

# Clinician's Guide to Treating Tobacco Dependence

*Produced by members of the  
AARC Tobacco-Free Lifestyle Roundtable*

*with a forward by Dr. Steven Schroeder*



*American Association for Respiratory Care*

# Clinician's Guide to Treating Tobacco Dependence

Produced by members of the  
AARC Tobacco-Free Lifestyle Roundtable

With a Foreword by  
Dr. Steven Schroeder

Copyright ©2014 by the American Association for Respiratory Care



Produced by the American  
Association for Respiratory Care

# Table of Contents

<b>Foreword</b> .....	5	<b>The Evidence and Special Populations</b> .....	31
<b>Effect of Nicotine on the Human Body</b> .....	6	Myocardial Infarction and Cardiac Issues	
Cardiopulmonary Involvement		Pregnant Smokers	
Psychoactive Involvement		Hospitalized Tobacco Users	
Effect on Weight and Appetite		Secondhand and Thirdhand Smoke	
Other Effects		Teen and Pre-teen	
<b>Tobacco Products</b> .....	8	<b>System-wide Implementation and Policy Development</b> .....	39
The Cigarette as a Drug-delivery System		The Joint Commission’s New Tobacco Measure Set	
Menthol		Steps to Implementing a Tobacco-cessation Program	
Light Cigarettes		Respiratory Care Educator Role	
Cigars and Cigarillos		<b>Reimbursement for Smoking and Tobacco Cessation and Counseling</b> .....	45
<b>Miscellaneous Products</b> .....	10	<b>Referral: Outpatient and Community Programs</b> .....	48
Electronic Cigarettes		<b>References</b> .....	50
Hookah Smoking		<b>Acronyms</b> .....	53
Smokeless Tobacco and Snus		<b>List of Figures and Tables</b>	
<b>Neurochemistry of Addiction</b> .....	13	Table 1. DSM 5 Severity of Disorder Criteria .....	16
<b>Chain of Addiction</b> .....	14	Table 2. Nicotine Replacement Therapy (NRT) Over-the-Counter Pharmacotherapy Options .....	28
<b>DSM 5 Nicotine Dependence Criteria</b> .....	15	Table 3. Nicotine Replacement Therapy (NRT) Prescription Pharmacotherapy Options.....	29
<b>Starting the Conversation</b> .....	17	Table 4. Non-NRT Pharmacotherapy Options.....	30
<b>5 A’s, 5 R’s, and the Condensed AAR Tobacco Intervention</b> .....	18	Table 5. Pharmacotherapy Options for Patients with Cardiovascular Disease .....	32
<b>Motivational Interviewing</b> .....	23	Table 6. Suggested Interventions for Hospitalized Patients.....	36
What Is Motivational Interviewing?		Table 7. Tobacco Measure Set Specifications.....	40
How Does Motivational Interviewing Work?		Figure 1. 5 A’s .....	18
Example of a Brief Motivational Interviewing Conversation		Figure 2. Stages of Change .....	20
<b>Pharmacotherapy</b> .....	27	Figure 3. Example of Readiness to Change/Confidence to Change Now Scale.....	24
Nicotine Replacement Therapy			
Bupropion			
Varenicline			

# Program Faculty

Georgianna Sergakis, PhD, RRT, CTTS  
Chairperson, Clinician's Guide to Treating  
Tobacco Dependence  
The Ohio State University  
Columbus, OH

Erna Boone, DrPH, RRT, FAARC  
University of Arkansas for Medical Sciences  
Little Rock, AR

Scott Cerreta, BS, RRT  
COPD Foundation  
Washington, DC

Crystal Dunlevy, EdD, RRT  
The Ohio State University  
Columbus, OH

Robert Fluck Jr., MS, RRT, FAARC  
SUNY Upstate Medical University, Retired  
Syracuse, NY

Susan Rinaldo-Gallo, MEd, RRT, CTTS, FAARC  
Duke University Hospital  
Durham, NC

Grace Howard, BSRT, RRT  
Cleveland Clinic  
Cleveland, OH

Kathryn Ickes, BS, RRT, RPFT, AE-C  
Cleveland Clinic  
Cleveland, OH

Gaylene Lee, MEd, RRT-NPS, TTS  
Concorde Career College  
San Antonio, TX

Mary Martinasek, PhD, RRT-NPS, CHES, AE-C  
University of Tampa  
Tampa, FL

Karen S. Schell, DHSc, RRT-NPS, RRT-SDS, RPFT,  
RPSGT, AE-C, CTTS  
Newman Regional Health  
Emporia, KS

Courtney Seibert, BS, RRT-NPS  
Dayton Children's Hospital  
Dayton, OH

Shawna Strickland, PhD, RRT-NPS, AE-C, FAARC  
American Association for Respiratory Care  
Irving, TX

Jay Taylor, RRT, CTTS  
Sanford Medical Center  
Fargo, ND

Sarah Varekojis, PhD, RRT  
The Ohio State University  
Columbus, OH

Jonathan Waugh, PhD, RRT, RPFT, CTTS, FAARC  
University of Alabama at Birmingham  
Birmingham, AL

With a foreword written by  
Steven Schroeder, MD  
Professor, Department of Medicine  
Director, Smoking Cessation Leadership Center  
Distinguished Professorship in  
Health and Health Care  
University of California, San Francisco  
San Francisco, CA

# Foreword

2014 was a landmark year in tobacco control in the United States, marking the 50<sup>th</sup> anniversary of the first Surgeon General's Report on Smoking and Health. In the intervening five decades, the United States has seen great progress in reducing smoking rates and the ravages of smoking-related diseases. Yet, tobacco use remains the number one killer, accounting for almost 500,000 annual deaths in the United States and 5 million worldwide. Respiratory therapists (RTs) are uniquely positioned to address this problem, given their frequent contact with smokers who have smoking-induced diseases, and their special trusted position as bedside clinicians with intimate patient contact.

What are the facts? There are about 42 million smokers in the United States today, of whom 80% smoke on a daily basis and 20% only intermittently. Just as the prevalence of adult smoking has gradually declined—from 42.7% in 1964 to 18% today—so too has the amount of daily cigarettes smoked by smokers—from 20 per day to about 13 per day. Tobacco use, especially combustible tobacco such as cigarettes and cigars, exert a devastating toll on personal health, both for smokers and for nonsmokers exposed to secondhand smoke. The association between smoking and lung cancer is well known, as is the linkage between smoking and heart disease and stroke. The list of other diseases that are more likely to occur in smokers expands every year. It includes multiple types of cancer, chronic obstructive pulmonary disease, diabetes, and—most recently—Alzheimer's dementia.

Over time, persons in higher socio-economic classes have abandoned smoking, which is now concentrated in the less fortunate, including populations with mental health and/or substance use disorders, the homeless, and those involved with the criminal justice system. Medical workers now have much lower smoking rates than the general population. Only about 1% of physicians smoke, and professions with previous high rates such as RTs and nurses now have smoking prevalence rates of 11% and 7%, respectively.

RTs understand that it is hard to quit smoking, even when patients are motivated to do so. A major reason for this is the extremely addictive nature of nicotine. But hospitalization provides an excellent opportunity to help smokers quit. There are now a number of evidence-based treatments that have been shown to increase the probability of quitting. These start with the simple recommendation from trusted clinicians. Counseling, either in-person or via toll-free telephone quitlines, accessed via 1-800-QUITNOW, is effective. Seven forms of FDA-approved medications have been proven to increase quit rates. Five of these are nicotine replacement products—the patch, gum, lozenge, nasal spray, and inhaler; the first three

are available over the counter, while the spray and inhaler require a prescription. Two oral medications, bupropion and varenicline, are also effective.

It is easy to be discouraged because many smokers are unable to quit, even those with serious smoking-induced diseases such as COPD and coronary disease. Even the most successful trials of counseling combined with medications yield quit rates of 25% or less. This is a great improvement over the spontaneous "cold turkey" quit rate of about 4%, but still means that success comes hard. But RTs should take this as a challenge. Most successful quitters have previously failed 8 to 12 quit attempts before finally quitting. There are now more ex-smokers than current ones. And the potential health benefits are immense. Not only do former smokers live longer, they also live healthier lives, as respiratory and cardiac symptoms recede. An added bonus of quitting is that it eliminates the burden of secondhand smoke exposure to family and friends, with the attendant risk of myocardial infarction and stroke.

RTs may be asked about the electronic cigarette, now available in scores of formats. It is important to note that these products are evolving continuously, and that data about their risk and potential to help smokers quit are incomplete and also dated by dint of the changing technology. In general, it is prudent to say that the risks and potential benefits of the e-cigarette are unproven, that it is likely that they are less harmful than combustible tobacco but not entirely harmless, and that their potential to help smokers quit is unknown but less than the combination of counseling and FDA-approved medications.

RTs are in a unique position to help smokers quit. No other action they can take compares with the clinical impact of stopping smoking. Read this guide carefully, use it for your patients, and thereby improve the health of the nation!

Steven A. Schroeder, MD  
Professor, Department of Medicine  
Director, Smoking Cessation Leadership Center  
Distinguished Professorship in Health and Health Care  
University of California, San Francisco



# Effect of Nicotine on the Human Body

Nicotine affects numerous systems and pathways in the human body, the consequences of which can be seen in the many patients and clients treated by the respiratory therapist. Nicotine acts as a nicotinic acetylcholine receptor agonist, enhancing the release of various neurotransmitters including epinephrine, norepinephrine, and dopamine. It can be absorbed through the respiratory tract, buccal membranes, and skin. Nicotine is naturally present in tobacco; but tobacco smoke also contains numerous other toxic substances, clouding the specific effects of nicotine. This section seeks to explain this chemical's cardiopulmonary, psychoactive, and metabolic involvement in the human body.

## *Cardiopulmonary Involvement*

Smoking is a major independent risk factor for coronary heart disease, cerebrovascular disease, and total atherosclerotic cardiovascular disease,<sup>1</sup> with nicotine being one of the most biologically active chemicals in tobacco smoke and smokeless tobacco. Immediate cardiac consequences of nicotine include acute increases in heart rate of up to 10–15 beats/min and increased blood pressures of 5–10 mmHg occurring across all nicotine delivery systems: cigarette smoke, smokeless tobacco, and nicotine replacement therapies (NRTs). These effects originate from increasing myocardial activity and constricting some cardiovascular beds, such as the skin and coronary arteries, while dilating others, such as skeletal muscle. Isolated and sporadic case results of adverse cardiovascular events (e.g., acute myocardial infarction) in patients who were smoking cigarettes while utilizing NRTs have been judged not to be causally related to nicotine and have no consistent relationship to NRTs.<sup>2</sup> A meta-analysis by Mills et al found no increased risk for myocardial infarction or death from NRTs,

although a majority of the studies excluded patients with baseline cardiac disease.<sup>3</sup>

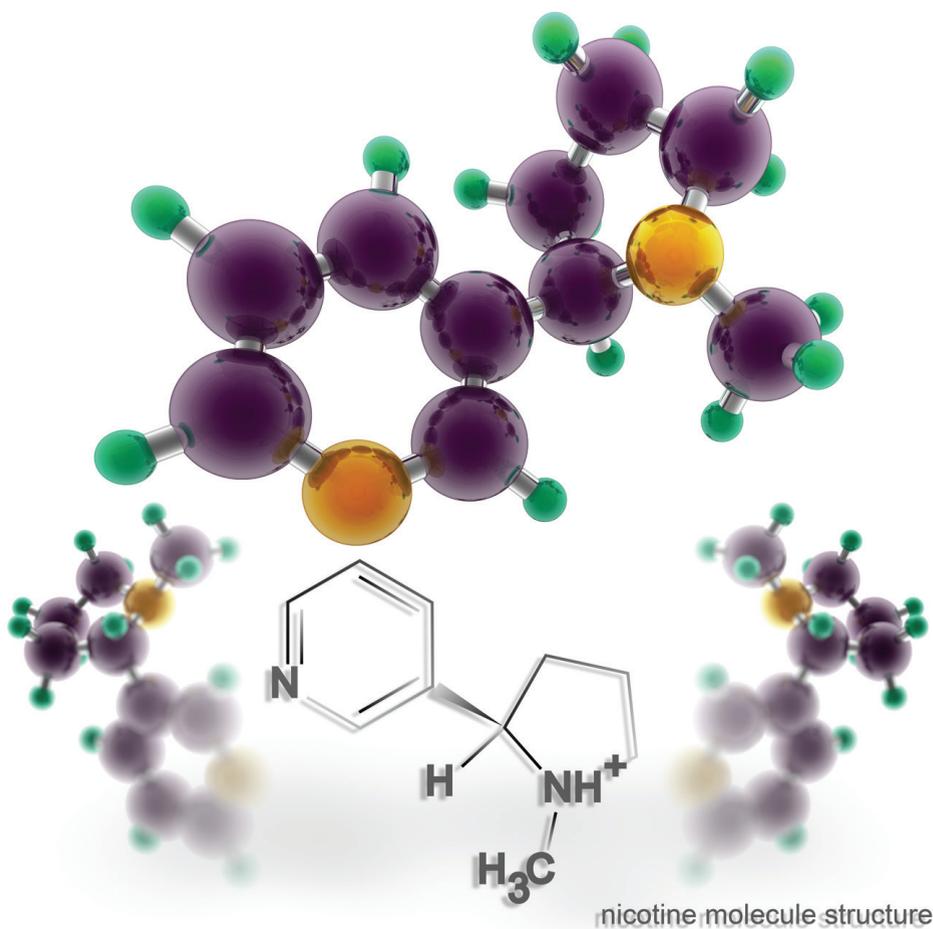
Inhaled nicotine causes a concentration-dependent cough and airway obstruction due to stimulation of afferent nerve endings in the bronchial mucosa and is mediated through parasympathetic cholinergic pathways.<sup>4</sup> Even passive (secondhand) smoking is associated with nocturnal chest tightness and shortness of breath; shortness of breath following activity; and increased bronchial responsiveness, leading to numerous respiratory symptoms and asthma.<sup>5</sup>

## *Psychoactive Involvement*

Psychological, physiological, behavioral, and social factors influence nicotine dependence.<sup>6</sup> Nicotine is the major psychoactive ingredient of tobacco smoke, acting on nicotinic acetylcholine receptors in the central nervous system and leading to the release of neurotransmitters such as dopamine and serotonin.<sup>7</sup> These central nervous system changes effect increased memory, concentration, and alertness; reduced pain and anxiety; and increased sensitivity to brain reward systems. The majority of withdrawal symptoms experienced with tobacco cessation are attributable to nicotine: anxiety, irritability, restlessness, cravings, and increased appetite.<sup>8</sup> Replacement and slow weaning of nicotine, as it is the highly addictive constituent of tobacco, is the goal of NRTs in an attempt to mediate the damaging effects of tobacco smoke as a whole.

## *Effect on Weight and Appetite*

Smokers tend to weigh less than non-smokers, and smoking cessation often leads to weight



ity of the bowel and produces an initial increase — then subsequent inhibition — of salivary and bronchial secretions. The vasoconstriction evident in skin and gingiva produces reduced nutritional blood flow, impaired wound healing, and amplified skin aging. It also increases platelet adhesiveness, giving rise to thrombotic microvascular occlusion and tissue ischemia.<sup>14</sup>

Smoking during pregnancy is associated with spontaneous abortion, placenta previa, placental abruption, preterm birth, stillbirth, fetal growth restriction, low birth weight, and sudden infant death syndrome. Nicotine is an established teratogen, and maternal use of NRTs still result in fetal and neonatal expo-

increase.<sup>9</sup> This relationship can partly be explained by the effect of nicotine on appetite suppression and increased metabolism.<sup>10</sup> With the loss of these effects upon cessation and no concomitant increase in physical activity, a positive energy balance develops. Smoking cessation can cause increased food intake due to a reward substitution mechanism (replacing cigarettes with additional food) and an increased reward value of certain foods.<sup>11</sup>

### Other Effects

The carcinogenicity of tobacco smoke has been studied extensively.<sup>12</sup> Currently, it is not specifically regarded as a carcinogen by the International Agency for Research on Cancer, but recent research has identified nicotine as a potential cause of cancer.<sup>13</sup> Nicotine increases the tone and motor activ-

sure to nicotine. Although there is no “safe” dose of nicotine during pregnancy, the use of NRTs is considered a more prudent alternative given the exposure to a number of additional chemicals with smoking. Evidence points to nicotine as a key chemical involved in adverse postnatal neurobehavioral outcomes: attention-deficit hyperactivity disorder, learning disabilities, behavioral problems, and increased risk of nicotine addiction.<sup>15</sup>

Nicotine has far-reaching effects in the human body, leading to a multifactorial addiction. Attempts to replace this drug and slowly wean from its grasp are warranted to improve the health of those currently addicted.

# Tobacco Products

The first Surgeon General's report on the health hazards of cigarette smoking was released in 1964. Since that time, it is estimated that millions of individuals have died or experienced health issues related to continued cigarette consumption.<sup>16</sup> Following the landmark report, more and more has been learned about the dangers of cigarette smoking and science continues to discover the health hazards related to the use of other tobacco products. It is important that respiratory therapists counseling tobacco users are informed of and understand the facts regarding the various tobacco products used by our clients and patients. Although cigarettes are still the most frequently used tobacco product among U.S. adults, there are other tobacco products that are quickly gaining popularity, including cigars, cigarillos, hookah, and e-cigarettes.<sup>17</sup> The evidence-based literature continues to grow with respect to the health hazards of continued tobacco use of these other products.<sup>16</sup>

## *The Cigarette as a Drug-delivery System*

Cigarettes contain finely cut tobacco wrapped in a thin paper. The tobacco and additives are burned and the smoke inhaled to consume the nicotine. The smoke contains particle sizes and gases that are known to result in substantial deposition in the lungs,<sup>18,19</sup> including nicotine as well as other chemical additives. While the exact composition of each cigarette is determined by brand (manufacturer) and type (filtered, non-filtered), estimates conclude there are over 6,000 chemicals in cigarette smoke, over 79 of which are known carcinogens.<sup>16</sup> Tobacco smoke is known to include some of the following:

- Cancer-causing chemicals: formaldehyde, benzene, Polonium-210, vinyl chloride
- Toxic metals: chromium, arsenic, lead, cadmium
- Poison gases: carbon monoxide, hydrogen cyanide, ammonia, butane, and toluene.<sup>20</sup>

The cigarette as a nicotine-delivery system is engineered to deliver drugs very efficiently. The nicotine is absorbed into the lungs and reaches the brain in 10 seconds. The dose of nicotine delivered to the cigarette smoker varies based on the depth of inhalation and number of puffs, but it is estimated to deliver 1–1.5 mg of nicotine per cigarette and typically takes a smoker 5–10 minutes to consume a cigarette.<sup>16</sup>

## *Menthol*

There are several different brands, flavors, and types of cigarettes available to smokers. It is important to understand the subtle differences associated with cigarette brand and dose of nicotine delivered when assessing a smoker's nicotine dependence. The addition of the menthol flavor to the cigarette contributes to a numbing and cooling effect to the throat that encourages the smoker to take a longer "drag" or inhalation, thereby inhaling a larger dose of nicotine and tar. Due to the anesthetic properties of the menthol, smokers might report a low pack-year history (number of cigarettes smoked multiplied by the years smoked), which might decrease the perceived severity of nicotine dependence. Research evidence supports that smoking menthol cigarettes is also associated



with higher levels of nicotine dependence and decreased abstinence.<sup>21</sup> Furthermore, menthol cigarettes are associated with increased initiation of smoking in youth and young adults.

### **Light Cigarettes**

The introduction of “light” and “ultra-light” cigarettes to the market may have misled the public to perceive them as a “safer” cigarette or to believe in the use of these products as “harm reduction.” The reality is that there is no such thing as a safe cigarette. Tobacco companies use machines to measure nicotine and tar in order to qualify tested cigarettes as “light” or “ultra-light” products. The manipulation of the ventilation holes in the filter of the cigarette allows the machine to measure diluted or decreased tar levels in these products.<sup>22,23</sup> However, the reduced tar delivered to the measuring machine does not accurately reflect how the smoker might actually use the product. A smoker may cover these ventilation holes or alter their smoking pattern (number of puffs or duration of inhalation) and actually consume a higher dose of nicotine and tar than measured by the industry testing machines.<sup>1</sup> Use of reduced tar cigarettes have not been found to result in a reduction of diseased risk and mortality in smokers.<sup>23,24</sup>

### **Cigars and Cigarillos**

A cigarillo is a short, narrow cigar. Unlike cigarettes, cigarillos are wrapped in tobacco leaves or brown tobacco-based paper. Cigarillos are smaller than regular cigars but larger than the traditional cigarette. Cigarillos are made without filters and are meant to be smoked without inhaling. Cigarillos are known in Europe as a “seven-minute cigar” because they can be smoked in seven minutes, and they have gained popularity in the United States due to the speed of consumption. In Spanish-speaking countries, it is considered to be a cigarette and is also used for smoking cannabis.<sup>25,26,27</sup>

As with other tobacco products, cigarillos are a major health risk to those who consume them. Like cigars, cigarillos are not meant to be inhaled. As a result, it is misperceived to be a healthier alternative to cigarettes. Health authorities around the world warn smokers that it poses a health risk due to the



smoke being held in the mouth, which can lead to mouth cancer. Cigar smoke contains toxic and cancer-causing chemicals that are harmful to both smokers and nonsmokers.<sup>26</sup> Cigar smoke is possibly more toxic than cigarette smoke. Cigar smoke includes higher levels of cancer-causing substances such as nitrosamines. These compounds are released during consumption. Nitrosamines are found at higher levels in cigar smoke than cigarette smoke. There is more cancer-causing tar in one gram of tobacco smoked via cigars than in cigarettes. Furthermore, while the consumption of a cigarillo is fast, it is still a slower smoking time than that of a traditional cigarette. Thus, higher exposure to many toxic substances exist, including carbon monoxide, hydrocarbons, ammonia, and cadmium.<sup>28</sup>

Even if a person does not inhale cigars, they contain higher rates to carcinogens that affect the lips, mouth, tongue, throat, and larynx. Additionally, when saliva containing the chemicals in tobacco smoke is swallowed, the esophagus is exposed to these carcinogens, which can account for similar oral and esophageal cancer risks. Even when cigar smoke is not inhaled, the body can still absorb high levels of the addiction-causing nicotine. A cigar smoker can absorb nicotine by two routes: inhalation into the lungs and absorption throughout the lining of the mouth. Either way, the smoker becomes addicted to the nicotine that is absorbed into the body. Although a cigarillo might be viewed by individuals as a healthier alternative to a cigarette because it is not meant to be inhaled, it can deliver just as much or more toxic chemicals throughout the body via different ways, and a single cigar can produce as much nicotine as a pack of cigarettes.<sup>29,30</sup>

# Miscellaneous Products

## *Electronic Cigarettes*

Electronic cigarettes (e-cigarettes) are a group of products ranging in size and shape to produce a vapor with an appearance similar to a conventional cigarette, cigar, or pipe. These devices function similarly across designs in that they consist of an LED light at the end to simulate a lit cigarette and contain either a pre-filled or refillable cartridge or a battery that aids in vaporizing the liquid. The propellant in the liquid nicotine is propylene glycol and/or glycerol. The nicotine-added cartridges or nicotine liquid contain varying amounts of nicotine. Puffing on the devices activates the battery-operated heating element to produce a vapor that is inhaled.

The prevalence of e-cigarettes usage among youth has been captured in the National Youth Tobacco Survey (NYTS).<sup>31</sup> This survey is administered to a nationally representative sample of youth in middle and high schools. The NYTS indicates that the prevalence of use has doubled in these populations. Currently there is no regulation on age limitations for purchasing the products. The concern from authorities is the potential for nicotine addiction from using these products by youth who were cigarette naïve. The primary concern is

that addiction may perpetuate the use of traditional cigarettes.

Little is known about the health effects of electronic cigarettes at this point in time. Studies are emerging with very small sample sizes limiting generalizability of the results. Currently, there is little information on the potential risks of e-cigarettes regarding quantity of nicotine and/or other potentially harmful chemicals during inhalation or as secondhand vapor exposure. Small studies have documented irritants, genotoxins, and animal carcinogens.<sup>32</sup> A dearth of information is available regarding the benefits of using these products from a smoking-cessation standpoint. According to the U.S. Food and Drug Administration (FDA), it is not known if e-cigarettes will serve as a gateway for adolescents and young adults to try other tobacco products, such as traditional cigarettes.<sup>33</sup>

Through anecdotal reports, the FDA states the following negative health effects are experienced by users: pneumonia, congestive heart failure, disorientation, seizure, hypotension, and other health problems. Research is needed to confirm these reports. The FDA conducted an analysis with a few brands of e-cigarettes. They concluded that the brands contained differing amounts of nicotine despite the labeling, that nicotine was contained in products advertised as having no nicotine, and that nitrosamines were identified. This raises concerns about the safety of e-cigarettes.<sup>34</sup>

Regarding legislation, the courts denied the FDA regulatory authority over e-cigarettes as a nicotine replacement product like the patches; however, they did gain regulatory control over e-cigarettes that are marketed for therapeutic purposes under the Family Smoking Prevention and Tobacco Control Act.<sup>35</sup>





## Hookah

Hookah smoking is believed to have originated in India and has been a part of some cultures for many centuries. What has changed over time and has impacted the increasing prevalence of hookah smoking has been the introduction of a flavored hookah tobacco in the 1990s. This tobacco is designed specifically for hookah smoking and is often referred to as shisha. Shisha is a pasty mixture of tobacco, sweeteners, and fruit flavorings.

For years, men in the eastern Mediterranean region (Syria, Lebanon, and Turkey) have smoked a non-fruit flavored tobacco called “jurak” or “tumbak.” Studies on these populations have indicated similar disease progression as found in long-term cigarette smokers. For example, these individuals have experienced an inability to quit smoking due to the addictive nature of tobacco and have developed chronic obstructive lung disease (COPD).

Because hookah smoking is relatively new to the United States, there have been no long-term studies of health effects related to shisha smoking. However, researchers have been able to assess the components in the smoke and have compared these to what is found in cigarette smoke using carefully controlled studies. To date, what is known is that hookah smoke contains cancer-causing agents<sup>36,37</sup> and even more carbon monoxide than cigarette smoke.<sup>38</sup> Like all tobacco, there is nicotine in shisha. Nicotine is the addictive substance in smoking and also provides a biphasic physiologic feeling of relaxation as it stimulates the release of dopamine in the brain and begins to alter the brain’s chemistry. Since this form of smoking involves a water base and charcoal (making it different than cigarettes), research was needed to better understand the effects. Research has found that the charcoal used to “bake” the shisha produces very high levels of carbon monoxide. When the carbon monoxide in the body exceeds certain levels, it may result in coma, seizures, permanent damage to the heart and brain, or death.<sup>39</sup> Physicians have begun reporting cases of hookah smokers entering the emergency rooms with very high levels of carbon monoxide in their bodies.<sup>40,41,42</sup> Additionally, the charcoal also has been found to produce heavy metals such as arsenic, cobalt, and nickel, which are inhaled into the smoker’s lungs.

Unlike cigarettes, hookah pipes are commonly shared by multiple people in a social setting. This sharing of a common mouthpiece is a breeding ground for bacteria and infectious disease transmission, such as herpes, tuberculosis, influenza, and other infectious diseases. Exacerbating this is the lack of regulation on hookah pipe cleaning at hookah bars and lounges. Similar to e-cigarettes, use of hookah as a gateway to traditional cigarette use and nicotine addiction should be discussed and prevention efforts should be initiated to inform users, specifically adolescents and young adults, about the known risks.

## Smokeless Tobacco and Snus

Like cigarette smoking, continued use of smokeless tobacco causes nicotine addiction and has significant associated health risks.<sup>43,44,45</sup> The tobacco in

smokeless products contains known carcinogens, the most notable of which are increased levels of harmful tobacco-specific nitrosamines formed during the processing of smokeless tobacco.<sup>45</sup> These related health consequences include oral and pancreatic cancer, gingival recession, leukoplakia, and periodontal bone loss.<sup>43</sup> Smokeless tobacco use is not a safe alternative to cigarette smoking, and switching to smokeless tobacco is not an effective strategy to quit smoking.<sup>46</sup> However, there is evidence that tobacco counseling treatments are effective in treating smokeless tobacco users.<sup>47,48,49</sup> Therefore, it is important to note that clinicians should offer advice and assistance for quitting to all tobacco users regardless of the tobacco product used.

Smokeless tobacco is not burned and inhaled like a cigarette but instead is absorbed in the mouth through the buccal mucosa. This type of tobacco is known by several other names including oral tobacco, snuff, dip, chew, and chewing tobacco. There are two main types of smokeless tobacco: chewing tobacco and snuff. Chewing tobacco is comprised of long strands or leaves of tobacco. Moist snuff (the most popular type of snuff) is also the most popular form of smokeless tobacco used in the United States.<sup>45</sup> Moist snuff is composed of finely cut, ground, or powdered tobacco and is often sold in different scents or flavors. Both types of smokeless tobacco products are typically placed in the mouth, and the tobacco user chews or sucks (also known as dipping), then swallows or spits out the

tobacco juices and saliva that accumulate. Nicotine content varies by brand; 1 mg of tobacco in moist snuff has between 4.4 mg and 25 mg of nicotine.<sup>50</sup>

A novel smokeless tobacco product developed in Sweden is snus. Snus (rhymes with loose) is a type of moist snuff that is packaged in a porous packet that is placed between the cheek and gum.<sup>51</sup> When using snus, rather than spit, the user swallows the juices produced in the mouth. Like cigarettes, snus has some serious side effects — the most serious of which is cancer of the mouth and esophagus.<sup>45</sup> Individuals with these types of cancer frequently require surgery as part of their treatment. This surgery is a radical neck dissection, which includes removal of the lymph nodes on the affected side and is very disfiguring.

Snus constitutes a public health experiment. They do not necessarily constitute a “gateway” device to cigarette smoking but are marketed as an adjunct to cigarettes for use in areas where smoking is prohibited. One Swedish study revealed more ex-smokers using snus than ex-snus users smoking cigarettes; other countries have not seen the same results.<sup>52</sup> Plus, snus is being co-marketed with cigarettes and is considered an adjunct to smoking with a marketing message: “When you can’t smoke, use snus.”<sup>51</sup> As a result, over half of teens using smokeless tobacco are also smoking cigarettes. The two major brands of snus are Marlboro and Camel.



# Neurochemistry of Addiction

Drug addiction, as defined by the American Society of Addiction Medicine (ASAM), “is a primary, chronic disease of the brain reward, motivation, memory, and related circuitry.”<sup>53</sup> The addicted person may not be able to control the use of the substance or stop the substance use when harms are noted. The initial use of the substance is typically voluntary; but over time, the brain chemistry changes the person’s ability to resist impulses to discontinue the use of the substance.

It is important to note the chronic nature of drug addiction. Similar to other chronic diseases, drug addiction can be managed successfully; however, it is common for the person addicted to occasionally relapse.

Historically, tobacco use was viewed as a social and psychological issue rather than a biologic or pharmacologic issue. Research in the late 1970s focused on smoking behavior and nicotine intake and produced a substantial body of evidence demonstrating tobacco as an addictive substance.<sup>16</sup> The 1988 Surgeon General report released by Surgeon General C. Everett Koop addressed this evidence and officially stated that tobacco use was more than a habit.<sup>54</sup>

Some people may develop dependence more quickly than others. As the nicotine level starts to decrease in the brain, the brain may send impulses requesting more nicotine. The person then increases intake of nicotine to eliminate the symptoms. Over time, most people need an increasing level of nicotine to produce the same response, which results in using tobacco more frequently or changing to a stronger brand or type of tobacco to fulfill the addiction. For these reasons, tobacco experts and recent guidelines emphasize that clinicians should reframe previous perceptions and understand that tobacco dependence is a chronic disease.<sup>43</sup>



# Chain of Addiction

Addiction is a multi-faceted issue and may be influenced by physical, social, and mental factors. The ASAM supports prevention policies that address all three of these areas, including education about the nature of the addictive substance as well as controls on availability and advertisement

of the substance.<sup>55</sup> The FDA is focusing efforts on breaking the chain of addiction by preventing the initial use of tobacco by children and adolescents.<sup>56</sup> However, treatment programs can integrate break points within all levels of the chain of addiction for current and future substance users.



# The DSM-5 Nicotine Dependence Criteria

The American Psychiatric Association (APA) published the most recent edition of the “Diagnostic and Statistical Manual of Mental Disorders” (DSM-5) in 2013. The DSM-5 is a standard classification of mental disorders used by health care providers and includes information regarding diagnostic criteria and codes for reimbursement as well as outcome measures recommendations. The DSM-5 updated the criteria for substance-related and addictive disorders from the prior edition (DSM-IV). The criteria address areas of impaired control over substance use (criteria 1–4), social impairment from substance use (criteria 5–7), risky use (criteria 8–9), and pharmacologic use (criteria 10–11). The following criteria are used to diagnose a substance-use disorder in the DSM-5.<sup>57</sup>

1. The individual may take the substance in larger amounts or over a longer period than was originally intended.
2. The individual may express a persistent desire to cut down or regulate substance use and may report multiple unsuccessful efforts to decrease or discontinue use.
3. The individual may spend a great deal of time obtaining the substance, using the substance, or recovering from its effects.
4. Craving is manifested by an intense desire or urge for the drug that may occur at any time but is

- more likely when in an environment where the substance was previously obtained or used.
5. Recurrent substance use may result in a failure to fulfill major role obligations at work, school, or home.
6. The individual may continue substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance.
7. Important social, occupational, or recreational activities may be given up or reduced because of substance use.
8. The individual continues to use the substance in situations that could be physically hazardous.
9. The individual fails to abstain from use despite the knowledge of a physical or psychological problem likely caused or exacerbated by use of the substance.
10. The individual develops tolerance to the substance, which results in the individual seeking





A substance use disorder, as defined by the DSM-5, is diagnosed by the presence of two or more of the criteria listed above. The number of criteria met classifies severity of the disorder. Table 1 itemizes the criteria met and the associated severity of disorder.<sup>57</sup> This classification of severity may assist the provider in anticipating

more of the substance to produce the desired effect.

11. The individual experiences withdrawal, which is the physical condition that occurs when blood or tissue concentrations of the substance decline in an individual who had maintained prolonged heavy use of the substance.<sup>57</sup>

Tolerance is a physiologic phenomenon in which the body becomes desensitized to the substance and subsequently requires a higher dose to produce the same effect. Interestingly, nicotine is metabolized quickly and tolerance can be lost overnight. Many smokers report that the first cigarette of the day produces the strongest effect and that tolerance progresses throughout the day.

Withdrawal occurs when an individual ceases use of the substance and the concentrations of the substance within the body decreases. The decreased concentrations of the substance produce uncomfortable symptoms that may produce significant distress or impairment such as, but not limited to, irritability, anxiety, restlessness, insomnia, and difficulty concentrating. These symptoms may entice the person to abandon cessation efforts and continue use of the substance to avoid withdrawal symptoms.

difficulties for smoking-cessation efforts and determining the appropriate level and intensity of intervention.

**Table 1. DSM 5 Severity of Disorder Criteria<sup>57</sup>**

Number of criteria met	Severity of disorder
0–1	No diagnosis
2–3	Mild substance use disorder
4–5	Moderate substance use disorder
> 6	Severe substance use disorder

Early remission of substance dependency is defined as no substance-dependence criteria for at least three months but less than 12 months. Sustained remission is defined as no substance dependence criteria for at least 12 months. It is important to note that craving (criterion 4) is excluded from the determination of early remission and sustained remission.

# Starting the Conversation

While engaging in a tobacco-intervention conversation is an important skill to learn, many health care professionals lack the confidence and training to have thoughtful, meaningful conversations that can lead a person toward the decision to quit smoking. Perhaps this is because conducting tobacco interventions was not part of respiratory therapy educational training, or it may be because the clinician feels unsure of how to approach this sensitive and emotionally evocative topic with current tobacco users. Actually starting the conversation is one of the most difficult tasks in the process. Using the recommended steps (the 5 A's and 5 R's) described below to perform a brief tobacco intervention is a strategy that many clinicians may find useful to approach the tobacco-dependent individual for a brief consultation as well as in everyday practice. This segment discusses an integrated stage-based brief tobacco inter-

vention based on the 5 A's and 5 R's model

recommended by the U.S. Public Health Service Guideline.<sup>43</sup>

In 2008, the U.S. Public Health Service (PHS) commissioned the Tobacco Use and Dependence Guideline Panel to update its clinical practice guideline on tobacco cessation. The abundance of research supporting this guideline indicates that health care providers can provide a reliable and persuasive message to patients about the risks of continued smoking and the benefits of quitting. The PHS guideline synthesizes 8,700 research articles, some of which illustrate the evidence base for the use of counseling strategies and pharmacotherapies for those attempting cessation.<sup>43</sup>

There are two models outlined in the Guideline: the 5 A's and the AAR model. The 5 A's model is commonly used in organizations that contain tobacco-cessation programs. The AAR model is more common in organizations where a referral

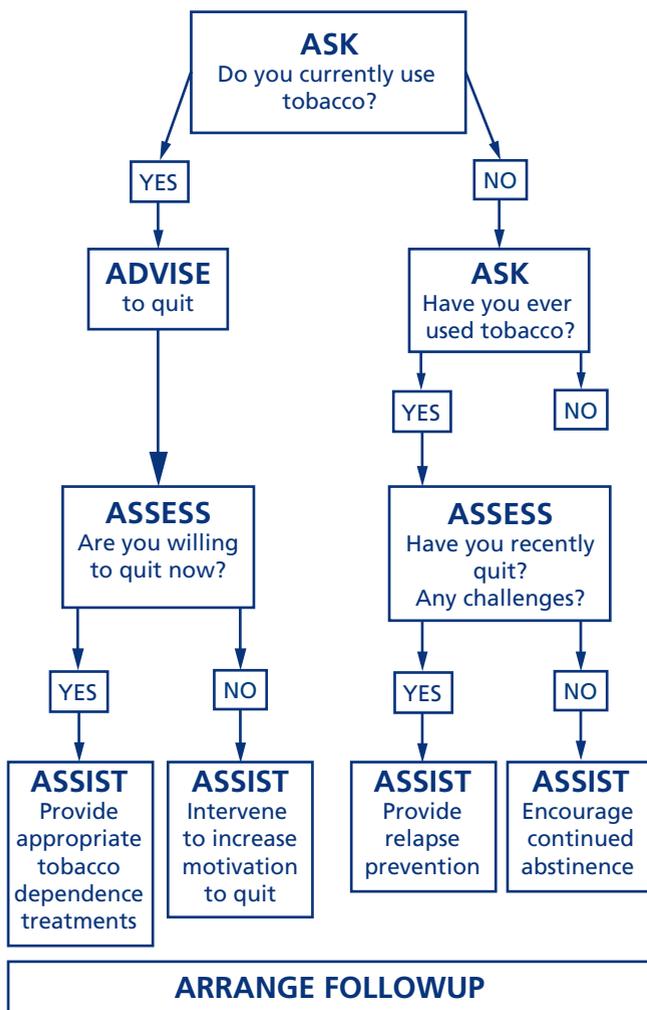
to cessation services like a state-funded smoker's quit-line takes place. These brief interventions often take less than one minute to implement, and interactions as short as three minutes have been found to be effective in the research literature.<sup>43</sup>



# 5 A's, 5 R's, and the Condensed AAR Tobacco Intervention

The components of a brief tobacco intervention are summarized in five steps: ask, advise, assess, assist, and arrange (see Figure 1).

Figure 1. 5A's Model.<sup>43</sup>



**Ask** — Tobacco Use Screening and Documentation. The system should ensure that patients are asked about their tobacco use (length of time, level of use, previous quit attempts) and that the information is documented for every patient who is admitted. Ideally, this should be done in the admission office or by the admitting clinician at the same time vital signs are recorded in the electronic health record (EHR). Tobacco use should be listed on the admission problem list and as a discharge diagnosis.<sup>43</sup>

Through this screening process, individuals are identified as current, never, or former tobacco users. If the current tobacco user is admitted to the hospital for several days, a brief tobacco intervention should be made by at least one clinician during that visit. When starting the conversation during the brief intervention, open-ended questions should be used when possible. Rather than start with a yes/no type question, a clinician will develop better rapport with the tobacco user and often gain more descriptive information with the opening statement "Please tell me about your tobacco use." The follow-up questions should be simple and concise:

- What types of tobacco products have you used in the last year?
- How often do you use tobacco? How soon after you wake up in the morning do you have your first cigarette/tobacco product?
- Are you exposed to secondhand smoke?
- How long has it been since you tried to quit?

- What is the longest amount of time you have ever been able to quit?
- What methods have you tried in the past to quit?
  - Cold turkey
  - Tapering off
  - Over-the-counter medications
  - Prescription medications
  - Hypnosis or acupuncture.

**Advise** patients to quit smoking using a clear, strong, personalized message. An example of clear advice is: “I think it is important for you to consider quitting now, and I can help you.” Strong advice would be “As your RT, I need you to know that quitting smoking is the most important thing you can do for your health.” The advice should also be personalized to the unique situation of the tobacco user. For example, if a patient is admitted to the hospital with a respiratory infection and also has a family history of lung cancer, the respiratory therapist could tie tobacco use to current symptoms and health concerns and say: “The single most important thing you can do to reduce your chance of another lung infection and to minimize your risk of lung cancer, which I heard runs in your family, is to quit smoking.”

Effective advice includes using the 5 R’s in the conversation: *relevance, risks, rewards, roadblocks, and repetition*. The 5 R’s are especially useful if the patient is unwilling to quit at this time. This advice helps the tobacco user find a personal and significant reason to want to quit. Remember, ultimately it is the patient’s reason, not the clinician’s influence, for quitting that will help them to move toward cessation. The opportunity respiratory therapists have in these situations is to *facilitate* the process of quitting. An important part of this process is personalizing the advice that is delivered.

- *Relevance* — The best advice is relevant to the patient’s health concerns, age, prior quitting experience, and barriers to cessation. In other words, the conversation should be crafted to fit the person’s unique and individual situation.
- *Risks* — When advising tobacco-dependent patients to quit, focus on the risks that are important to them. In the example stated



above, the patient is at risk for more infections, lung cancer, and possibly other lung-related diseases such as COPD. Consider the acute risks (shortness of breath, exacerbation of asthma or bronchitis, increased risk of respiratory infections, harm to pregnancy, impotence, and infertility), long-term risks (heart attacks, stroke, lung and other cancers, COPD, osteoporosis, long-term disability, and need for extended care), as well as the environmental risks (increased lung cancer and heart disease risk to spouses exposed to secondhand smoke, increased risk for low birth weight, sudden infant death syndrome (SIDS), asthma, middle-ear disease, and respiratory infections of children of smokers).

- *Rewards* — Emphasize the rewards of quitting tobacco. These rewards might include: improved health, saving money, better-tasting food, improved sense of smell, improved appearance including reduced wrinkling/aging of skin and whiter teeth, feeling better about yourself, setting a good example for children and decreasing the likelihood that they will smoke, having a healthier baby or child, feeling better physically, and performing better in physical activities.
- *Roadblocks* — The patient’s readiness to quit is often entangled within perceived roadblocks. These often include weight gain, fear of failure, withdrawal symptoms, depression, mood swings, limited knowledge of effective treatment options, and many others.
- *Repetition* — It is important to promote effective outcomes through repetition. Let the patient know that his/her health is important and that the next time they visit the hospital or clinic, his/her respiratory therapist will advise them about the dangers of tobacco use. Tobacco users who have failed in previ-

ous attempts to quit should understand that most tobacco users make many repeated quit attempts before they are successful and that clinicians will continue to question them about their tobacco use in the future.

**Assess** or determine the patient’s willingness to quit smoking.<sup>58</sup> Ask: “Are you willing to quit using tobacco?” An assessment of the patient’s willingness to make a quit attempt might include asking:

- “What is good about smoking?”
- “What is not so good?”
- “On a scale from 1 to 10, how important is it for you to stop smoking?”
- “On a scale from 1 to 10, how confident are you that you can stop smoking?”

If a patient is willing to make a quit attempt and/or is interested in pharmacotherapy during the hospital stay, a systematic method for providing counseling and pharmacotherapy should be in place. Previous personal experiences and feelings about the seven first-line pharmacotherapies should be investigated to recommend the most appropriate and personalized pharmacotherapy treatment plan.

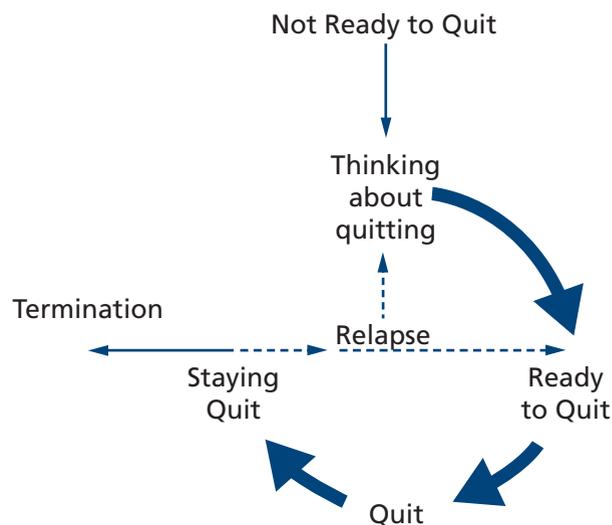
A close evaluation of where individuals feel they are in the stages of change, which are outlined by the Transtheoretical Model, is important when assessing willingness to quit. The stages are:

- Pre-contemplative: Not ready to quit — no intention to quit in the next six months
- Contemplative: Thinking about quitting — intends to quit in the next six months
- Preparation: Ready to quit — willing to set a quit date in the next 30 days
- Action: Quit — has not used any tobacco for less than six months
- Maintenance: Staying quit — has not used any tobacco more than six months
- Termination: Living quit — has been free of tobacco use and has complete self-efficacy.

Figure 2 represents the stages and illustrates that the individual can relapse at any time and return to another stage of change. The 5 A’s

approach is most useful for tobacco users in the preparation stage. One in five people who are counseled for tobacco use will be in the preparation stage (willing to quit in the next 30 days).<sup>58</sup> This may be even higher during hospitalization when patients recognize that their health is impacted by tobacco use. Interventions with individuals in the pre-contemplative or contemplative stages should focus on the 5 R’s.

**Figure 2: Stages of Change**



**Assist** the patient with quitting tobacco use. At this point, a standing order for tobacco cessation that leads the physician or nurse to call for a tobacco-cessation consult and initiate pharmacotherapy, as recommended in the clinical practice guidelines to assist the patient in a quit attempt, should be initiated. A counseling consult should also be completed during the hospital stay by a qualified staff member (e.g., a respiratory therapist) trained in tobacco-cessation counseling, best practices and, ideally, holding a Certified Tobacco Treatment Specialist (CTTS) credential. The counseling should include a discussion of past quit attempts, relapse prevention, importance of support from family and friends, appropriate use of pharmacotherapy, and review of health consequences of continued smoking to the patient and to others (especially children) who may be exposed to secondhand smoke. All FDA-approved tobacco-cessation medications should be offered to all patients who use tobacco during the hospital stay (unless contraindicated). The counselor should place the counseling consult



in the patient record and tailor the standing order form following the counseling session to recommend revisions in pharmacotherapy, if needed. The attending or rounding physician then completes the standing order form.

Patients willing to quit in the next 30 days should be assisted in developing a Quit Plan or referred to the appropriate agency for assistance. Strategies for implementation of a Quit Plan should include: set a quit date (within two weeks is ideal); tell family, friends and co-workers about quitting and ask for their support; anticipate challenges during the first few days and weeks like nicotine withdrawal; remove tobacco products from the environment (particularly the home, work, and car).<sup>43</sup>

For those who are “not ready to quit” or “thinking about quitting,” they may be ready next time. It is important to avoid being judgmental or trying to pressure the patient into quitting. Offer literature and supportive materials that emphasize the benefits of quitting.

**Arrange** for a follow-up appointment or referral to cessation services. For patients willing to quit in the next 30 days, first, congratulate them for their willingness to set a quit date and improving their future health. Next time or at discharge, tobacco users should receive referrals to evidence-based outpatient counseling services and a prescription

for appropriate FDA-approved cessation medications. Additionally, every patient should receive at least one follow-up contact within 30 days of discharge to determine their tobacco-use status at that time. Four models of post-discharge follow-up are:

- **In-person phone calls** from hospital personnel (similar to those received following outpatient surgery or during the post-partum period) are a reasonable approach for some hospitals.
- **Interactive voice response (IVR)** is a telephone technology in which a computer places a call to the patient. It recognizes verbal responses and records the responses in a dataset and responds with pre-recorded audio. Hospital staff scans the results of IVR calls and respond to those calls requiring a response. This system eliminates substantial human effort in making follow-up calls.<sup>59</sup>
- **Referring patients** to a tobacco-cessation telephone support quitline (e.g., 1-800-QUIT-NOW) is a viable option for follow-up after discharge, especially if the quitline is able to include fields required by The Joint Commission and transmit patient data back to the hospital via a HIPAA-secure fax machine.
- **Email and Web-based** — Follow-up by email and use of electronic health communication techniques is becoming more common and may be viable follow-up strategies in the near future. Several studies are underway to provide some evidence for the effectiveness of these methods. One study is currently on-going to evaluate the effectiveness of a Web-based system to support tobacco cessation for patients following discharge, with an e-referral system for providers and delegation functions for caregivers and families.<sup>60</sup> Another study is comparing a Web-based cessation intervention with the state Quitline.<sup>61</sup>

For those “not ready to quit at this time” or “thinking about quitting,” it is important to remind the tobacco user that the respiratory therapist will ask about tobacco use the next time they visit the hospital or clinic. Motivational

Interviewing principles should be employed to guide these individuals toward deciding to quit.

### ***The AAR model***

The three components of the AAR model include ask, advise, and refer:

- **Ask** about tobacco use every encounter.
- **Advise** patients to quit smoking using a clear, strong personalized message. Be certain to include the five R's in your conversation: *relevance, rewards, risks, roadblocks, and repetition*.
- **Refer** patients willing to quit smoking in the next 30 days to external cessation services, like a state-funded quitline. 1-800-QUIT-NOW is a national directory that will connect a patient to their local quitline based on the caller's area code.

Most quitlines offer a fax referral system. It is important to know how to initiate a referral to the local quitline. It is becoming more common for hospitals not to provide their own in-house cessation services, as these tend to be expensive. Furthermore, the successful quit rates are about the same for those who attend in-person classes versus telephonic services. State-funded quitlines can reach more individuals in all areas of the state at a lower cost. Therefore, collaborating with the local quitline enables the health care system to provide a brief tobacco intervention and refer those patients willing to quit smoking in the next 30 days to the experts who have been trained to help people quit. Quitlines often have access to free or discounted medications to support patients in their quit attempt.



# Motivational Interviewing

People often do not follow advice to quit tobacco use. However, the method used to give advice makes a difference in how it is received and acted upon. Personal change is more likely when people are guided — rather than pushed — to explore options for ways to make positive changes that fit within their personal goals and values. Interventions to increase the likelihood that a tobacco user who was unwilling to quit will decide to quit can draw upon the principles of motivational interviewing. These principles are discussed below as recommended strategies to use when discussing tobacco dependence with the tobacco user.

## *What Is Motivational Interviewing?*

The motivational interviewing (MI) method is an evidence-based approach to address ambivalence to change. It is designed to help people resolve their uncertainty about making meaningful per-

sonal changes in their lives. MI also helps people identify their readiness, willingness, and ability to make the change.

There are a number of models (e.g., Transtheoretical Model) for explaining and promoting health behavior modification, but they address “stages of change” in some way. Recall that the previously described stages of change include:

- Precontemplation — Not considering a change, in denial, and may not see the advice applies to them personally.
- Contemplation — Ambivalent about changing. Giving up an enjoyed behavior causes feeling of loss despite the perceived gain. Patients assess barriers (i.e., time, expense, hassle, fear, “I know I need to, but...”) as well as the benefits of change.



- Preparation — Prepare to make a specific change. They may experiment with small changes as their confidence to change increases (self-efficacy). Example, switching to a different brand of cigarettes may signal that they have decided a change is needed.
- Action — Many previously failed resolutions provide evidence that action itself is often not enough. Prior stages cannot be glossed over. However, any action taken by patients should be praised because it demonstrates the desire for lifestyle change.
- Maintenance and relapse prevention — Involve incorporating the new behavior “over the long haul.” Discouragement over occasional “slips” may halt the change process and result in the patient giving up.<sup>58</sup>

### How Does Motivational Interviewing Work?

The four core principles of MI are listed below. However, some separate “roll with resistance” and “avoid confrontation.”

- Express empathy via open-ended questions and reflective listening.
- Roll with resistance by avoiding direct confrontation and redirect with “what if” questions.
- Develop discrepancy between the person’s goals and current behaviors.
- Support self-efficacy by offering incremental steps to bridge what seem like insurmountable obstacles.

Motivational interviewing can be applied at any stage of change. The “5 R’s” is a tool designed specifically to help people unwilling to quit, and it incorporates MI principles.<sup>43</sup>

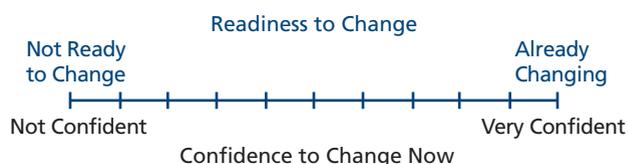
Set the agenda always with permission. First, ask what the patient would like to discuss and then raise items that are important to discuss. Use questions to help make the patient receptive to discussion: “I’m concerned about your child’s frequent ear aches (a consequence of secondhand smoke exposure). Would it be OK if we talked about that today?” Prioritize multiple, potentially intercon-

nected concerns (tobacco use, allergy, exercise, etc.) and agree on discussion topics.

Understand the patient’s experience. It is important to avoid leading the patient, so use open-ended questions and respond with words like, “Could you help me understand more about...? You say you feel..., and that makes you want to....” The goal is to obtain meaning rather than just collect facts. Empathy communicates to the patient that what they say, think, and feel is important; it is not reassurance or judgment. Explore the goals and values of the patient (What do you want in life?). Reflect the meaning heard from the patient and allow the patient to clarify or correct misinterpretations. Be careful when asking “why” questions because they have the potential to sound judgmental.

Determine how important change is to the person and their confidence about making changes. Once sufficient understanding of a patient’s situation is discovered and the stage at which the patient resides is identified, help the patient identify positive and negative aspects of their tobacco-use target behavior in that order. Be prepared for some surprising responses. Prompt their thinking, if necessary, with questions like, “What do you like about the effects of tobacco?” Summarize the positive aspects before moving on to the negative aspects. Ask about the undesirable effects of tobacco use and prompt, if necessary, with questions like, “What is the downside to tobacco use? What are some things you would not miss?” After summarizing negative aspects, then ask the person to state where they are on a scale of one to ten or show a simple scale on paper and have them mark where they are (see Figure 3). Many people address and assess importance and confidence separately; but it is possible to explore them simultaneously, especially if time is limited.

**Figure 3. Example of Readiness to Change/ Confidence to Change Now Scale.**



**Enhance importance and confidence.** After determining the patient's current view of the importance of quitting and confidence toward doing it, try to reinforce its importance and build their confidence. Start with questions like, "How would quitting make your life easier? What could you look forward to if you quit?" Address ambivalence and internal conflict by using techniques such as double-sided reflection where you compare patient statements that are conflicting. For example, "So on one hand you would like the freedom to be involved with X, but on the other hand having to go outside for regular smoking breaks and use mouthwash and deodorizer afterward is interfering with that." Help the patient get out of their "thinking ruts" and consider new alternatives ("What are other ways to get some of the effects you like from tobacco?").

This is the point at which the respiratory therapist can try to elicit "change talk" in order to help move the person toward change. Enhance the importance of change and selectively respond to change talk with curiosity and interest ("Hey that's interesting. Tell me more about that.") Discover what language a patient uses to signal desire, ability, reasons, need, or commitment to change (i.e., change talk) and reinforce it. Change talk can sound like, "I need to cut back a little on how much I smoke," or "If my job situation was less stressful, I think I could smoke half as much as I do now." It is best if the patient comes up with ideas for change. However, if he is stuck you might ask, "In what ways might this change be a good thing?" or "How might this change affect your relationships?" If the patient gets frustrated or resists, respond with empathy: "So you would like to change, but it seems a little overwhelming and you're not sure where to start?" If a patient sees no way to make a change, then help by reframing the view of the situation to make choices more visible: "A lot of people experience difficulty with that. What has worked for people I know is to divide it into smaller pieces and deal with them one at a time."

**Ask for a decision.** Depending on the patient's response, it may be prudent to reassess the impor-

tance of change and readiness to change using the verbal or visual scale. Restate their dilemma or ambivalence and then ask for a decision. Perhaps start with, "You were saying that you were trying to decide whether to continue or cut down..." or "After this discussion, are you more clear about what you would like to do?" Then ask, "So have you made a decision?" If the patient is ready to quit, help with setting goals and planning next steps. Assist patients to move to action by helping them develop specific steps to action. If the patient is unsure, empathize with the difficulty and ask if there is something else that would help them make a decision (further explore the ambivalence). Ask if they are interested in reducing some of the problems while making a decision. If the patient is not ready to quit, show appreciation and give encouragement on their positive statements, and reinforce awareness of discrepancies identified during the conversation.

### ***Example of a Brief Motivational Interviewing Conversation***

The following is an example dialogue employing an abbreviated form of the MI method (Elicit-Provide-Elicit). The reality is that many patient encounters are typically brief by necessity of schedule, so it is important to make the most of the limited time available with patients. Try to identify where the patient is in the stages of change and how many of the specific MI strategies (ask open-ended questions, listen reflectively, affirm, summarize, and elicit self-motivational statements) are used.

**Background:** The patient below currently smokes one pack per day and uses an e-cigarette while at work in the evening to get her through the portion of her day when tobacco smoking is not allowed. She will likely be scheduled for surgery in the near future. The RT is seeing her to reinstruct her on proper inhaler use. The therapist verifies with the patient the accuracy of their smoking status in the medical record and asks if the patient can discuss an aspect of the recommended surgery that is also noted in the medical record, to which the patient agrees.

Which statement would be more productive? “What do you know about how smoking affects the healing process after surgery?” or “If surgery were performed on you, I’m afraid your wound would not heal because of your smoking.”

The first option is more likely to elicit patient interest. It helps draw the patient into discussing an aspect relevant to her situation. The second option is the RT’s opinion and can sound judgmental. The patient says she was not aware that smoking had any effect on healing from surgery and wants to know how it would impact the surgery she is considering.

The RT responds with, “What we know is that tobacco can impair the wound healing after surgery, leaving patients vulnerable to infections.” Which follow-up statement would be most productive? “Tell me what your thoughts are about that,” or “It’s obvious from this information that you need to quit.” Asking for the patient’s thoughts helps reveal what is important and the patient’s level of understanding about the issue. Their response may be to seek additional information or specifics (“Does this apply to my type of surgery?”).

The patient says they know several friends who had surgery, who also were smokers, and they seemed to recover from surgery alright. Which follow-up statement would be most productive? “Would you want to take that risk with your own life?” or “What would be your concerns about wound healing if you were susceptible to these complications?” The second response is less confrontational and helps personalize the issue while inviting further exploration and trust-building.

Motivational interviewing contains many more details than the brief treatment allowed in this guide. It is a valuable skill that is improved with practice and feedback from mentors, peers, and even patients. Be sure to ask what was most appreciated and effective after encounters.

#### Summary of the MI encounter

1. Set the agenda.
2. Collaborate with patient.
3. Use specific skills to understand the patient’s experience.
4. Determine importance and confidence.
5. Enhance importance and confidence.
6. Elicit patient’s “change language,” reinforce it, and build upon it.
7. Help patient develop action steps.



# Pharmacotherapy

The use of pharmacotherapy is widely accepted as an effective means to reduce the symptoms of nicotine withdrawal and aid in smoking cessation. Unless contraindicated, it is recommended that all smokers making a quit attempt be offered a form of pharmacotherapy. The use of pharmacotherapy in treating tobacco dependence has been shown to double cessation rates.<sup>43</sup> This section will provide details about the first-line therapies as well as recommendations regarding their use. Medications used in smoking cessation can be divided into two categories: nicotine replacement drugs and products that do not contain nicotine. Seven drugs are considered first-line therapies: nicotine patch, nicotine gum, nicotine lozenge, nicotine inhaler, nicotine nasal spray, bupropion, and varenicline.

## *Nicotine Replacement Therapy*

Nicotine is the main ingredient in tobacco to cause addiction. Nicotine replacement therapy works to eliminate the withdrawal effects and cravings felt by those making a quit attempt by providing nicotine without the use of tobacco. NRTs can be long acting (patch) and short acting (gum, lozenge, inhaler, or nasal spray) and can be administered in a variety of forms. In addition, some are sold over the counter. There is evidence that combining the transdermal nicotine patch with one of the short-acting NRTs is more effective than one type of NRT alone.<sup>43</sup>

Investigating the misperceptions and realities about the pharmacotherapy options with the tobacco user is one way the clinician can contribute to a successful cessation attempt. Using an open-ended statement like “Tell me a little more about your last quit attempt or about your experience with nicotine patches or varenicline” is a successful strategy for gaining important information from the tobacco user.

The RT can also become an excellent resource when discussing side effects and appropriate use of the recommended cessation products. For example, many tobacco users misperceive that the

nicotine gum should be used like regular chewing gum. Instead, the correct use of the gum is to use the “chew and park” method. The user should be instructed to chew the gum until a “peppery” or “flavored” taste emerges, then park it between the cheek and gum to let the nicotine absorb. When the gum user can no longer taste the peppery or flavored taste, chewing should ensue once again. The “chew and park” method usually lasts until the taste leaves, which is estimated to take about 30 minutes.<sup>62</sup>

The RT can have an integral role in determining the dose of nicotine each tobacco user requires to address the individual’s severity and particular level of nicotine dependence. The Mayo Clinic guidelines<sup>63</sup> and public health guidelines<sup>43</sup> both illustrate that the old standard dosing for NRT may not be enough to address the nicotine dose required by the tobacco user. The PHS guidelines differ from those of the Mayo Clinic only in the realm of double patching. The Mayo Clinic Guidelines advocate for double patches for the severely nicotine-dependent individual with an increased daily tobacco usage (>21 mg or 1 pack per day). However, both dosing guidelines recommend at least one patch for maintenance with nicotine gum or lozenges to address breakthrough cravings.

## *Bupropion*

Bupropion (Zyban<sup>®</sup>, GlaxoSmithKline, Greenville, NC) is an effective option in the treatment of tobacco dependence. It works by blocking the reuptake of dopamine and norepinephrine. Bupropion has been shown to increase quit rates and decrease nicotine withdrawal symptoms and cravings. The FDA has a boxed warning regarding suicidality and antidepressant drugs when used in children, adolescents and young adults.<sup>43</sup>

## *Varenicline*

Varenicline is also used to aid in smoking cessation. It works as a partial agonist to a sub-unit of

a receptor that appears to be associated with the addictive properties of nicotine. It has been shown to reduce the symptoms of nicotine withdrawal as well as block some of the reinforcing or rewarding effects of smoking. When considering varenicline,

one should be aware that the FDA has issued a “boxed warning” that varenicline patients have reported depressed mood, agitation, behavioral changes, suicidal ideation, and suicide.<sup>43</sup>

**Table 2. Nicotine Replacement Therapy (NRT) Over-the-Counter Pharmacotherapy Options**

Name	Application	Dosing	Adverse Effects	Other
Transdermal Patch (Nicorette CQ; Nicoderm CQ)	Place 1 patch each morning on non-hairy site above the waist and below the neck; rotate sites to avoid skin irritation.	>10 cigarettes/day: 21 mg/day for 6 weeks followed by 14 mg/day for 2 weeks then 7 mg/day for 2 weeks.  <10 cigarettes/day or person <45kg: 14 mg/day for 6 weeks followed by 7 mg/day for 2 weeks.	Skin irritation Dizziness Tachycardia Nausea Headaches Muscle aches Muscle stiffness Sleep problems	Sleep problems last 3-4 days.  No smoking.  Change brand or decrease nicotine for symptom relief.
Nicotine Gum (Nicorette; Nicoderm)	Chew whenever there is an urge to smoke. Chew gum until “peppery” taste. Park between cheek and gums; continue cycle chewing as needed to reduce craving.	> 25 cigarettes/day: 4mg  <25 cigarettes/day: 2mg  One piece of gum every 1-2 hours for first 6 weeks then taper over the next 6 weeks.  No more than 24 pieces/day.  Schedule dosing is better than PRN.	Bad taste Throat irritation Nausea Mouth sores Hiccups Jaw discomfort Vomiting Tachycardia Excess salivation Can stick to dentures	Avoid coffee, soda, and other acidic drinks for 15 minutes before and during use.  Maximum use is 6 months.  15-20% use for less than 1 year.
Nicotine Lozenge (Nicorette)	Use whenever there is an urge to smoke. Suck until fully dissolved. Do not bite, chew, or swallow.	If you smoke within 30 minutes of awakening: 4 mg; otherwise, 2 mg.  1 every 1-2 hours for first 6 weeks then 1 every 24 hours for 3 weeks then 1 every 4-8 hours for 3 weeks.	Insomnia Nausea Hiccups Coughing Heartburn Headache Flatulence Mouth irritation	Do not use if smoking, chewing tobacco, snuff, or other source of tobacco. Nothing to eat or drink 15 minutes before use.

**Table 3. Nicotine Replacement Therapy (NRT) Prescription Pharmacotherapy Options**

Name	Application	Dosing	Adverse Effects	Other
Nicotine Inhaler* (Nicotrol)	Insert cartridge into mouthpiece before use.  Nicotine delivered as vapor and absorbed.	4-20 cartridges/day for a maximum of 6 months.	Mouth irritation Coughing Throat irritation Upset stomach	Most expensive form of NRT.  This is not the same as electronic cigarettes.
Nicotine Nasal Spray (Nicotrol)	Insert tip of bottle into nare, spray. Repeat with other nare. Do not inhale, sniff, or swallow immediately following spray. Wait 1-2 minutes before blowing nose.	1-2 sprays/hour for 3 months.  Maximum dose is 10 sprays/hour or 80 sprays/day.	Nasal irritation Throat irritation Runny nose Watery eyes Sneezing Coughing	Clean up spills using rubber gloves.  If skin contact occurs, rinse with water. Call poison control if overdose is suspected.
*Note: The used nicotine inhaler cartridge still contains nicotine and thus is a danger to children and small pets. Nicotine has been implicated in accidental deaths and suicides. Nicotine is poisonous to humans.				



**Table 4. Non-NRT Pharmacotherapy Options**

Name	Application	Dosing	Adverse Effects	Other
Bupropion (Zyban, Wellbutrin, Aplenzia)	Start 1-2 weeks before quitting; use 2 – 6 months.	150 mg/day for 3 days followed by 150 mg twice a day for the duration of quit	Dry mouth Insomnia Agitation Headache Constipation Change in appetite	Use with NRT only with physician supervision.
<p>*Contraindications to bupropion: history of seizures, past heavy alcohol use, serious head injury, bipolar disorder, anorexia, or bulimia.                      *A common side effect of anti-depressants is suicidal ideation. Contact your physician immediately if any of these symptoms present. There is a boxed warning of this on the box.</p>				
Varenicline (Chantix)	Begin 1 week prior to target quit date.  Take after a meal with a full glass of water.	0.5mg/day for 3 days, then 0.5mg twice a day for 4 days, then 1 mg twice a day for remaining 12 weeks.	Nausea Agitation Headache Vomiting Unusual dreams Insomnia Change in taste Flatulence Increased risk of heart attack in those with heart disease Allergic reaction Serious skin reaction Trouble driving or operating heavy machinery	Use with NRT increases incidence of side effects.  Decreases pleasure from nicotine and blunts withdrawal symptoms.  Not for use in those under age 18 years.
<p>*People using varenicline have reported changes in behavior, hostility, depressed mood, suicidal ideation, and attempted suicide. Stop taking varenicline and contact your physician immediately if any of these symptoms present. There is a boxed warning of this on the box.</p>				

It may be advantageous to consider combining a long-acting nicotine replacement therapy (such as the transdermal nicotine patch) and a short-acting NRT (such as the gum, lozenge, or inhaler). The long-acting NRT would act as the primary nicotine-replacing agent with the short-acting NRTs controlling cravings and urges for cigarettes. Studies suggest that using a combination therapy is more effective than one NRT alone.<sup>43</sup>

The use of pharmacotherapy is an effective aid in smoking cessation. It is recommended that counseling support be used along with pharmacologic therapy as the two together have higher success rates than either independently.

# The Evidence and Special Populations

The 2008 update to the “Treating Tobacco Use and Dependence” clinical practice guideline has a chapter devoted to providing effective smoking-cessation interventions to specific populations.<sup>43</sup> The purpose of the PHS guideline chapter is to address questions surrounding whether the recommendations contained in the guideline need to be altered based on factors including comorbidities or current hospitalization, among others. The recommendation is very clear: “[The] interventions identified as effective in this Guideline are recommended for all individuals who use tobacco, except when medication is contraindicated or with specific populations in which medication has not been shown to be effective.”<sup>43</sup> This chapter continues with a review of the current evidence specific to each of the common special populations the respiratory therapist is likely to encounter.

## ***Myocardial Infarction and Cardiac Issues***

Providing tobacco-dependence consults for patients with underlying cardiac disease or who have recently experienced a cardiac event can be especially challenging to the respiratory therapist. In the inpatient setting, the respiratory therapist is often providing critical care and may find it difficult to allocate the appropriate time to address tobacco dependence and cessation. Then, as the patient transitions into the outpatient setting, the respiratory therapist may find it difficult to gain access to the patient and to compete with other education and new skill acquisitions the patient is required to master before their move to self-care. The purpose of this section is to summarize the evidence and address common myths related to some of the special considerations of providing successful smoking-cessation interventions for cardiac patients. Under medical comorbidities, cardiovascu-

lar disease is specifically listed. Effective interventions, as determined by randomized controlled trials, for this patient population include psychosocial interventions, exercise, bupropion SR, and nicotine patch, gum, or inhaler. (For more information, see Table 7.1 in the guideline, which is online at [www.ncbi.nlm.nih.gov/books/NBK63960/](http://www.ncbi.nlm.nih.gov/books/NBK63960/).)

The PHS guideline provides guidance to respiratory therapists in both inpatient and outpatient settings regarding specific strategies that have been shown to improve smoking-cessation success. Its Chapter 3 details strategies to use for brief interventions when time is limited, and Chapter 4 provides additional information relevant to tobacco-cessation specialists that provide more intense interventions that usually occur over longer periods of time and through multiple sessions. As stated above, the interventions described in these chapters are applicable to the cardiac patient regardless of setting.

Common Myth: Medications to aid in smoking cessation are not safe to use in patients with cardiac disease.

Chapter 3 of the guideline also includes several tables designed to assist the clinician in selecting appropriate medications to aid in smoking cessation. While additional information is included in this guide regarding medications for treating tobacco use and dependence, it is important to highlight a few important considerations as they relate to the patient with cardiac disease. The guideline’s Table 3.2 specifically addresses the question of whether NRT should be avoided in patients with a history of cardiovascular disease. The evidence is very clear that NRT is appropriate for use in patients with cardiovascular disease, and

the nicotine patch particularly has been shown to be safe and beneficial for these patients. In addition, the remaining tables in the chapter provide additional information for clinicians regarding the

use of first- and second-line medications in patients with cardiovascular disease. Relevant excerpts from Tables 3.3–3.11 are presented below in Table 5.

**Table 5. Pharmacotherapy Options for Patients with Cardiovascular Disease<sup>43</sup>**

<b>Medication</b>	<b>Clinical Use in Patients with Cardiovascular Disease</b>
Bupropion SR	Generally well-tolerated; occasional reports of hypertension.
Nicotine Gum	NRT is not an independent risk factor for acute myocardial events. NRT should be used with caution among particular cardiovascular patient groups: those in the immediate (within 2 weeks) postmyocardial infarction period, those with serious arrhythmias, and those with unstable angina pectoris.
Nicotine Inhaler	NRT is not an independent risk factor for acute myocardial events. NRT should be used with caution among particular cardiovascular patient groups: those in the immediate (within 2 weeks) postmyocardial infarction period, those with serious arrhythmias, and those with unstable angina pectoris.
Nicotine Lozenge	NRT is not an independent risk factor for acute myocardial events. NRT should be used with caution among particular cardiovascular patient groups: those in the immediate (within 2 weeks) postmyocardial infarction period, those with serious arrhythmias, and those with unstable angina pectoris.
Nicotine Nasal Spray	NRT is not an independent risk factor for acute myocardial events. NRT should be used with caution among particular cardiovascular patient groups: those in the immediate (within 2 weeks) postmyocardial infarction period, those with serious arrhythmias, and those with unstable angina pectoris.
Nicotine Patch	NRT is not an independent risk factor for acute myocardial events. NRT should be used with caution among particular cardiovascular patient groups: those in the immediate (within 2 weeks) postmyocardial infarction period, those with serious arrhythmias, and those with unstable angina pectoris.
Varenicline	Not contraindicated.
Clonidine	As an antihypertensive medication, clonidine can be expected to lower blood pressure in most patients. Therefore, clinicians should monitor blood pressure when using this medication. When stopping clonidine therapy, failure to reduce the dose gradually over a period of 2–4 days may result in a rapid increase in blood pressure, agitation, confusion, and/or tremor.
Nortriptyline	Because of the risk of arrhythmias and impairment of myocardial contractility, use with caution in patients with cardiovascular disease.

NRT = Nicotine Replacement Therapy  
 SR = Sustained Release

## Risk-related pharmacologic treatments outweigh benefits of smoking cessation.

It is very important to note that clinicians must weigh the relative safety of tobacco-dependence treatments — and specifically the use of medications — against the significant hazards of continued smoking. This is an important discussion that the health care team must have when designing an approach to smoking cessation for cardiovascular patients. It is well established that continued smoking exacerbates cardiac disease — and conversely, that cardiac disease can be improved by quitting smoking. In a 2013 overview of pharmacologic interventions for smoking cessation, the Cochrane Collaboration found that none of the first- or second-line medications reviewed have an incidence of adverse events that would indicate their use should be avoided.<sup>64</sup> In contrast, research has shown that patients are more likely to experience a second myocardial infarction if they continue to smoke; and smoking cessation is believed to be the most important change a post-myocardial infarction patient can make to improve future health.<sup>65</sup>

It is important to ensure appropriate smoking-cessation interventions, including counseling as well as medication administration, are incorporated into both the inpatient and the outpatient care of cardiac patients. Smoking-cessation counseling must receive the same time and attention as either blood pressure and lipid management or as diet and exercise counseling for this patient population.

## ***Pregnant Smokers***

Pregnant smokers present a unique challenge to the respiratory therapist in that the significant risks associated with smoking extend beyond the mother to the fetus. The earlier the pregnant woman stops smoking, the better; but abstinence at any time during the pregnancy is beneficial. According to the “Clinical Practice Guideline: Treating Tobacco Use and Dependence: 2008 Update,” cigarette smoking during pregnancy is the “greatest modifiable risk factor for pregnancy-related morbidity and mortality in the United States.”<sup>43</sup> Therefore, tobacco-cessation interventions should

be offered at every opportunity from prenatal to postnatal visits. Because smoking may decrease fertility, tobacco-cessation advice should be offered even before conception. Following is a summary of evidence-based guidelines applicable to pregnant smokers.

### Psychosocial interventions

The clinical practice guideline “Treating Tobacco Use and Dependence: 2008 Update” recommends that pregnant smokers should be offered “person-to-person psychosocial interventions that exceed minimal advice to quit.”<sup>43</sup> Such interventions are important because of the danger smoking poses to the fetus: spontaneous abortions, stillbirths, premature births, low birthweights, sudden infant death syndrome (SIDS), and placental abruption.



The first step in intervention is assessment of the pregnant woman's tobacco use. Research has shown that pregnant women are 40% more likely to be honest about their tobacco use when multiple-choice questions are used instead of closed-ended yes/no questions.<sup>43</sup> For example, a question like "Which of the following best describes your current smoking status?" that is followed by four or five choices may lead to more accurate information than a simple yes/no question. The evidence regarding psychosocial interventions aimed at pregnant smokers is as follows:

- Psychosocial interventions are significantly more effective than "usual care" in getting pregnant women to stop smoking.<sup>43</sup>
  - Usual care includes a recommendation to stop smoking, sometimes combined with self-help materials, brief counseling (two-to-three minutes), or referral to a tobacco-cessation program.
- Effective psychosocial interventions include:
  - Physician advice about risks related to smoking for both mother and fetus
  - Videotape with information about risks, barriers, and smoking-cessation advice
  - 10-minute counseling session from a health care professional
  - Self-help manuals (pamphlets and quitting guides)
  - 90-minute counseling session with bimonthly telephone follow-up.<sup>43</sup>
- There are no adverse effects from psychosocial interventions used in tobacco cessation.<sup>66</sup>
- Increasing the duration or frequency of psychosocial interventions did not increase effectiveness.<sup>66</sup>
- Psychosocial interventions have not proven to be effective in postpartum smokers.<sup>43</sup>
- Researchers have not identified an effective strategy for preventing relapse postpartum.<sup>43</sup>

## Drug Therapy for Pregnant Smokers

Nicotine replacement therapy is likely to be safer than using tobacco because, although pregnant women are still exposed to nicotine, they are not exposed to the other numerous chemicals contained in cigarette smoke. However, because NRT is metabolized at a higher rate in pregnant women, higher doses may be needed.<sup>67</sup> Evidence about medications used in tobacco cessation by pregnant women is shown below.

### Nicotine replacement therapy:

- There is insufficient evidence to determine safety or efficacy when used during pregnancy.<sup>43,67</sup>
- There is insufficient evidence to determine the impact of NRT on birth outcomes (rates of miscarriages, stillbirths, premature births, low birthweights, or neonatal deaths).<sup>43,67</sup>

### Varenicline and bupropion:

- No randomized clinical trials have been published.<sup>67</sup>

## ***Hospitalized Tobacco Users***

Tobacco use in the United States is responsible for immeasurable suffering, nearly half a million deaths a year, and health care costs estimated near \$193 billion annually.<sup>68</sup> The resulting individual burdens are poor health outcomes (COPD, cardiovascular disease, cancers, etc.), decreased quality of life, and lost productivity.<sup>69</sup> The health care system suffers as well due to the fiscal impact of excessive health care utilization and decreased quality performance measures. The strong relationship between tobacco use and poor health outcomes necessitates identification of use, intervention, and systematic implementation of strategies to help people quit. In general, contact with the health care system has the potential to increase tobacco cessation.

### Teachable moments

Hospitalization may provide the "teachable moment" for tobacco users to finally decide to quit or find the personally relevant reason to move toward quitting. As respiratory therapists,

we can play an integral role by talking to the inpatient tobacco user in either a brief or intensive counseling intervention. The development of tobacco intervention strategies in acute care is one approach to address continued tobacco dependence and can be justified by the following:

- The Joint Commission tobacco-free policies in accredited hospitals prohibit inpatients from using tobacco in and around the facility during their stay.
- The initiation of tobacco withdrawal symptoms and their associated discomfort during this forced abstinence motivates patients to seek evidence-based smoking-cessation medications.
- New or continued tobacco-related symptoms may highlight vulnerability and emphasize the need to stop.

In the acute care setting, respiratory therapists have a unique opportunity to take advantage of these teachable moments because RTs often treat these patients for the clinical manifestations of continued tobacco use. How often do RTs deliver aerosol therapy to current tobacco users? How many times do RTs ask about their tobacco status or calculate a pack-year history for the medical record? For those who work with children, how many have noticed the distinct smell of tobacco smoke on the clothing of the parent of a child with asthma? How often do health care practitioners take it to the next level and offer evidence-based tobacco-cessation treatment? It is crucial that respiratory therapists are directly involved in the effort to provide counseling, medication, and resources for tobacco users.

#### Evidence and recommendations

Although a steady decline has been noted in tobacco use in the United States in the 50 years since the first Surgeon General's report about the dangers of tobacco in 1964, more than 43.8 million adults continue to use tobacco.<sup>70</sup> The majority of adult tobacco users want to quit (68.8%), but very few succeed unaided.<sup>43</sup> Effective treatments are available but underutilized.

The use of nicotine replacement therapy and

other pharmacotherapy has been shown to vastly increase the success rate.<sup>43</sup> The evidence also suggests that multi-component cessation programs wherein health care providers combine strong advice to quit with pharmacotherapy, ongoing support, and referral to additional cessation-counseling assistance when needed can further improve cessation rates.<sup>71</sup> The combination of pharmacotherapy and counseling is more effective for treating tobacco dependence than either medication or counseling alone.<sup>43</sup>

Again, the RT is in a perfect position to capitalize on this evidence and assist the tobacco-dependent patient in the acute care setting. The new tobacco-cessation performance measure set from The Joint Commission is providing some hospitals with an impetus to provide these services.<sup>72</sup> The measure-set went into effect at the beginning of 2012 and expands on the 2004 performance measure that required clinicians ask specific groups of adults (those admitted for acute myocardial infarction, congestive heart failure, or pneumonia) whether they smoke and advise them to quit if they do. While The Joint Commission is not requiring hospitals to implement all of the measures in the new set (hospitals need only choose four from a list of 14), the new measure-set does expand tobacco treatment and documentation to all admitted patients. It also promotes evidence-based treatment for those willing to quit and for those unwilling to quit but interested in alleviating withdrawal symptoms.

The PHS guideline synthesizes and illustrates the evidence base for the use of pharmacotherapies for those attempting cessation, excluding patients with specific medical contraindications.<sup>43</sup> The pharmacotherapies have been shown to be cost effective and beneficial to increase long-term cessation. In the acute care setting, use of pharmacotherapy also addresses the discomfort of withdrawal experienced from the abstinence forced by hospital admission. Positive experiences with these treatments may increase the likelihood of use in future quit attempts or allow the patient to maintain continued abstinence. Tables 2, 3, and 4 list the seven first-line pharmacotherapies recommended in the guideline.<sup>43</sup> These include the non-nicotine medications (bupropion and varenicline) and the

NRT medications (gum, patch, lozenge, inhaler, and nasal spray).

The research evidence demonstrates that while intensive interventions are often associated with better cessation outcomes, brief interventions can be effective as well.<sup>43</sup> The “Treating Tobacco Use and Dependence: 2008 Update” supports the promotion of cessation interventions in the hospital and recognizes the need for further evidence regarding the effectiveness of nurses and respiratory therapists in such intervention efforts.<sup>67</sup> Amidst the almost 300 pages of the PHS guideline arises a specific call to respiratory therapists to impact tobacco use in this environment. Table 4, Suggested Interventions for Hospitalized Patients, outlines acute care tobacco interventions suggested by the PHS guideline.<sup>43,72</sup>

### Table 6. Suggested Interventions for Hospitalized Patients<sup>72</sup>

For every hospitalized patient, the following steps should be taken:

- Ask each patient on admission if he or she uses tobacco and document tobacco use status.
- For current tobacco users, list tobacco use status on the admission problem list and as a discharge diagnosis
- Use counseling and medications to help all tobacco users maintain abstinence and to treat withdrawal symptoms.
- Provide advice and assistance on how to quit during hospitalization and remain abstinent after discharge.
- Arrange for follow-up regarding smoking status. Supportive contact should be provided for at least a month after discharge.

#### Removing barriers

Despite the call for hospital-based tobacco-cessation efforts found in The Joint Commission measure-set and the PHS guideline, the evidence suggests that inpatient smoking status is not reli-

ably addressed.<sup>5</sup> Tobacco-dependence intervention opportunities are often overlooked because of gaps in clinician training, as well as work overload and lack of comfort approaching the subject of smoking with patients.

Resources are available to assist the respiratory therapist in this environment. In 2009, the American Respiratory Care Foundation and the AARC published “Why Quit Using Tobacco?” available at [www.aarc.org/resources/tobaccocessation](http://www.aarc.org/resources/tobaccocessation). This resource may be requested to accompany the in-patient brief or intensive counseling session.<sup>62</sup>

Another barrier to providing evidence-based tobacco intervention is the concern related to reimbursement. However, Appendix C of the PHS guideline clearly notes that the American Medical Association has CPT reimbursement codes for these services. Reimbursement is covered in more detail later in this guide.

The electronic health record (EHR) has the potential to impact adherence to the tobacco-treatment guidelines as well. Several uses have been outlined in the literature, many of which have been shown to be effective in other settings.<sup>73</sup> The EHR can be utilized to:



- Deliver clinician prompts to ask about tobacco use.
- Give clinician reminders to deliver brief advice.
- Prompt clinicians to examine appropriate pharmacotherapy levels given the patient's dependence level and withdrawal symptoms.
- Communicate previous and current tobacco-dependence interventions.
- Facilitate referral to further tobacco counseling and intervention.

Initiation of tobacco-intervention protocols by clinical nurse specialists and other clinicians has been described in the literature as having positive outcomes for providing assessment and intervention as well as achieving compliance with quality measures.<sup>74</sup> Opportunities for the respiratory therapist to become more involved in tobacco cessation are clearly present in the acute care environment.

## ***Secondhand and Thirdhand Smoke***

The health risks associated with smoking are well known and are not exclusive to firsthand smokers. There is no safe level of exposure to tobacco smoke; and exposure to any tobacco smoke, either secondhand or thirdhand, is also dangerous. Secondhand smoke refers to the exhaled smoke that others may breathe in, and it causes immediate harm to nonsmokers who breathe it. Contaminants from secondhand and thirdhand smoke can linger for hours and contain over 6,000 chemicals — including 200 poisonous gases, 79 carcinogens, and several heavy, toxic metals.<sup>75</sup> Environmental tobacco smoke (ETS), secondhand smoke, can affect nearly every organ in the body. ETS is a toxin dangerous to anyone who is exposed. Thirdhand smoke is the residue left from secondhand smoke that may be left on the surfaces of objects.<sup>76</sup>

ETS is a mixture of gases and fine particles that includes smoke from a burning cigarette, cigar, or pipe tip. It also includes smoke that has been exhaled by those smoking. Most exposure occurs in homes or the workplace, with some also continuing in public places. The only way to fully protect nonsmokers from secondhand smoke exposure is to eliminate smoking in indoor spaces. ETS is not eliminated by cleaning the air, opening windows, separating nonsmokers from smokers, or ventilating the building.<sup>76</sup>

Thirdhand smoke (THS) consists of secondhand smoke residue that is left on the surfaces of objects. Over time it ages and becomes increasingly more toxic, leading to nicotine exposure levels that are similar to what smokers experience. These particles land and remain on any surface — including clothes, furniture, and flooring — where someone has smoked. The interaction of THS substances with other chemicals in the environment creates carcinogens.<sup>77</sup> The toxins in THS can be inhaled, ingested, or absorbed.<sup>6</sup> In confined spaces, such as a car, the residue is much more concentrated and can be made worse by the use of an air conditioner or heater. Smoking inside a car with the windows closed produces a level of secondhand smoke several times higher than the average bar.<sup>78</sup>

There is no risk-free level of exposure to secondhand smoke.<sup>79</sup> Both ETS and THS cause significant risk to nonsmokers. Individuals at risk include children, smokers' spouses, and workers in environments where smoking is allowed. Homes of smokers are contaminated with thirdhand smoke existing on surfaces and in the dust. Children who live in homes where smoking is allowed are at significant risk for suffering from multiple short-term and chronic health problems, which may not manifest fully until later in life.<sup>77</sup> Secondhand smoke is responsible for lower respiratory tract infections, ear infections, more frequent asthma attacks, respiratory symptoms, decreased lung function, and greater risk for sudden infant death syndrome in children.<sup>76</sup>

Ten percent of the economic costs related to tobacco use are attributable to secondhand smoke. Direct costs to society include treating tobacco-related diseases with indirect costs associated with reduced productivity and loss of wages because of death or illness.<sup>80</sup> Secondhand smoke causes approximately 3,400 deaths from lung cancer and 22,700 – 69,600 deaths from heart disease each year.<sup>81</sup> Thirty-one percent of deaths attributable to secondhand smoke occur in children.<sup>80</sup>

Nonsmokers can protect themselves and their families by not allowing anyone to smoke in the home and car. Make sure children's day care centers and schools are tobacco free. Look for restaurants and other places that do not allow smoking

and remember that “no-smoking sections” do not protect non-smoking patrons.

Millions of Americans, both children and adults, are still exposed to secondhand and thirdhand smoke in their homes and workplace. Eliminating smoking in indoor spaces protects non-smokers from exposure. Premature death and disease can be prevented in children and adults when not exposed to secondhand and thirdhand smoke.<sup>75</sup>

### ***Teens and Preteens***

Smoking habits are established during the adolescent years. According to the Centers for Disease Control and Prevention (CDC), more than 75% of adult smokers begin smoking before the age of 18 years. Cigarette use in teens decreased significantly in the late 1990s; but since 2003, the rates have declined more slowly. However, there has been an increase in smokeless tobacco use in white high school males and an increase in cigar smoking in black high school females during this timeframe. It is estimated that 4,000–6,000 children under age 18 years smoke their first cigarette in the United States every day and that 1,000 teens and pre-teens become daily cigarette smokers. There are roughly 800,000 new teen smokers every year, and one in four U.S. high school seniors is a current smoker. Younger people become addicted faster and on lower levels of nicotine than adults. Current tobacco patterns will reflect about 6.5 million teens dying prematurely from smoking.<sup>82</sup> The 2012 Surgeon General’s Report states that of those high school students who continue to smoke into adulthood, one-half will die about 13 years earlier than their nonsmoking peers.<sup>83</sup>

Many factors influence the use of teen and pre-teen tobacco use. Those who have a low socioeconomic status and low levels of academic achievement are more likely to use cigarettes. They do not have the necessary skills to resist tobacco and may suffer from low self-esteem. Peers and siblings who use tobacco are more likely to approve the teen’s

use of cigarettes. Smoking by parents or guardians often leads to tobacco use in children since the child has the perception that tobacco use is the norm. Adolescents are influenced by exposure to smoking in movies and in tobacco advertising. Tobacco use during the teen years is associated with other undesirable behaviors such as high-risk sexual behavior or use of alcohol and illicit drugs like marijuana.<sup>82</sup> Prevention efforts aimed at this population are important and should include the scientific evidence, debunk myths and expose the risks associated with tobacco use, including the use of e-cigarettes and hookah.

There is no evidence that smoking is associated with weight loss among adolescent smokers.<sup>11</sup> Programs and policies that are effective in reducing youth smoking include multicomponent interventions. Media campaigns designed for youth, taxing tobacco products, high school and college campus policies on tobacco use, and community-wide changes in smoke-free policies are effective in reducing the amount of tobacco use by teens and pre-teens.<sup>83</sup>



# System-wide Implementation and Policy Development

Smoking-cessation rates remain low in the United States due, in part, to “systems level” barriers. Systems level refers to formal and informal processes within an institution or organization that can impact the effectiveness of smoking cessation, such as the use of technological systems that identify the smoking status of every patient, the consistent use of proactive telephone counseling systems, and brief provider interventions delivered by qualified professionals. It can also include larger systems, such as health plans and insurance companies, that set performance benchmarks and make policies for reimbursement for counseling and medications.<sup>84</sup>

Respiratory therapists who are involved in any way in the development, implementation, evaluation, or provision of smoking-cessation services must understand how systems-level barriers can interfere with even an excellent, evidence-based tobacco-dependence treatment program’s sustainability, regardless of whether it is being offered to inpatients or outpatients or in a physician’s office or a skilled nursing facility. Among the most common system barriers are lack of an easy, established process for providing and documenting cessation advice, staff discomfort with discussing cessation, lack of reimbursement for cessation advice, and treatment and lack of adequate follow-up. Successful strategies to remove these barriers require a chronic disease management approach that makes smoking-cessation counseling a routine part of patient care.<sup>85</sup>

There is convincing evidence that effective tobacco-dependence treatment must be connected

in coordinated and multiple ways to the health care system in which it is offered.<sup>43</sup> At this time, scientists, researchers, and policymakers have learned how to effectively intervene with tobacco users at all levels of our society. Research has also determined that evidence-based smoking-cessation interventions are cost effective. It is for these reasons that external forces, such as the Healthcare Effectiveness Data and Information Set (HEDIS<sup>®</sup>) and The Joint Commission, are now challenging health care organizations to be accountable for effectively intervening at the systems level.<sup>84</sup>

The purpose of this section of the “Clinician’s Guide to Treating Tobacco Dependence” is to provide the respiratory therapist with guidance for the systematic development, implementation, and evaluation of a hospital-based tobacco-treatment program using a systems approach to ensure its overall effectiveness and sustainability. The examples presented in this section are applied in an in-patient hospital setting; but the basic tenets can be applied in other settings where RTs may be providing tobacco-dependence treatment, including hospital outpatient clinics, physician offices, and skilled nursing facilities.

## ***The Joint Commission’s New Tobacco Measure Set***

Over the past 20 years or so, research has demonstrated that tobacco treatment during a hospital admission for myocardial infarction, for example, is both efficacious and cost effective.<sup>86,87</sup> In spite of this evidence, tobacco-treatment interventions have not been broadly prescribed by

health care providers, probably because they did not fit well into the “structure of U.S. health care provision, documentation requirements, or reimbursement.”<sup>88</sup> However, changing these structures or “systems of care” to improve the health outcomes of patients with chronic diseases has finally become a priority in today’s health care environment.

The Joint Commission implemented performance measures for delivery of tobacco cessation to patients with diagnoses of acute myocardial infarction, congestive heart failure, or community-ac-

quired pneumonia in 2004. However, this measure was rather narrow and did not require follow-up. It was replaced by a new measure set (see Table 7) in 2011 that is much more comprehensive. If selected by a hospital, it requires screening of all inpatients for tobacco use and the provision of both counseling and medications to tobacco users ages 18 years or older. Additionally, a follow-up contact must be initiated within 30 days to determine tobacco use status.<sup>86</sup> Additional details about this measure set are available in The Joint Commission’s “Specifications Manual for National Hospital Inpatient Quality Measures.”<sup>89</sup>

**Table 7. Tobacco Measure Set Specifications<sup>88</sup>**

Set Measure ID	Tobacco Measure Set Specifications
TOB-1 Tobacco Use Screening	<p><b>Numerator:</b> The number of patients who were screened for tobacco use status.</p> <p><b>Denominator:</b> The number of hospitalized inpatients 18 years of age and older.</p>
<p>TOB-2 Tobacco Use Treatment Provided or Offered</p> <p>TOB-2a Tobacco Use Treatment</p>	<p><b>Numerator:</b> The number of patients who received or refused practical counseling to quit and received or refused FDA-approved cessation medications.</p> <p><b>Denominator:</b> The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.</p> <p><b>Numerator:</b> The number of patients who received practical counseling to quit and received FDA-approved cessation medications.</p> <p><b>Denominator:</b> The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.</p>
<p>TOB-3 Tobacco Use Treatment provided or Offered at Discharge</p> <p>TOB-3a Tobacco Use Treatment at Discharge</p>	<p><b>Numerator:</b> The number of patients who were referred to or refused evidence-based outpatient counseling and received or refused a prescription for FDA-approved cessation medication at discharge.</p> <p><b>Denominator:</b> The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.</p> <p><b>Numerator:</b> The number of patients who were referred to evidence-based outpatient counseling and received a prescription for FDA-approved cessation medication at discharge.</p> <p><b>Denominator:</b> The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.</p>
TOB-4 Tobacco Use: Assessing Status after Discharge	<p><b>Numerator:</b> The number of discharged patients who are contacted within 30 days after hospital discharge and follow-up information regarding tobacco use status is collected.</p> <p><b>Denominator:</b> The number of discharged patients 18 years of age and older identified as current tobacco users.</p>

Because the tobacco-cessation measure set is optional, respiratory therapists who are in a position to influence their administration should benefit from understanding important reasons for selecting the tobacco measure set:

- *Public health impact of tobacco use* — Tobacco is responsible for approximately one in five deaths each year in the United States (about 440,000 deaths per year). Tobacco use causes the chronic diseases that are responsible for the leading causes of death and disability in the United States and costs more than \$193 billion per year in health care costs and lost productivity.<sup>90</sup>

- *Health of patients* — The continued use of tobacco may affect the ability of patients to recover, plus it has a detrimental effect on their overall health. Patients with heart disease who smoke are more likely to have a second heart attack. Cancer patients who are successfully treated for their lung, head, and neck cancer but who continue to smoke have an increased risk for developing another cancer. Smoking continues to have a negative effect on patients with a COPD diagnosis and on surgical wound healing.<sup>43</sup>

- *Electronic health records/meaningful use* — The federal Health Information Technology for Economic and Clinical Health (HITECH) Act, part of the American Recovery and Reinvestment Act of 2009, provides incentives for eligible hospitals that adopt electronic health record technology and demonstrate they are meaningful users of that technology. An eligible user must use EHRs to capture health data, track key clinical conditions, and coordinate care of those conditions. The requirements of these incentive programs emphasize the importance of addressing tobacco use among patients during Stage 1 and 2 of the program. Incentives to hospitals for adopting EHRs and demonstrating significant use can mean receiving from \$2–\$12 million in incentives annually.<sup>86</sup>

- *Commitment to community wellness/hospital mission* — Almost all hospital mission statements have language demonstrating their commitment to improving the health of the community they serve. Since, on average, about one in every five residents of those communities will die from a tobacco-re-

lated disease,<sup>91</sup> investing in tobacco cessation is an important way the hospital can demonstrate that it is serious about aligning services to meet its stated mission and, thus, contribute to the overall health of the community.

Hospitals and health care providers have an essential role in preventing the burdensome toll that tobacco use takes on individuals, families, and communities. Respiratory therapists and other health care professionals must ensure that hospital leaders get the message about the important reasons for selecting The Joint Commission's tobacco measure set. Once the decision is made to select the tobacco measure set, a tobacco-cessation program must be ready to be implemented simultaneously.

### ***Steps to Implementing a Tobacco-cessation Program***

Successful implementation and sustainability of a comprehensive tobacco-cessation program is difficult in any setting and requires the time and effort of dedicated individuals and the support and commitment of the organization's administration, clinical leaders, and other stakeholders. Typically, successful programs in any setting have followed some variation of the following steps to implement and subsequently evaluate the program:

- *Obtain commitment from leadership* — The process should begin by asking the organizational leadership to convene a group of organizational leaders with an interdisciplinary focus who are likely to promote and champion the program. It is important to have a physician and a nurse who will help secure "buy-in" from other physicians, nurses, and hospital administrators, if possible. It is essential to develop a clinical workflow in which all providers are crystal clear regarding their roles and responsibilities in the tobacco-treatment intervention.<sup>86</sup> Plus, having all providers "on board" will help to ensure its success and sustainability.

This is also a good time to review the organization's smoking-cessation employee benefit to ensure it is comprehensive and includes access to currently available cessation medications approved by the FDA. According to the Partnership for

Prevention and the American Lung Association, smoking-cessation coverage should ideally be free of barriers, such as co-pays, duration limits, prior authorization requirements, stepped-care therapy, and other requirements for medications and counseling. Eliminating these barriers is especially important for low-income populations, such as Medicaid recipients.

- *Assess existing tobacco-use treatment services* — In the hospital setting, determine the tobacco-use services that are being provided in each area of the hospital and the obstacles that could prevent implementation of The Joint Commission’s tobacco measure set. Review the evidence regarding effective tobacco-use treatment found in the 2008 update of the U.S. Public Health Service’s clinical practice guideline “Treating Tobacco Use and Dependence.” Since an integrated approach is recommended for successful and sustained programs, identify tobacco-treatment specialists (or those with genuine interest in obtaining training and expertise) who cross multiple departments and units or departments, especially those who have been successfully using tobacco screening and intervening with tobacco users.<sup>43</sup> Finally, determine what tobacco-use treatment coverage is provided within the health system by researching those health plans that cover the highest number of patients served by the institution. This will help identify the many variations in reimbursement for services that exist.<sup>86</sup>

- *Plan and build consensus with key stakeholders* — Identify and use a systematic approach to ensure that all tobacco users that are admitted to the hospital are routinely provided with tobacco-dependence treatment. This will require the use of certain tools (such as a logic model, a stakeholder analysis, an implementation plan, or even a combination of tools) to ensure that objectives, quality improvement measures, delivery systems/providers, policies, processes, and practices are identified and defined in the planning phase. This will ultimately ensure that the comprehensive program is effectively implemented and subsequently evaluated systematically.

As the implementation and evaluation plan is developed, it is important to include strategies for involving the staff and providers who will be affected by new workflows, new tasks, new job descriptions, staff performance evaluations, as well as the need to expand hospital formularies to include all FDA-approved medications and the need to include tobacco-screening questions in the electronic medical record, just to name a few items. Ideally, these individuals should not only be involved in the planning process but also support and contribute to the initiative during the implementation and evaluation stages, as well. The



same messages conveyed by the respiratory therapist to urge hospital leaders to choose The Joint Commission's tobacco measures set can be used to convince staff and providers of the importance of the program and to gain their support and contributions to the initiative.

During this phase, determine what data is already being collected that could be used to measure tobacco outcomes required by The Joint Commission. Also identify the current tracking systems that are in place to answer the evaluation questions The Joint Commission will ask as well as the referral resources that are currently being used. Knowing what data is already collected, and the tracking systems and referral resources currently in use, is essential to future implementation and evaluation steps.

- *Train hospital staff* — Information about accredited programs that provide comprehensive, evidence-based training for tobacco cessation may be found on the Association for the Treatment of Tobacco Use and Dependence (ATTUD) website.<sup>92</sup>

Currently, each accredited training center specifies the criteria for achieving the CTTS credential following completion of their training program. A standardized written examination is being considered by some ATTUD professionals and will likely be available in the future.

To the extent possible, a cadre of hospital staff should be trained in evidence-based treatment strategies at one of these accredited programs, and they should earn the CTTS credential. These individuals would then set objectives for health care provider education, offer staff training, and determine ongoing training needs for the hospital staff in their area of the hospital. At a minimum, staff should receive training and evaluation in the use of the 5 A's and the seven FDA-approved cessation medications. In some hospitals, each department has a designated smoking-cessation champion whose responsibility it is to ensure the staff is trained and patients are screened and treated. These providers should be given feedback about their performance from data found in chart audits and the EHR.



- *Provide tobacco-cessation interventions to patients* — The tobacco treatment program should consist of some form of the 5 A's and 5 R's described previously. Follow-up or referral are recommended as an integral part of the process. In addition, a strategy to evaluate and monitor performance should be included.

- *Monitor performance and solicit feedback from staff and patients* — During the planning and consensus-building phase for the program implementation, objectives and quality improvement measures were defined. These objectives and measures describe program outcomes for reviewing program progress and providing feedback on performance.

Review the data that is already being collected and the method by which it is collected. Determine what additional tracking systems need to be developed in order to meet the Joint Commission measures. When referral resources are used, such as the state quitline, it will be necessary to devise a way to retrieve data from these resources and catalogue them in the hospital.

It is important to understand how effectively the program has met its goals of identifying, documenting, and treating patients who use tobacco and to be able to provide feedback to individual clinicians. Careful and systematic development of an evaluation plan that identifies program objectives, responsible individual(s), activities, indicators, data sources, timelines, and proximal and distal outcomes is recommended. This will ensure the program will receive an evaluation of the appropriate measures, individuals will receive timely and useful feedback, and a continuous quality improvement cycle will be in place to aid in ensuring program sustainability.

Cessation rates remain low in the United States partly due to a failure to develop, implement, and evaluate tobacco-dependence treatment programs using a systems-based approach. The Joint Commission's tobacco measure set offers hospitals who select it an opportunity to impact the toll tobacco takes on the health of individuals, families, and communities. Respiratory therapists can assume a leadership role in tobacco-depen-

dence treatment programs designed to meet the performance measure set specified by The Joint Commission by using a systems-based approach at all levels. This requires a systematic analysis of each formal and informal process to determine how it could affect achievement of the desired outcome of reduced smoking rates, ideally before the process is initiated.

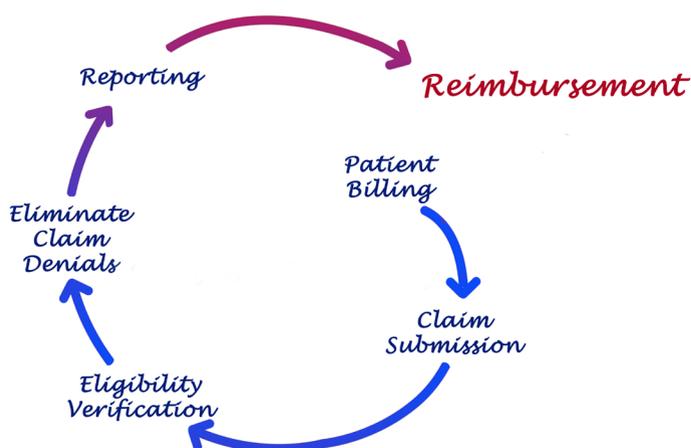
## **Respiratory Care Educator Role**

The curricular content in accredited respiratory care educational programs must be consistent with competencies and duties performed by Registered Respiratory Therapists entering the workforce, as established by the National Board for Respiratory Care (NBRC).<sup>93</sup> Indeed, concepts related to evidence-based smoking cessation have been tested by the NBRC in the past; and smoking cessation continues to be listed on the 2015 Detailed Content Outlines for both the Therapist Multiple-Choice Examination and the Clinical Simulation Examination.<sup>94</sup> Notably, future practitioners with the designation of Advanced Practice Respiratory Therapist (APRT) will be required to perform even more explicit and complex services for patients with tobacco addiction, including "conduct smoking-cessation interventions to include motivational interviewing, patient counseling, and prescribing medications."<sup>95</sup> Accordingly, it is now incumbent upon respiratory care educators to reinforce smoking-cessation skills throughout the formal educational program to ensure graduates are ready to assume smoking-cessation roles. Similarly, hospital-based educators must inculcate the belief that tobacco-dependence treatment is a standard of good clinical practice among clinicians who are practicing in all health care settings.

The evidence is clear. Training clinicians to provide evidence-based tobacco-dependence treatment results in increased quit rates; but when coupled with other system changes, the quit rates are increased even further. Thus, these programs are likely to achieve a level of effectiveness and sustainability that may not be seen among those that are not developed, implemented, and evaluated using a systems approach.

# Reimbursement for Smoking and Tobacco Cessation and Counseling

Reimbursement for tobacco-cessation counseling services varies widely, but it is improving. Medicare provides coverage for both counseling and prescription medication. Most state Medicaid programs provide some coverage for counseling or medications, but only a few provide comprehensive coverage. Respiratory therapists can furnish smoking-cessation counseling as “incident to” a physician’s service under Medicare Part B (hospital outpatient or physician office) and Part A (inpatient setting). Commercial plans vary widely, but many private insurance carriers follow Medicare’s payment guidelines. The current smoking-cessation codes were available for use on August 10, 2010. Justification for establishing a tobacco treatment service can also include: determination of patient eligibility for organ transplantation, contribution to decreased hospital readmission rates and reduction in the costs associated with wound healing complications.



Smoking cessation counseling is “incident to” the physician’s service as long as the regulatory requirements are met. This means that the service requires direct supervision by a physician, such as might occur in a freestanding physician’s office or in a hospital outpatient setting. This benefit is established under the Medicare benefit category established by Section 1861(s)(2)(A) of the Social Security Act. Respiratory therapists cannot bill directly at this time. Only the physician or other qualified health care professional can bill Medicare directly for this service.<sup>96</sup>

“Incident to” services are “those services that are furnished incident to physicians’ professional services in the physician’s office or in a patient’s home.” The qualifications for personnel who can provide “incident to” services are determined by Medicare contractors. “Incident to” services must conform to all of the following:

- An integral part of the patient’s treatment course,
- Commonly rendered without charge (or included in the physician’s bill),
- Of a type commonly furnished in a physician’s office or clinic, and
- Furnished by the physician or by auxiliary personnel under the physician’s direct supervision. (Respiratory therapists would be considered auxiliary personnel in this scenario.)<sup>96</sup>

To be covered, the physician must personally perform an initial service, remain actively involved in the overall treatment of the patient, and directly supervise the respiratory therapist by remaining



in the office suite to be available to assist the therapist, if needed. In this case, the physician would bill Medicare directly for the service and payment would be made directly to the physician under the Medicare Physician Fee Schedule. The respiratory therapist would then be paid by the physician according to negotiated terms agreed upon by both parties.<sup>96</sup>

Respiratory therapists may also be able to provide cessation services in a hospital or skilled nursing facility under the Part A Medicare benefit. This is because the intermediate and intensive counseling sessions that are reimbursable under the National Coverage Determination (NCD) by the Centers for Medicare and Medicaid Services (CMS) are available as a Part B benefit to physicians and other Medicare-recognized practitioners who can bill Medicare directly and be paid for the service.<sup>96</sup>

According to the NCD, “hospital beneficiaries who are smokers” and meet certain requirements can receive cessation services if they are provided by qualified physicians and other Medicare-recognized practitioners. There is a basic tenet of

the Medicare program that no payment may be made under Part B for any services that the beneficiary is entitled to have payment made with respect to such services under Part A. For services to be covered under Part A or Part B, a hospital must also provide non-physician or “incident to” services to inpatients.<sup>96</sup>

Medicare Part A broadly covers inpatient therapeutic services, including cessation services provided by respiratory therapists when they are approved to do so by the local contractor. In this case, the cessation service is treated like any other covered service a respiratory therapist provides under Part A; and it is “bundled” along with other inpatient services, and Medicare pays the hospital under the usual diagnosis-related group (DRG) payment.

There are a few exceptions that would allow in-patients to have smoking cessation covered under Medicare Part B, but none of those exceptions would allow the services of a respiratory therapist to be covered.<sup>96</sup>

Medicare will now reimburse for cessation counseling regardless of whether or not the tobacco user has signs or symptoms of tobacco-related disease. Counseling sessions may be performed by or “incident to” the services of a qualified practitioner, and two cessation attempts per year are covered. Each attempt can include up to four intermediate (3–10 minutes) or intensive (>10 minutes) counseling sessions with the annual benefit covering up to eight sessions in a 12-month period.<sup>97</sup> Flexibility exists so that the practitioner and patient can choose between intermediate or intensive sessions at each meeting. No more than one session per day will be covered. G codes are used for asymptomatic patient counseling in the physician office setting. Below is a list of the codes that can be used along with their descriptions.

CPT codes for outpatient and inpatient hospital setting or physician’s office:

- **99406** — Smoking and tobacco-use cessation counseling visit; intermediate, greater than three minutes and up to 10 minutes.
- **99407** — Smoking and tobacco-use cessation counseling visit; intensive, greater than 10 minutes. Do not report 99407 in conjunction with 99406.<sup>98</sup>

G codes for asymptomatic patients in the physician office or clinic setting:

- **G0436** — Smoking and tobacco-cessation counseling visit for the asymptomatic patient; intermediate, greater than three minutes and up to 10 minutes.
- **G0437** — Smoking and tobacco-cessation counseling visit for the asymptomatic patient; intensive, greater than 10 minutes.

Starting on Jan. 1, 2011, the Accountable Care Act provided for a waiver of Medicare coinsurance and Part B deductible requirements for these G codes.

Counseling services lasting three minutes or less are bundled into the routine care that patients receive. Therefore, they are not separately billable.<sup>99</sup>

Another requirement for billing is that the patient must be competent and alert at the time of counseling. Also, the services must be provided face to face. Appropriate documentation is required and can include cessation techniques, quitting stages, obstacles, resources used, and follow-up.

## **Medicaid**

A major goal of the Patient Protection and Affordable Care Act (P.L. 111–148) is to provide affordable coverage and primary care to a greater number of Americans. The focus of health reform is on primary and preventive care; and as a result, state Medicaid programs are under new guidelines:

1. As of Oct. 1, 2010, Medicaid must provide comprehensive cessation benefits to pregnant women with no cost sharing by the patient.
2. As of June 2011, Medicaid is allowed to reimburse quitlines for callers enrolled in Medicaid.
3. As of Jan. 1, 2013, Medicaid programs that voluntarily cover all recommended preventive services, including tobacco cessation, receive increased federal reimbursements.
4. As of Jan. 2, 2014, Medicaid can no longer exclude tobacco-cessation drugs from prescription drug coverage.<sup>100</sup>

These provisions are hugely important since the smoking prevalence rates in the Medicaid population are much higher than in the general population (31% of smokers enrolled in Medicaid compared to about 19%,<sup>101</sup> 25% of pregnant women enrolled in Medicaid smoke compared to 12%).<sup>102</sup>

# Referral: Outpatient and Community Programs

Tobacco users can be counseled in any setting to assess their willingness to quit. Respiratory therapists may have the opportunity to counsel patients about tobacco cessation in the outpatient clinic, the hospital, the pulmonary function testing lab, the physician's office, the dentist's office, or at health fairs or other places. It is important to remember that 70% of smokers want to quit and that most smokers have had many previous quit attempts.<sup>103</sup> Health care professionals can give advice, listen to their quitting concerns, discuss smoking-cessation medications and quitting strategies, provide encouragement, and distribute self-help information. If the patient is willing to make a quit attempt, it is necessary to refer patients to a smoking-cessation service for continued assistance and follow-up.

Patients can be referred to tobacco intervention resources such as quitlines, individual counseling, group counseling sessions, online self-directed programs, or residential counseling programs. Each type of follow-up is more effective than no follow-up at all. Also, the effectiveness of therapy increases with the intensity.<sup>43</sup> The most common referral is to a telephone quitline, which is a tobacco-cessation service available through a toll-free telephone number. Quitlines are staffed by counselors trained specifically to help smokers quit. Quitlines also deliver information, advice, support, and encouragement to tobacco users. Counselors offer personalized quit plans, self-help materials, social support, coping strategies to help tobacco users deal with cravings, and the latest information about tobacco-cessation medications.

Examples of national quitlines include the U.S. Department of Health and Human Services' Quit

Now program (1-800-QUIT-NOW) and the National Cancer Institute's quitline (1-877-44U-QUIT). Similar services are offered through private insurance companies. When calling the Quit-Now number, the caller will be directed to the state from which the call is initiated.<sup>104</sup> The service can vary from state to state. The number of calls offered per customer varies and so does the ability to offer no-cost NRT medications. Some states have a fax referral program. If the smoker agrees, a form can be faxed to the quitline with the smoker's contact information. The quitline counselors will then follow up with the smoker. This is more successful than leaving it up to the smoker to make the first contact.<sup>105</sup>

Group counseling sessions are offered by various wellness groups, health insurance companies, health care institutions, and the American Lung Association. The natural propensity of human beings to congregate makes group therapy a powerful therapeutic tool for treating substance abuse or tobacco addiction — one that is as helpful as individual therapy and sometimes more successful. One reason for this efficacy is that groups intrinsically have many rewarding benefits, such as reducing isolation and enabling members to witness the recovery of others. These qualities draw clients into a culture of recovery. Another reason groups work so well is that they are also suitable for treating problems that commonly accompany substance abuse, such as depression, isolation, and shame.<sup>106</sup>

The American Lung Association (ALA), the American Thoracic Society (ATS), and Congress of Lung Association Staff (CLAS) launched a project to develop a smoking-cessation program in 1975 called Freedom from Smoking<sup>®</sup>. Freedom from Smoking offers a group counseling program and an online program. The group session model calls

for eight group sessions. The topics for each session are:

- Session 1: Thinking About Quitting
- Session 2: On the Road to Freedom
- Session 3: Wanting to Quit
- Session 4: Quit Day
- Session 5: Winning Strategies
- Session 6: The New You
- Session 7: Staying Off
- Session 8: Celebration

The sessions are held over a seven-week period. Attendees use a workbook and complete exercises. The local ALA may not be offering a group session at all times but may be able to supply a referral to a near-by group session. For more information, consult their website at <http://ffsonline.org>.

The ALA also publishes an online version of this program. It is a free program that uses the same method as the seven-week clinic. The difference is that it lets smokers pace themselves by logging on to the program wherever and whenever they choose. Freedom From Smoking Online<sup>®</sup> uses a workbook with seven modules to guide smokers through the process — much like the seven-week clinic. A message board provides an online support group where smokers can share their struggles and successes as well as get support from others.<sup>107</sup>

A residential quit-smoking program is likely to be the least convenient, since the tobacco users actually check into a facility for a period of time in order to quit. These programs are also the most expensive, ranging from around \$3,500 to \$5,000. However, for some people the intensity of a full-time, week-long quit-smoking intervention is just what they need to be successful.

Mayo Clinic's Nicotine Dependence Center offers a well-known residential treatment program in Minnesota. The program, which started in 1992, lasts eight days and is based on principles of addiction therapy and behavior change. Participants check into the facility and are assigned an individual counselor who is a Certified Tobacco Treatment Specialist. Services include medical assessment,



daily medical follow-up, lab work, individual and group counseling sessions, wellness coaching, and tobacco-related health education. The program is staffed 24 hours a day. After completion, staff members follow up regularly with participants to help prevent relapse. The program claims to have a 52% success rate at 12 months after completion of the program.<sup>107</sup>

Another source for a variety of tobacco-treatment programs are the state health departments. Many health departments are actively offering telephone or online services. The Affordable Care Act (ACA) regulations require all health plans and employer groups to offer comprehensive tobacco- and smoking-cessation services. The ACA also requires Medicare to cover the cost for nicotine replacement therapy and other smoking-cessation medications. It is expected that more programs will be offered in the workplace through health insurance companies in the future.

Each type of tobacco-cessation program has advantages and disadvantages. It is important to remember that all the programs have a success rate that is greater than quitting "cold turkey" without assistance, which averages 3%–5%. As professional health care workers, respiratory therapists should be knowledgeable about the types of tobacco-cessation programs that are available in their area so they can assist tobacco-dependent individuals.

# References

1. Jee SH, Suh I, Kim IS, Appel LJ. Smoking and atherosclerotic cardiovascular disease in men with low levels of serum cholesterol: the Korea Medical Insurance Corporation Study. *JAMA* 1999; 282(22):2149–2155.
2. Benowitz NL, Gourlay SG. Cardiovascular toxicity of nicotine: implications for nicotine replacement therapy. *J Am Coll Cardiol* 1997; 29(7):1422–1431.
3. Mills EJ, Wu P, Lockhart I, et al. Adverse events associated with nicotine replacement therapy (NRT) for smoking cessation. A systematic review and meta-analysis of one hundred and twenty studies involving 177,390 individuals. *Tob Induc Dis* 2010; 8:8.
4. Hansson L, Choudry N, Karlsson JA, Fuller RW. Inhaled nicotine in humans: effect on the respiratory and cardiovascular systems. *J Appl Physiol* (1985) 1994; 76(6):2420–2427.
5. Janson C, Chinn S, Jarvis D, et al. Effect of passive smoking on respiratory symptoms, bronchial responsiveness, lung function, and total serum IgE in the European Community Respiratory Health Survey: a cross-sectional study. *Lancet* 2001; 358(9299):2103–2109.
6. Zbikowski SM, Swan GE, McClure JB. Cigarette smoking and nicotine dependence. *Med Clin North Am* 2004; 88(6):1453–1465.
7. Dome P, Lazary J, Kalapos MP, Rihmer Z. Smoking, nicotine and neuropsychiatric disorders. *Neurosci Biobehav Rev* 2010; 34(3):295–342.
8. Glynn DA, Cryan JF, Kent P, et al. Update on smoking cessation therapies. *Adv Ther* 2009; 26(4):369–382.
9. Thorgeirsson TE, Gudbjartsson DF, Sulem P, et al. A common biological basis of obesity and nicotine addiction. *Transl Psychiatry* 2013; 3:e308.
10. Audrain-McGovern J, Benowitz NL. Cigarette smoking, nicotine, and body weight. *Clin Pharmacol Ther* 2011; 90(1):164–168.
11. Lerman C, Berrettini W, Pinto A, et al. Changes in food reward following smoking cessation: a pharmacogenetic investigation. *Psychopharmacology (Berl)* 2004; 174(4):571–577.
12. International Agency for Research on Cancer (IARC). IARC monographs on the evaluation of carcinogenic risks to humans. Tobacco smoking. Lyon (France) 2004; Vol 38.
13. Wu WK, Cho CH. The pharmacological actions of nicotine on the gastrointestinal tract. *J Pharmacol Sci* 2004; 94(4):348–358.
14. Misery L. Nicotine effects on skin: are they positive or negative? *Exp Dermatol* 2004; 13(11):665–670.
15. Bruin JE, Gerstein HC, Holloway AC. Long-term consequences of fetal and neonatal nicotine exposure: a critical review. *Toxicol Sci* 2010; 116(2):364–374.
16. U.S. Department of Health and Human Services. The health consequences of smoking – 50 years of progress. A report of the Surgeon General. Printed with corrections. Atlanta GA, January 2014.
17. Lee YO, Hebert CJ, Nonnemaker JM, Kim AE. Multiple tobacco product use among adults in the United States: cigarettes, cigars, electronic cigarettes, hookah, smokeless tobacco, and snus. *Prev Med* 2014; 62:14–19.
18. Stratton K, Shetty P, Wallace R, Bondurant S. Clearing the smoke: the science base for tobacco harm reduction — executive summary. *Tob Control* 2001; 10(2):189–195.
19. Gower S, Hammond D. CSP deposition to the alveolar region of the lung: implications of cigarette design. *Risk Anal* 2007; 27(6):1519–1533.
20. Centers for Disease Control and Prevention website. Smoking & tobacco use. Consumer booklet. Available at: [http://www.cdc.gov/tobacco/data\\_statistics/sgr/2010/consumer\\_booklet](http://www.cdc.gov/tobacco/data_statistics/sgr/2010/consumer_booklet) Accessed April 30, 2014
21. U. S. Food and Drug Administration website. Preliminary scientific evaluation of the possible public health effects of menthol versus nonmenthol cigarettes. Available at: [www.fda.gov](http://www.fda.gov) Accessed April 30, 2014
22. Hoffmann D, Hoffmann I. The changing cigarette, 1950–1995. *J Toxicol Environ Health* 1997; 50(4):307–364.
23. National Cancer Institute. Risks associated with smoking cigarettes with low machine-measured yields of tar and nicotine. Smoking and tobacco control monograph No. 13: 2001; NIH Publication No. 02-5047.
24. U.S. Department of Health and Human Services. The health consequences of smoking: a report of the Surgeon General. Atlanta GA; 2004.
25. National Cancer Institute website. Factsheet. Cigar smoking and cancer. Available at: <http://www.cancer.gov/cancertopics/factsheet/Tobacco/cigars> Accessed May 19, 2014
26. American Cancer Society website. Cigar smoking. Available at: [http://www.cancer.org/docroot/PED/content/PED\\_10\\_2X\\_Cigar\\_Smoking.asp?sitearea=PED&viewmode=print&](http://www.cancer.org/docroot/PED/content/PED_10_2X_Cigar_Smoking.asp?sitearea=PED&viewmode=print&) Accessed May 19, 2014
27. Baker F, Ainsworth SR, Dye JT, et al. Health risks associated with cigar smoking. *JAMA* 2000; 284(6):735–740.
28. Kozlowski LT, Dollar KM, Giovino GA. Cigar/cigarillo surveillance: limitations of the U.S. Department of Agriculture System. *Am J Prev Med* 2008; 34(5):424–426.
29. National Cancer Institute website. Smoking and tobacco control monographs. Monograph 9: cigars: health effects and trends. Available at: <http://www.cancercontrol.cancer.gov/tcrb/monographs/9/index.html> Accessed March 20, 2014
30. U.S. Department of Health and Human Services. Reducing tobacco use: a report of the Surgeon General. Atlanta GA, 2000.
31. Centers for Disease Control and Prevention website. Smoking and tobacco use. National youth tobacco survey (NYTS). Available at: [http://www.cdc.gov/tobacco/data\\_statistics/surveys/nyts](http://www.cdc.gov/tobacco/data_statistics/surveys/nyts) Accessed May 19, 2014
32. Cobb NK, Byron MJ, Abrams DB, Shields PG. Novel nicotine delivery systems and public health: the rise of the “e-cigarette”. *Am J Public Health* 2010; 100(12):2340–2342.
33. U.S. Food and Drug Administration website. Electronic cigarettes (e-cigarettes). Available at: <http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm172906.htm> Accessed May 19, 2014
34. FDA-US Food and Drug Administration. Evaluation of e-cigarettes. 2009. Available at: <http://www.fda.gov/downloads/Drugs/ScienceResearch/UCM173250.pdf> Accessed May 19, 2014
35. Office of Information and Regulatory Affairs website. View rule. Available at: <http://www.reginfo.gov/public/do/eAgenda-ViewRule?pubId=201310&RIN=0910-AG38> Accessed May 19, 2014

36. Shihadeh A, Saleh R. Polycyclic aromatic hydrocarbons, carbon monoxide, "tar", and nicotine in the mainstream smoke aerosol of the narghile water pipe. *Food Chem Toxicol* 2005; 43(5):655–661.
37. Daher N, Saleh R, Jaroudi E, et al. Comparison of carcinogen, carbon monoxide, and ultrafine particle emissions from narghile waterpipe and cigarette smoking: sidestream smoke measurements and assessment of second-hand smoke emission factors. *Atmos Environ* (1994); 44(1):8–14.
38. Cobb CO, Shihadeh A, Weaver MF, Eissenberg T. Waterpipe tobacco smoking and cigarette smoking: a direct comparison of toxicant exposure and subjective effects. *Nicotine Tob Res* 2011; 13(2):78–87.
39. Centers for Disease Control and Prevention website. Carbon monoxide poisoning. Available at: <http://www.cdc.gov/co/faqs.htm> Accessed July 28, 2013
40. Cavus UY, Rehber ZH, Ozeke O, Ilkay E. Carbon monoxide poisoning associated with narghile use. *Emerg Med J* 2010; 27(5):406.
41. La Fauci G, Weiser G, Steiner IP, Shavit I. Carbon monoxide poisoning in narghile (water pipe) tobacco smokers. *CJEM* 2012; 14(1):57–59.
42. Uyanik B, Arslan ED, Akay H, et al. Narghile (hookah) smoking and carboxyhemoglobin levels. *J Emerg Med* 2011; 40(6):679.
43. Fiore MC, Jaen CR, Baker TB, Bailey WC, Benowitz NL, Curry SJ, et al. Treating tobacco use and dependence: 2008 update. US Dept Health Human Service 2008.
44. U.S. Department of Health and Human Services. The health consequences of smoking – 50 years of progress. A report of the Surgeon General. Printed with corrections. Atlanta GA, January 2014.
45. National Cancer Institute website. Factsheet. Smokeless tobacco and cancer. Available at: <http://www.cancer.gov/cancer-topics/factsheet/Tobacco/smokeless#r1> Accessed May 9, 2014
46. Henley SJ, Connell CJ, Richter P, et al. Tobacco-related disease mortality among men who switched from cigarettes to spit tobacco. *Tob Control* 2007; 16(1):22–28.
47. Severson HH, Andrews JA, Lichtenstein E, et al. Self-help cessation programs for smokeless tobacco users: long-term follow-up of a randomized trial. *Nicotine Tob Res* 2007; 9(2):281–289.
48. Gansky SA, Ellison JA, Rudy D, et al. Cluster-randomized controlled trial of an athletic trainer-directed spit (smokeless) tobacco intervention for collegiate baseball athletes: results after 1 year. *J Athl Train* 2005; 40(2):76–87.
49. Ebbert JO, Dale LC, Patten CA, et al. Effect of high-dose nicotine patch therapy on tobacco withdrawal symptoms among smokeless tobacco users. *Nicotine Tob Res* 2007; 9(1):43–52.
50. Richter P, Hodge K, Stanfill S, et al. Surveillance of moist snuff: total nicotine, moisture, pH, un-ionized nicotine, and tobacco-specific nitrosamines. *Nicotine Tob Res* 2008; 10(11):1645–1652.
51. Bahreinifard S, Sheon NM, Ling PM. Is snus the same as dip? Smokers' perceptions of new smokeless tobacco advertising. *Tob Control* 2013; 22(2):84–90.
52. Hatsukami DK, Lemmonds C, Tomar SL. Smokeless tobacco use: harm reduction or induction approach? *Prev Med* 2004; 38(3):309–317.
53. American Society of Addiction Medicine. The definition of addiction. ASAM public policy statement, 2011.
54. U.S. Department of Health and Human Services. The health consequences of smoking: nicotine addiction: a report of the Surgeon General, 1988. DHHS Publication No. (CDC) 88-8406.
55. American Society of Addiction Medicine. Prevention. ASAM public policy statement, 2009.
56. Kessler DA, Witt AM, Barnett PS, et al. The Food and Drug Administration's regulation of tobacco products. *N Engl J Med* 1996; 335(13):988–994.
57. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4<sup>th</sup> ed., 2013.
58. Prochaska JO, Redding CA, Evers KA. Chapter "The Transtheoretical Model and Stages of Change in Glanz, Karen, Barbara K. Rimer, and Frances M. Lewis. *Health Behavior and Health Education: Theory, Research, and Practice*. San Francisco: Jossey-Bass, 2002. Print.
59. Regan S, Reyens M, Lockhart AC, et al. *An interactive voice response system to continue a hospital-based smoking cessation intervention after discharge*. *Nicotine Tob Res* 2011; 13(4):255–260.
60. Clinical Trials.gov website. Web-based smoking cessation intervention: transition from inpatient to outpatient. Available at: <http://www.clinicaltrials.gov/ct2/show/NCT01277250> Accessed May 7, 2014
61. Clinical Trials.gov website. Dissemination of tobacco tactics for hospitalized smokers. Available at: <http://www.clinicaltrials.gov/ct2/show/NCT01309217> Accessed May 7, 2014
62. Waugh J, Lee G, Anders M, Fluck R, French A, O'Farrell J, et al. Why quit using tobacco? American Association for Respiratory Care and American Respiratory Care Foundation, 2010.
63. Dale LC, Ebbert JO, Hays JT, Hurt RD. Treatment of nicotine dependence. *Mayo Clin Proc* 2000; 75(12):1311–1316.
64. Pharmacological interventions for smoking cessation: an overview and network meta-analysis. *Cochrane Database Syst Rev* 2013; 5:CD009329.
65. Benowitz NL, Prochaska JJ. Smoking cessation after acute myocardial infarction. *Journal of the American College of Cardiology*, Volume 61, Issue 5, 5 February 2013, Pages 533–535 *J Am Coll Cardiol*. 2013;61(5):533–5.
66. Chamberlain C, O'Mara-Eves A, Oliver S, et al. Psychosocial interventions for supporting women to stop smoking in pregnancy. *Cochrane Database Syst Rev* 2013; 10:CD001055.
67. Lavender T, Richens Y, Milan SJ, et al. Telephone support for women during pregnancy and the first six weeks postpartum. *Cochrane Database Syst Rev* 2013; 7:CD009338.
68. Centers for Disease Control and Prevention (CDC). Quitting smoking among adults – United States, 2001–2010. *MMWR Morb Mortal Wkly Rep* 2011; 60(44):1513–1519.
69. U.S. Department of Health and Human Services. How tobacco smoke causes disease: the biology and behavioral basis for smoking-attributable disease. A report of the Surgeon General. Atlanta GA, 2010.
70. Centers for Disease Control and Prevention (CDC). Current cigarette smoking among adults – United States, 2011. *MMWR Morb Mortal Wkly Rep* 2012; 61(44):889–894.
71. Ginn MB, Cox G, Heath J. Evidence-based approach to an inpatient tobacco cessation protocol. *AACN Adv Crit Care* 2008; 19(3):268–278.
72. Sergakis G. Tobacco cessation in acute care: opportunity knocking — will we answer? *AARC Times* 2013;37(6):8–12.
73. Linder JA, Rigotti NA, Schneider LI, et al. An electronic health record-based intervention to improve tobacco treatment in primary care: a cluster-randomized controlled trial. *Arch Intern Med* 2009; 169(8):781–787.
74. Zarlino KK, Burke MV, Gaines KA, Gauvin TR. Registered nurse initiation of a tobacco intervention protocol: leading quality care. *J Cardiovasc Nurs* 2008; 23(5):443–448.
75. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. A report of the Surgeon General: how tobacco smoke causes disease: what it means to you, 2010.
76. Centers for Disease Control and Prevention website. Smoking & Tobacco Use. Secondhand Smoke (SHS) Facts. Available at: [www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/secondhand\\_smoke/general\\_facts/](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/secondhand_smoke/general_facts/) Accessed April 3, 2014

77. Matt GE, Quintana PJE, Zakarian JM, Fortmann AL, Chatfield DA, Hoh E, et al. When smokers move out and non-smokers move in: residential thirdhand smoke pollution and exposure. *BMJ* 2011;20:e1–e8.
78. Sendzik T, Fong GT, Travers MJ, Hyland A. An experimental investigation of tobacco smoke pollution in cars. *Nicoting Tob Res* 2009;11(6):627–634.
79. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. A report of the Surgeon General: the health consequences of involuntary exposure to tobacco smoke, 2006.
80. World Health Organization website. 10 facts on second-hand smoke: fact 8. Available at: [www.who.int/features/factfiles/tobacco/tobacco\\_facts/en/index7.html](http://www.who.int/features/factfiles/tobacco/tobacco_facts/en/index7.html) Accessed April 3, 2014
81. American Lung Association website. Secondhand smoke. Available at: [www.lung.org/stop-smoking/about-smoking/health-effects/secondhand-smoke.html](http://www.lung.org/stop-smoking/about-smoking/health-effects/secondhand-smoke.html) Accessed April 3, 2014
82. Centers for Disease Control and Prevention (CDC) website. Youth and tobacco use. Available at: [www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/youth\\_data/tobacco\\_use/index.htm](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/index.htm) Accessed Feb. 11, 2014
83. U.S. Department of Health and Human Services website. Preventing tobacco use among youth and young adults. A report of the Surgeon General: executive summary. Available at: [www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/exec-summary.pdf](http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/exec-summary.pdf) Accessed Feb. 11, 2014
84. University of Massachusetts. Basic skills for working with smokers: creating an environment supportive of tobacco treatment services. Available at: [http://www.umassmed.edu/tobacco/training/basicskills\\_online/basicskills\\_goals/](http://www.umassmed.edu/tobacco/training/basicskills_online/basicskills_goals/). Accessed June 2, 2014
85. Sheffer, C. Smoke free hospital toolkit: a guide for implementing smoke-free policies. Tobacco Prevention and Education Program, Arkansas Department of Health. Available at: [http://www.uams.edu/coph/reports/smokefree\\_toolkit/Hospital%20Toolkit%20Text.pdf](http://www.uams.edu/coph/reports/smokefree_toolkit/Hospital%20Toolkit%20Text.pdf). Accessed June 2, 2014
86. Partnership for Prevention. Helping patients quit: implementing The Joint Commission measure set in your hospital. Partnership for Prevention, 2011. Available at: <http://www.prevent.org/data/files/resourcedocs/hpq,%20full,%20final,%2010-31-11.pdf>. Accessed June 2, 2014
87. Ladapo JA, Jaffer FA, Weinstein MC, Froelicher ES. *Projected cost-effectiveness of smoking cessation interventions in patients hospitalized with myocardial infarction*. *Arch Intern Med* 2011; 171(1):39–45.
88. Rigotti NA. *Integrating comprehensive tobacco treatment into the evolving US health care system: it's time to act*. *Arch Intern Med* 2011; 171(1):53–55.
89. The Joint Commission. Specifications manual for national inpatient hospital quality reporting measures. Available at: [http://www.jointcommission.org/specifications\\_manual\\_for\\_national\\_hospital\\_inpatient\\_quality\\_measures.aspx](http://www.jointcommission.org/specifications_manual_for_national_hospital_inpatient_quality_measures.aspx). Accessed June 2, 2014
90. Centers for Disease Control and Prevention. Smoking & tobacco use. Fast facts. Available at: [http://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/fast\\_facts](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts) Accessed May 7, 2014
91. Centers for Disease Control and Prevention. Smoking & tobacco use. Tobacco-related mortality. Available at: [http://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/health\\_effects/tobacco\\_related\\_mortality/](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/tobacco_related_mortality/). Accessed June 2, 2014
92. Association for the Treatment of Tobacco Use and Dependence. Available at [www.attud.org](http://www.attud.org). Accessed June 12, 2014
93. Commission on Accreditation for Respiratory Care. Accreditation standards for the profession of respiratory care, 2010. Available at: <http://www.coarc.com/29.html>. Accessed June 2, 2014
94. National Board for Respiratory Care. Registered respiratory therapist. Available at: <http://www.nbrc.org/rrt/pages/default.aspx>. Accessed June 2, 2014
95. Commission on Accreditation for Respiratory Care. Standards for accreditation of advanced practice programs. Available at: <http://www.coarc.com/73.html>. Accessed June 2, 2014
96. American Association for Respiratory Care website. Medicare's new Part B Smoking Cessation Counseling Benefit and its impact on respiratory therapists: an analysis by care setting, July 2005. Available at: [https://www.aarc.org/members\\_area/advocacy/federal/sc\\_guidance\\_doc.pdf](https://www.aarc.org/members_area/advocacy/federal/sc_guidance_doc.pdf) Accessed June 2, 2014
97. American Association for Respiratory Care website. Coding guidelines for certain respiratory care services – November 2013. Available at: [www.aarc.org/resources/coding/CodingGuidelines\\_AARC\\_Nov2013\\_rev121013.pdf](http://www.aarc.org/resources/coding/CodingGuidelines_AARC_Nov2013_rev121013.pdf) Accessed March 4, 2014
98. American Medical Association. CPT professional edition, 2014. ISSN: 0276-8283.
99. MedLearn Publishing website. Coding essentials for respiratory therapy/pulmonary function. Available at [http://shop.medlearn.com/product\\_p/prt14.htm](http://shop.medlearn.com/product_p/prt14.htm) Accessed March 25, 2014
100. American Lung Association website. *Tobacco cessation coverage 2012. Helping smokers quit*. Available at: <http://www.lung.org/assets/documents/publications/smoking-cessation/helping-smokers-quit-2012.pdf> Accessed May 7, 2014
101. Centers for Disease Control and Prevention website. Schiller JS, Lucas JW, Ward BW, Peregoy JA. *Summary health statistics for U.S. adults: National Health Interview Survey, 2010. National Center for Health Statistics*. Available at: [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_252.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_252.pdf) Accessed May 7, 2014
102. Halpin HA, Bellows NM, McMenamin SB. *Medicaid coverage for tobacco-dependence treatments*. *Health Aff (Millwood)* 2006; 25(2):550–556.
103. National Institutes of Health, National Institute on Drug Abuse website. Topics in brief, 2007. Available at: <http://www.drugabuse.gov/publications/topics-in-brief/drug-abuse-prevention>. Accessed June 2, 2014
104. The Cochrane Library website. Telephone counselling for smoking cessation. Available at: [www.thecochranelibrary.com/userfiles/ccoch/file/World%20No%20Tobacco%20Day/CD002850.pdf](http://www.thecochranelibrary.com/userfiles/ccoch/file/World%20No%20Tobacco%20Day/CD002850.pdf) Accessed April 1, 2014
105. National Center for Biotechnology Information (NCBI), U.S. National Library of Medicine (NLM) website. Substance abuse treatment: group therapy. Available at: [www.ncbi.nlm.nih.gov/books/NBK64223/](http://www.ncbi.nlm.nih.gov/books/NBK64223/) Accessed March 26, 2014
106. American Lung Association website. Freedom from smoking, 2010. Available at: [www.ffsonline.org](http://www.ffsonline.org) Accessed April 1, 2014
107. Mayo Clinic website. Residential treatment program in Minnesota. Available at: [www.mayoclinic.org/departments-centers/nicotine-dependence-center/minnesota/services/residential-treatment-program](http://www.mayoclinic.org/departments-centers/nicotine-dependence-center/minnesota/services/residential-treatment-program) Accessed March 26, 2014

# Acronyms

ACA	Affordable Care Act
ALA	American Lung Association
APA	American Psychiatric Association
ASAM	American Society of Addiction Medicine
ATS	American Thoracic Society
ATTUD	Association for the Treatment of Tobacco Use and Dependence
CDC	Centers for Disease Control and Prevention
CLAS	Congress of Lung Association Staff
CMS	Centers for Medicare and Medicaid Services
COPD	chronic obstructive lung disease
CTTS	Certified Tobacco Treatment Specialist
DRG	diagnosis-related group
DSM-5	Diagnostic and Statistical Manual of Mental Disorders
EHR	electronic health record
ETS	environmental tobacco smoke
FDA	U.S. Food and Drug Administration
HIPAA	Health Insurance Portability and Accountability Act
IVR	interactive voice response
MI	motivational interviewing
NBRC	National Board for Respiratory Care
NCD	National Coverage Determination
NDA	National Coverage Determination
NRT	nicotine replacement therapies
PHS	U.S. Public Health Service
SIDS	sudden infant death syndrome
THS	thirdhand smoke