

What to Do With a Patient Who Smokes

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CASE PRESENTATION

Dr M is a 42-year-old general internist in a busy metropolitan multispecialty group practice. She believes in prevention and is aware of the health consequences of smoking cigarettes. Yet the press of patient care plus the myriad administrative responsibilities limit the time she can spend with any one patient. Consequently, she spends very little time addressing smoking cessation. While understanding that she could do better, she has been disappointed that so few of her patients who smoke seem to be able to quit. How can she help smokers quit without becoming overwhelmed by this responsibility?

THE BURDEN OF SMOKING

Helping smokers quit may be the most important thing that Dr M could do as a physician. Tobacco use remains the single most preventable cause of death, causing about 440 000 deaths per year in the United States and almost 5 million worldwide.¹ More than 8.6 million people in the United States are disabled from smoking-related diseases, such as chronic obstructive pulmonary disease and lung cancer.² Smoking causes more than twice as many deaths as human immunodeficiency virus and AIDS, alcohol abuse, motor vehicle collisions, illicit drug use, and suicide combined.³ It causes at least 100 000 more deaths annually than obesity. On average, smokers die 10 years earlier than nonsmokers.⁴ Among

Despite the reality that smoking remains the most important preventable cause of death and disability, most clinicians underperform in helping smokers quit. Of the 46 million current smokers in the United States, 70% say they would like to quit, but only a small fraction are able to do so on their own because nicotine is so highly addictive. One third to one half of all smokers die prematurely. Reasons clinicians avoid helping smokers quit include time constraints, lack of expertise, lack of financial incentives, respect for a smoker's privacy, fear that a negative message might lose customers, pessimism because most smokers are unable to quit, stigma, and clinicians being smokers. The gold standard for cessation treatment is the 5 As (ask, advise, assess, assist, and arrange). Yet, only a minority of physicians know about these, and fewer put them to use. Acceptable shortcuts are asking, advising, and referring to a telephone "quit line" or an internal referral system. Successful treatment combines counseling with pharmacotherapy (nicotine replacement therapy with or without psychotropic medication such as bupropion). Nicotine replacement therapy comes in long-acting (patch) or short-acting (gum, lozenge, nasal spray, or inhaler) forms. Ways to counter clinicians' pessimism about cessation include the knowledge that most smokers require multiple quit attempts before they succeed, that rigorous studies show long-term quit rates of 14% to 20%, with 1 report as high as 35%, that cessation rates for users of telephone quit lines and integrated health care systems are comparable with those of individual clinicians, and that no other clinical intervention can offer such a large potential benefit.

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smoking-related deaths, about 33% are from cardiovascular disease, 28% from lung cancer, 22% from respiratory causes, and at least 7% from cancers other than lung cancer. A disproportionate number of deaths from smoking, probably more than 40%, occur among patients with mental illness and substance abuse disorders.^{5,6} Nine percent of deaths attributable to smoking occur in nonsmokers, caused by exposure to secondhand smoke, most from cardiovascular causes.⁷ In addition, smoking is a risk factor for an expanding list of other illnesses: reduced fer-

tility in women, poor pregnancy outcomes, breast cancer, cataracts, macular degeneration, and others.⁸

Smoking prevalence among adults in the United States has been in slow decline over the past 5 decades. Overall prevalence is now 22.1%, down from

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57% among men in 1955 and 34% among women in 1965, with the gap between men's and women's rates having narrowed to about 4%.⁹ Of the current 46 million smokers, 70% say that they would quit if an easy way were available, though only about 2.5% are able to do so annually.¹⁰ The reality is that there are now as many ex-smokers as current smokers and that most successful quitters have had many (on average, about 8) prior unsuccessful attempts.¹⁰

BENEFITS OF QUITTING

Patients of any age can benefit from quitting. Early improvements that occur within a few weeks include better pulmonary function and exercise tolerance. Respiratory symptoms also decrease, though excretion of excess mucus and tobacco residue may cause a transient increase in coughing.¹¹ One year after cessation, the risk of coronary disease drops to half that of smokers, and by about 15 years later, it has fallen to the rate of never smokers. The all-cause death rate declines within the first 2 years of cessation.¹² The risk of stroke declines at a comparable rate. Although the risk of pulmonary and other cancers never declines to the rate of nonsmokers, it falls by 50% after a decade of abstinence. Even smokers who quit at age 65 years can anticipate 4 additional years of life than their counterparts who are unable to quit.^{4,13-15} In addition to extra years of life, quality of life is another important benefit of cessation.

ADDICTION AND NICOTINE PHARMACOLOGY

Why is it so difficult to quit smoking? The physiologic actions of nicotine are numerous and include central nervous system effects (pleasure, arousal, improved task performance, and anxiety relief), cardiovascular effects (increased heart rate, cardiac output, and blood pressure, as well as coronary and cutaneous vasoconstriction), appetite suppression, and increased metabolic rate.¹⁶ Distribution in the body is rapid: nicotine can reach the brain within 11 seconds after inhaling cigarette smoke.¹⁷ Nicotine triggers the release of multiple

neurotransmitters, most critically dopamine. Nicotine absorption is pH-dependent; at physiologic pH levels, it is well absorbed, but in more acidic media, absorption is inhibited.¹⁶ Most nicotine is metabolized in the liver, and the major metabolite, cotinine, is excreted in the urine.¹⁸ Long-term exposure to nicotine results in up-regulation of nicotine receptors in the nucleus accumbens and ventral tegmental areas of the midbrain.¹⁹

Tolerance develops after long-term nicotine use, but in smokers sensitivity is restored overnight—hence, the appeal of the first morning cigarette, which serves to restore nicotine levels in the brain. Smokers can self-regulate nicotine intake by the frequency of cigarette consumption, the intensity of inhalation, and the degree to which vents and other filtering devices on cigarettes are manually obstructed. To maintain a given nicotine level, smokers generally titrate their smoking to achieve maximal stimulation and avoid withdrawal symptoms. The symptoms of nicotine withdrawal are profound: anger and irritability, anxiety, cravings, decreased concentration, hunger and weight gain, restlessness, drowsiness, fatigue, impaired task performance, and sleep disturbance.²⁰ Assessing the extent of addiction helps in planning an appropriate treatment strategy and monitoring progress.

SMOKING CESSATION INTERVENTIONS

There are 5 basic ways to help smokers quit: increase the price of a pack of cigarettes by increasing federal and state taxes; pass clean indoor air legislation that bans smoking in public places; create and disseminate effective counter-marketing messages about smoking—in the media or as graphic package displays; ban tobacco advertising and promotion; and provide cessation aids.¹ Smoking cessation treatment, including both counseling and pharmacotherapy, can be delivered in clinical settings or by trained counselors in sites such as telephone “quit lines.” Helping smokers quit must be individual-

ized and characterized by persistence and a willingness by both clinicians and patients to try various treatments.

Most clinicians ask patients whether they smoke. Yet, despite evidence that clinician assistance can more than double the odds of quitting,¹⁰ only a small minority of clinicians are involved in helping patients quit.²¹ Some common reasons for this reluctance, derived from experiences at the Smoking Cessation Leadership Center, University of California, San Francisco, include time constraints, lack of expertise, lack of financial incentive, respect for privacy (eg, reluctance by some clinicians to intrude into the personal lives of their patients), fear that a negative message might scare away patients, belief that most smokers cannot or will not quit, concern about the stigma of smoking (ie, negative attitudes toward smokers, who are often perceived as having made an unwise choice), and the clinician being a smoker. Although time is a consideration, especially for busy practitioners like Dr M, simply asking about tobacco use, recommending cessation, and referring to a counselor or a telephone quit line could be accomplished in less than 1 minute. The gold standard for initiating smoking cessation treatment is the 5 As¹⁰: asking about tobacco use, advising tobacco users to quit, assessing readiness to make a quit attempt, assisting with the quit attempt, and arranging follow-up care. Only a minority of physicians even know about the 5 As, let alone follow them (Richard Strouse, unpublished data, 2003). A shortcut is developing as a second choice option: ask, advise, and refer (to an internal resource or a telephone quit line).

CESSATION OPTIONS

Counseling

The odds of a smoker quitting are increased both by counseling and by pharmacological treatment.^{10,16} Cognitive therapy aims to reframe the way a patient thinks about smoking. Smokers are taught techniques of distraction, positivism, relaxation, and mental imagery and are offered encouragement and motivation. In contrast, behavioral therapy

Box. Available Forms of Nicotine Replacement Therapy**Gum**

2-mg and 4-mg doses

Recommended for up to 12 weeks

Patch

Seven strengths: 5, 7, 10, 14, 15, 21, and 22 mg

16- or 24-hour release

Recommended for 6 to 10 weeks

Lozenge

2-mg and 4-mg doses

1 lozenge to be used every 1 to 2 hours while awake

Recommended for up to 12 weeks

Nasal spray

0.5 mg per spray

1 to 2 doses every hour

Not to exceed 40 doses per day

Can be used for 3 to 6 months

Inhaler

4 mg per cartridge

1 cartridge to be used every 1 to 2 hours while awake

6 to 16 cartridges per day

Can be used up to 6 months

helps smokers avoid stimuli that trigger smoking, such as alcohol, first morning coffee, stress, and associating with other smokers. Behavioral strategies also attempt to alter the usual smoking routine, anticipate cravings, and address the consequences of nicotine withdrawal, such as oral needs, weight gain, and cravings. Intensive counseling is associated with a 22% rate of quitting, and even minimal (<3 minutes) counseling is associated with a 13% quit rate.¹⁰

Pharmacotherapy

Two general classes of drugs are approved by the US Food and Drug Administration (FDA) for cessation: nicotine replacement products and psychotropic drugs. Available nicotine replacement therapies (NRTs) are summarized in the **BOX**.¹⁶

Nicotine Replacement. The choice of an NRT product should be individualized—based on patient preference, tolerance of adverse effects, and smoking habits. Higher doses are more likely to be effective but also to produce adverse effects. Increasingly, patients with severe nicotine addiction are prescribed combination NRT—a patch plus one of the short-acting formulations.²² Higher-than-recommended doses may be indicated in smokers with severe addiction, and failure to respond may reflect inadequate dosage, incorrect usage, or both.

The nicotine patch is emerging as a mainstay for pharmacological treatment of smoking cessation, often in combination with other forms of nicotine replacement and psychotropic medications. Its major advantages are consistent levels of nicotine delivery, easy use and concealment, and good compliance. Disadvantages include insomnia (greater with the 24-hour patch), inability to titrate dose, allergic reactions to the patch adhesive (patients with dermatological conditions are advised against its use), and morning nicotine cravings with the 16-hour-release form. In general, greater levels of smoking call for higher-dose patches, and morning cravings necessitate the use of the 24-hour formulation. Patch sites should be rotated to avoid skin reactions. Most patients can tolerate the skin irritation, which topical corticosteroids can ameliorate.

Nicotine gum may satisfy oral cravings, may delay weight gain after cessation, and lends itself to titration for control of withdrawal symptoms. Its major disadvantages include that its use may not be socially acceptable, it may adhere to dental work such as fillings and bridges, and it must be used properly to be effective. The nicotine lozenge, like the gum, can satisfy oral cravings and also lends itself to titration of nicotine delivery. It is easy to use and to conceal, and, thus, may be more socially acceptable than the gum. In many patients, the lozenge is well tolerated, but heavy users may note adverse effects of hiccups, nausea, dyspepsia, and flatulence.

Using nasal spray to deliver periodic doses of nicotine more closely mimics the act of smoking. Its advantages include rapid absorption, ease of titrating doses to attain desired nicotine levels, and similarity to the act of smoking. Disadvantages include a high rate of nasal and throat irritation (generally tolerated by users), the risk of dependence, and the need to wait up to 5 minutes before driving because of local reactions and sneezing. Patients with chronic nasal disorders or reactive airway disease should not use the spray. Finally, the nicotine inhaler, like the nasal spray, mimics the act of smoking and permits titration of nicotine levels. It also can cause local irritation and should be used cautiously in patients with bronchospastic disease. Slow inhalation lessens the chance of such irritation.

Psychotropic Medications. The only psychoactive drug currently recommended by the FDA for cessation is bupropion, an atypical antidepressant thought to affect levels of various brain neurotransmitters, including dopamine and norepinephrine.¹⁶ Prescribed in 150-mg doses as a sustained-release capsule, bupropion seems to act by decreasing both the craving for cigarettes and the symptoms of nicotine withdrawal. Given the high prevalence of smokers who are depressed,^{5,6} bupropion has the added advantage of treating both conditions simultaneously. It is easy to use and can be taken in combination with NRT. Because bupropion may forestall the weight gain that so commonly accompanies cessation, it is particularly appropriate for smokers with weight concerns.²³ The drug should be started at least 1 week before the cessation date to achieve stable blood levels. Initially, the patient should take 1 pill each morning for 3 days, increasing to twice a day if tolerated, although once a day may suffice in some patients. Treatment usually is recommended for 2 to 3 months after the cessation date, but in selected cases it may be taken for up to a year. Bupropion is contraindicated for patients with seizure disorders or conditions that might predis-

pose to seizures (brain tumors, head trauma, other medications that lower seizure thresholds, bulimia, and anorexia nervosa). Adverse reactions among those without risk of seizure include insomnia (mitigated by taking the second dose in late afternoon rather than at bedtime) and dry mouth.

The US Public Health Service has recommended as second-line agents for cessation 2 centrally active medications currently used for other conditions: nortriptyline, a tricyclic antidepressant, and clonidine, a centrally active α -agonist. Neither is approved by the FDA for smoking cessation. For the heavily addicted smoker, triple therapy is advocated: the nicotine patch plus a short-acting NRT plus bupropion.²² Clinicians should reserve this option for smokers who can tolerate the combined risk of adverse effects and who are unlikely to quit with a simpler regimen. When bupropion is either contraindicated or poorly tolerated, it may be worth considering other selective serotonin reuptake inhibitors, especially for individuals with a history of major depression or for those who have experienced significant negative affect during previous cessation attempts.²⁴

Future Medication Options. Several potential new medications for cessation are currently in field tests and not yet approved by the FDA. Rimobant is a cannabinoid receptor inhibitor that blocks the reinforcing effects of nicotine and also suppresses appetite. Now in phase 3 trials, it has already received much attention for its potential to attack 2 major public health epidemics—smoking and obesity. Nicotine vaccine produces antibodies to nicotine and thus reduces nicotine levels. Whether it will discourage smokers or stimulate more aggressive smoking to overcome the blockade is yet unclear. Another psychotropic drug, varenicline, may offer an alternative to bupropion. Finally, cytochrome P246 inhibitors decrease the action of the cytochrome P246 liver enzyme that metabolizes nicotine, thus giving smokers a higher level of nicotine per cigarette. These drugs could be used to help smokers

who are not ready to quit cut back on their smoking levels, as well as to increase the potency of NRT.²²

OUTCOMES OF CESSATION

Despite widespread pessimism about whether smokers can quit, the proportions able to do so are impressive. Strong evidence indicates that interventions by clinicians—counseling, pharmacotherapy, or both—increase the odds of smokers quitting. Moreover, it is important to appreciate that most smokers require multiple cessation attempts before they succeed in quitting.¹⁰ The most rigorous studies of such interventions use control groups that offer usual care, not no care. The Cochrane Collaboration^{25,26} derived impressive long-term (>6 months) quit rates for the various forms of drug treatment compared with placebo controls: nicotine gum, 19.7% vs 11.5%; nicotine patch, 14.4% vs 8.4%; nicotine lozenge, 17.2% vs 8.9%; nicotine nasal spray, 23.9% vs 11.8%; nicotine inhaler, 17.1% vs 9.1%; and bupropion, 19.3% vs 10.2%. Jorenby and colleagues²⁷ found even higher cessation rates at 12 months for the nicotine patch plus bupropion (35.5%), bupropion alone (30.3%), the patch alone (16.4%), or placebo (15.6%). Fiore et al¹⁰ showed that the odds ratios for clinician interventions achieving a greater than 5-month cessation abstinence were 1.0 for no clinician, 1.1 for self-help material, 1.7 for nonphysician clinicians, and 2.2 for physicians; the latter 2 differences were statistically significant. The circumstances of these studies differ sufficiently, so it is not yet possible to rate the various forms of drug treatment by their levels of effectiveness except to conclude that combination therapy may be superior to monotherapy.

TREATMENT COSTS

The average daily costs for smoking cessation options are estimated to be \$6.07 for the inhaler, \$5.81 for the gum, \$4.98 for the lozenge, \$4.30 for sustained-release bupropion, \$3.91 for the patch, and \$3.40 for the nasal spray.²⁸ Obviously, differences in dosing frequency and strength could change these esti-

mates in either direction. For comparison, the cost of a pack of cigarettes ranges from \$2.79 in Kentucky to \$5.26 in Rhode Island, the range reflecting differences in state cigarette taxes. Costs for counseling would be pegged at the charge for individual or group visits.

SYSTEMS INTERVENTIONS

Systems that identify patients who smoke and then help them to quit can be established in hospitals and medical care organizations. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) recently derived a set of core measures for 3 chronic diseases—community-acquired pneumonia, acute myocardial infarction, and congestive heart failure—for which determination of smoking status and documentation of smoking cessation advice is monitored in all accredited hospitals. Rates of smoking cessation advice vary from as low as 30% to as high as 75%.²⁹ Of interest is that the performance of a university hospital consortium group that could have been expected to be high performers did no better than the national average of all JCAHO hospitals. Characteristics of hospitals with better-than-average performance include a supportive chief executive officer, a clinician champion for smoking cessation, a way to identify smoking status in the hospital data system, systems to steer smokers into treatment, and cessation programs for hospital staff members who smoke.

Combining these elements has generated impressive cessation results. The Providence Health Systems in Portland, Ore, established a multicomponent program that, over a 5-year period, reduced smoking prevalence of patients from 21% to 16.8%, while the prevalence in Oregon dipped only from 22% to 21.5%.³⁰ Kaiser Permanente of Northern California adopted an aggressive strategy of identifying smokers, referring them to internal and external cessation resources and following up on effectiveness of the intervention. It drove its adult smoking prevalence down to 12%, 4.5% below the Califor-

nia average.³¹ Group Health Cooperative of Seattle, Wash, using similar strategies, saw its adult smoking rate drop from 25% to 14.5%, 5 percentage points below the state average.³²

THE UNSUNG HERO: TELEPHONE QUIT LINES

Telephone quit lines are free for smokers; most are funded by states from the 1998 Master Settlement Agreement.¹ Such toll-free quit lines—one of the least used forms of tobacco control—connect smokers with trained counselors who take an individual smoking history, prepare a customized cessation plan that includes pharmacotherapy when appropriate, and provide follow-up telephone calls to assess progress. Quit lines are available in 42 states, and national services are provided by the American Cancer Society and the Cancer Information Service of the National Cancer Institute. In November 2004, the Department of Health and Human Services announced a national number, 1-800-QUITNOW, that will route callers to the appropriate service in their region. Quit lines vary in their hours of operation, whether they can provide vouchers for NRT (as the California line does for Medicaid recipients), and the number of follow-up calls they make per smoker. The California quit line (1-800-NOBUTTS) has also devised a wallet-sized “gold card” that has become a popular marketing device for its services. The Smoking Cessation Leadership Center has devised a national card analogous to the one used in California.

Telephone quit lines offer numerous advantages, including convenience, the ability to serve diverse and multilingual populations, and anonymity.^{33,34} Surveys of smokers have shown that 70% to 85% would prefer to use a quit line rather than see a clinician.³² Quit lines can also evaluate outcomes of their efforts. However, quit lines must overcome their relatively low profile among clinicians and patients—only 4.5% of smokers in California could identify quit lines as a way to help them quit.³⁵ Other challenges for quit lines include how to deliver pharmacotherapy when indicated, funding,

and quality control. Despite these challenges, evidence of their effectiveness is strong, with a recent Cochrane Review estimating their odds ratio of cessation as 1.56, just slightly less than the 1.74 for NRT.³⁶ Real-world studies of California quit line users showed 1-year abstinence rates of 12%; other studies of more targeted populations have yielded even higher rates.³³ A recent experiment in New York City that offered free nicotine patches to callers of the local quit line triggered more than 425 000 calls in the first 3 days, an unprecedented response.³⁷

FINAL THOUGHTS

Given the clear benefits of helping smokers quit, why does performance lag expectations? Barriers to successful cessation efforts include clinician inattention or pessimism, the challenge of comorbid mental illness and/or drug or alcohol addiction among smokers, and the underuse of telephone quit lines. Other obstacles are the lack of insurance coverage for cessation pharmacotherapies (it should be noted that Medicare recently announced that it will pay for cessation counseling for patients with smoking-related illnesses) and improper use of those drugs when prescribed. Moreover, health care facilities and systems may lack comprehensive cessation programs.

Overcoming these barriers will require multiple strategies. First, expectations of success must be reframed. Most smokers will not quit on their first or second attempt, and many are unable to ever quit. However, a few supportive efforts can make the difference. Physicians need to understand that successful cessation usually requires multiple attempts and that few other clinical efforts convey such a high potential benefit. Health insurance companies should cover currently available and future cessation therapies; this makes sense from both medical and public health standpoints. Health care systems can model their cessation programs after those that already have been proven in lead hospitals and medical organizations. In addition, telephone quit

lines should be better marketed to the public and to clinicians.

A small increase in the cessation rate would reap powerful public health benefits, especially when multiplied over the population of smokers. Of 46 million smokers, one third to one half will die prematurely from smoking.¹⁰ Increasing the baseline cessation rate from 2.5% to 10% would save an additional 2.4 million lives in any given year. Increasing the quit rate to 15% would save 4 million lives. No other health intervention or combination of interventions comes close to making such an impact.

In conclusion, my message to Dr M is learn more about cessation, help your hospital and clinic to establish systems to identify smokers and steer them into treatment—either now or later on, and become a champion of telephone quit lines and of expanding coverage for evidence-based cessation services. You will be doing the right thing, you will not be overwhelmed, and you will be reinforcing the reasons you chose a career in medicine in the first place.

QUESTIONS AND DISCUSSION

A PHYSICIAN: It seems the growth market for tobacco companies is international these days, such as in China and third-world countries. Do those countries see smoking as a health problem the same way as malaria or tuberculosis?

DR SCHROEDER: Smoking in developing nations is a disturbing trend. The industry clearly sees it as a growth area. For example, almost 70% of Chinese men smoke, but only about 5% of Chinese women do.³⁸ China makes more money from growing tobacco than it loses from treating patients who are smokers. Many African countries are being told to grow tobacco because it will be a profitable commodity. So there's a conflict. It's very difficult to get funders—governments or foundations—involved in overseas smoking issues. Human immunodeficiency virus dominates. Our government does nothing in this area. And the developing countries, with a few exceptions, have not seen tobacco use as a public health threat comparable with HIV, malaria, or tuberculosis.

A PHYSICIAN: If you go to the symphony now, the good news is that now you can take a breath of air in the lobby and it isn't filled with smoke like it used to be. However, you cannot go outside, because you'll inhale a half a pack just by being there. Is there any push to move smokers even farther away from the entrances to public places?

DR SCHROEDER: I think the tobacco industry, which is always one step ahead of all of us, has figured out that they're fighting a rear guard action and within 25 years, it is going to be very difficult to smoke in any public area in the United States. The reason why it's easier to mobilize the population about smoking is the dangers of secondhand smoke. Increasingly, people are saying, "I don't want to be exposed to that." The discussions about smoking have changed from individual freedom of the right of smokers to smoke to individual freedom of the right of nonsmokers not to be exposed to someone else's smoke. But this gets fought every step of the way. The industry has worked closely with the hospitality business to convince it that banning smoking will be bad for businesses. But the data show that the revenues actually increase in bars and restaurants after smoking bans are passed.

A PHYSICIAN: Is it really established that nicotine is the dependent compound?

DR SCHROEDER: The fact that you can get people to quit smoking with just nicotine replacement is a good indication that it is the major one. A popular misconception about nicotine causing cancer inhibits some patients from trying nicotine replacement therapy. Positron emission tomography scans and other imaging studies show that nicotine really does change brain chemistry—and treating that addiction is very hard. Many people who have been addicted to other substances—cocaine, heroin, alcohol—say that it's easier to quit those things than to quit smoking.

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