

## Current Concepts in the Management of Smoking Cessation: A Review

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### OBJECTIVES

- 1) Identify pharmacologic and nonpharmacologic treatment options for smoking cessation.
- 2) Describe the 4 different dosage forms of currently available nicotine replacement therapy (NRT).
- 3) Identify patient education tips for each dosage form of NRT.
- 4) List adverse events associated with each dosage form of NRT and bupropion.
- 5) Identify other modalities that are being studied for smoking cessation.
- 6) Provide information on designing a patient-specific plan for smoking cessation.



### CONTINUING EDUCATION CREDIT

This course has been approved for a total of two (2) contact hours of continuing education credit (0.2 CEUs) by the University of Tennessee College of Pharmacy. The University of Tennessee College of Pharmacy is approved by the American Council on Pharmaceutical Education as a provider of continuing pharmaceutical education. ACPE Program Number: 064-000-00-201-H-O3. This course expires on March 31, 2003.

Smoking contributes to 20% of all deaths in the United States annually.<sup>1</sup> It is known to be a primary cause of several forms of cancer and is a leading risk factor for coronary, vascular, and respiratory diseases.<sup>1</sup> Children and adolescents who smoke increase their risk for respiratory illness, are less physically fit, and may have blunted lung maturation compared to nonsmoking peers.<sup>1</sup> Exposure

to secondhand smoke by nonsmokers increases the risk for coronary heart disease and lung cancer. Infants are especially affected by secondhand smoke, with exposure increasing their risk for a variety of health problems such as lower respiratory tract infections and middle ear effusions.<sup>1</sup> Furthermore, women who smoke during pregnancy place the fetus at risk for preterm delivery, low birth weight, miscarriage, and sudden infant death syndrome (SIDS).<sup>1</sup> See Table 1 for a summary of health risks caused by secondhand smoke. Despite documented health risks, 25% of Americans continue to smoke.<sup>1</sup>

The economic impact of smoking is considerable, with an estimated cost of more than \$50 billion in medical costs attributable to smoking.<sup>1</sup> These medical expenses do not include lost wages or other nonmedical costs incurred due to increased morbidity. Currently, most managed care organizations do not pay for prescription or over-the-counter products used to assist in cessation despite the significant expenses for smoking-related healthcare.

Smoking cessation can dramatically decrease the health risks to all smokers regardless of how long the patient has smoked. After only 1 year of abstinence, the risk of myocardial infarction and cerebral arterial disease-related death are decreased by one half.<sup>1</sup> Oral cancer risk decreases by 50% after 5 years, and lung cancer risks are 30% to 50% less after 10 years of cessation.<sup>1</sup> Smokers who quit before age 50 decrease their risk of dying of smoking-related causes by 50%.<sup>1</sup>

### Cessation

Seventy percent of smokers who smoke more than 20 cigarettes a day (1 pack per day) claim that, if asked by a physician, they would quit.<sup>2</sup> The problem lies then in the fact that in a 1998 public poll, less than 25% of smokers have been advised to quit by their physician.<sup>2</sup> The availability of over-the-counter (OTC) nicotine replacement therapy has increased the smoking cessation rate in the United States, but is a likely reason for decreased physician

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involvement in smoking cessation programs. Other deterrents to physician involvement may be decreased time per patient and a perceived lack of skills in the area of smoking cessation.<sup>3</sup> This underscores the opportunity for healthcare professionals other than physicians to assume the leadership role in smoking cessation recruitment and management. According to the Agency for Health Care Research and Quality (AHRQ), counseling on the importance of smoking cessation can be done effectively in as little as 3 minutes.<sup>4</sup> Positive results are produced when the message is clear and consistently reinforced.<sup>2</sup> Almost one half of smokers attempt to quit every year, but only 6% succeed.<sup>5</sup> The Clinical Practice Guideline on Smoking Cessation produced by the AHRQ suggest steps for smoking cessation that many healthcare professionals can easily use to help patients. Steps include setting a quit date, joining an organized smoking cessation program, and drug therapy. Table 2 lists the AHRQ guidelines for physicians and patients to help smokers quit. Guidelines are also available from the American Psychiatric Association<sup>6</sup> and the American Society of Health-System Pharmacists.<sup>7</sup>

### Smoking Addiction

Nicotine addiction, like that of other drugs, involves psychological, behavioral, social, and physical dependencies.<sup>4</sup> Behavioral therapy and social support play important roles in a smoking cessation program; however, it is the replacement of nicotine that manages the serious withdrawal effects of the addiction. Nicotine acts on the nicotinic receptors in the central nervous system, which ultimately leads to release of the neurotransmitters dopamine, serotonin, norepinephrine, and acetylcholine.<sup>8</sup> The increase in neurotransmitters is thought to produce the rewarding effects of nicotine such as pleasure, increased performance, improved memory, and reduction in tension and anxiety.<sup>8</sup> Repeated exposure to nicotine leads to an upregulation of nicotinic receptors.<sup>8</sup> Sudden discontinuation of nicotine intake leads to negative withdrawal symptoms such as irritability, aggressiveness, headache, restlessness, and nicotine craving.<sup>8</sup> Nicotine replacement therapy allows patients to focus on behavioral and social habits without suffering from severe withdrawal symptoms.

### Pharmacotherapy

Even though the clinical practice guideline states that every patient should be offered pharma-

cotherapy to aid in cessation, a 1999 report found that while 30% of smokers are offered a smoking cessation program, only 3% are offered nicotine replacement therapy (NRT), which produces cessation rates twice that of placebo.<sup>9</sup> Nicotine replacement allows the patient to adapt to smoke-free

**Table 1.** Negative Effects of Secondhand Smoke

Respiratory illness
Ear infections
Decreased physical fitness
Blunted lung growth
Preterm delivery
Low birth weight
Miscarriage
Sudden infant death syndrome

Adapted from reference 1.

**Table 2.** AHRQ Guidelines on Smoking Cessation

<b>Physician Guidelines</b>
■ <b>Ask</b> —identify smokers
■ <b>Advise</b> —strongly urge cessation
■ <b>Identify</b> —which patients are willing
■ <b>Assist</b> —help form a plan
■ <b>Arrange</b> —follow-up contact
<b>Patient Plan</b>
■ <b>Set</b> a quit date
■ <b>Inform</b> family, friends, and coworkers
■ <b>Remove</b> cigarettes
■ <b>Anticipate</b> challenges

Adapted from reference 2.

behavior without the negative effects of nicotine withdrawal. The amount of nicotine provided is less than that of smoking, with a slower onset of effect and an improved safety profile.<sup>10</sup> Several myths surround NRT; one is that patients will not receive improved health benefits from smoking cessation until the NRT therapy is complete. Cardiovascular injury is shown to be caused by products and toxins in cigarettes other than nicotine.<sup>11</sup> Patients who abstain from smoking receive positive benefits on

cardiovascular risk factors even if they use NRT.<sup>4</sup> In fact, studies have shown that positive cardiovascular changes from cessation, including decreased platelet aggregation, decreased fibrinogen levels, and changes in the lipid profile, are not delayed by NRT.<sup>11</sup> Cancer is also thought to be caused by toxins other than nicotine. Because the NRT products do not contain tar and carbon monoxide, patients should not fear that local cancer of the mouth and esophagus will result from NRT.<sup>10</sup>

A second myth is that NRT should not be recommended to any patient who may continue smoking. While it is not recommended, especially for patients with respiratory and coronary artery diseases, NRT combined with cigarettes is relatively safe.<sup>12</sup> A Canadian study demonstrated that patients maintained an acceptable level of safety even with high nicotine levels.<sup>13</sup>

That NRT is expensive is another myth. All methods of nicotine replacement cost approximately the same as smoking.<sup>10</sup> Table 3 compares the cost of different forms of NRT with cigarette smoking. These averages show that the monthly cost of nicotine replacement equals the cost of smoking between 1 and 2 packs of cigarettes per day. When future cigarette purchases and health expenses are considered, NRT is extremely cost effective.

Another benefit of NRT is the added ease of deleting nicotine from the system using titration methods. Craving, irritability, and other negative symptoms of withdrawal can all be significantly reduced by utilizing a nicotine replacement program.<sup>10</sup> When considering patients as candidates for NRT, a physician should be involved if the patient is

**Table 3.** Cost Comparison of NRT and Smoking\*

	Average Cost (\$)†	Average Cost per Month (\$)‡
Nicorette gum		
2 mg	49.20/ 108 pieces	109.33§
4 mg	54.15/ 108 pieces	120.33
Nicoderm CQ		
21 mg/d	28.63/ 7 patches <sup>  </sup>	103.50
14 mg/d	48.30/ 14 patches	
7 mg/d		
Nicotrol patch 15mg/d	28.65/ 7 days	122.78
Generic nicotine patch		
22 mg/d	22.94/ 7 patches	79.07
11 mg/d	36.90/ 14 patches	
Nicotrol nasal spray	45.62	109.49¶
Nicotrol inhaler	45.75	196.00-320.25#
Zyban	94.19	94.19**
Cigarettes	2.50/pk	1 ppd = \$75.00†† 2 ppd = \$150.00

\*Data collected by author; Nashville, Tennessee, October 1999.

†Average cost reflects price comparison of 6 Nashville area pharmacies. Cigarette cost per pack is an average of 6 area retail stores.

‡Average cost per month reflects cost of product over a 30-day period.

§Based on directions of one piece every 2 hours (16 h/d) = 240 pieces.

<sup>||</sup>Cost reflects prices for all strengths.

¶Each nasal spray contains 200 sprays. Using one spray every hour (16 h/d) = 480 sprays.

#Each inhaler comes with 42 cartridges. Cost reflects varying doses of 6–10 cartridges per day. Manufacturer suggests minimum of 6 cartridges with a maximum of 16 cartridges per day.

\*\*Price per 60 tablets (300 mg per day).

††One pack contains 20 cigarettes.

pregnant or has heart disease. These patients will benefit from cessation; however, they must be monitored and all risks considered.

### Nicotine Replacement Therapy

Four dosage forms of nicotine replacement systems are currently marketed and will be the focus of this text. The gum and patch are OTC, while the nasal spray and inhaler require a prescription. Nicotine polacrilex gum (Nicorette<sup>®</sup>, SmithKline Beecham Consumer Healthcare, Pittsburgh, PA), is available in 2-mg and 4-mg strengths. The 2-mg dose is recommended for patients who smoke less than 25 cigarettes per day; otherwise, the 4-mg dose should be utilized.<sup>12</sup> The 4-mg strength gum is also an appropriate choice for patients who fail the 2-mg dose, have a high nicotine dependence, or who prefer the 4-mg over the 2-mg form.<sup>12</sup> Instruct the patient to slowly chew the gum until a "peppery" taste is noted. The gum should then be placed between the cheek and buccal cavity for several minutes to allow absorption of the nicotine through the buccal mucosa. Each piece may be chewed and "parked" in the cheek for about 30 minutes. To receive maximum benefit, 1 piece should be chewed every 1-2 hours for 6 weeks followed by 6 weeks of tapering.<sup>12</sup> Also, patients should be instructed not to eat or drink any acidic beverages such as colas, fruit juices, and coffee for at least 15 minutes before and during chewing the gum, or nicotine absorption will be decreased.<sup>2</sup>

Two different approaches utilizing patch therapy are OTC: fixed-dose and dose tapering. One patch, Nicotrol<sup>®</sup>, (McNeil Consumer Products Company, Fort Washington, PA) provides 15 mg/day of nicotine over a 16-hour period. It is recommended this patch be used 16 hours per day, during awake hours, for 6 weeks.<sup>14</sup> The other patch system, Nicoderm CQ<sup>®</sup>, (SmithKline Beecham Consumer Healthcare, Pittsburgh, PA), can be worn 16-24 h/day and involves tapering from 21 mg/day to 7 mg/day over 8 weeks. Long-term cessation rates have been linked to early smoking abstinence with the patch. The 21-mg/day patch may boost early quitting and has been shown to result in higher long-term abstinence.<sup>15</sup> Any smoker who smokes 15 cigarettes per day, or more, can start at 21 mg/day.<sup>2</sup> The rapid rise in nicotine plasma concentration seen with Nicoderm CQ may also be attractive to some patients. The patch, equipped with a small amount of nicotine readily available in the adhesive layer of the patch, avoids the lag time in plasma concentrations seen with other patches.<sup>13</sup> Patients should be instructed to

apply 1 patch at a time to a clean, dry, hairless area on the trunk or arms. Regardless of which patch is chosen, treatment is effective in 8 weeks or less.<sup>2</sup> Recently, the prescription patches Habitrol<sup>®</sup> (Novartis Consumer Health, Inc, Summit, NJ) and Prostep<sup>®</sup> (Elan Pharma Ltd, Athlone, Ireland, for Lederle Pharmaceutical Division, Pearl River, NY) were transferred to an over-the-counter status by the Food and Drug Administration (FDA).<sup>16</sup> Generic patches, also now available in 2 strengths OTC, increase the selection and competition for nicotine patch selection without a prescription.

The Nicotrol<sup>®</sup> inhaler (McNeil Consumer Products Company, Fort Washington, PA) combines nicotine replacement with the behavioral actions of smoking. The inhaler is shaped like a cigarette with nicotine cartridges that come in a case about the size of a package of cigarettes. Patients puff on the inhaler for several minutes at a time to receive nicotine, which is absorbed buccally whether the puffs are deep or shallow.<sup>12</sup> Patient technique with the inhaler has no effect on the product's efficacy. Patients should be instructed to use 6-16 cartridges per day for up to 12 weeks, and then gradually reduce the number of cartridges per day over the following 6-12 weeks. Effects are very similar to that of the gum, and the patient determines the dose titration. At least 6 cartridges per day should be utilized by all smokers for 4-6 weeks before beginning to taper.<sup>14</sup> If the patient is unable to completely stop smoking by the fourth week, treatment should be discontinued.<sup>14</sup> Anyone who is allergic to nicotine or menthol should not use the Nicotrol<sup>®</sup> inhaler.<sup>14</sup>

Nicotrol<sup>®</sup> nasal spray (McNeil Consumer Products Company, Fort Washington, PA) delivers nicotine more rapidly than any of the other dosage forms and is second only to cigarettes in rate of absorption of nicotine.<sup>12</sup> Patients should begin using 1-2 doses per hour for up to 8 weeks, followed by a tapering period over the next 4-6 weeks.<sup>14</sup> Each dose is equivalent to 2 sprays, 1 in each nostril. Patients are advised to use at least 8 doses, or 16 sprays, per day, with a maximum of 40 doses, or 80 sprays, in a 24-hour time period.<sup>14</sup> Patient education is similar to that of other nasal sprays: nasal passages should be clear, sprays should be alternated between nostrils, and correct inhalation technique must be demonstrated. Patients should be instructed not to sniff, swallow, or inhale the spray, and to tilt their head back slightly during administration.<sup>14</sup> The nasal spray is not recommended for any patient with a nicotine allergy, asthma, bronchospasm, or reactive airway disease.<sup>14</sup> Irritation to the nasal mucosa

should also be considered in a risk-to-benefit assessment of this product.<sup>14</sup>

Medications other than nicotine replacement products have been shown to be beneficial in smoking cessation. Bupropion hydrochloride (Zyban®, Glaxo Wellcome, Inc, Research Triangle Park, NC), taken in doses of 300 mg/d for 7-12 weeks, can double cessation rates compared to placebo.<sup>12</sup> Bupropion should be started at least 1 week prior to cessation and be continued for 2-3 weeks after successfully completing a cessation program.<sup>12</sup> The starting dose is 150 mg once daily for 3 days, then increasing to 150 mg twice daily. Patients concerned that the medication is classified as an antidepressant should be reassured that the antidepressant actions are not what aids in cessation. Bupropion is an inhibitor of the neuronal uptake of norepinephrine, serotonin, and dopamine. The mechanism by which bupropion aids in smoking cessation is unknown, but it is supposed that it is due to the noradrenergic and dopaminergic mechanism.<sup>14</sup> Bupropion should not be given to patients with a history of an eating or seizure disorder, those who

heavily use alcohol, who are taking the prescription medication Wellbutrin® (Glaxo Wellcome, Inc, Research Triangle Park, NC), or who are on an monoamine oxidase inhibitor.<sup>14</sup>

**Experimental Pharmacological Modalities**

Nortriptyline is another antidepressant that has been successfully used for smoking cessation. Its mechanism of action is to block the reuptake of norepinephrine and serotonin; however, it is unknown if this effect is what aids in cessation.<sup>17</sup> Patients using nortriptyline had an observed decrease in irritability and anxiety compared with those patients on placebo.<sup>17</sup> While nortriptyline has more associated anticholinergic side effects than bupropion, it is generally well tolerated and relatively inexpensive.<sup>17</sup> It is also on open formulary for many managed care organizations, which makes it easier for patients to receive reimbursement. Elderly patients and those patients with benign prostatic hypertrophy (BPH) or narrow-angle glaucoma are not recommended candidates for nortriptyline therapy. Clonidine and naltrexone have also been studied in smoking cessation; however, neither drug has shown a significant effect,<sup>18,19</sup> and none of these drugs has been approved for this indication.

All of the products discussed approximately double cessation rates compared to placebo and have similar costs.<sup>9</sup> Product choice should be based upon patient preference and should be the product that the patient feels will work the best. Table 4 summarizes advantages and disadvantages of different forms of NRT that should be considered before deciding on a specific NRT product. A combination of products may be used, and is encouraged, for optimal results.<sup>12</sup> Combinations that have been studied with success are bupropion (as directed for 9 weeks) and patch (tapered over 8 weeks), patch (tapered over 5 months) plus nasal spray (as directed for 1 year), and patch plus gum (as directed per product label).<sup>5,12,20</sup> Combinations may increase long-term cessation rates and decrease withdrawal symptoms without having clinically significant outcomes on blood pressure and heart rate.<sup>5,12,20</sup>

**Table 4.** Advantages and Disadvantages of Different Forms of Nicotine Replacement Therapy

	Advantage	Disadvantage
Gum	Patient-controlled titration	Food/beverage restrictions Must use correct technique Chewing gum vs daily activity Must use every 1-2 hours
Patch	Easiest to use Available as 24-h/d nicotine replacement	Patient not in control of titration No intermittent craving control Steady level all day
Nasal spray	Fast craving control	Must use proper nasal spray technique Must use every hour
Inhaler	Behavioral tapering	Frequent use Most expensive Manufacturer direction nonspecific

Adapted from reference 2.

### Side Effects

Side effects also play a role in product selection. If side effects are intolerable, patients should be switched to other products; however, most side effects from NRT will dissipate within the first week of use. Nicotine gum may cause hiccups, flatulence, and indigestion while the patch is more commonly associated with a local skin reaction.<sup>1</sup> It is important that the patient rotates sites to prevent patch irritation; however, even with care, local reactions are common. Hydrocortisone cream 5% or triamcinolone cream 0.5% are recommended to alleviate symptoms.<sup>2</sup> The cream should be applied after the patch is removed and rotated to another site. Over-the-counter hydrocortisone creams (0.5% and 1.0%) may be effective for irritation if the patient is hesitant to visit a physician. The inhaler and nasal spray can both cause local irritation and cough. The nasal spray may also cause rhinitis, sneezing, and watering eyes. Dry mouth, insomnia, and other anticholinergic effects are seen with bupropion and nortriptyline. Nortriptyline has also been reported to change the taste of cigarettes to the smoker.<sup>12,17</sup>

Smoking cessation can have side effects—real or perceived—that can become issues for patients. Weight gain is a major concern for many smokers who fear they will add substantial pounds if they quit. Weight gain is a reality, with abstinence usually adding 5 or more pounds. Remind the patient of the many health benefits of cessation and advise them to tackle 1 problem at a time. Encourage successful cessation before attempting to lose weight.<sup>4</sup> Nicotine replacement therapy does not delay weight gain; it is the other ingredients in cigarettes, not nicotine, that keep weight controlled while smoking.<sup>21</sup> Fear of anxiety may be another reason to continue smoking for some patients. The fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* includes increased anxiety as one of the nicotine withdrawal symptoms<sup>22</sup>; however, one study has shown that anxiety levels do not increase, but actually decrease, from baseline after 2 weeks of cessation.<sup>23</sup> Smokers also worry about long-term craving. This is seldom the case, as 50% of patients who have abstained for more than 48 months say they no longer crave cigarettes. Another 30% say they crave only 1 time per month or less.<sup>15</sup>

### Drug Interactions

Drug interactions may be another important aspect of a smoking cessation program. Cigarette smoking affects the metabolism of several medica-

tions through the CYP1A2 enzyme system.<sup>24</sup> After cessation, the plasma concentration of these drugs may increase and cause adverse events. While there are many possible interactions, few are clinically significant. Theophylline's interaction with cigarette smoking can be extremely significant with serum theophylline concentrations doubling in some patients.<sup>24</sup> Signs and symptoms of theophylline toxicity include nausea and vomiting, anxiety, tremor, insomnia, and seizures. The combustion products of cigarette smoke are the cause of suspected drug interactions with smoking; therefore, patients should be monitored upon cessation of cigarettes, not nicotine.<sup>24</sup> Close monitoring of the patient's medication profile is an important part of any cessation program, as smoking cessation is often a life-saving step in patients with lung disease requiring theophylline. Smokers who have diabetes often need larger doses of insulin to control blood glucose secondary to decreased absorption of the drug.<sup>24</sup> Insulin requirements may decrease upon discontinuation of smoking.<sup>24</sup>

### Behavioral Therapy

Pharmacotherapy provides much benefit to patients attempting cessation. Many of the products

**Table 5.** Smoking Cessation Support and Educational Programs

<p><b>American Cancer Society</b>                      "Fresh Start Program"                      800-ACS-2345  <a href="http://www.cancer.org">www.cancer.org</a></p>
<p><b>American Heart Association</b>                      800-242-8721  <a href="http://www.amhrt.org">www.amhrt.org</a></p>
<p><b>National Cancer Institute</b>                      800-422-6237  <a href="http://www.nci.nih.gov">www.nci.nih.gov</a></p>
<p><b>Nicotine Anonymous World Services</b>  <a href="http://www.nicotine-anonymous.org">www.nicotine-anonymous.org</a></p>
<p><b>Glaxo Wellcome Inc</b>                      800-428-6100  <a href="http://www.smokefreekids.com/smoke.htm">www.smokefreekids.com/smoke.htm</a>  <a href="http://www.quitnet.org">www.quitnet.org</a></p>

offered by pharmaceutical companies include supplemental behavioral programs.<sup>12</sup> Behavioral treatment is necessary because a large number of patients will continue smoking during cessation attempts.<sup>25</sup> Healthcare professionals should encourage patients to use these programs and can offer supportive care directly. Personal face-to-face or telephone counseling also increases cessation rates.<sup>21</sup> These interpersonal tactics significantly increase cessation compared to media or mailing campaigns, especially if the patient desires follow-up communication.<sup>26,27</sup> Any healthcare professional can offer cessation support by encouragement, communicating interest, and offering education.<sup>3</sup> Encouragement may be needed most by those who have previously failed cessation programs, as most smokers will make more than 5 attempts before they successfully abstain long term.<sup>12</sup> Counseling for these patients may consist of identifying obstacles, establishing coping techniques, identifying and avoiding cues, providing smoke-free areas, and social support.<sup>4</sup> Table 5 lists support and educational programs available for patients who are trying to quit smoking or who are interested in smoking cessation options.

Interventions, whether with current smokers or those already in a program, will be better received if they are tailored to the specific individual. Tailoring may include an individual's health status, expectations, or behaviors.<sup>28</sup> Sex-specific issues may also help tailor a program. Men and women are no different in their attempts at abstinence, but men are more successful long term. Women tend to be more concerned with weight gain and often do gain more weight than men; they may also require more of a support system.<sup>4</sup> Exercise programs may prove to be useful to women as they improve cessation, help control weight, and decrease stress.<sup>29</sup>

### Conclusion

The popularity of smoking cessation is evident. New products such as mint-flavored nicotine gum, herbal gum, and generic nicotine patches widen the selection for smokers who are considering quitting. Healthcare professionals can make the difference between attempts at cessation and successful abstinence by aiding in selection of products and educating patients on the importance of behavioral and/or social support. Patients come in contact with healthcare professionals on a frequent basis. They will consider suggestions to stop smoking, use advice on selection of nicotine replacement products, and they will continue to seek support and encourage-

ment throughout their cessation attempt. The smoking cessation message is important for all smokers to hear on a consistent basis. Products for nicotine replacement, bupropion, and nortriptyline can be used by most smokers to improve success rates, and social or behavioral support can be given in a few short minutes by a well-trained healthcare professional.

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CONTINUING PHARMACY EDUCATION



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Instructions

After reading the article "Current Concepts in the Management of Smoking Cessation: A Review," select the best answer to each of the following questions.

1. Smoking cessation is beneficial for:

- a) pregnant women
b) persons having smoked more than 20 pack-years
c) persons with heart disease
d) all of the above

2. Smokers who quit smoking before age 50 decrease their risk of dying by:

- a) 50%
b) 25%
c) 10%
d) 30%

3. Physician involvement in smoking cessation is declining because:

- a) patients do not visit their physicians
b) the physician does not ask them to quit
c) peer pressure
d) patients do not listen to their physicians' advice

4. Positive effects of smoking cessation are seen:

- a) only if nicotine replacement therapy (NRT) is not used
b) immediately after NRT completion
c) immediately
d) after 5 years of cessation

5. NRT is contraindicated in which one of the following patient types:

- a) patients with heart disease
b) those under 18 years of age
c) pregnant patients
d) none of the above

6. Which of the following is not a patient education point for nicotine gum?

- a) "chew and park" method
b) chew 1 piece every 1-2 hours
c) no food or acidic beverages within 15 minutes of chewing the gum
d) a "peppery" taste indicates that a fresh piece is needed

(CPE QUESTIONS CONTINUED ON FOLLOWING PAGE)

Current Concepts in the Management of Smoking Cessation: A Review

ACPE Program Number: 064-000-00-201-H-03

(PLEASE PRINT CLEARLY)

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3. a b c d 8. a b c d 13. a b c d 18. a b c d
4. a b c d 9. a b c d 14. a b c d 19. a b c d
5. a b c d 10. a b c d 15. a b c d 20. a b c d

Please complete the Program Evaluation on following page, and send with \$15 fee, payable to University of Tennessee, to:

Glen E. Farr, PharmD
University of Tennessee College of Pharmacy
600 Henley Street, Suite 213
Knoxville, TN 37902

...CPE QUIZ...

7. Which statement is true of nicotine patches?

- a) patients who smoke more than 2 packs per day may need 12 weeks of NRT, while patients who smoke less than 2 packs per day only need 8 weeks
- b) the 21 mg/d patch is for heavy smokers (more than 3 packs per day), and the 7 mg/d patch is for light smokers
- c) all patches may be worn for 16-24 hours
- d) generic patches currently come in 2 strengths, 22 mg and 11 mg, and are usually less expensive

8. A primary advantage of the nicotine inhaler is:

- a) the nicotine is absorbed like that of a cigarette
- b) behavioral actions are the same as that of a cigarette
- c) the "high" is the same as that of a cigarette
- d) there are no side effects because the nicotine is inhaled

9. Which statement is true of the nicotine nasal spray?

- a) nicotine is delivered more rapidly than any other dosage form of NRT
- b) dosing is only required twice daily
- c) nasal spray technique is different from that of other nasal sprays
- d) it is less expensive than the other NRT dosage forms

10. Bupropion is approved for use in smoking cessation and the treatment of:

- a) eating disorders
- b) depression
- c) dementia
- d) irritable bowel syndrome

11. Bupropion should not be prescribed to patients with:

- a) eating disorders
- b) seizure disorder
- c) heavy alcohol use
- d) all of the above

12. What is a recommended solution to skin reactions caused by nicotine patches?

- a) hydrocortisone cream
- b) benadryl spray
- c) cutting the patch in half
- d) cold compress

13. NRT will greatly increase the blood level of which of the following drugs, thus making the combination an important drug interaction with smoking cessation:

- a) theophylline
- b) digoxin
- c) warfarin
- d) gentamycin

(CPE QUESTIONS CONTINUED ON FOLLOWING PAGE)

CPE PROGRAM EVALUATION

The University of Tennessee College of Pharmacy would like to have your opinion. Please fill out the questionnaire below, tear off along the dotted line, and mail along with your CPE test form. We thank you for your evaluation, which is most helpful.

Please circle your answers:

My pharmacy practice setting is:	Independent	Chain	Hospital	Consultant
The objectives of the lesson were achieved.	Yes	No		
The quality of presentation of the material was:	Excellent	Good	Fair	Poor
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How long did it take you to read the material and respond to the Continuing Education questions? (Please specify the number of hours.)

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(CPE questions continued from previous page)

**14. In addition to drug therapy, what is the most important aspect of a smoking cessation program?**

- a) behavioral therapy
- b) written literature
- c) public awareness programs
- d) give-away incentives

**15. The following are appropriate NRT combinations:**

- a) patch and nasal spray
- b) bupropion and patch
- c) patch and gum
- d) all of the above

**16. Which of the following statements regarding bupropion is false?**

- a) dosing should be at 300 mg/d for at least 1 week prior to cessation attempt
- b) the starting dose is 150 mg/d
- c) bupropion may be used alone or in combination with NRT products
- d) bupropion is effective because most smokers are depressed

**17. A less expensive pharmacological alternative to bupropion that has been studied for smoking cessation therapy is:**

- a) nortriptyline
- b) alprazolam
- c) clonazepam
- d) amitriptyline

**18. A correct response to weight gain associated with smoking cessation is:**

- a) most smokers do not gain weight with cessation
- b) weight loss should be a focus only after cessation is successful
- c) NRT will delay weight gain
- d) health benefits of smoking cessation are cancelled out by any weight gain over ideal body weight

**19. Smoking cessation attempts in the United States have increased due to:**

- a) physician emphasis on cessation
- b) the availability of over-the-counter NRT products
- c) high first-time success rates
- d) the aging of the population

**20. Which of the following smoking cessation tools are available over the counter?**

- a) nicotine patches
- b) nicotine nasal spray
- c) nicotine inhaler
- d) bupropion



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