use.

An important office improvement in addressing tobacco use is requiring a smoke-free office environment. This smoke-free zone should extend around the building to discourage staff and patients from smoking at the entrance. In addition, the obstetrician–gynecologist can advocate at the state and community level for the institution of ordinances that reduce smoking and smoke exposure such as imposing clean air acts and increasing tobacco taxes; the cost of tobacco products is inversely proportional to the uptake of use by adolescents.

Coding and Reimbursement

As of October 2010, the Affordable Care Act requires all new health plans to cover smoking cessation counseling as a U.S. Preventive Services Task Force Grade A preventive service. In January 2011, all Medicare patients became covered and it is expected that all persons will be covered in 2014. Also in January 2011, the *International Classification of Diseases*, 9th Revision, and *Current Procedural Terminology* codes for reimbursement for smoking cessation counseling went into effect. Under the new codes, counseling can be provided for all patients who smoke. Reimbursement is based on the amount of time spent counseling patients. Counseling that takes 3–10 minutes is considered intermediate and counseling lasting longer than 10 minutes is considered intensive.

References

1. MMWR Morbidity and Mortality Weekly Report. "Vital Signs: Current Cigarette Smoking Among Adults Aged ≥ 18 Years – United States, 2009. Available at: <http://www.cdc.gov/mmwr>. Retrieved April 13, 2011.
2. Healthy People.gov: 2020 Topics & Objectives: Tobacco. Available at: <http://healthypeople.gov/2020/topicsobjectives/2020/objectiveslist.aspx?topicid=41>. Retrieved April 13, 2011.
3. Smoking and Tobacco Use: Youth and Tobacco Use. Office on Smoking and Health. National Center for Chronic Disease Prevention and Health Promotion. November 30, 2010.
4. Economic Facts About U.S. Tobacco Production and Use. Office on Smoking and Health. National Center for Chronic Disease Prevention and Health Promotion. Available at: http://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/index.htm. Retrieved July 14, 2010.
5. Benowitz NL, Samet JM. The threat of menthol cigarettes to U.S. public health [published online ahead of print May 4, 2011]. *N Engl J Med* 2011;364:2179–81.
6. Knishkowsky B, Amitai Y. Water-pipe (narghile) smoking: an emerging health risk behavior. *Pediatrics* 2005;116:113–9.

7. Chen J. Toxicological analysis of low-nicotine and nicotine-free cigarettes. *Toxicology* 2008;249:194–203.
8. Center for Tobacco Products, United States Food and Drug Administration. Guidance, compliance & regulatory information. United States Food and Drug Administration. Available at: <http://www.fda.gov/TobaccoProducts/GuidanceComplianceRegulatoryInformation/default.htm>. Retrieved April 13, 2011.
9. U.S. Department of Health and Human Services. Women and smoking: a report of the Surgeon General. Rockville (MD); DHHS; 2001. p. 7.
10. Botteri E, Iodice S, Bagnardi V, Raimondi S, Lowenfels AB, Maisonneuve P. Smoking and colorectal cancer: a meta-analysis. *JAMA* 2008;300:2765–78.
11. Marchbanks PA, Wilson H, Bastos E, Cramer D, Schildkraut JM, Peterson HB. Cigarette smoking and epithelial ovarian cancer by histologic type. *Obstet Gynecol* 2000;95:255–60.
12. Xue F, Willett WC, Rosner BA, Hankinson SE, Michels KB. Cigarette smoking and the incidence of breast cancer. *Archives of Internal Medicine* 2011;171:125–133.
13. Kapeu AS, Luostarinen T, Jellum E, Dillner J, Hakama M, Koskela P, et al. Is smoking an independent risk factor for invasive cervical cancer? A nested case-control study within Nordic biobanks. *Am J Epidemiology* 2009;169:480–8.
14. Trimble CL, Genkinger JM, Burke AE, Hoffman SC, Helzlsouer KJ, Diener-West M, et al. Active and passive smoking and the risk of cervical neoplasia. *Obstet Gynecol* 2005;105:174–81.
15. Reichert VC, Seltzer V, Efferen LS, Kohn N. Women and tobacco dependence. *Obstet Gynecol Clin North America* 2009;36:877–90.
16. Njølstad I, Arnesen E, Lund-Larsen PG. Smoking, serum lipids, blood pressure, and sex differences in myocardial infarction: a 12-year follow-up of the Finnmark study. *Circulation* 1996;93:450–6.
17. U.S. Department of Health and Human Services. The Health Consequences of Smoking: A Report of the Surgeon General. Washington, DC; HHS; 2004.
18. Shuster LT, Rhodes DJ, Gostout BS, Grossardt BR, Rocca WA. Premature menopause or early menopause: long term health consequences. *Maturitas* 2010;65:161–6.
19. Kanis JA, Johnell O, Oden A, Johansson H, De Laet C, Eisman JA, et al. Smoking and fracture risk: meta-analysis. *Osteoporosis International* 2004;16:155–62.
20. Solberg LI, Maciosek MV, Edwards NM, Khanchandari HS, Goodman MJ. Repeated tobacco-use screening and intervention in clinical practice. *Am J Prev Med* 2006;31:62–71.
21. Counseling to Prevent Tobacco Use and Tobacco-Caused Disease: USPSTF Recommendations. AHRQ Pub. No. 04-0526. November 2003.
22. Fiore MC, Jean 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.
23. DiFranza J, Savageau JA, Fletcher K, O’Loughlin J, Pbert L, Ockene JK, et al. Symptoms of tobacco dependence after brief intermittent use: the development and assessment of Nicotine Dependence in Youth-2 Study. *Arch Pediatr Adolesc Med* 2007;161:704–10.
24. Thorogood M, Hillsdon M, Summerbell C. Changing behavior. *Clinical Evidence* (online) August 1, 2006. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2907629>. Retrieved April 11, 2011.
25. Motivational interviewing: a tool for behavior change. ACOG Committee Opinion No. 423. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2009;113:243–6.

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