



# Translating Psychological Research Into Practice

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## CHAPTER 51

### Smoking Cessation

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#### CLINICAL PROBLEM

Tobacco smoking remains one of the leading preventable causes of disease and death in the United States, responsible for over 400,000 deaths per year, primarily from lung cancer and heart disease. Indeed, smokers have nearly a 50% chance of dying prematurely as a consequence of their smoking.

Fortunately, smoking cessation is associated with improved length and quality of life. It slows the progressively increasing risk of lung cancer, and within 10 years it reduces the risk of heart disease by one half. Although the majority of smokers who quit do so without assistance, smoking cessation is a challenge, with over 90% of self-quitting attempts failing to produce long-term tobacco abstinence. Specific challenges include: coping with unpleasant nicotine withdrawal symptoms (e.g., mood disturbance, sleep disturbance, attentional problems, appetite increase); coping with cravings for tobacco; managing weight gain; coping with life stressors without tobacco; living with other smokers; and avoiding full relapse after an initial “slip.” Behavioral and pharmacological interventions have been developed to address these challenges. Moreover, smoking cessation interventions are among the most cost-effective life-saving interventions in the entire public health arena.

#### PREVALENCE

In the United States, 19% of adults are current smokers, including 22% of men and 17% of women. Smoking is increasingly a behavior of the poor and less educated. For example, the prevalence is 29% among adults living below the poverty level, and 45% among those with only a GED diploma.

Nearly one half of all cigarettes are now smoked by individuals with mental illness or other substance use disorders. Although the rates of tobacco use have declined in recent years, approximately 46 million people continue to smoke in the United States, and there is evidence that the shrinking population of smokers is becoming progressively more difficult to treat.

#### CULTURAL DIVERSITY ISSUES

In terms of race and ethnicity, the highest prevalence is among Native Americans (32%) and the lowest among Asians (10%) and Hispanics (13%).

Although the prevalence of smoking among African Americans is lower than the population as a whole, African Americans appear to become more addicted to tobacco (i.e., they are less likely to quit smoking), and they suffer disproportionately from tobacco-related diseases. Although the causes of these disparities are unknown, attention has focused on targeted marketing of tobacco products to minorities in general, and menthol cigarettes to African Americans in particular. Moreover, studies indicate that smokers who are African American, Hispanic, or from lower income groups are less likely to be asked about their tobacco use by their health care provider, given advice to quit, or given pharmacotherapies to aid cessation.

### EVIDENCE-BASED TREATMENTS

Because of education and changes in routine procedures, health care providers are increasingly addressing tobacco smoking with their patients. However, practicing psychologists lag in this regard, primarily because smoking is not usually the presenting problem and because they do not feel qualified to treat smoking. Nevertheless, psychologists and other mental health professionals have some advantages over other health care providers, including ongoing and closer relationships with their patients, and the expertise to facilitate behavior change.

The US Public Health Service has produced the comprehensive *Clinical Practice Guideline for Treating Tobacco Use and Dependence*, which is based on review and/or meta-analysis of over 8,000 studies. It found that the best cessation rates are produced by a combination of behavioral counseling and pharmacotherapy.

#### Counseling

Interventions as short as 3 minutes long can increase cessation rates. Brief interventions can be targeted to patients who are willing to quit, are not willing to quit, or have already quit smoking. The Guideline recommends that clinicians take 5 steps when providing patients with a brief intervention. These “5As” include: 1) Ask the patient if he or she uses tobacco; 2) Advice him or her to quit smoking; 3) Assess their willingness to quit in the next 30 days; 4) Assist those who are willing to quit by making a quit plan; and 5) Arrange follow-up contacts to prevent relapse. For patients who are not ready to quit, clinicians should use a brief, personally relevant intervention to increase motivation. Although brief interventions can be effective, there is a dose–response relationship between the intensity of the intervention (number and duration of sessions) and the probability of successful long-term cessation. Among the more intensive counseling approaches, the greatest efficacy has been found for cognitive behavioral therapy (CBT) that includes: social support, education about nicotine dependence and nicotine withdrawal symptoms, identifying what triggers tobacco craving, training in cognitive and behavioral coping skills, and relapse-prevention training. The number of sessions may vary between 6 and 12 and could last anywhere from 2 to 12 weeks, and CBT can be delivered in group or individual formats. Aside from this general CBT approach, other behavioral therapies that have shown evidence of efficacy include Scheduled Reduced Smoking (controlled gradual reduction in smoking) and Rapid Smoking (an aversive technique that has fallen out of favor). Note that there is

insufficient evidence at this time to recommend either hypnosis or acupuncture for smoking cessation.

### Pharmacotherapy

Seven smoking-cessation medications have been approved by the FDA. Five of these are nicotine replacement therapies (NRTs) designed to reduce cravings and nicotine withdrawal symptoms by delivering relatively small dosages of nicotine. These products include nicotine gum, transdermal patch, inhaler, nasal spray, and lozenge. The transdermal patch differs from the others in that it provides a steady dose of nicotine throughout the day, but all of the products deliver nicotine in a slower, and therefore less addicting, manner than actual smoking. Side effects from these products are minor and primarily related to their particular route of administration (e.g., skin rash from patch).

Two non-nicotine medications also have FDA approval. The first, bupropion (Zyban), is also marketed as an antidepressant (Wellbutrin). The second, varenicline (Chantix) is a nicotine receptor partial agonist. That is, it stimulates nicotinic receptors to relieve craving and withdrawal symptoms, but also blocks those receptors, which reduces satisfaction from smoking. Both of these medications include a run-up period of approximately 1 week prior to quitting smoking. Side effects and contraindications are minimal for these medications. However, based on post-marketing reports, the FDA has issued a boxed warning for both bupropion and varenicline with respect to possible neuropsychiatric and other symptoms. Patient monitoring for these symptoms is recommended.

Clinical trials have found that the NRTs and bupropion tend to double cessation rates compared to placebo, whereas research to date suggests that varenicline may triple cessation rates. Recent research suggests that combining a slower delivery medication (e.g., nicotine patch) with a relatively rapid-delivery medication (e.g., nicotine gum) may produce the highest cessation rates. In addition, there is growing evidence that it is beneficial to use any of these medications for 1 week or more prior to quitting smoking.

### Relapse Prevention

Because 70% to 95% of smokers typically relapse following any given quit attempt, high quality interventions usually include a relapse-prevention component that trains patients to use coping responses to avoid a lapse, achieve lifestyle balance without cigarettes, and to prevent an initial slip or lapse from progressing to a full relapse. For self-quitters, a recent meta-analysis concluded that written relapse-prevention booklets are effective.

### Telephone Quitlines

Every state now has a smoking cessation quitline that typically provides counseling, literature, local referrals when necessary, and sometimes free pharmacotherapy to smokers. Research supports quitlines as an effective intervention, and they can be a convenient referral for clinicians who do not feel qualified to provide cessation counseling to their patients. The national phone number (1-800-QUITNOW) will automatically route calls to the caller's state quitline.

## FUTURE RESEARCH

Although there are many areas of needed research, the following are particularly relevant:

1. Methods for motivating the remaining, often “hard core,” smokers to attempt cessation
2. Improving counseling strategies that complement the use of improved pharmacotherapies
3. Enhancing dissemination and implementation of smoking cessation treatments across all health care providers, including mental health professionals.

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## Clinician Application

### Smoking Cessation

Andrew M. Gottlieb

## COMMENT ON THE EVIDENCE-BASED RECOMMENDATIONS

The conclusions from the evidence-based recommendations are that the best cessation rates result from a combination of behavioral therapy and drug therapy. The major approach to behavioral therapy is cognitive behavioral therapy (CBT). CBT for cigarette cessation involves multiple components including motivational enhancement components, identifying triggers for smoking and learning skills to deal with these triggers, relaxation training and stress management, relapse prevention, and sometimes, behavioral aversive techniques, such as rapid smoking. There is a strong dose–response relationship of behavioral treatments where both session length and number of sessions are highly correlated with smoking cessation success. It should be noted that the aversive technique of rapid smoking, although less used currently, has considerable evidence suggesting that it leads to very high smoking cessation rates.

Pharmacotherapy for smoking cessation includes seven different options: five types of nicotine replacement and two non-nicotine prescription drugs. Although studies suggest that these medications increase abstinence, perhaps doubling or tripling the natural quit rate, the later relapse rate is very high for all drug options. Thus, medication options should be best seen as helping with short-term quitting rather than longer-term abstinence. This is why behavioral approaches, particularly those incorporating relapse prevention training, are so important. As Mark Twain said, “Giving up smoking is the easiest thing in the world. I know because I’ve done it thousands of times.”

## CASE EXAMPLE

### Subject Information and Brief History

Charles was a 52-year-old, single, Caucasian physician, currently retired. He was smoking 20 to 30 cigarettes per day of an additive-free organic tobacco brand.

He had first started smoking in his 40s, and had quit multiple times. He had started smoking as a result of social influences, as he had become seriously involved in swing dancing. Many of his peers in the dance community were smokers and he began smoking as a result.

### Presenting Problem

Charles presented for treatment to stop smoking cigarettes. He had decided he wanted to quit smoking because he had met a woman that he liked who had told him that she would not get involved with a smoker. He was smoking more than one pack per day. This was interspersed throughout the day, but primarily during two sessions, one in the morning, and one in the late evenings, during which he would sit outside on his deck reading and smoking.

Current stressors in his life included his having little structure in his day owing to his retirement, and having considerable responsibility for the caretaking of his elderly mother who was suffering from dementia.

### Treatment Intervention and Course

The first step in treating cigarette smoking is assessing motivation and setting a quit agenda. Using the technique of paradoxical agenda setting developed by Dr. David Burns, MD, we explored all the reasons why he might not want to quit smoking cigarettes. These included pleasure from smoking, avoidance of withdrawal symptoms, social connections with other smokers, stress relief from caring for his elderly mother, and the pairing of relaxed reading and cigarette smoking. I challenged him to convince me that in spite of all of these reasons he would want to quit smoking. He argued that he wanted to date this new woman, and also to be able to play soccer without being winded. He felt that both of these activities could greatly enhance his quality of life.

We developed a treatment plan that involved a combination of behavioral techniques and nicotine replacement therapy. (Prescription medication treatment was ruled out because he had a history of depression and there is a black box warning for suicidal ideation on both of the prescription options.) Because he had such strong positive associations between smoking and relaxed pleasure (i.e., reading

on his deck), we decided that the first component would be an in vivo aversive conditioning using rapid smoking. We met at his house, on the deck, for three consecutive days and performed rapid smoking using a standard protocol where he was instructed to smoke several cigarettes, one after another, while inhaling every 6 seconds, cued by a digital tape loop. He continued until he was no longer able to smoke without feeling like vomiting or passing out. This usually took about two or three cigarettes. Charles was instructed not to smoke between sessions. Given the extreme nausea due to the aversive smoking, this was not difficult.

At the end of the rapid smoking sessions, Charles began to use a nicotine patch at the highest 21 mg dose. He was also given nicotine gum in the 4 mg dosing. (Both are over-the-counter medications, and he purchased them before starting rapid smoking.) We met weekly to problem-solve challenges to his smoking cessation. During these sessions, Charles was taught meditation and muscle relaxation methods to help cope with stress. He was also encouraged to increase his daily exercise and began to do some light jogging, that he found very helpful in increasing his stamina for playing soccer. This reinforced his nonsmoking behavior.

He began dating his new woman friend and this also reinforced his nonsmoking. He was also instructed to speak with his smoking friends and ask them to avoid offering him cigarettes or smoking in his proximity. At the end of treatment, we spent several sessions doing relapse prevention, during which we identified potential triggers for relapse (e.g., reading late at night outside on his deck, and cooling off outside a dance bar), and rehearsed ways of dealing with them. He removed the chairs from his deck, so that he'd be forced to read inside where he had no smoking cues. He also decided not to cool off with other smokers when attending dance bars, instead standing with nonsmokers.

### Outcome

Treatment lasted 6 weeks and he was abstinent at that point. A follow-up at 1 year revealed a small relapse of several days triggered by his mother's worsening medical condition. After this brief setback his abstinence continued. He was still dating his nonsmoking girlfriend and playing a lot of soccer, as well as jogging. He had stopped using the nicotine patch after the first 6 weeks of abstinence, but occasionally still used nicotine gum when he had cravings.

### CHALLENGES IN APPLYING THE EVIDENCE-BASED APPROACH

There are two main challenges to evidence-based treatment of cigarette smoking. The first is selection. That is, given the multiplicity of options, how does the clinician choose which components to include? Of all of the medication options, varenicline (Chantix) has the best cessation rates, but also has the most clinical reports of severe psychiatric side effects (e.g., vivid and disturbing dreams, suicidal ideation and attempts, and homicidal ideation and acts), so risk/reward benefits must be considered by the clinician and the prescribing physician. (Also, the government has banned the use of Chantix for commercial pilots and truck drivers, owing to safety concerns.) For heavier smokers, the use of nicotine replacement options, preferably in the higher dose options is optimal. For lighter smokers, the use of the nicotine patch or nicotine gum or lozenges in lower doses can help, but in this population there is less evidence of the efficacy of pharmacotherapy. In all cases,

some version of behavioral and cognitive behavioral counseling will potentiate the effects of treatment.

The second challenge is that even the best evidence-based treatments have relapse rates at 1 year of at least 70%, and often as high as 95%. This is probably because cigarette smoking is intensely addictive, owing to its inhaled mode of administration, and dose-dependent variable effects which allow fingertip control of mood, concentration, and energy. Because the probability of relapse is so high, all interventions should include a strong relapse-prevention component.

### CULTURAL DIVERSITY ISSUES

There were no major cultural diversity issues in this case as both the therapist and the patient were Caucasian males. The National Institute of Health concluded that there was no evidence of any differential effectiveness for smoking cessation techniques across diverse ethnic and cultural populations. There are a few populations where medication use is contraindicated (pregnant women), and a few in which medication has not been found to be effective (smokeless tobacco users, light smokers, and adolescents, who have powerful social influences on smoking).

### FUTURE RESEARCH

Successful development of truly effective smoking cessation treatments could save millions of lives worldwide, which should encourage research and development in this field. Future research is needed to determine the best combinations of treatments. For instance, one could easily imagine a  $2 \times 7$  research design that compared each of the pharmacotherapy options combined with either cognitive behavioral counseling or a no counseling control group. Also, we need further research into the optimal combination treatments. Which combination treatments result in higher cessation rates? Because relapse rates are so high, future research could also focus on improving relapse-prevention techniques.

It would also be useful to explore the use of electronic cigarettes as a cessation tool. These devices provide nicotine in vaporized inhalable form without carbon monoxide, tars, or other combustion products. They are widely in use by consumers, but virtually no research has been performed on them as smoking cessation options.

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