

Smoking

WHO SMOKES?

According to a 2002 report by the Centers for Disease Control and Prevention, an estimated 22.8% of adult Americans smoke, representing a slow but steady decline from the 25% who smoked in 1993. The risk varies by age, ethnic group, and geographic location. From 1993 to 2000, the incidence of smoking decreased in all age groups except for young adults aged 18 to 24. Still, some 46.5 million Americans continue to smoke, especially those aged 18 to 44.

Smoking in Childhood and Adolescence

Smoking rates among high school students increased during most of the 1990s but have been declining since 1997. About 28.5% of high school students smoke, down from 36.4% in 1997. Caucasian and Hispanic students were more likely to smoke than African Americans. Still, 63.9% of high school students had tried cigarettes, and in some states, more than 20% of those in middle school smoke. Each day, more than 5,000 young people try cigarettes, more than 3,000 of whom become regular smokers. Smoking is often immediately addictive: adolescents who have smoked 100 cigarettes or more, according to one report, are generally not able to quit even if they want to.

In the past, advertising was responsible for a third of teenage smoking. New regulations have made it much more difficult for advertisers to promote smoking to young people, but many students are still taking up smoking, despite stepped-up anti-smoking campaigns. A 2002 survey of popular movies found that smoking occurs in more than 85% of box office hits. It is almost always depicted in a positive light, which appears to be a major influence on the attitude toward smoking in children and adolescents.

The most important steps for preventing smoking in children are for parents to not smoke and to let their child know that they disapprove of smoking. One study reported that preschoolers whose parents smoke are more likely to view themselves as future smokers. And conversely, another found that schoolchildren who believed that both their parents strongly disapproved of smoking were less than half as likely to take up the habit as those who felt their parents were more lax. (Interestingly, in that study, parental disapproval had an equally strong effect regardless of whether the parents themselves smoked.)

Other research has supported these findings. In one study, children whose television and music-listening habits were closely monitored by their parents were less likely to drink, use drugs, and smoke cigarettes. Neglected children, or children with absentee parents, were four times as likely to abuse drugs, drink, and smoke than children living with parents who were regularly present and who mandated a structured lifestyle. In a 2002 study, children who regularly attended religious services were also less likely to smoke.

Physicians can have a major effect on young people. But in one survey, less than half of teenagers had ever been asked by their doctors if they smoked or counseled not to smoke, even though most teen smokers said they would admit to it if asked.

Smoking among Older Adults

Older people are less likely to be smokers. Among people aged 55 to 64 years, about 24% are smokers. Between 65 and 74 years the smoking rate drops to 15%, and among those aged 75 or older, the rate is 8%.

Ethnicity and Gender

Among adult men, 25.7% are smokers, broken down according to ethnic background as follows, from highest to lowest:

- Native Americans (29.1%).
- African American (26.1%).
- Caucasian American (25.9%).
- Hispanic American (24%).
- Asian (21%).

Among adult women, 21% of whom are smokers, the percentages are:

- Native American (42.5%).
- Caucasian American (22.4%).
- African American (20.9%).
- Hispanic American (13.3%).
- Asian/Pacific Islanders (7.6%).

Geography

In a 2002 report, the highest smoking rates were in Kentucky (30.5%). Other states with percentages over 26% were Nevada, Missouri, Indiana, and Ohio. The lowest were in Utah (12.9%) followed by California (17.2%). Other states with smoking rates under 20% were Arizona, Montana, Hawaii, and Minnesota. In general, smoking prevalence is highest in the Midwest and South and lowest in the Northeast and West.

Educational Level

A major government study reported that people with a high school education or below have higher smoking rates (33.9%) than those educated beyond college (8.4%).

Psychologic Factors

Psychologic factors play a major role in people's susceptibility to smoking.

- People with low self-esteem and adolescents with behavioral problems have a higher risk for smoking.

- Depression and schizophrenia are known risk factors for smoking and both may actually have biologic effects that are responsible for this higher risk. Indeed, nicotine may stimulate receptors in the brain that improve mood in certain people with depression and affect receptors that improve symptoms in schizophrenia.

Genetic Factors

Evidence now strongly supports genetic factors as a major risk factor for nicotine dependence, and researchers are targeting specific genes that may be responsible. Among the findings is a common genetic vulnerability to both nicotine and alcohol dependence. (For some people who wish to stop drinking as well as smoking, a dual recovery process can be effective.)

Economic Factors

Some studies suggest that the cheaper it is to smoke the more widespread smoking will be. For example, states that have low excise taxes on cigarettes have a high proportion of smokers. And, conversely, making it more expensive to smoke could reduce the number of smokers.

WHAT ARE THE RISKS OF SMOKING?

General Guidelines to the Harmful Effects of Exposure to Smoking and Tobacco

Dangers of Cigarette Smoking. Cigarette smoking kills more than 440,000 people a year, making it more lethal than AIDS, automobile accidents, homicides, suicides, drug overdoses, and fires combined. Indeed, one in every five deaths is attributable to smoking. It reduces life expectancy by 15 to 25 years and is the single most preventable cause of death. In one study, only 42% of male lifelong smokers reached the age of 73, compared to 78% of nonsmokers. Smoking may be even more dangerous in women.

Smoking-related health costs force Americans to spend an astounding \$155 billion each year. Smoking may be even more dangerous now than 30 years ago, most likely because the lower tar and nicotine levels in most cigarette brands cause people to inhale more deeply.

The smoke is the most dangerous component of the cigarette. Smoke contains nitrogen oxide and carbon monoxide, which are harmful gases. When people inhale they also bring tar into their lungs. Tar itself includes 4,000 chemicals, some of which are known to cause cancer. Other inhaled chemicals include:

- Cyanide.
- Benzene.
- Formaldehyde.
- Methanol (wood alcohol).
- Acetylene (the fuel used in torches).

- Ammonia.

Experts warn that so-called "safer" cigarettes (e.g., Advance, Omni) that claim to filter out some of these toxins are still not safe; the smoke from these cigarettes still contain many harmful chemicals. Even worse, a 2002 study suggested that people who smoke as few as three standard brand cigarettes a day are at higher risk for blood vessel abnormalities that endanger the heart.

Dangers of Cigars and Pipes. One study reported that people who switch from cigarettes to cigars or pipes halve their risk of lung cancer, heart disease, and chronic lung disease, possibly because they use less tobacco and inhale less. Still, the risk of these diseases using "safer" forms of tobacco is 50% to almost 70% higher than nonsmokers. And the risk for periodontal disease and tooth loss may be just as high in pipe and cigar smokers as it is in cigarette smokers.

Dangers of Smokeless Tobacco. Twelve million Americans use smokeless tobacco; most are men, and 25% are teenagers. Smokeless tobacco includes chewing tobacco, tobacco powder, and snuff, as well as flavored tobacco lozenges. These products allow tobacco to be absorbed by the digestive system or through mucous membranes, and none of them are harmless.

In fact, chewing smokeless tobacco eight to 10 times per day may be equivalent to smoking 30 to 40 cigarettes per day. Smokeless tobacco produces a 50-fold increase in the risk of oral cancer, gingivitis, and tooth loss. Most users also become addicted.

Dangers of Second-Hand Smoke. People who are exposed to second-hand or side-stream smoke are also at risk. Smoke that is exhaled not only contains the same dangerous contaminants as inhaled smoke, but the exhaled smoke particles are smaller, so that they can reach distant sites in the lungs of involuntary or passive smokers and do great harm. By some estimates, second-hand smoke kills more than 53,000 nonsmoking Americans a year, or about one nonsmoker for every eight smokers that tobacco kills.

Regular exposure to passive smoke is now estimated to increase the risk of heart disease in the nonsmoker by 25% to 91%, causing more than 30,000 deaths each year. One study indicated that even a half-hour of exposure to second-hand smoke may be enough to interfere with normal blood flow to the heart.

Effects of Smoking on Heart Disease, Diabetes and Stroke

Smokers in their thirties and forties have a heart-attack rate that is five times higher than their nonsmoking peers.

Any current smoker is at higher risk for heart disease or stroke. Although heavy smokers--particularly those who smoke high-tar cigarettes--are at highest risk, a 2002 study

indicated that even light smokers (as few as three cigarettes a day for women and six for men) doubled their risk of heart attack.

Smoking poses greater risks in women than in men. For example, in women who smoke, the risk for a heart attack is about 50% greater than in male smokers. In women over 35 who smoke, taking oral contraceptives poses special hazards by increasing their risk for heart attack and stroke well beyond their non-smoking peers.

Quitting will rapidly reduce the risk of developing heart disease, but long-term smoking may still permanently damage arteries.

Specific Effects of Smoking on the Heart. Cigarette smoking may be directly responsible for about 62,000 deaths from heart disease each year. Smoking cigars may increase the risk of early death from heart disease, although evidence is much stronger for cigarette smoking. The damaging effects of smoking on the heart are multifold:

- Smoking lowers HDL levels (the so-called good cholesterol), even in adolescents.
- It causes stiffness and inflexibility in blood vessels. One way it does this is by reducing levels of nitric oxide (NO), a substance in the lining of blood vessels that keeps them supple and promotes cardiovascular health.
- It increases the risk for blood clots. In fact, smoking may cause *larger* blood clots, which can increase the severity of heart attacks.

- It increases the activity of the sympathetic nervous system (which regulates electrical activity in the heart and blood vessels).
- In women, it may increase heart disease risk by altering hormone levels and causing estrogen deficiency.

Effects of Smoking on Diabetes. A study of women smokers found that those with type 2 diabetes were at especially high risk for heart disease. Quitting smoking reduced this risk substantially. Smoking may also accelerate other complications of diabetes, including kidney disease.

Effects of Smoking on Stroke. Smoking can affect blood vessels in the brain as it does in the heart. People who smoke a pack a day have almost two and a half times the risk for stroke as nonsmokers. The risk for stroke may remain elevated for as long as 14 years after quitting. Note: women smokers who take oral contraceptives have a specifically higher risk for stroke. In fact, any woman who smokes increases her risk for hemorrhagic stroke, the type of stroke caused by a ruptured blood vessel.

Cancer

Smoking accounts for about 30% of all cancer deaths in the US, and it has been cited as the most important factor in changes in worldwide cancer trends.

Lung Cancer. Smoking is the primary risk factor in 85% to 90% of lung cancers, which is expected to kill nearly 155,000 Americans in 2002. About 15% of all people who smoke

develop lung cancer, with the risk varying depending on the duration of the addiction and the number of pack years. (A pack year equals the number of packs of cigarettes smoked per day multiplied by the number of years that the person has smoked.) [See Table Risk for Lung Cancer in Men at Age 75.]

Risk for Lung Cancer in Men at Age 75	
Quitting Age	Percentage
30	2%
40	3%
50	6%
60	10%

Source: Smoking, smoking cessation, and lung cancer in the UK since 1950: combination of national statistics with two case-control studies, *British Medical Journal*. 321:323-329 (5 August 2000)

The table is from a study of male smokers. Some studies indicate that the risk for lung cancer may be even higher in women smokers. In a 1999 study, the risk for older women was 2.3 times that of older men. Death rates from lung cancer among Caucasian American women increased by 600% between 1950 and 2000. Each year, in fact, lung cancer now kills over 60% more women than breast cancer and accounts for 25% of all cancer deaths in women.

Some evidence suggests that people who smoke low-tar, or "light," cigarettes may be no safer than those who smoke high-tar cigarettes. Mentholated cigarettes in fact have been associated with a higher risk for lung cancer. People who smoke mentholated or low-tar cigarettes tend to inhale more deeply, bringing particles to the smallest and most vulnerable tissues in the lungs where these cancers start. In fact, these smokers may have a higher risk for a particularly deadly form of lung cancer called adenocarcinoma.

Other Cancers. Smoking is also related to other cancers:

- Smoking and smokeless tobacco cause between 60% and 93% of cancers of the oral passages and upper airways, including the throat, mouth, and esophagus.
- Smoking triples the risk of skin cancers.
- Although smoking does not appear to affect the risk for developing breast cancer itself, it does appear to increase the severity of existing breast cancer, possibly because of a higher risk for the cancer to spread to the lungs.
- Smokers have higher rates of leukemia and cancers of the kidney, stomach, pancreas and bladder. (The risk for bladder cancer may be higher in women smokers than in male smokers.)

- Studies have found a link between long-term smoking and an increased risk for colon and rectal cancer.
- About 30% of cervical cancers have been attributed to both active and passive smoking.

Biologic Effects of Smoking that May Contribute to Cancer. Cigarette smoke contains many chemicals and cancer may develop from the accumulative effects of more than one chemical.

- The smoke is the most dangerous component of the cigarette. Chemicals formed during smoking trigger genetic mutations that lead to cancer. When people inhale it, they bring tar into their lungs that itself includes 4,000 chemicals, some of which are carcinogenic. Other inhaled chemicals in cigarette smoke that may increase the risk for cancer include cyanide, benzene, formaldehyde, methanol (wood alcohol), acetylene (the fuel used in torches), and ammonia. Smoke also contains nitrogen oxide and carbon monoxide, both of which are harmful gases.
- Nicotine itself may be a hazard. A 2000 laboratory study suggested that the human body might be converting inhaled nicotine into a chemical called aminoketone, which has been linked to the formation of tobacco-related lung cancer. And another 2001 study reported that nicotine triggered new blood vessel growth, which could theoretically promote growth of any existing tumors. Whether or not these studies apply to long-term use of nicotine replacement products (such as patches), as well as from cigarette smoking, is still unclear. (They should certainly not discourage people from using nicotine replacement methods for quitting, but may indicate that these devices should not be used long-term.)
- Chromosomal damage in the lung occurs in nearly all chronic smokers. An elevated risk for lung cancer can persist for more than 20 years after quitting smoking, although the risk drops significantly even in the first year after quitting.
- *Second-Hand Smoke and Cancer.* One analysis of studies suggested that exposure to second-hand tobacco smoke may increase the risk of lung cancer in the nonsmoker by about 25%, but a 2000 study suggested that this figure may be an overestimate, since it was derived from many small and possibly biased studies. In one study, people who had been exposed to tobacco smoke as children, but not as adults, did not appear to have any higher risk.

Dementia and Neurologic Diseases

The role between smoking and neurologic diseases has been mixed. Nicotine has some positive effects on the brain, including improving concentration and short-term memory. Certainly, smoking can increase the risk for dementia by causing small or major strokes. Low levels of HDL ("good" cholesterol), which are more common in smokers, have also been linked to dementia.

Parkinson's Disease. Cigarette smokers appear to have a *lower* risk for Parkinson's disease, indicating some protection by nicotine. This finding, of course, is no excuse to smoke, but such protection may help researchers develop new therapies.

Alzheimer's Disease. Nicotine enhances the actions of the cholinergic system (which is depleted in Alzheimer's disease) and is known to improve concentration and memory in

the short term. Some studies have suggested that nicotine may protect nerve cells and help prevent the formation of beta amyloid. One study indicated that nicotine might help protect against Alzheimer's disease in carriers, but not noncarriers, of the ApoE4 gene. Research to date, however, has found no strong evidence of improvement with nicotine replacement methods. Smoking itself makes little difference in the risk for Alzheimer's, and, in fact, the risk for dementia is slightly higher in smokers.

Acute and Chronic Lung Diseases

Smoking is associated with a higher risk for nearly all major lung diseases, including pneumonia, flu, bronchitis, and emphysema. There is also a link between smoking and exacerbation of asthma symptoms. Second-hand smoke, too, has been associated with respiratory problems, including nighttime chest tightness, breathlessness after exertion, and worsening of asthma.

One study indicated that smokers who quit and start again may damage their lungs even more severely than people who have not yet made an attempt to quit. Some experts suggest that people who relapse and start smoking again are more strongly addicted than other smokers and may inhale more deeply and hold the smoke in their lungs longer. The message here is not that quitting smoking is more dangerous than not quitting; rather, the emphasis is on not starting again.

Effect on Sexuality and Fertility

Female Infertility and Pregnancy. Studies have now linked cigarette smoking to many reproductive problems. Women who smoke pose a greater danger not only to their own reproductive health but, if they smoke during pregnancy, to their unborn child. Some of the negative effects of smoking on pregnancy and on the newborn include the following:

- Greater risk for infertility. Women at greatest risk for fertility problems are those who smoke one or more packs a day and who started smoking before age 18.
- Earlier menopause. Women who smoke tend to start menopause at an earlier age than nonsmokers, perhaps because toxins in cigarette smoke damage eggs.
- Greater risk for ectopic pregnancy and miscarriage.

- Greater risk for stillbirth, prematurity, and low birth weight. Infant mortality rates in pregnant smokers are increased by 33%. Some women carry particular genes that may make it especially likely that they will deliver low birth weight infants if they smoke, although newborns of all female smokers have a greater risk for low weight. The good news is that women who quit before becoming pregnant or even during the first trimester reduce the risk for a low birth weight baby to that of women who never smoked.
- Folate deficiencies. Smoking reduces folate levels, a B vitamin that is important for preventing birth defects.

One intriguing study found that mothers or fathers who smoke a pack or more a day are more likely to have daughters than sons. The likelihood of having a male child was lowest when both parents smoked.

Male Sexuality and Reproduction. Smoking also negatively effects male sexuality and fertility. Heavy smoking is frequently cited as a contributory factor in impotence in men because it decreases the amount of blood flowing into the penis. One study noted, for example, that among men with high blood pressure, smoking causes a 26-fold increase in impotence.

Smoking also affects fertility. It impairs sperm motility, reduces sperm lifespan, and may cause genetic changes that affect the offspring. One 2002 trial found that men or women who smoke have lower success rates with fertility treatments. An earlier study reported that men who smoke also have lower sex drives and less frequent sex.

Specific Effects of Parental Smoking on Children

The children of parents who smoke are more likely to smoke themselves. In addition, the parent's smoking poses other health risks to their children.

Effects of Second-Hand Smoke on Children. An estimated four million children a year fall ill from exposure to second-hand smoke. Parental smoking has been shown to affect the lungs of infants as early as the first two to 10 weeks of life, and such abnormal lung function could persist throughout life.

A number of studies have reported associations between smoking parents and childhood illnesses.

- Parental smoking is believed to increase the risk for lower respiratory tract infections (such as bronchitis or pneumonia) by 50%. Environmental exposure to smoke is thought to be responsible for 150,000 to 300,000 such cases of such every year.
- Exposure to second-hand smoke in the home increases the risk for asthma and asthma-related emergency room visits in children who have existing asthma.
- Smoking in pregnant women and new mothers is strongly linked to sudden infant death syndrome (SIDS) in their children.
- Children of mothers who smoke during pregnancy may also be at increased risk for obesity and diabetes.
- Maternal smoking is believed to be related to 37% of the cases of childhood meningococcal disease, an uncommon but potentially fatal infection.
- Parental smoking has also been linked to recurrent ear infections and eczema.
- Parental smoking lowers vitamin C levels in children, which may make them more susceptible to infections and other ailments.

Behavioral and Social Problems. Children of smoking mothers are more likely to have more motor control problems, perception impairments, attention disabilities, and social problems than children of non-smoking mothers. Some reasons for these associations have been suggested:

- Women who breastfeed and smoke pass nicotine byproducts to their babies, which may contribute to these problems.
- Women smokers tend to be less educated than women nonsmokers, which may cause increased stress at home.

- Smoking mothers and their children may share certain inherited psychological factors, such as depression, that cause addictive and behavioral problems that are unrelated to smoking itself.

Effects on Bones and Joints

Smoking has many harmful effects on bones and joints:

- Smoking impairs formation of new bone, and women who smoke are at high risk for loss of bone density and osteoporosis.
- Postmenopausal women who smoke have a significantly greater risk for hip fracture than those who do not.
- Smokers are more apt to develop degenerative disorders and injuries in the spine.
- Smokers have more trouble recovering from surgeries, including knee or hip replacements.
- Smokers whose jobs involve lifting heavy objects are more likely to develop low back pain than nonsmokers.
- In women, smoking may also pose a small increased risk for developing rheumatoid arthritis. Women smokers or ex-smokers who have rheumatoid arthritis, especially those with a particular genetic makeup, may also have a more severe form of the disease.

Effects on the Gastrointestinal Tract

Smoking increases acid secretion in the stomach. It also reduces blood flow and production of compounds that protect the stomach lining.

Diverticulitis. A 2000 study suggested that smoking was a major risk factor in diverticulitis, a condition in which small out-pouches develop in the wall of the colon. In addition, smokers were at risk for its complications, including bleeding and abscesses. Diverticulitis mostly affects people over 50 years of age.

Inflammatory Bowel Disease. Smoking has mixed effects on inflammatory bowel disease.

Smokers have lower than average rates of ulcerative colitis, but higher than average rates of Crohn's disease. In fact, smokers with Crohn's disease who quit experience a much less severe course.

Peptic Ulcers. Results of studies on the effect of smoking on ulcers are mixed. Some evidence suggests that smoking delays the healing of gastric and duodenal ulcers. One 1999 study reported that after ulcers healed, about half of smokers relapsed after a year and that all *heavy* smokers relapsed after three months. Other studies, however, have found no increased risk for ulcers in smokers, and smoking does not appear to increase susceptibility to *H. pylori*, the bacteria that causes many peptic ulcers. This should not give smokers any comfort, however, given the proven dangers from smoking.

Hepatitis and Cirrhosis. Smoking is linked to increased liver scarring (cirrhosis) caused by either excessive drinking or chronic hepatitis B or C viruses.

Thyroid and Autoimmune Conditions

Hyper- and Hypothyroidism. Cyanidem, found in tobacco smoke, interferes with thyroid hormone production. Smoking triples the risk for developing thyroid disease, particularly autoimmune hyper- and hypothyroidism. Women smokers with subclinical hypothyroidism, a symptom-free condition in which the thyroid gland is mildly underactive, face an increased risk for developing full-blown hypothyroidism than their nonsmoking peers. According to one study, smoking also increases the negative effects of hypothyroidism itself, possibly including unhealthy cholesterol levels, in patients who already have the condition. Smoking has also been linked to goiter, a swelling of the thyroid that occurs in people who don't get enough iodine.

Disseminating Lupus Erythematosus. One study reported that smokers are almost seven times more likely to develop SLE than nonsmokers, and ex-smokers have a 3.6-fold risk, according to research published in 2001. Not all studies support the association.

Impaired Surgical Recovery

Smokers are at increased risk for heart and circulatory problems and delayed wound healing after surgery. In one study, patients who were able to cut down or quit smoking six to eight weeks prior to knee or hip replacement surgery were much less likely to suffer complications.

Other Disorders Related to Aging

People who smoke also endanger other parts of their bodies as they age. The following are age-related conditions that occur at higher rates in smokers than nonsmokers:

- Cataracts, importantly the type of cataract that most severely limits vision. Quitting smoking lowers the likelihood of needing cataract surgery in the future, although not to the level seen with nonsmokers.
- Macular degeneration, a leading cause of blindness in older people.
- Gum disease, and therefore tooth loss.
- Wrinkles. Studies in multiple ethnic groups confirm that smokers are nearly five times more likely to develop more and deeper wrinkles as they age compared to nonsmokers.
- Baldness and premature gray hair.
- Hearing loss, particularly high-frequency hearing loss. Some experts believe that losing the ability to hear high-pitched sound in smokers may be due to a decrease in blood flow to the cochlea, the part of the ear that carries sound to the brain.
- Incontinence. One study of 600 women indicated that smokers and former smokers are twice as likely to develop incontinence than women who never smoked.

Physical Benefits After Quitting

Time after last cigarette	Physical Response
20 minutes	Blood pressure and pulse rates return to normal
8 hours	Levels of carbon monoxide and oxygen in the blood return to normal
24 hours	Chance of heart attack begins to decrease
48 hours	Nerve endings start to regrow; ability to taste and smell increases
72 hours	Bronchial tubes relax; lung capacity increases
2 weeks to 3 months	Improved circulation; lung function increases up to 30%
1 to 9 months	Decreased incidence of coughing, sinus infection, fatigue, and shortness of breath; regrowth of cilia in the airways, increasing the ability to clear mucus and clean the lungs and reducing the chance of infection; overall energy level increases

WHY DO SMOKERS FAIL TO QUIT?

Although nearly a quarter of American adults continue to smoke, about the great majority of them want to quit. Unfortunately, in one study of women smokers who said they wanted to stop smoking, 80% of them were unable to. Withdrawal is a difficult process. Even after years of not smoking, about 20% of ex-smokers still have occasional cravings for cigarettes. People who keep trying, however, have a fifty-fifty chance of finally quitting. In any case, the attempts to quit are never a waste of time, since the amount of smoking is reduced during these periods. The smoker is up against an army of obstacles to quitting.

Individual Risk Factors for Failure

Researchers have been trying to discover individual risk factors or sets of behaviors that can help predict why specific people fail to quit. Some factors include:

- Being female.
- Being a heavy smoker.
- Inhaling deeply.
- Being a long-term smoker.
- Having severe withdrawal symptoms.

One study found that cheating during the first two weeks of withdrawal, even with the patch, nearly guaranteed smoking again in six months. Further, nearly half of the people who did not cheat during the first two weeks were still not smoking after six months.

Women and Smoking. Over three million women have died from smoking-related illness since 1980, and women now account for over 39% of all smoking-related deaths, a number that has doubled since 1965. Studies show that women have a harder time trying to quit smoking and have less success with abstinence programs than their male counterparts. Reasons for this disparity may include:

- Women may fear weight gain after quitting more than men do.
- Nicotine replacement may not be as effective in women as in men.
- Smoking cessation aids are not approved for pregnant women.
- Phases in the menstrual cycle may affect the response to drugs that are used to help women quit smoking.
- Men may be less supportive than women in helping their partners to quit.
- Women trying to quit may miss the feeling of control associated with smoking more than men do.

Addictive Aspects of Nicotine

Nicotine is a psychoactive drug, and some researchers feel it is as addictive as heroin. In fact, nicotine has actions similar to cocaine and heroin in the same area of the brain.

Depending on the amount taken in, nicotine can act as either a stimulant or a sedative. Cigarette smoking (either the nicotine or the oral process of smoking itself) has definite immediate positive effects:

- It relieves minor depression.
- It helps suppress little fits of anger.
- It enhances concentration and short-term memory.
- It produces a modest sense of well being.

The addictive process of smoking has a specific daily cycle:

- Most smokers have a special fondness for the first cigarette of the day because of the way brain cells respond to the day's first nicotine rush. Nicotine, particularly taken in the first few cigarettes of the day, increases the activity of dopamine, a chemical in the brain that elicits pleasurable sensations, a feeling similar to achieving a reward.
- Over the course of a day, however, the nerve cells become desensitized to nicotine. Smoking becomes less pleasurable, and smokers may be likely to increase their intake to get their "reward." A smoker develops tolerance to these effects very quickly and requires increasingly higher levels of nicotine.

Withdrawal in the First Two Weeks

Because the first two weeks are so critical in determining quitting failure rates, smokers should not be shy about seeking all the help they can during this period. Withdrawal symptoms begin as soon as four hours after the last cigarette, generally peak in intensity at three to five days, and usually disappear after two weeks, although some may persist for several months. They include both physical and mental symptoms.

Physical Symptoms. During the quitting process people should consider the following physical symptoms of withdrawal as if they were recuperating from a disease and treat them accordingly as they would any physical symptoms:

- Tingling in the hands and feet.
- Sweating.
- Intestinal disorders (cramps, nausea).
- Headaches.
- Respiratory symptoms as the lungs begin to clear, including sore throats, coughing, and other signs of colds.

Mental and Emotional Symptoms. Tension and craving build up during periods of withdrawal, sometimes to a nearly intolerable point. One European study found that the incidence of workplace accidents increases on No Smoking Day, a day in which up to 2 million smokers either reduce the amount they smoke or abstain altogether.

Nearly every moderate to heavy smoker experiences more than one of the following strong emotional and mental responses to withdrawal:

- Infantile emotions: temper tantrums, intense needs, feelings of dependency, a state of near paralysis.
- Insomnia.
- Mental confusion, vagueness, or difficulty concentrating.
- Irritability, restlessness, impatience, or anger.
- Anxiety.
- Depression, which is common during withdrawal and over the long term [see Long-Term Depression, below]. In the short term it may mimic the feelings of grief felt when a loved one is lost. As foolish as it sounds, a smoker should plan on a period of actual mourning in order to get through the early withdrawal depression.

Long-Term Depression

There is a significant association between cigarette smoking and a susceptibility to depression. People who are prone to depression face a 25% chance of becoming depressed when they quit smoking, and this increased risk persists for at least six months. What's more, depressed smokers have a very low level of success. Only about 6% remain smoke-free after a year. There are strong reasons for this:

- Smoking may be masking depression, which can become severe even after the early stages of withdrawal have passed.
- For some smokers, the future physical damage incurred by smoking is an abstraction, which fails to motivate quitting when measured up against the very real emotional pain triggered by nicotine withdrawal.
- Not only does the smoker suffer, but the negative emotions often harm relationships with friends and family, who might even urge the ex-smoker to take up cigarettes again.

People who suffer from depression while quitting might do better using a combination of emotionally supportive therapy (as opposed to behavioral therapy), nicotine replacements, and antidepressants, such as bupropion (Zyban). If severe depression lasts beyond the withdrawal period, professional help should be sought as soon as possible.

Weight Gain

Effects of Smoking on Calories. Smoking uses up calories--about 200 a day according to one study. A 1999 study reported that smoking increases energy expenditure in men by 3.6% at rest and by 6.3% during physical activity. (Actually, the higher level during exercise was only because the men inhaled more deeply during that time.)

Weight Gain after Quitting. Quitting can add five or more pounds, due to the following reasons:

- Obviously, the body is working better. After quitting, the body's metabolism slows down, and food is digested more efficiently.
- Insulin levels increase, enabling the body to process more sugar for energy.
- People snack as an oral substitution.

Long-Term Effects of Abstinence on Weight. One 1998 study reported that people who quit smoking put on more weight than expected, and although they gained most of the weight in the first year, they kept adding weight over a period of five years. This contradicts other studies that ex-smokers lost their extra weight over a year or two and that the longer they abstained from smoking the more weight they lost. Indeed, an encouraging 1999 study reported that weight gain tends to peak between two and four years after quitting and then declines to the same rate as those who never smoked.

Keeping the Weight Off. It should be noted that to use up the 200 calories gained from quitting smoking, one need only take an extra 15-minute daily walk and eliminate 100 calories a day from meals. Even a moderate increase in physical activity among middle-aged women who have quit smoking can help keep weight gain to a minimum. Using Zyban, nicotine gum, or both also appears to help protect against weight gain, at least while these drugs are being used.

WHAT ARE METHODS FOR QUITTING SMOKING?

At this time the most effective method for quitting is a combination of nicotine replacement products and the antidepressant bupropion (Zyban) bolstered by counseling. Typical short-term rates for quitting smoking are 40% to 60% at the end of drug treatment and 25% to 30% after a year.

Cold Turkey

After a year only about 4% of smokers who quit without any outside help succeed. Nevertheless, most people try to quit alone and many have reported activities that can help the process of withdrawal. [See *Table*, Some Tips for Quitting.] The primary obstacle in trying to quit alone is making the behavioral changes necessary to eliminate the habits associated with smoking. Excellent books, tapes, and manuals are available and are strongly recommended to help people who want to quit without other assistance.

Nicotine Replacement

Nicotine replacement products provide low doses of nicotine that do not contain the contaminants found in smoke. They relieve cravings for nicotine and ease the symptoms of withdrawal, doubling the chances of long-term success. It should be noted that nicotine replacements are most effective in moderate to heavy smokers. They appear to have little effect for light smokers (less than 15 cigarettes a day).

Replacement products include nicotine patches, gums, nasal sprays, and inhalers. A British study indicated that about 20% of people who use nicotine replacement products and have some support from health professionals will abstain for at least a year and about 10% will remain nonsmokers. (Unfortunately this rate is not much better than using placebo, although adding the antidepressant Zyban is improving this rate.) In spite of the obvious health benefits from nicotine replacement treatments, only about a quarter of HMOs reimburse smokers for these aids.

Tips for All Nicotine Replacement Products:

- Not cheating on the very first day of nicotine-replacement use increases the chance of quitting permanently by tenfold.
- The more cigarettes a patient smokes, the higher the dose of nicotine replacement may be required at the start.
- There is no evidence yet that one form of nicotine replacement is any better than another, but individual preferences vary. Compliance rates also vary and are highest for the patch, intermediate for the gum, and lowest for the spray or inhaler. The different forms can also be used together. In some studies, combining the patch with another form improved quitting rates.
- Adding a counseling program may boost the effect of any nicotine replacement program. One study reported a quit rate of 30.5% after a year in patients who wore the patch and attended a quit-smoking program.
- Nicotine replacement and the antidepressant Zyban are equally effective, and can be used together to boost success rates even further. Zyban may be particularly useful in addition to nicotine replacement in ensuring long-term abstinence in people who suffer from depression because of or independently of withdrawal.
- No one should smoke while using nicotine replacement. It can cause nicotine to build up to toxic levels.
- Nicotine replacement helps prevent weight gain while it is being used, but people are still at higher risk for gaining weight when they stop all nicotine.

Side Effects. Side effects of any nicotine replacement product may include headaches, nausea, and other gastrointestinal problems. People often experience sleeplessness in the first few days, particularly with the patch, but the insomnia usually passes. Patients using very high doses are more likely to experience symptoms, and reducing the dose can prevent them.

Special Concerns for Specific Individuals. Certain individuals may need to be aware of some concerns with nicotine replacement products. Most studies have been conducted using the patch, but results may apply to other replacement products as well.

- *People with Heart Disease.* There has been some concern that the patch might be harmful for people with heart or circulatory disease, but studies are finding that it poses no danger for these individuals. In fact, it may help reduce angina attacks brought on by exercise. Nevertheless, unhealthy cholesterol levels (lower HDL levels) caused by smoking remain abnormal with the use of nicotine replacement (at least with the use of the patch). HDL levels improve when all nicotine is stopped.
- *Pregnant Women.* Nicotine replacement may not be completely safe in pregnant women, although it has been used successfully in this group without ill effect. There is an increase in heart rates in fetuses of women who use the patch as compared with those who smoke. Because this may be an indication of fetal stress, pregnant women are cautioned to remove the patch before bedtime.
- *Adolescents.* Nicotine replacement is safe for adolescents.
- *Small Children.* Nicotine is a poison and all nicotine products should be kept safely away from small children. A parent should call a physician or a poison control center immediately if a child has been exposed to a nicotine replacement product, even for a short duration. Parents should also call the doctor if a small child has been exposed to a nicotine product and has any symptoms, including stomach upset, irritability, headaches, a rash, or fatigue.

Warnings against Long-Term Use. No one should use these replacement therapies as a long-term substitute for smoking. Any nicotine replacement therapy should be temporary and directed at quitting. In one study, use of nicotine gum for more than a year was associated with insulin resistance, an abnormality that occurs in diabetes. Some studies have now suggested that nicotine itself may have properties that increase the risk for cancer, independent of carcinogenic chemicals in smoke. More studies are needed, however, and nicotine replacement therapy is still a better alternative to smoking.

Nicotine Patches. Nicotine patches, or transdermal nicotine, delivers nicotine through the skin and can be an effective way to quit smoking. The quit rate for patch users is around 20% after six months, twice the rate of those who try to quit cold turkey. Nicotine patches are available over the counter, but it is best to consult a doctor before using them, particularly people with any medical problems. They are probably the best nicotine replacement products for people with asthma or other chronic lung problems.

The patch products available have different approaches:

- NicoDerm CQ includes patches that come in three strengths (21, 14, and 7 mg), which are used in a step-down program over a period of 8 to 10 weeks. The initial set of large patches is replaced after about three weeks with a smaller, less potent set. A 21 mg patch, for example, is about equal to 15 cigarettes. A heavy smoker may therefore need to wear two patches at first.
- Nicotrol is a single-step patch and can be taken off after 16 hours and replaced 8 hours later. It can only be taken for six weeks.

Both brands are used in similar ways:

- A single patch is worn each day and replaced after 24 hours.
- To avoid skin irritation it is applied to different hairless locations above the waist and below the neck each day. (Transparent patches are now available, which expand the body areas for application.)
- People can wear the patches for 24 hours, but some have reported odd dreams and have disliked the sensation of the patch during the night. People who wear the patch all the

- time, however, have less withdrawal symptoms and slightly better abstinence rates than those who take it off at night.
- Patches should be stored and discarded safely, particularly in homes with small children. Small children have been poisoned (not fatally so far) from wearing, chewing, or sucking on nicotine patches.
 - The FDA recommends using the patches three to five months, although some studies suggest that using it for eight weeks achieves the maximum benefits.

Special precautions should be made if children are exposed to the patches:

- Children should not come in contact with the patches, even while the smoker is wearing them.
- If the child has worn the patch, the affected skin should be washed right away.
- Urgent medical care may be required if the child has eaten nicotine or worn a patch for a prolonged time. (The hazard increases if the child has been exposed to more than one patch or one that has not been used.)

Nicotine Gum. Nicotine gum (Nicorette), available over the counter, has also been effective for a number of people. Some prefer it to the patch because they can control the nicotine dosage and chewing satisfies the oral urge. Long-term dependence may be a problem with this method. Although such dependence is probably safer than smoking, research is needed to confirm this, and experts recommend chewing the gum for no more than six months.

Some tips for using the gum are as follows:

- Patients starting to quit can chew one to two pieces each hour. A smoker should not chew more than 20 pieces a day.
- The goal is to stop using the gum by six months, but about 3% of people continue to use it long after they have quit smoking.
- The gum must be chewed slowly until it develops a peppery taste. It is then tucked between the gum and cheek where it is stored so that the nicotine can be absorbed.
- Coffee, tea, soft drinks, and acidic beverages may interfere with nicotine absorption, so people should wait at least 15 minutes after drinking before chewing a piece of gum.

Some people prefer other methods or cannot use the gum for the following reasons:

- They find the gum unpleasant tasting.
- Side effects specific to the gum may include upset stomach, mouth ulcers, hiccups, and throat irritation.
- They are embarrassed chewing gum.
- They wear dentures.

The Nicotine Inhaler. The nicotine inhaler resembles a plastic cigarette holder. It comes with a number of nicotine cartridges, which are inserted into the inhaler and "puffed" for about 20 minutes, up to 16 times a day. The dose is gradually decreased. It requires a prescription in the US. A number of studies have reported that the inhaler triples abstinence rates (between 17% and 28%) compared with placebo (6% to 9%) after six months. It has some specific advantages over other nicotine replacement products:

- The inhaler provides varying doses of nicotine on demand (as opposed to continuously with the patch or the gum) and is relatively fast-acting. Blood nicotine levels peak about 20 minutes after using the inhaler, comparable to the gum and faster than the two to four hours seen with the patch.
- It satisfies oral urges.
- Most of the nicotine vapor is delivered in the mouth, not into the lung airways (although some people experience mouth or throat irritation and cough).

Using a combination of the inhaler and the patch may be particularly effective. In one study, the combination led to an abstinence rate of over 60% after six weeks. While this percentage dropped off over time, it was still a marked improvement over the use of the inhaler and a placebo patch.

The Nicotine Nasal Spray. The nasal spray satisfies immediate cravings by providing doses of nicotine rapidly and thus may play a useful role in conjunction with slower-acting nicotine replacement therapies. (Nicotine levels peak within five to ten minutes after administering the spray.) The spray can irritate the nose, eyes, and throat, so it may not be suitable for those with allergies or sinus infections. Most people, however, can tolerate the side effects, which usually subside within the first few days.

Other Nicotine Replacements. A nicotine lozenge that is held under the tongue is being investigated. In a large 2002 study, 15% to 18% of smokers who used it remained smoke free, compared to 6% to 10% who were given a dummy lozenge. Side effects included heartburn, hiccups, nausea, headaches, and cough.

A solution containing nicotine that people can put in their drinks (coffee, tea, juice, soda) is also being tested.

Warning Note: Nicotine-containing water (Nico Water), lollipops, and other products have been marketed as dietary supplements on the Web and elsewhere. Consumer groups have raised concerns about possible dangers for children, and the Food and Drug Administration has restricted their sale.

Reduced-Smoke Cigarette: Special Warning?

Eclipse is a reduced-smoke cigarette that is being marketed as safer than other cigarettes. It works in the following way:

- The smoker lights a carbon rod at the tip of the cigarette.
- The heat passes from the carbon rod through a layer of tobacco. The carbon rod is insulated by a glass fiber mat, so the tobacco is heated rather than burned.
- The smoker inhales.
- Nicotine and other substances in the cigarette are delivered to the lungs similar to using an aerosol device.

It should be strongly noted, unlike nicotine replacement products, that this cigarette has undergone no rigorous independent studies. In a 2002 study comparing it to two ultra-light brands, it was as carcinogenic as Carlton and more carcinogenic than Now. The

study also reported that consumers smoke Eclipse at higher puff volumes and frequencies than other cigarettes.

Bupropion (Zyban)

The unique antidepressant bupropion (Zyban) is proving to be a strong aid in the quitting process. It differs from most other antidepressants because it increases the effects of dopamine, the brain chemical that appears to play a strong role in nicotine addiction. People should take Zyban only as directed by their physician.

Administration and Benefits. The usual recommended dosing is 150 mg tablet twice a day. No single dose should be higher than 150 mg. In one comparative study reported by the manufacturer, quit rates were with abstinence rates at 12 weeks ranging from 20% with 100 mg/day to 25% at 300 mg/day. (It should be noted that other studies report significantly higher quit rates, particularly in combination with nicotine replacement.) Zyban is equally effective in African American and Caucasian smokers. Many people quit smoking one to two weeks after starting, although the drug is typically prescribed for seven to 13 weeks.

In people who are not depressed, there is no noticeable effect on mood. People who are depressed generally report better spirits and more energy, although in a few cases depression worsened.

People tend to maintain their weight after quitting while they are on the drug. A 2001 study indicates that Zyban is most effective while it is being taken, and some people may need to take it for a year or longer to increase the duration of abstinence and perhaps maintain weight loss.

Even if people return to smoking after taking Zyban, they can use it again with considerable success. In one 2001 study, those who were retreated with the drug still had a significantly better abstinence rate (20% at 12 weeks) than those on placebo (3%).

Side Effects. Side effects include gastrointestinal problems, headaches, insomnia, dry mouth, and irritation. In very rare cases, seizures have occurred, although usually in people who exceeded the recommended dose or who already had risk factors for seizures.

Outside Support

Smokers who use outside help have the best record for quitting, with success rates between 25% and 35%. (Those who are counseled in addition to using nicotine replacement and Zyban have the best chance.) The two most successful behavioral interventions are the following:

Supportive Care by a Clinician. Studies report that even brief counseling by a physician (three minutes or less) or a computerized form letter may increase the likelihood of successful quitting. In spite of the strong evidence supporting any physician intervention, a 2001 study reported that nearly a quarter of physicians failed to counsel their patients on quitting. In a 2002 study, physicians were given a short training seminar to help their patients quit. After a year, 13% of their patients continued to abstain from smoking, versus 5% whose doctors were not trained in smoking cessation techniques.

Counseling Programs that Offer Problem Solving or Coping Strategies. Smokers who learn thinking (cognitive) and behavioral techniques for breaking the link between certain cues and smoking; stress management; and ways to handle the symptoms of withdrawal and the urge to relapse are more likely to be successful in quitting. The more intense the counseling program, the better. Smokers should look for programs that include the following:

- 20 to 30 minute session lengths.
- Four to seven sessions.
- Two week program duration.
- An additional two weeks or more of follow-up contacts.

Telephone hotlines offering counseling also help, especially when smokers receive follow-up calls. Brochures, audio tapes, and other self-help materials are often ineffective when used alone but may be helpful in conjunction with a counseling program.

[For programs *see* Where Else Can Help Be Obtained for Quitting Smoking?, below.]

Other Investigative Agents

Nortriptyline. Antidepressants known as tricyclics may also be beneficial, since they have additional effects, independent of reducing depression, that may help smokers. The tricyclic nortriptyline (Pamelor, Aventyl) has been specifically studied for helping smokers. It is best to start taking the medication 10 to 28 days before the quit date. In one study, after six months, 14% taking the drug had quit compared to 3% who hadn't used it. Side effects of this drug include dry mouth and changes in taste. It should be noted that in rare cases, tricyclics can have serious side effects, and overdose can be fatal. Tricyclics may pose a danger for some patients with certain types of heart disease.

Clonidine. Small trials indicate that the high blood pressure drug clonidine (Catapres) may be effective for smoking cessation. It acts on the central nervous system and helps to ease symptoms of withdrawal. Dry mouth, sedation, and other side effects, however, are common and may limit its use.

Naltrexone. Naltrexone, a drug used in detoxification programs for opiate addiction and alcohol abuse, has shown some promise for smoking cessation as well, particularly in women and those with a history of depression. In a 2002 study, 92% of women who took the medication along with nicotine replacement and counseling had successfully quit

after three months, compared to 51% who used only the standard therapies. Earlier studies, however, have been mixed, and more research is needed.

Alternative and Other Methods for Quitting

Scheduled Reduction. One study showed that people who used a systematic withdrawal schedule were twice as likely to quit as those who went cold turkey. The procedure involves the following steps:

- Divide the number of minutes per day awake by the number of daily cigarettes; the result is the minute-long wait between smokes.
- Set up a schedule with time intervals based on this result and using a timer, smoke only at those intervals; if the "cigarette appointment" is missed by more than five minutes, the smoker must skip that cigarette.
- The following week, one-third fewer cigarettes are used and the smoking time is recalculated based on the lower number.
- During the third week the count is again reduced by a third, and the smoker quits in the fourth week.

(Those who are unable to smoke during working hours could try calculating the intervals based on the usual smoking times of the day.)

Hypnosis. Although rigorous studies are lacking, some people report successful cessation from smoking when hypnosis is given in individual sessions. Group sessions appear to be worthless. The process is effective only if the subject trusts the therapist and can feel completely at ease in the vulnerable and passive state necessary for hypnotic suggestion. A typical effective session includes the following steps:

- The hypnotherapist uses various techniques (e.g., imagery, silent counting) to put the subject in a relaxed state.
- When the subject is very relaxed, but not asleep, the hypnotherapist quietly suggests motivations for not smoking.
- The hypnotherapist should also reinforce a positive self-image while the subject is in deep relaxation. This helps many people avoid the depression that accompanies withdrawal.
- The session usually takes about an hour.

The patient is taught methods of self-hypnosis to use at home, and there is usually one follow-up reinforcing session.

Acupuncture and Acupressure. The acupuncture technique for quitting smoking usually uses tiny curved staples attached to three different points around the edge of the ear. The procedure is entirely painless. The patient is instructed to press each staple in sequence for a few seconds whenever the craving for a cigarette occurs. The acupuncturist may also use acupuncture points elsewhere on the body. Sometimes acupuncturists also use pressballs, which are very small gold or silver pellets that are taped onto the ear. There are no side effects except for some soreness if the acupuncture staple is pressed too hard. A related technique called acupressure involves simply pressing select points on the body when a craving hits.

Some small studies have indicated that acupuncture and acupressure may reduce the taste for cigarettes and help people to quit. A systematic review noted, however, that rigorous evidence of benefit is lacking and that these techniques may not provide any long-term benefits over sham treatments.

Public Health Efforts and Social Pressure (Denormalization)

Public health efforts are effective, mostly by creating the idea that smoking is no longer normal. This concept of *denormalization* is best instituted by laws and local regulations making smoking inaccessible in public places, raising prices, and putting stricter limitations on cigarette advertising. Here are some examples of its success:

- In California, where public efforts to control tobacco began in 1989, the prevalence of smoking dropped from 26% that year to 17.2% in 2000. During its first nine years, it was estimated that this campaign prevented over 30,000 deaths.
- In Arizona, an anti-smoking campaign funded in part by a tax increase on cigarettes, dramatically reduced smoking rates among men, women, and different ethnic groups, so that it now has one of the lowest smoking rates in the country (18.6%). Two of the groups showing the sharpest declines were individuals earning less than \$10,000 a year and those with less than an eighth-grade education, an encouraging result since these groups tend to have a high rate of smoking.
- In Oregon, school programs that began in 1997 reduced smoking among eighth graders.
- In Canada, graphic images of diseased lungs, mouths, and other body parts on cigarette packs, which have been required since 2001, have been very effective in encouraging smokers to try to quit.
- An international survey found that smoke-free workplaces reduced the overall prevalence of smoking by 3.8%. (To have a comparable effect, cigarette taxes would have to rise from an average of 76 cents to \$3.05 per pack.)

Denormalization can also work on a personal level. A British study found that when one spouse makes healthy changes, including quitting smoking, the other one follows. In couples where smoking continues, it usually continues in both. Even if smokers have all the public and professional support available, however, quitting is still a solitary and difficult process.

SOME TIPS FOR QUITTING

Aim to Quit Completely

Everyone who quits should aim to quit completely. Most people who return to smoking "cheat" in the first few weeks. In addition, reducing smoking, even by half, does not eliminate the risk for cancer and other health problems. Although smokers take in less smoke and nicotine, the body is still unable to heal itself from the ongoing intake of toxins. Quitting completely is essential to regain good health and reverse adverse effects caused by smoking. It should also be noted that changing to low-tar cigarettes is not a solution. In fact, smokers of these cigarettes tend to inhale deeper, perhaps even increasing health risks.

Create a List

Write down 10 reasons to quit. In addition to health reasons, the list might include having better smelling hair, clothes, and breath; having fewer wrinkles; enjoying the taste of food; saving money; and not supporting the tobacco industry. Read the list often to help stay motivated.

Decide on a Specific Quit Date

Some people find it helpful to choose a particular date to quit when little or no stress is anticipated for at least the first three days. Women affected by PMS should avoid quitting right before their periods. It may help the smoker to write out a quit contract, putting the date on paper, and getting a friend to cosign. Involving others can offer the smoker even more incentive to quit. The smoker should also discard all smoking paraphernalia on the eve before the quit date, and make plans to stay busy on the day itself, and especially at night, when the urge to smoke will be high. (If smokers lose their nerve on the chosen day, they must not get discouraged but should simply choose another quit date as soon as possible.)

Make an Oath

Take an extreme "sacred" or superstitious oath. (Example: "If I smoke one more cigarette my dog will die.") Although this seems absurd, some people, even well-educated individuals, who have failed all other methods have reported that they quit completely and successfully after taking such an oath.

Let the Body and Mind Heal during Withdrawal

- Retreat from the world when cravings become overwhelming: take naps, warm baths or showers, meditate, read novels.
- Assist the body in getting rid of nicotine. Drink plenty of water, eat fresh fruits, vegetables, whole grains, and fiber-rich foods. Carrots, apples, and celery are good munching foods.
- When cravings occur, hold your breath as long as possible or take a few deep rhythmic breaths.
- Use meditation or relaxation and deep breathing exercises. In fact, taking deep breaths when the urge to smoke occurs is a good stopgap measure.

Get Family and Friends Involved

- Tell all your friends and family that you've already quit, so you'll be embarrassed if they catch you smoking.
- Pay a family member or friend if they catch you smoking. The amount should be large enough (\$5 to \$20) to be a deterrent, but not so large as to be ridiculous.
- If your partner or a friend smokes, try and persuade him or her to quit or at the very least not to smoke around you and others.

Exercise

An enjoyable exercise program is a great asset. Studies continue to show that smokers who exercise, vigorously if possible, can greatly increase their ability to quit smoking, while reducing their risk for weight gain. Move the muscles when craving occurs. Dance, run, walk, jump up and down, stretch, do push-ups. Yoga is an excellent exercise program for quitting. Older people and anyone with health problems should consult a physician or health care expert before starting such a program.

Maintain a Healthy Diet

- Eat plenty of fresh, crunchy fruits and vegetables. This is also a useful way of satisfying oral cravings without adding many calories.
- Drink plenty of water and healthy beverages.
- Weight gain is a problem when quitting, but you would need to gain 100 pounds to do as much damage to your body as smoking a pack of cigarettes a day. One study reported that a low-calorie diet during withdrawal and for the first few weeks helped women prevent weight gain and improved abstinence significantly compared to those on a normal diet, even when subjects went off this diet later on.

Change Daily Habits

- Change the daily schedule, particularly eating times, as much as possible. Eat at different times or eat many small meals instead of three large ones. Sit in a different chair or even a different room, rearrange the furniture.
- Find other ways to close a meal. Play a tape or CD, eat a piece of fruit, get up and make a phone call, or take a walk (a good distraction that burns calories as well). For example, if you normally have a cigarette with coffee, drink tea instead or use a different cup.
- Substitute oral habits (eat celery, chew sugarless gum, suck on a cinnamon stick, or carry worry beads.) One small study comparing men who had quit for 10 years with those who failed found that those who substituted other types of oral behavior were more likely to succeed in quitting than those who didn't. People who simply tried to distract themselves with busy activities were typical of those who relapsed.
- Go to public places and restaurants where smoking is prohibited or restricted.
- Set short-term quitting goals and reward yourself when they are met.
- Every day put the money normally spent on cigarettes in a jar and buy something pleasurable at the end of a predetermined period of time. (Moderate to heavy smokers can even go on vacation with the money saved after just one year of quitting.)
- Find activities that focus the hands and mind but are not taxing or fattening: computer games, solitaire, knitting, sewing, whittling, and crossword puzzles.
- Avoid heavy drinking of alcohol, coffee, or other stimulants or mood altering substances.

WHAT SHOULD SMOKERS AND FORMER SMOKERS DO TO PROTECT THEMSELVES AGAINST HARMFUL EFFECTS OF SMOKING?

It is so difficult to quit that smokers should never feel inadequate if they fail. In fact, self-recriminations and guilt only reinforce the low self-esteem and depression that helps cause smoking behavior in the first place. So the cycle continues. Everyone who smokes

should simply assume that at some point they will be able to quit, even if they have relapsed many times. Whether or not smokers can stop smoking, they and former smokers should begin immediately to change any other behaviors that might be damaging their health.

Exercise

Any smoker who is able to and is not exercising should start after discussing an appropriate program with their physician. Regular exercise reduces a smoker's risk of heart disease (although still not to the level of a nonsmoker). Exercise does not lower a smoker's risk for lung cancer or emphysema.

Regular Check-Ups

Smokers should be assiduous about screening programs for any disorders that are increased with smoking. They should have their cholesterol and blood pressure checked regularly. Women should have annual Pap smears (which are used to detect cervical cancer). All older adults should be screened for colon cancer. Smokers might ask their physicians about computed tomography (CT) screening programs, which are becoming increasingly available and might detect lung cancer in early stages. (At this time, they are not usually covered by insurance.)

Healthy Diet

Everyone should also maintain a healthy diet, with foods rich in whole grains and fruits and vegetables (particularly dark colored ones). Saturated fats should be avoided, and people should choose monounsaturated fats, which are contained in olive oil or fats from oily fish. (All fats are high in calories and former smokers particularly should be careful to use even these fats in moderation.) Two studies have indicated that eating fish more than twice a week might help limit the tobacco damage in people who are not heavy smokers (more than a pack and a half a day). An interesting Spanish study indicated that smokers who drank coffee regularly may have a lower risk for smoking-associated bladder cancer. This does not mean coffee protects smokers from cancer, but coffee may have certain cancer-fighting compounds. More studies are needed.

Vitamins and Supplements

Even with a healthful diet, however, smoking reduces the levels of a number of vitamins, importantly vitamin C. Some research suggests that supplements of folic acid, a B vitamin, and the antioxidants vitamins E and C and selenium may improve lung function or reduce the damage done by cigarette smoke. According to two studies, daily vitamin E supplements were associated with reduced risk for prostate cancer among smokers, and in another, higher levels of vitamin E were associated with a lower risk for lung cancer. It should be strongly noted that taking another well known antioxidant, beta-carotene, has been associated in more than one study with *higher* rates of lung cancer in smokers. The best way of achieving healthy levels of important nutrients is from healthy foods.

Protecting the Smoker in Special Circumstances

Pregnant Women. Women who are pregnant and continue to smoke must be sure to take appropriate vitamins, particularly folic acid. In this way, they might reduce the increased risk of fetal injury and death, although they do not eliminate that risk.

Smokers with Heart Disease. Smokers who have had a heart attack and are still smoking may dramatically reduce their risk for another heart attack by taking aspirin. This agent may also have some protection against lung cancer. Long-time use, however, increases the risk for gastrointestinal bleeding (which is also higher in smokers).

WHERE ELSE CAN HELP BE OBTAINED FOR QUITTING SMOKING?

Pfizer www.chantix.com

American Cancer Society, 1599 Clifton Road, NE, Atlanta, GA 30329. Call (800-ACS-2345) or (404-320-3333) or (<http://www.cancer.org>). The ACS offers a good quitting smoking program that covers four one-hour sessions during over a two-week period. They claim that 20% to 30% of people remain off cigarettes. Call to find the nearest program.

The American Lung Association, 1740 Broadway, New York, New York 10019-4374. Call (800-LUNG-USA) , 212-315-8700 or on the Internet (<http://www.lungusa.org>). The association is very responsive and offers a wide range of information and services.

National Cancer Institute. Suite 3036A, 6116 Executive Boulevard, MSC8322, Bethesda, MD 20892-8322. Call (800-422-6237) or (<http://www.nci.nih.gov>). The NCI offers free information on quitting smoking.

American Academy of Addiction Psychiatry. 7301 Mission Road, Suite 252, Prairie Village, KS 66208. Call 913-262-6161 or (<http://www.aaap.org>)

Nicotine Anonymous World Services. Call (866-536-4539) or (<http://www.nicotine-anonymous.org>). The organization uses the same principles as Alcoholics Anonymous. It offers a directory of meeting places and times in many locations.

Agency for Health Care Research and Quality, Publications Clearinghouse 2101 E. Jefferson St., Suite 501 Rockville, MD 20852 Call (301-594-1364) or (<http://www.ahcpr.gov>)

The American Council on Science and Health, 1995 Broadway - Second Floor, New York, NY 10023-5860. (<http://www.acsh.org>) Phone: (212) 362-7044. Offers very useful information on health consequences of smoking.

SOURCES OF ALTERNATIVE METHODS

The American Society of Clinical Hypnosis, 130 East Elm Court, Suite 201, Roselle, IL 60172-2000. (<http://www.asch.net>) or call (630-980-4740). To find a reliable hypnotherapist send a self-addressed stamped envelope to the Society.

The Society for Clinical and Experimental Hypnosis, 3905 Vincennes Rd., Suite 304 Indianapolis, IN 46268. (<http://sunsite.utk.edu/IJCEH/scehmain.htm>)

American Academy of Medical Acupuncture. 4929 Wilshire Boulevard, Suite 428, Los Angeles, California 90010/ Call (323) 937-5514 or go to <http://www.medicalacupuncture.org> . To find an acupuncturist (<http://www.medicalacupuncture.org/refsearch.html>)

USEFUL SITES

(<http://www.smokefreekids.com/smoke.htm>)

(<http://www.megalink.net/~dale/quitcigs.html>)

(http://www.quitnet.com/qn_main.jtml)

(<http://www.globalink.org/tobacco/>)

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