

PERSONAL HEALTH; Not Starting Means Never Having to Quit

By JANE E. BRODY

My husband's fate was sealed at age 11, when he smoked his first cigarette. As he put it, "I got hooked that very day." Although he tried repeatedly to quit, he rarely abstained from nicotine longer than a tortured week or two.

Finally, with the help of a hypnotist and nicotine gum, at age 61 he quit for good. But 50 years of smoking took its toll. Emphysema limited his stamina for a decade, and lung cancer killed him 15 years after he smoked his last cigarette.

That's the bad news. The good news is that he repeatedly told our sons, "Learn from my mistake -- if you never start, you'll never have to quit," and they never started. Nicotine is a legal but pernicious addictive drug, likened in its tenacity to heroin and cocaine. Recent studies have shown how it hooks so many people -- especially adolescents -- and why those who smoke have such a hard time giving it up, even when they know the risks all too well. One woman I know has had lung cancer twice and is still smoking.

After several decades of decline in the prevalence of smoking, fostered largely by clean-air regulations and public stigma, it has now leveled off at around 20 percent of Americans 18 and older, said Dr. Neal L. Benowitz of the University of California, San Francisco, author of a recent report on nicotine addiction in *The New England Journal of Medicine*. As older smokers quit or die, Dr. Benowitz said in an interview, more youngsters start. That keeps the number of smokers at 45 million, and the number of smoking-related deaths at 435,000 a year.

An Early Start

The studies have clearly shown that those who first smoke as adolescents (or younger) are more likely to become regular and heavier smokers as adults. Furthermore, studies in adolescent animals found that nicotine can induce "permanent structural and chemical changes in the brain that affect behavior and foster addiction," Dr. Benowitz said.

Still, the improved understanding of nicotine addiction, including evidence of a genetic influence, has offered new avenues for prevention and treatment. First and foremost, of course, is to keep youngsters from starting. Those who make it to 18 without inhaling cigarette smoke are least likely to become regular smokers.

As Dr. Chyke A. Doubeni and colleagues at the University of Massachusetts Medical School reported in June in *Pediatrics*, a four-year study that followed 1,246 children starting in sixth grade showed that an adolescent need not smoke daily to get hooked. As with my husband, in some youngsters, a dependence on nicotine developed after their very first cigarette.

Those who inhaled tobacco smoke at least once a month, the researchers reported, were 10 times as likely as less frequent smokers to develop symptoms of nicotine dependence, including a strong desire to smoke, withdrawal symptoms, feeling addicted and having difficulty controlling their smoking.

The more often they smoked, the more dependent they became, and vice versa. Even one symptom of dependency was enough to lead to daily smoking.

Dr. Benowitz expects that New York's new \$4.35-a-pack cigarette tax (by far the highest in the nation) will deter adolescent smoking by raising the full price to about \$10. But more can be done through taxation, especially if tax dollars are directed toward tobacco control.

In The New England Journal of Medicine this month, Dr. Steven A. Schroeder and Kenneth E. Warner note that European tobacco taxes tend to be much higher; in Norway, for example, they exceed \$11 a pack. The writers suggested extending smoke-free zones to vehicles in which children ride, apartments and condominiums, and public parks and beaches, as well as more public financing of cessation programs.

Nicotine's Hook

Nicotine provides a quick fix. With each inhalation, it is carried into the lungs, where it rapidly enters the circulation and moves quickly to the brain. There it binds to receptors and facilitates the release of various brain chemicals, especially dopamine, which induces feelings of pleasure that in turn reinforce the desire for more nicotine.

Dr. Benowitz explained that over the course of a day, as the brain continues to be exposed to nicotine, partial tolerance develops and each subsequent cigarette produces less of an effect. But during sleep, nicotine comes off the receptors and smokers awaken with an intense craving for a cigarette.

"That first cigarette in the morning has the biggest kick," he said, and the vicious cycle resumes. He reported that as tolerance develops, the number of binding sites for nicotine in the brain increases, enhancing symptoms of craving and withdrawal and the desire for the next cigarette.

New drugs, like varenicline (Chantix), have been developed that block nicotine receptors and make smoking less satisfying; other drugs under development have nicotinelike effects that can lessen withdrawal symptoms. A nicotine vaccine is also being tested.

To be sure, cravings for nicotine go beyond its chemistry. As Dr. Benowitz reported: "Nicotine induces pleasure and reduces stress and anxiety. Smokers use it to modulate levels of arousal and to control mood. Smoking improves concentration, reaction time, and performance of certain tasks."

He added, however, that "relief from withdrawal symptoms is probably the primary

reason for this enhanced performance and heightened mood." In other words, if they had never started smoking, most people would never know the difference.

The main exception, perhaps, may be people who suffer from depression, other mental ills, and substance abuse disorders. They are more likely to smoke and much less likely to quit because nicotine acts as a form of self-medication.

When addicted smokers try to quit, they experience irritability, depressed mood, restlessness and anxiety, symptoms typical of psychiatric patients. Many in withdrawal say they feel that there is little pleasure left in life.

Added to the brain effects of nicotine withdrawal are behavioral and environmental cues to smoke -- the feel and taste of a cigarette; the association with certain moods and activities like drinking, partying, or relaxing after a meal; a habit of smoking on the job, or being with someone who is smoking -- and you can see why it can be so hard for a smoker to quit.

Dr. Benowitz noted that women who smoke are more strongly influenced than men by "conditioned cues" and negative emotions. Women also metabolize nicotine more quickly, which can make them more dependent on nicotine and explain in part why it is more difficult for women to quit.

"If we understand the reasons different people smoke, we can provide specific behavioral skills to deal with them instead of smoking," he said. "Smoking cessation has to be individualized."