Smoking Cessation Tools for Health Care Providers
by Deborah Gentile, MD

Introduction

Nearly 40 million US adults currently smoke cigarettes on a regular basis and cigarette smoking accounts for nearly a half million deaths annually in the US alone. Moreover, smoking has an adverse effect on the quality of life of many other patients including those with asthma. Health care providers have the ability to make a tremendous impact on smoking cessation because more than 70 percent of smokers see a physician each year. Interestingly, more than half of smokers wish to quit but many are never asked about their smoking addiction or given advice on cessation. Major reasons contributing to the failure to address smoking cessation include lack of time and lack of knowledge of medications and treatment. Indeed, less than 25 percent of physicians report any formal training in smoking cessation and only 65 percent of physicians feel confident in prescribing smoking cessation medications. Additionally, most physicians are unaware of the US Public Health Service Clinical Practice Guidelines for tobacco cessation. The aim of this article is to assist health care providers in becoming aware of smoking cessation guidelines and to provide information on smoking cessation and treatments.1-4

Nicotine Addiction and Dependency

Nicotine is the addictive substance in cigarettes. When a smoker inhales, approximately 90 percent of the nicotine inhaled is rapidly absorbed and the smoker will feel the effects within 10 seconds. Nicotine causes tachyphylaxis which contributes to an increasing number of smoked cigarettes on a daily basis as well as deeper inhalation and longer breath holding during smoking. Nicotine also causes physical and psychological dependence that is under the influence of the dopamine-dependent mesolimbic (the euphoria or reward center) and mesocortical brain pathways. Nicotine exerts its effect by increasing the release of dopamine bursts in specific regions of the brain that positively reinforce with pleasure and appetite suppression.5-7

Implementing Smoking Cessation into Practice

Treating Tobacco Use and Dependence: 2008 Update published by the US Public Health Service recommends that health care providers use the concept of the 5 "As" (ask, advise, assess, assist, and arrange) to standardize the care of all patients. (See table 1, page 11). The first step is to ask about tobacco use. One way to easily blend this step into the regular screening process is to incorporate it into the evaluation of vital signs. For former smokers, it provides an opportunity for positive reinforcement, and for those who never smoked, it provides an opportunity for primary prevention. Informing smokers of their pack-years is an effective smoking cessation tool since there is a strong correlation between the greater lifetime dose and the risk of developing a smoking related disease.1,8

The second step in the model is to advise. Many patients report that a physician’s advise to quit is an important motivator for smoking cessation. It has been reported that brief interventions of only three minutes can significantly affect smoking cessation rates in all populations. The US Health Service guidelines suggest using advise that is clear, strong, and personalized. Asking about smoking associated symptoms such as constipation, diarrhea, flushing, palpitations, chest discomfort, irregular menses, irritability, joint and muscle pain, and sleep problems may also serve as motivation for cessation since many smokers do not recognize that these symptoms are abnormal or may not associate them with smoking. A novel approach to helping a smoker quit is to obtain spirometry and use the results to calculate their lung age using the following formulas of [(2.87 x height in inches) – (31.25 x observed FEV1 in liters) – 39.375] or [(3.56 x height in inches) – (40 x observed FEV1 in liters) – 77.28] for men and women, respectively.9-11

Providing Medical Treatment to Smokers

The third step is to assess the willingness of the patient to quit smoking. If the patient is willing to try to quit, it is the role of the health care provider to assist (the fourth step) these patients. Ideally, patients should be given a combination of therapy with counseling and medication since this has been found to be the most effective method for sustained cessation. If the patient is not interested in one or the other method, it is important to realize that counseling or medication alone may be successful as well. Brief counseling in the office and adding the adjunctive telephone quit line (1-800-QUIT-NOW) can be effective. The internet can also provide additional resources. (See table 2, page 12). More challenging patients may need to be referred to a specialist in the field of tobacco dependence for more intensive therapy. Patients need to be trained to recognize situations that put them at risk of smoking or relapse. Many smokers use nicotine as a drug to cope with life stressors and may have undiagnosed depression and/or anxiety disorders. At follow-up visits, it is important to provide constant reinforcement regardless of how long it has been since the last cigarette. For patients who are not yet willing to set a quit date, it is important for health care providers to use previously discussed motivational techniques and briefly discuss the harmful effects of smoking. Understanding why a patient smokes and his or her perceived value of smoking can help direct discussions at follow-up visits. Indeed, studies have shown that patients who were not willing to quit but received ongoing cessation counseling reported increased satisfaction with their health care. Consequently, the fifth step is to arrange follow-up care.1,12

Smoking Cessation Medications

(See table 3, page 13)

Nicotine Replacement Therapies

Nicotine replacement therapies (NRTs) including gum, lozenge, inhaler, nasal spray, and transdermal patch have been shown in a meta-analysis of randomized controlled studies to be efficacious in smoking cessation. Studies have shown continued on page 11
Smoking Cessation Tools for Health Care Providers
continued from page 10

that NRTs increase the odds of long-term cessation by 1.5 to 2 fold. NRTs are specifically designed to relieve some of the nicotine withdrawal symptoms and have been found to also serve as good adjuvants to the nicotine-free medications described below.

The main disadvantage of NRTs is that they do not exactly mimic the sensations a smoker feels when smoking. For example, the instantaneous gratification received with a cigarette is not reproduced by the nicotine patch, which can take up to three hours to exert an effect. Providers must identify which method and dose is best for each individual patient. For patients with a high level of nicotine dependency (> 10 cigarettes per day), there is a better quit rate when higher doses of NRT are used. Additionally, starting the NRT two weeks before the quit date results in doubling of the cessation rates at four weeks compared with starting NRT on the actual quit date.

It is also important to understand that NRTs can be used in conjunction with each other. For example, some providers have found that using the patch with the lozenge or nasal spray may help recreate the same peaks and trough feelings experienced with smoking. Finally, the importance of individualized NRT based on patient characteristics cannot be stressed enough. The inhaler may give the feel of holding a cigarette, while the nasal spray gives the quick nicotine surge of smoking, gum and lozenges may be helpful for those who need to keep their mouth active, and the patch may be good for the busy patient because it requires less attention to repetitive daily dosing.13-18

Bupropion
Bupropion is a heterocyclic antidepressant that has been specifically marketed for smoking cessation. It acts as a weak inhibitor of norepinephrine, serotonin, and dopamine uptake and an antagonist of the nicotine receptor. Its benefits in smoking cessation are derived from its ability to block nicotine effects, reducing withdrawal effects and reducing the depressed mood associated with nicotine withdrawal. There is some evidence that nicotine may have antidepressant properties that reinforce smoking and that an antidepressant may serve as an effective substitute. Most physicians recommend setting a quit date for one week after initiation of therapy and treatment should be continued for seven to 12 weeks. Six-month cessation rates increased from 17 percent to 33 percent for smokers who took bupropion versus placebo. Bupropion in combination with counseling has been found to be twice as effective in smoking cessation as placebo. Bupropion is generally well-tolerated by most patients and the most common adverse effects are dry mouth and insomnia.19-22

Varenicline
Varenicline is currently the most successful single-agent medication for smoking cessation. It is a partial agonist of the nicotine receptor that causes a low level of sustained dopamine release but not the burst described earlier. It combines the agonist and antagonist effects of the nicotine receptor to alleviate the withdrawal adverse effects while limiting the reinforcing properties of nicotine. Varenicline has a proven efficacy profile. The most common adverse effect is nausea, which may be decreased by using a one-week lead-in titration schedule. A quit date should be planned at the completion of the first week of treatment. Treatment should be continued for 12-24 weeks and can be reinstituted if relapses occur. Combination with NRT in conjunction with varenicline has been found to be effective in controlling urges and triggers.9,24

Conclusion
It is important for health care providers to positively impact upon smoking cessation because it directly affects the care they provide. Positive results can be achieved by screening, counseling, and prescribing first-line smoking cessation medications. Arranging follow-up provides an additional step in increasing the likelihood of successful smoking cessation.

Table 1: The 5 “A’s” Model

<table>
<thead>
<tr>
<th>The A’s</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Ask</td>
<td>Screen all patients for tobacco use or environmental tobacco smoke exposure as part of expanded vital signs</td>
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<tr>
<td>Advise</td>
<td>Recommend patient or household contacts quit</td>
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<tr>
<td>Assess</td>
<td>Determine the smoker’s desire to quit</td>
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<tr>
<td></td>
<td>• If positive, provide assistance</td>
</tr>
<tr>
<td></td>
<td>• If unwilling to quit, provide motivational counseling</td>
</tr>
<tr>
<td></td>
<td>• If already quit, provide positive reinforcement</td>
</tr>
<tr>
<td>Assist</td>
<td>Provide a quit plan by advising the patient as follows:</td>
</tr>
<tr>
<td></td>
<td>• Set a quit date</td>
</tr>
<tr>
<td></td>
<td>• Tell others and request support</td>
</tr>
<tr>
<td></td>
<td>• Anticipate pitfalls</td>
</tr>
<tr>
<td></td>
<td>• Remove all tobacco from their environment</td>
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<tr>
<td></td>
<td>• Counsel in office and provide referral if needed</td>
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<tr>
<td></td>
<td>• Pharmacotherapy</td>
</tr>
<tr>
<td>Arrange</td>
<td>Provide follow-up at the following intervals:</td>
</tr>
<tr>
<td></td>
<td>• First week</td>
</tr>
<tr>
<td></td>
<td>• First month</td>
</tr>
<tr>
<td></td>
<td>• Ongoing based on patient’s needs</td>
</tr>
</tbody>
</table>

Adapted from the 2008 US Public Health Service Clinical Practice Guideline Treating Tobacco Use and Dependancy: 2008 Update
Table 2

<table>
<thead>
<tr>
<th>Resources for Patients</th>
<th>What they provide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennsylvania 24-hour Free Quitline 1-800-QUIT-NOW</td>
<td>Phone is staffed by clinically trained counselors. Callers are referred to a counselor and are mailed an appropriate booklet based upon their readiness to make a quit attempt. Special materials are also available for smokeless tobacco users and pregnant women. This quitline is supported by the Pennsylvania Department of Health (DOH). Physicians may order free materials from the Quitline.</td>
</tr>
<tr>
<td>Determine to Quit <a href="http://www.determinedtoquit.com/">http://www.determinedtoquit.com/</a></td>
<td>This DOH website offers support and help with quitting smoking. Individuals can click on the &quot;Community Support and Resources&quot; tab to find programs in their own community.</td>
</tr>
<tr>
<td>Resources for Providers</td>
<td></td>
</tr>
<tr>
<td>Smoke-Free Homes <a href="http://www.kidslivesmokefree.org/">http://www.kidslivesmokefree.org/</a></td>
<td>The website is intended to provide resources, information, ideas, and opportunities for collaboration for pediatric clinicians.</td>
</tr>
<tr>
<td>Smokefree.gov <a href="http://www.smokefree.gov/">http://www.smokefree.gov/</a></td>
<td>CDC sponsored webpage with quit support materials, links to on-line chat and telephone counselors, research trials/studies, and print materials.</td>
</tr>
<tr>
<td>Treatobacco.net <a href="http://www.treatobacco.net">http://www.treatobacco.net</a></td>
<td>Treatobacco.net provides evidence-based data and practical support for the treatment of tobacco dependence. It is aimed at physicians, nurses, pharmacists, dentists, psychologists, researchers, and policy makers. Treatobacco.net is produced and maintained by the Society for Research on Nicotine and Tobacco, in association with the World Bank, Centers for Disease Control and Prevention, the World Health Organization, the Cochrane Group, and a panel of international experts.</td>
</tr>
<tr>
<td>Campaign for Tobacco Free Kids <a href="http://www.tobaccofreekids.org/index.php">http://www.tobaccofreekids.org/index.php</a></td>
<td>NIDA InfoFacts: Cigarettes and Other Tobacco Products <a href="http://www.drugabuse.gov/Infofact/tobacco.html">http://www.drugabuse.gov/Infofact/tobacco.html</a> This NIDA InfoFact sheet discusses statistics associated with smoking and tobacco use, health hazards, promising research, and treatments that are available to help smokers quit. It is also available in Spanish.</td>
</tr>
<tr>
<td>American Lung Association <a href="http://www.lungusa.org/">http://www.lungusa.org/</a></td>
<td>Treating Tobacco Use and Dependence, 2008 Update: Clinical Practice Guideline <a href="http://www.ahrq.gov/path/tobacco.htm">http://www.ahrq.gov/path/tobacco.htm</a> A comprehensive document, this guideline contains evidence-based strategies and recommendations designed to assist clinicians, tobacco dependence treatment specialists, and others in delivering and supporting effective treatments for tobacco use and dependence.</td>
</tr>
<tr>
<td>Help for Smokers and Other Tobacco Users <a href="http://www.ahrq.gov/consumer/tobacco/helpsmokers.htm">http://www.ahrq.gov/consumer/tobacco/helpsmokers.htm</a></td>
<td>Available in both English and Spanish, this booklet is a companion of the &quot;Treating Tobacco Use and Dependence: 2008 Update&quot; Clinical Practice Guideline. It is written in an easy-to-understand format and includes educational and motivational messages and resources to help patients/consumers quit smoking.</td>
</tr>
<tr>
<td>HealthCare Provider Reminder Systems, Provider, and Patient Education: Action Guide <a href="http://www.prevent.org/content/view/159/178/">http://www.prevent.org/content/view/159/178/</a></td>
<td>This CDC guide helps health care delivery systems to improve the delivery of tobacco use treatment to patients.</td>
</tr>
<tr>
<td>Guide to Community Preventive Services: Tobacco Use and Control <a href="http://www.cdc.gov/tobacco/tobacco_control_programs/stateandcommunity/comguide.htm">http://www.cdc.gov/tobacco/tobacco_control_programs/stateandcommunity/comguide.htm</a></td>
<td>This guide, released by the CDC in 2001, provides recommendations to decision makers about the types of interventions most appropriate for reducing tobacco use and exposure for different populations. Recommendations are based upon the strength of the evidence for each intervention type according to a systematic review process and are helpful to decision makers when selecting an intervention for specific groups or individuals.</td>
</tr>
<tr>
<td>National Tobacco Cessation Collaborative <a href="http://www.tobacco-cessation.org/">http://www.tobacco-cessation.org/</a></td>
<td>The purpose of the NTCC website is to provide in one place the best available information on tobacco cessation. This information comes from the many agencies and organizations working to increase tobacco cessation in the United States and Canada.</td>
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</tbody>
</table>
The Effects of Smoking on Asthma Management: Post-Test

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Address

Circle the correct answer(s).

1. There are more than 100 of over 4,000 chemicals in tobacco smoke. Which of the following are examples of these gaseous chemicals?
   a. formaldehyde
   b. sulphur dioxide
   c. carbon monoxide
   d. acetone
   e. nitrogen oxides
   f. hydrogen cyanide
   g. heavy metals (nickel, lead, and cadmium)

2. The CDC estimates that cigarette smoking affects not only users but also persons exposed to secondhand smoke and accounts for an estimated one in five deaths each year in the United States. Which of the following is/are not an adverse effect of this?
   a. lung cancer
   b. cardiovascular problems
   c. strokes
   d. acute respiratory infections
   e. otitis media
   f. more frequent and severe asthma attacks

3. Prenatal exposure occurs in the placenta via the umbilical cord and takes place when the mother inhales the harmful smoke, which can result in permanent damage to development of a child's lungs.
   □ True □ False

4. In 2006-2008, the estimated prevalence of current smokers was 21 percent (CI: 20-23) with no significant prevalence between males and females. Which age group had the highest significant current smoking prevalence estimate?
   a. age 18-29
   b. age 30-44
   c. age 45-64
   d. 65 and over

5. Which of the following are adverse effects of smoking on asthma:
   a. Asthma control
   b. Health resource utilization
   c. Decline of lung function
   d. Less sensitive to corticosteroids
   e. Enhances platelet aggregation
   f. A, b, c, d
   g. All of the above

6. Smokers with more than a 20-pack-year history had nearly an eight-fold risk of death from asthma.
   □ True □ False

7. Major reasons contributing to failure to address smoking cessation in your practice include which of the following?
   a. Lack of time
   b. Insufficient knowledge of referral resources
   c. Lack of knowledge of medications and treatment
   d. Patient refusal
   e. Lack of counseling experience
   f. All of the above

8. The US Public Health 2008 Update of Treating Tobacco Use and Dependence recommends using the concept of the 5 "As" to standardize the care of all patients. Which of the following are not included in the standard?
   a. Align
   b. Ask
   c. Advise
   d. Assess
   e. Assist
   f. Arrange
   g. All of the above

9. Which of the following are categories of drugs which have been identified in smoking cessation treatment?
   a. nicotine replacement therapy
   (gum, inhaler, lozenge, patch, spray)
   b. prednisone
   c. Chantix™/varenicline
   d. Zyban®/bupropion
   e. a, c, d
   f. All of Above

10. Utilization of spirometry can be used to assist in smoking cessation by using the results to calculate the patient's lung age compared to non-smoker's lung age.
    □ True □ False