

CHAPTER 6

SMOKING, ALCOHOL, AND DRUGS

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INTRODUCTION

Of all the risk factors for heart disease, the ones over which an individual has the most control are those related to “bad habits,” namely the use or abuse of tobacco (especially cigarettes), alcohol, and illicit drugs. Numerous studies show that people who use these substances have a marked increase in risk of developing heart disease. Still, there is heartening news for longtime smokers, drug users, and heavy drinkers who quit. The increased risks can be lowered and even eliminated.

The benefits of controlling or, better still, eliminating these risk factors can be dramatic. In fact, smoking cessation is the single most effective step that smokers can take to lower their risk of heart disease. Former smokers live significantly longer than do continuing smokers, and their reduced incidence of heart disease is one of the major reasons.

This chapter reviews the dangers of smoking, drinking, and using illicit drugs. The ways in which these habits raise the risk of heart disease and methods for quitting or moderating consumption are also discussed. The chapter also reiterates a key theme, namely, that quitting can lower the risk of the development and progression of heart disease, even after decades of use.

SMOKING

Cigarette smoking is by far the leading cause of premature or preventable deaths in the United States. And cancer is not, as many people believe, the only risk of smoking. According to a 1990 report by the Surgeon General, tobacco use is responsible for more than 350,000 deaths a year from heart disease. Cigarettes hold the dubious distinction of being the only mass-marketed product that when used as directed actually causes disease and death. If cigarettes were invented now, health officials would no doubt ban their sale. Unfortunately, for a variety of reasons, appropriate restrictions on smoking are often difficult to implement.

SMOKING AND LUNG DISEASE

Since the first Surgeon General’s Report on Smoking and Health in 1964, lung cancer has been recognized as one of the long-term dangers of smoking. However, lung cancer is not the only pulmonary disease caused by tobacco. Smoking is also the most important risk factor for developing chronic bronchitis and emphysema, a chronic pulmonary disease in which the lungs gradually lose their normal elasticity. A per-

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son with emphysema is often short of breath, and persons with chronic bronchitis frequently cough up thick phlegm. Emphysema also makes the heart (particularly the right side) work harder. This strain on the heart can lead to a debilitating disease called cor pulmonale, in which the right atrium and ventricle enlarge and fail to function adequately.

SMOKING AND HEART DISEASE

Smoking by itself greatly increases the risk of heart disease, but there is a synergistic effect when cigarette smoking is combined with other cardiovascular risk factors, such as high blood pressure, high serum cholesterol (or low HDL) levels, obesity, and a family history of heart disease. When smoking is combined with these factors, the increased risk is not simply additive; instead, the risks are compounded, with the total risk exceeding the sum of the individual risks. Thus, even moderate smoking can triple a person's risk of heart disease.

The increased cardiovascular risk from smoking is significantly lower among pipe and cigar smokers than among cigarette smokers, probably because they are less likely to inhale. However, when smokers switch from cigarettes to pipes or cigars, they may continue to inhale, and their risk may not be reduced. Likewise, changing to low-tar, low-nicotine, or filtered cigarettes has not been shown to lower and may even increase the risk of heart disease. Nicotine is only one of about 4,000 potentially harmful substances in cigarettes, and some of these other compounds may affect the heart. There is also evidence that people who switch to low-nicotine, low-tar cigarettes inhale more deeply, thereby increasing the amount of harmful substances entering the body.

The heart disease risk in users of smokeless tobacco (chewing tobacco and snuff) has not been thoroughly studied. However, the nicotine from smokeless tobacco has been shown to have the same adverse effect on the heart and blood vessels as that from cigarettes.

Fortunately, cigarette smoking has become less popular in the United States, particularly among people with more than a high school education and in the group at highest risk of heart disease: middle-aged men. Unfortunately, there has also been a dramatic rise in smoking among teenagers, especially teenage girls. If this trend continues, the number of female smokers is expected to equal the number of male smokers by the mid-1990s and then surpass it.

As a consequence of increased smoking by women, lung cancer has replaced breast cancer as the number one cause of cancer death among women. In recent decades, the risk of heart disease has also risen among women smokers. Since smoking interferes with estrogen production and metabolism, it lowers the natural protection against premature atherosclerosis conferred by estrogen. Taking certain oral contraceptives (especially those with high levels of estrogen) raises the smoking-related risk of vascular disease even higher, especially in women over age 35.

HOW SMOKING RAISES CARDIOVASCULAR RISK

ATHEROSCLEROSIS

Research has shown conclusively that smoking accelerates arteriosclerosis (hardening of the arteries) and atherosclerosis (a type of arteriosclerosis characterized by fatty deposits in the artery walls), increasing the risk of heart disease, stroke, and peripheral vascular disease. Consequently, smokers have a higher risk of cardiovascular disease in general, and heart attacks in particular, than nonsmokers.

Cigarettes may promote atherosclerosis by a variety of mechanisms. Smoking increases the levels of carbon monoxide, a poisonous gas that is inhaled in smoke. Over the long term, this increased level of carbon monoxide from the inhaled smoke itself contributes to damaging the lining of the blood vessels and accelerates the process of atherosclerosis.

Smoking also affects serum cholesterol. Smokers tend to have decreased levels of high-density lipoproteins (HDL—the “good cholesterol”) and increased levels of low-density lipoproteins (LDL—the “bad” cholesterol) and triglycerides (a blood fat), thereby raising the risk and severity of atherosclerosis.

Blood levels of fibrinogen, a component of blood necessary for clotting, are raised by smoking. This may increase the likelihood of blood clots forming and blocking the coronary arteries, leading to a heart attack or stroke. Such clots are most likely to form on areas of the endothelium (the inner lining of blood vessel walls) that are clogged by atherosclerotic plaque and have been roughened by prior damage,

rather than on those that remain smooth and intact. Smoking may also cause blood platelets to clump abnormally, adding to the risk of clotting.

Stopping smoking results in an increase in the ratio of HDL to LDL cholesterol and lowers the level of fibrinogen in the blood. Both of these changes help reduce the risk of a heart attack.

SHORT-TERM EFFECTS

Smoking causes surges in the concentrations of catecholamines (the stimulator chemical messengers of the autonomic nervous system) as well as increases in carbon monoxide in the blood. Both of these short-term effects can exacerbate existing heart disease, resulting, for instance, in attacks of angina (chest pain). Nicotine raises blood pressure and heart rate, requiring the heart to work harder. It also constricts the coronary arteries, thereby lessening the supply of blood and oxygen to the heart muscle. It also promotes irregular heartbeats (cardiac arrhythmias).

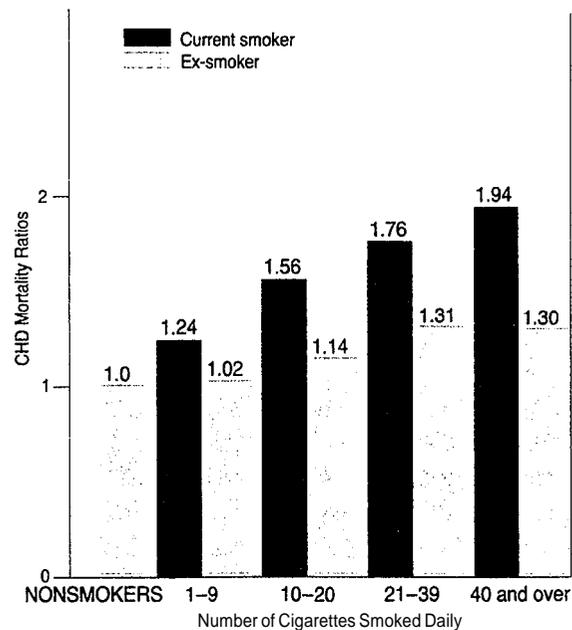
HOW SMOKING CESSATION LOWERS RISK

The increased cardiovascular risk from smoking can actually be reversed simply by stopping smoking. Even smoking fewer cigarettes or switching to a pipe or cigars has been shown to lower the risk, but stopping all tobacco use is much more effective in eliminating the increased risk. Not surprisingly, the greatest benefits are to heavy smokers, those who smoke more than two packs a day. (See Figure 6.1.)

Some smokers are reluctant to quit smoking for fear of gaining weight. Still, the health benefits of quitting far outweigh any increased health risks from the average 5-pound weight gain that may follow smoking cessation. (Even this minor weight gain can be avoided or reversed with careful planning prior to quitting and behavior modification.)

Quitting lowers the risk of heart disease for people who have never had any symptoms, as well as those who have suffered extensive heart disease. Often a heart attack or a coronary artery bypass graft operation compels individuals to stop smoking, and it

Figure 6.1
Cessation of Smoking and Coronary Heart Disease (CHD):
Mortality Ratios of Current Smokers Versus Ex-smokers



Source: E. Rogot and J. L. Murray, *Smoking and causes of death among U.S. veterans: 16 years of observation*. *Public Health Reports* 95(3) 213-222, May-June 1960.

is certainly true that they will be better off if they quit. However, a heart attack does irreversible damage to part of the muscle of the heart. Therefore, it is much better to stop smoking whether or not heart disease may be present—or, better yet, never start. After a heart attack, quitting smoking may be the most effective single risk factor intervention. It can lower the risk of developing a second heart attack and of dying of a future heart attack if it does occur.

Even for people who have been smoking for decades, the cardiac benefits of quitting are great—and they start the moment a person quits. Within 20 minutes after the last puff, nicotine-induced constriction of the peripheral blood vessels lessens, decreasing the coldness of the hands and feet that troubles some smokers. Eight hours later, the blood's oxygen level returns to normal, and its carbon monoxide level lessens.

Perhaps most important, the risk of having a heart attack starts to decline within the first *day* after stopping smoking. According to the 1990 Surgeon General's Report on the Health Benefit of Smoking Cessation, the smoking-related excess risk of heart disease is cut in half within one year of quitting. Within 5 to 10 years after stopping, the average ex-smoker's risk of heart disease is the same as that of someone who has never smoked. This is true for both men and women.

In contrast to the heart, the lungs take somewhat longer to show the beneficial effects of quitting. But there, too, the rewards of stopping smoking are great. Ten years after quitting, a former pack-a-day smoker has nearly the same chance of avoiding fatal lung cancer and other smoking-linked cancers as does a lifetime nonsmoker.

SMOKING CESSATION METHODS

Quitting “cold turkey,” rather than tapering off gradually, seems to be the best method for most people, although it is not successful for everyone. It helps if friends, relatives, or coworkers who smoke can stop on the same day—or at least not smoke in front of the new ex-smoker. Many smokers who want to stop can do it on their own, while others may need the help of individual or group counseling, relaxation training, hypnosis, or behavior modification to ease withdrawal symptoms.

Among structured programs, the best success rates have been reported for those that provide the quitter with a support system and that include counseling and education on behavior modification, stress management, and nutrition. Behavior modification is the most important component. It makes people confront the reasons why they smoke and assists them in finding the path that will help each one individually achieve success in quitting. (See the “Why Do You Smoke?” self-assessment quiz.) Most smokers are accustomed to lighting up in response to stress. By learning better techniques for managing stress, they can prevent themselves from starting to smoke again.

Sometimes weight gain accompanies smoking cessation. Part of the reason is that, with quitting, taste buds regain their keenness, so food tastes better. Eating also provides something to do with the hands and mouth, which want a cigarette. Finally, it appears that metabolism (the rate at which the body expends calories) is speeded up by nicotine and tends to slow down with quitting. Exercise can help boost metabolism again, while nutritional counseling can teach quitters how to choose healthy, low-fat snacks and structure their regular meals to compensate for extra nibbling. With these changes, most weight gain is not significant.

Smokers who want to quit and fear weight gain should keep in mind that although true obesity is also a risk factor for heart disease, a few extra pounds are

not nearly as detrimental as smoking. It would take an additional 75 pounds to offset the benefit the average smoker gains from quitting. Furthermore, most ex-smokers find that once they have completely stopped smoking, it is easier to lose the few extra pounds than it was to give up smoking.

Yale–New Haven Hospital’s Center for Health Promotion offers a smoking cessation program called Smoke Stoppers, developed by the National Center for Health Promotion, to its employees and patients, as well as corporate and community participants. The program features behavior modification, stress management, and nutritional counseling, and has a success rate of 50 percent to 70 percent at the end of one year. On average, program participants gain approximately 2 pounds. The program’s success is largely attributed to carefully trained and certified instructors. All are ex-smokers who can empathize with the participants—and see through their defenses and denial.

At the first group session, smokers in the Yale program learn about the benefits of smoking cessation and methods of treatment. They do not quit at that meeting, but set a “quit date” within the next week. In the interim, they are encouraged to start keeping a diary of their activities, including smoking. (See box, “Daily Cigarette Count.”) This diary-keeping helps them identify the individual behavior that has chained them to the smoking habit. Such analysis, in itself, often results in a curtailment of smoking, which lowers the body’s dependence on nicotine, thus easing the next step: quitting cold turkey.

At the next meeting, the program participants throw out their cigarettes and learn survival techniques for their first day of “staying quit.” Daily meetings over the next three weeks then reinforce this support, with nutritional counseling and extensive training in stress management techniques. Those participants who are found to be highly nicotine dependent and those in whom withdrawal symptoms pose a particular problem can consult their doctors about nicotine-replacement therapy. The instructors follow up with the quitters at intervals of six, 12, and 18 months after the quit date. Participants who begin to smoke again are invited to repeat the program at no charge.

Some other programs and individuals have reported success with the “wrap” method. During the period before the quit date, the smoker wraps each pack of cigarettes with paper and rubber bands (a variation calls for wrapping each individual cigarette in aluminum foil). Whenever there is an urge to smoke, the automatic response is broken by the chore

Why Do You Smoke? A Self-Assessment Quiz

Here are some statements made by people to describe what they get out of smoking cigarettes. How often do you feel this way when smoking? Choose one number for each statement.

5 = always 4 = frequently 3 = occasionally 2 = seldom 1 = never

- A. I smoke cigarettes in order to keep myself from slowing down. _____
- B. Handling a cigarette is part of the enjoyment of smoking. _____
- C. Smoking cigarettes is pleasant and relaxing. _____
- D. I light up a cigarette when I feel angry about something. _____
- E. When I have run out of cigarettes, I find it almost unbearable until I can get more. _____
- F. I smoke cigarettes automatically without even being aware of it. _____
- G. I smoke cigarettes to stimulate me, to perk myself up. _____
- H. Part of the enjoyment of smoking a cigarette comes from the steps I take to light up. _____
- I. I find cigarettes pleasurable. _____
- J. When I feel uncomfortable or upset about something, I light up a cigarette. _____
- K. I am very much aware of the fact when I am not smoking a cigarette. _____
- L. I light up a cigarette without realizing I still have one burning in the ashtray. _____
- M. I smoke cigarettes to give me a "lift." _____
- N. When I smoke a cigarette, part of the enjoyment is watching the smoke as I exhale it. _____
- O. I want a cigarette most when I am comfortable and relaxed. _____
- P. When I feel "blue" or want to take my mind off cares and worries, I smoke cigarettes. _____
- Q. I get a real gnawing for a cigarette when I haven't smoked for a while. _____
- R. I've found a cigarette in my mouth and didn't remember putting it there. _____

How to Score

- Enter the numbers you have selected for the test questions in the spaces below, putting the number you have selected for question A over line A, for question B over line B, etc.
- Total the 3 scores on each line to get your totals. For example, the sum of scores over lines A, G, and M gives you your score on Stimulation. Scores over 11 or above indicate that this factor is an important source of satisfaction for the smoker. Scores of 7 or less are low and probably indicate that this factor does not apply to you. Scores in between are marginal.

_____	+	_____	+	_____	=	_____
(A)		(G)		(M)		Stimulation
_____	+	_____	+	_____	=	_____
(B)		(H)		(N)		Handling
_____	+	_____	+	_____	=	_____
(C)		(I)		(O)		Relaxation
_____	+	_____	+	_____	=	_____
(D)		(J)		(P)		Crutch
_____	+	_____	+	_____	=	_____
(E)		(K)		(Q)		Craving
_____	+	_____	+	_____	=	_____
(F)		(L)		(R)		Habit

Source: Adapted from "Smoker's Self Test" by Daniel Horn, Ph.D., Director of the National Clearinghouse for Smoking and Health, Public Health Service.

Interpreting Your Score

- **Stimulation.** You smoke because it gives you a lift. Substitute a brisk walk or a few simple exercises.
- **Handling.** You like the ritual and trappings of smoking. Find other ways to keep your hands busy.
- **Relaxation.** You get a real sense of pleasure out of smoking. An honest consideration of the harmful effects may help kill the "pleasure."
- **Crutch (or negative feelings).** If you mostly light up when you're angry or depressed, you're using smoking as a tranquilizer. In a tough situation, take a deep breath to relax, call a friend, and talk over your feelings. If you can learn new ways to cope, you're on your way to quitting.
- **Craving.** Quitting smoking is difficult for you if you feel you're psychologically dependent, but once you've stopped, it will be possible to resist the temptation to smoke because the withdrawal effort is too tough to face again.
- **Habit.** If you usually smoke without even realizing you're doing it, you should find it easy to break the habit pattern. Start by asking, "Do I really want this cigarette?" Change smoking patterns and make cigarettes hard to get at.

Source: Adapted from "7-Day Plan to Help You Stop Smoking Cigarettes," American Cancer Society, 1978.

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Daily Cigarette Count .

Instructions: Attach a copy of this table to a pack of cigarettes. Complete the information each time you smoke a cigarette (those from someone else as well as your own). Note the time and evaluate the need for the cigarette (1 is for a cigarette you feel you could not do without; 2 is a less necessary one; 3 is one you could really go without). Make any other additional comments about the situation or your feelings. This record helps you understand when and why you smoke.

time	Need	Feelings/Situation
6AM	_____	_____
6:30	_____	_____
7	_____	_____
7:30	_____	_____
8	_____	_____
8:30	_____	_____
9	_____	_____
9:30	_____	_____
10	_____	_____
10:30	_____	_____
11	_____	_____
11:30	_____	_____
12PM	_____	_____
12:30	_____	_____
1	_____	_____
1:30	_____	_____
2	_____	_____
2:30	_____	_____
3	_____	_____
3:30	_____	_____
4	_____	_____
4:30	_____	_____
5	_____	_____
5:30	_____	_____
6	_____	_____
6:30	_____	_____
7	_____	_____
7:30	_____	_____
8	_____	_____
8:30	_____	_____
9	_____	_____
9:30	_____	_____
10	_____	_____
10:30	_____	_____
11	_____	_____
11:30	_____	_____
12AM	_____	_____
12:30	_____	_____
1	_____	_____
1:30	_____	_____

of having to unwrap and rewrap the pack. For each cigarette, the smoker must write down the time and his or her mood and current activity, and then rate the importance of the cigarette. Like the diary, this helps potential quitters start to think about why they smoke.

A program of this type requires a time and financial commitment that may be difficult or unnecessary for some people. On the other hand, some smokers find that the financial commitment is an added incentive to quit.

A number of government and voluntary health agencies offer free or nominally priced self-help materials for smokers who want to quit on their own. (See box, "Smoking Cessation Resources.") The American Cancer Society and the American Lung Association run relatively inexpensive smoking-cessation programs, as do the Seventh Day Adventists and some hospitals. At the same time that they introduce workplace no-smoking policies, many employers are offering such programs as well.

SECONDHAND SMOKE

Smokers are not the only people harmed by tobacco. Toxic fumes from cigarettes pose a health threat to all those around smokers—family, friends, and co-workers. Because the organic material in tobacco does not burn completely, smoke contains many toxic chemicals, including carbon monoxide, nicotine, and tar. Cotinine, a breakdown product of nicotine in the body, can be detected even in infants of smoking parents, as well as in nonsmoking adults who were unaware that they had been passively exposed to smoking.

As a result of this exposure, smokers' children have more colds and flu, and they are more likely to take up smoking themselves when they grow up. Women who smoke increase the risk of miscarriage, delivering an underweight baby, and other health problems during delivery and infancy. There seems to be an increased incidence of sudden infant death syndrome (SIDS) among babies whose mothers smoke. Otherwise, most of the effects of passive smoking appear to be reversible. For instance, women who quit smoking before becoming pregnant or during their first four months of pregnancy eliminate their risk (unless other factors are present) of bearing a baby of low birth weight.

Smoking Cessation Resources

Local offices of the American Cancer Society, the American Heart Association, and the American Lung Association can provide pamphlets on smoking cessation and resources for low-cost cessation programs. To find the office in your area, check your local telephone book or contact:

American Cancer Society
1599 Clifton Road NE
Atlanta, GA 30329

American Heart Association
7320 Greenville Avenue
Dallas, TX 75231

American Lung Association
1740 Broadway
New York, NY 10019

A "Quit Kit" of smoking cessation information, lists of local stop-smoking programs, and over-the-phone counseling is available from:

The National Cancer Institute
Cancer Information Clearinghouse
Office of Cancer Communication
Building 31, Room 10A18
9000 Rockville Pike
Bethesda, MD 20205
1-800-4-CANCER for all areas of the U.S. except:
Alaska (800) 638-6070
Oahu, HI (800) 524-1234

National Center for Health Promotion
Smoker Stoppers Program
3920 Varsity Drive
Ann Arbor, MI 48108
(313) 971-6077

For several years, secondhand smoke (passive smoking) has been implicated as potentially raising the risk of lung cancer. Evidence linking passive smoking to heart disease has been documented. New estimates released recently by the Surgeon General's office indicate that passive smoking may cause ten times as much heart disease as lung disease. Accordingly, passive smoking is now ranked as the third leading cause of preventable death, after active smoking and alcohol abuse.

Researchers suggest that nonsmokers who live with smokers have a 30 percent higher risk of dying from heart disease than do other nonsmokers. Since the U.S. Environmental Protection Agency estimates that exposure to secondhand smoke in the workplace

is about four times that of a typical household, the problem may be even worse for employees.

Not only can passive smoking contribute to the development of heart disease, but it also has been shown to worsen the condition of people with existing heart disease. The transportation of oxygen to the heart via red blood cells is hampered by the carbon monoxide in secondhand smoke. In people whose oxygen supply is already hampered by coronary artery disease, this places an excess burden on the heart. There is also evidence that passive smoking makes blood platelets abnormally sticky and more likely to form clots; these effects play a role in the development of atherosclerotic plaques on the artery walls.

The exposure of nonsmokers to environmental tobacco smoke is reduced—but not eliminated—when smokers and nonsmokers are placed in separate rooms that are ventilated by the same system. Since it is not practical to remove all tobacco smoke through air filters in ventilation systems, many municipalities and employers have now instituted no-smoking policies, either prohibiting all cigarette smoking within their buildings and certain public places or confining it to areas that are ventilated separately, with exhaust channeled directly outdoors.

QUITTING TIPS

- Make a list of all the possible reasons to quit and the benefits you'll receive from doing so. Mark those that are most important to *you*, such as "so my children won't breathe my smoke or mimic my smoking." Read over the list at least once a day and try to add to it.
- Think about your smoking patterns—when and why you have each cigarette. This analysis alone can help taper off the habit, lower your body's dependence on nicotine, and help you get a head start on actually quitting.
- Choose a date, in advance, to give up smoking completely. One popular day is the Great American Smokeout sponsored each November by the American Cancer Society, but it can be your birthday, the anniversary of a special day, or *any* day.
- Share your plan with a friend, coworker, or spouse. If your confidant is a smoker, ask him or her to quit with you. If not, ask for understanding and support or make it a challenge and propose a bet that you can do it.
- Start getting ready to quit by changing the type of cigarette you smoke (such as from regular to menthol) and the brand. Buy only one pack at a time and switch each time. Stop carrying matches or a lighter, and keep your cigarettes in an unhandy place.
- Get a large jar and start collecting all your butts in it.
- In another large jar start collecting the money you would normally spend on cigarettes each time you forgo buying a pack. Set aside the saved money as a reward for yourself.
- Remember, the first days are the hardest, so do whatever is needed to get through them. At first, it may be necessary to avoid activities that trigger the urge to smoke, such as socializing with other smokers. Try to spend as much time as possible in places where smoking is prohibited (or at least awkward).
- Brush your teeth or use mouthwash or spray several times a day. Enjoy the clean taste in your mouth.
- Change the behavior associated with your strongest urges. For example, if you always have a cigarette with your coffee during your morning break, have tea or juice or go for a quick walk instead.
- Keep your mouth and hands busy. Especially during the difficult early days, eat plenty of healthful snacks (such as fresh vegetables or fruits), chew gum (or consider a nicotine-containing gum available by prescription), and try holding a pencil between your fingers, doodling, or whittling. Suck on a toothpick or a straw.
- Enjoy not smoking: Think of the healthy returns of quitting; savor the taste of food, now that tobacco is no longer dulling the taste buds.

HELPING OTHERS TO QUIT

Smoking is psychologically and physically addictive, making it difficult for most people to quit. By keeping

Reasons to Quit Smoking

1. Add years to your life.
2. Help avoid lung cancer, emphysema, bronchitis, and heart attacks.
3. Give heart and circulatory system a break.
4. Get rid of smoker's cough.
5. Feel more vigorous in sports.
6. Improve stamina.
7. Stop smoke-related head and stomach aches.
8. Regain sense of smell and taste.
9. Have smoke-free rooms and closets.
10. End cigarette breath.
11. Save money.
12. Eliminate yellow stains on teeth and fingers.
13. Stop burning holes in clothes or furniture.
14. Get rid of messy ashtrays, ashes on carpets.
15. Set good example for others.
16. Prove self-control.
17. _____
18. _____
19. _____
20. _____

Source: Adapted from "7-Day Plan to Help You Stop Smoking Cigarettes," American Cancer Society, 1978.

these tips in mind, a supportive nonsmoker can make a decisive difference for a friend, family member, or coworker who is trying to stop smoking:

- Do not nag or preach.
- Praise the smoker's efforts to stop, no matter how tentative or small.
- Show confidence in the smoker's ability to quit.
- Invite the smoker to share pleasurable activities in places where smoking is prohibited. For example, go to the movies, visit a museum, attend a concert, or have dinner in a restaurant with a nonsmoking section.
- Offer healthful snacks to keep the quitter's mouth and hands busy while keeping weight gain to a minimum.
- Encourage the smoker to call you for help in "getting through" a sudden urge for a cigarette.
- Most important, be patient.

ALCOHOL

After smoking, excess alcohol is the second most common cause of preventable death. Alcohol is toxic to virtually every organ in the human body, but when consumed in moderate amounts, it is detoxified by the liver and does little or no harm. Alcoholic beverages contain ethyl alcohol (ethanol), which is metabolized in the body to acetaldehyde. In large amounts, both ethanol and acetaldehyde interfere with normal functions of organs throughout the body, including the heart.

There is a significantly higher incidence of high blood pressure among those who consume more than 2 ounces of ethanol a day (which translates into 4 ounces of 100-proof whiskey, 16 ounces of wine, or 48 ounces of beer). Abrupt withdrawal of alcohol from those consuming large amounts on a regular basis may cause the condition known as delirium tremens (DTs), which is associated with a significant risk of cardiac arrest.

Binge drinking can provoke arrhythmias (irregular heart rhythms)—frequently in the form of atrial fibrillation—in people with no previous symptoms of heart disease. This alcohol-induced rhythm disturbance is most common among people who have chronically abused alcohol. It is sometimes called "holiday heart" because it often occurs over the holidays or on weekends, after consumption of more alcohol than usual. People who are deprived of sleep are susceptible to developing "holiday heart" from drinking too much at one time, even if they do not regularly abuse alcohol.

Alcohol is thought to provoke arrhythmias by stimulating the sympathetic nervous system. Alcoholics tend to have higher blood levels of the chemical messengers of this system such as epinephrine (adrenaline). Deficiency of the trace mineral magnesium, which often occurs with chronic alcohol abuse, may also play a role.

Up to a third of all cases of a type of heart disease called cardiomyopathy are attributed to excessive drinking. Alcoholic cardiomyopathy occurs most often in middle-aged men. In this disorder, the heart muscle (myocardium)—particularly the right and left ventricles—enlarges and becomes flabby. (See Chapter 15.) As the working cells deteriorate, they become more sparse, and are replaced by fibers of connective tissue in the spaces between the cells (interstitial fibrosis). Eventually, alcoholic cardiomyopathy can result in heart failure, in which the heart does not pump

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blood efficiently to all parts of the body. Fatigue, shortness of breath during exercise, and swelling in the ankles are its most common symptoms. The heart's inability to send blood efficiently to the kidneys, where excess salt and water are normally filtered out, means the body begins to retain salt, and thus water. This in turn raises blood volume and causes a backup of fluid into tissues such as the lungs (hence the breathing difficulty).

When individuals with congestive heart failure caused by alcoholic consumption continue to drink, their prognosis is poor. In contrast, those who abstain from alcohol raise their chances of reversing the progress of alcoholic cardiomyopathy, especially if the problem is detected early. Their hearts may return to normal size, and they can live for many years. In fact, patients with alcoholic cardiomyopathy who abstain from drinking have a better prognosis than do patients with cardiomyopathy from other causes.

Physicians once believed that malnutrition was the sole mechanism by which alcohol damaged the heart. In extreme cases, alcoholics consume too many cal-

ories as drink and not enough as food, and they become malnourished. This could cause depletion of the protein in heart muscle. However, it is now recognized that in most cases, alcohol damages the heart even in the absence of malnutrition.

MODERATE USE OF ALCOHOL

A number of epidemiologic studies have suggested that the risk of heart disease is somewhat lower among people who regularly drink small amounts of alcohol, such as a glass of wine a day, than among teetotalers. Likewise, higher levels of high-density-lipoprotein (HDL) cholesterol have been reported among light drinkers than among nondrinkers. The overwhelming evidence, however, indicates that excess alcohol is harmful to the cardiovascular system. In all of the studies showing a lower than average risk among light drinkers, the highest risk was shown to be among heavy drinkers. Excess alcohol has been proved to damage the heart and other organs, including the liver, stomach, and brain.

Alcohol Content By the Drink

Alcohol, in its pure, undiluted form, is too strong for the mouth and stomach. The type of alcohol in alcoholic drinks is ethyl alcohol.

Alcohol content is expressed in percentages by volume. Thus, the amount of liquid is not the determining factor. At a bar or party, the size of the glass in which a certain type of drink is usually served determines the amount of alcohol a person can expect to ingest. For instance, although there is a much smaller proportion of alcohol in beer than in a cocktail, beer is usually served in a mug many times the size of a cocktail glass. Below are approximations of the amounts of alcohol found in various kinds of drinks.

Beer

Most beers contain about 5 percent alcohol by volume. Malt liquors may contain up to 8 or 9 percent.

Wine

A typical table wine contains about 10 to 13 percent alcohol by volume. A wine's taste and bouquet are not indicators of alcohol content. A light, fragrant wine may contain a higher percentage of alcohol than a

full-bodied wine. (Wine such as sherry or vermouth is fortified; extra alcohol is added when it is produced. It sometimes contains up to 20 percent alcohol by volume.)

Cocktails

Hard liquors including brandy, gin, vodka, and whiskey and most liqueurs contain 40 to 50 percent alcohol by volume. The proof is a measure of alcohol concentration. In the United States, proof is equal to two times the alcohol content. Thus, liquor that is 80, proof contains 40 percent alcohol by volume.

Approximate equivalents determined by the size of the conventional drink glasses:



A 12-ounce mug of beer

=



a 4-to 5-ounce glass of wine

=



a 1.5-ounce shot of 80-proof liquor

The links between light drinking and cardiovascular protection should certainly not be used as an excuse for drinkers to consume additional alcohol; nor should nondrinkers start drinking in order to protect their hearts. On the other hand, for those who drink, a modest alcohol intake can be an acceptable means of stress modification. (See box, "Alcohol Content By the Drink.") A single cocktail or a glass of wine or beer at the end of a long day may be quite relaxing and beneficial. It should not be harmful unless there is a family history of alcoholism or a demonstrated sensitivity to small amounts of alcohol.

ALCOHOL ABUSE

Any use of an illicit drug can be considered abuse. The situation with alcohol, however, is more complex. Although alcohol is a drug, and a potentially harmful one, its use is legally and socially sanctioned. An estimated two-thirds of adults in the Western world use alcohol, and at least one in ten is a heavy user. Therefore, definitions of alcoholism vary.

How much alcohol is too much? The level of alcohol an individual can tolerate before showing mental and physical effects varies from person to person and may vary for the same individual depending upon the circumstances. Body size is a major determinant of how much a person can drink: Generally, the larger a person is, the more he or she can tolerate. In general, women cannot tolerate as much alcohol as men can. Until recently, it was assumed that this is because, on average, they weigh less. A preliminary study has shown, however, that women's stomachs

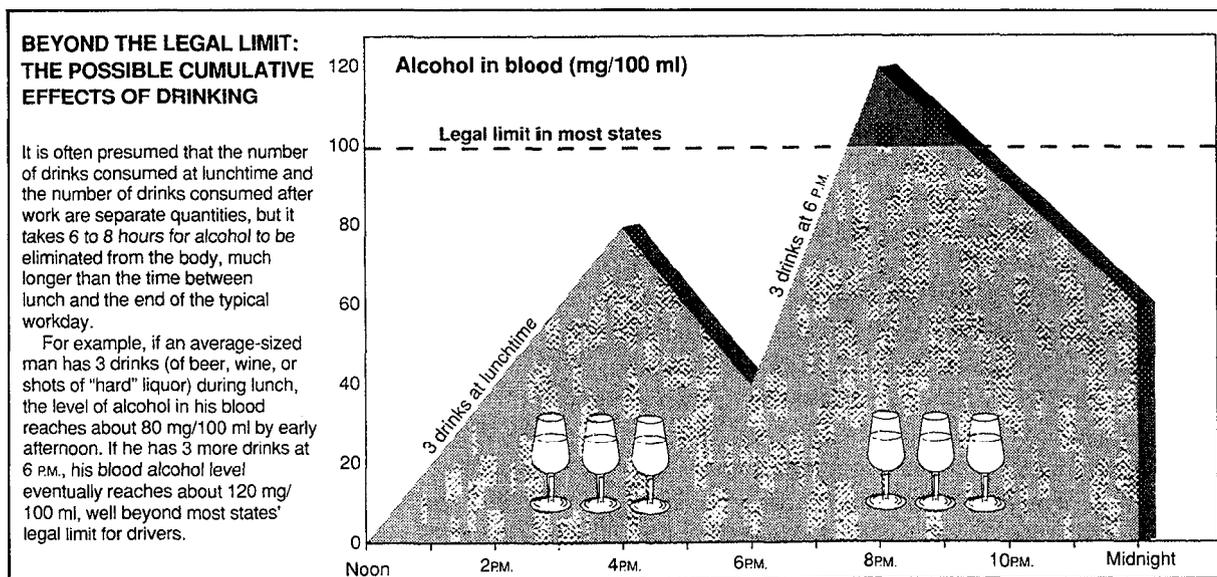
also have less alcohol dehydrogenase, an enzyme that helps neutralize alcohol before it reaches the bloodstream. Thus, more alcohol is absorbed into a woman's bloodstream. Drinking on an empty stomach, consuming drinks in rapid succession, and drinking when fatigued can affect tolerance. In most states, the legal limit for driving is 100 mg/100 ml of alcohol in the blood. (See Figure 6.2.) But the deleterious effects of alcohol can begin with far less.

A "yes" answer to even one of the following questions should be reason to suspect alcohol abuse in an individual:

- Has alcohol ever caused lateness for or absence from work?
- Has alcohol ever caused neglect of obligations to family, friends, or job?
- Has the individual ever acted "out of character"—obnoxious, belligerent, antisocial, or even overly sociable—while drinking?
- Has the individual ever "blacked out" or been unable to remember the night before on the morning after?

Like smokers and drug abusers, alcoholics must stop denying their problem before they can start to solve it. Confronting the substance abuser is often the first step in this process. Suspicions that one—or one's friend, relative, or coworker—has a drinking problem warrant a consultation with a doctor. Local resources, including Alcoholics Anonymous chapters, are listed in the yellow pages of the telephone book.

Figure 6.2



ILLICIT DRUGS

Like smoking and drinking, using illicit drugs can also be hazardous to the heart. The problems vary with the drug used and they range from physiologic to infectious.

COCAINE

Use of cocaine has snowballed in recent decades, along with the myth that the drug is relatively safe, especially when it is sniffed (“snorted”) rather than injected or smoked as “crack.” In fact, no matter how it is used, cocaine can kill. It can disturb the heart’s rhythm and cause chest pain, heart attacks, and even sudden death. These effects on the heart can cause death even in the absence of any seizures, the most common of cocaine’s serious noncardiac “side effects.” Dabblers should beware: Even in the absence of underlying heart disease, a single use of only a small amount of the drug has been known to be fatal. Although such deaths are uncommon, they **do** occur.

Cocaine use is not healthful for anyone, but especially for certain groups. Although the drug has been shown to impair the function of normal hearts, it seems even more likely to cause death in people with any underlying heart disease. And when pregnant women use cocaine, they not only raise the likelihood of having a miscarriage, a premature delivery, or a low-birth-weight baby, but also of having a baby with a congenital heart abnormality, especially an atrial-septal or ventricular-septal defect.

A variety of mechanisms conspire to cause cocaine’s impairment of the heart. Use of cocaine raises blood pressure, constricts blood vessels, and speeds up heart rate. It may also make blood cells called platelets more likely to clump and form the blood clots that provoke many heart attacks. In addition, cocaine’s effects on the nervous system disrupt the normal rhythm of the heart, causing arrhythmias (irregular heartbeats). Recently, scientists have established that cocaine binds directly to heart muscle cells, slowing the passage of sodium ions into the cells. Cocaine also causes the release of the neurotransmitter norepinephrine (noradrenaline), a chemical messenger that stimulates the autonomic nervous system. Both changes can lead to arrhythmias.

Heart attacks in young people are rare. However, when they do occur, cocaine is frequently the cause.

Friends and even medical personnel may be slow to suspect that a heart attack is taking place because of the victim’s youth; yet the percentage of cocaine-induced heart attacks that are fatal is equal to the percentage of heart attacks from other causes that are fatal. Recurrent chest pain and heart attacks have been reported among those who continue to use cocaine after surviving a cardiac complication.

INTRAVENOUS (IV) DRUGS

Using a needle to “shoot up” a drug such as heroin can lead to a deadly disease called infective endocarditis. Endocarditis is an infection of the endocardium, which includes the heart valves. Colonies of bacteria (usually streptococcus or staphylococcus), fungi, or other microbes introduced into the bloodstream via intravenous needles grow on the endocardium and can damage or destroy the heart valves. The microorganisms can also migrate through the bloodstream to other regions of the body. The clumps of microbes and their by-products can also form plugs, or emboli; if these plugs become lodged in arteries serving the lungs, heart, or brain, they can lead to pulmonary embolism, heart attack, or stroke, respectively.

Endocarditis is not confined to drug users. However, when it strikes people who do not use drugs, it tends to be confined to artificial valves or to valves that have been previously weakened by a heart condition such as rheumatic heart disease or congenital heart disease. In contrast, in most IV drug users who develop infective endocarditis, the heart valves are normal at first. It is possible that IV drug use itself makes heart valves vulnerable to infection. Particles present in the injected material may damage the valves and blood vessel linings, roughening the surface and leading to platelet clumping, thus providing likely sites for bacteria to grow.

“Street” drugs carry no verified list of ingredients. Along the way to the buyer, they pass through the hands of many distributors. Each of these dealers may “cut,” or dilute, a single sample of a drug with cheaper powders such as lactose, starch, quinine, and talc. Bacteria or fungi easily find their way into the drug sample during the mixing of these substances, or when the drug is dissolved in fluid just prior to injection, or from the injection paraphernalia itself.

Early symptoms of infective endocarditis include weakness, fatigue, fever, chills, and aching joints. Without treatment, infective endocarditis is invaria-

bly fatal. However, recovery is possible when the disease is detected and treated promptly with an antibiotic that has been selected to kill the particular bacteria causing the infection. Sometimes surgery must be performed to replace the damaged valve; for example, if antibiotic treatment alone is unsuccessful, or if heart failure develops and cannot be controlled, surgery may be recommended to replace the damaged valve.

AMPHETAMINES

Like cocaine, amphetamines (“speed”) raise blood pressure and heart rate. They are dangerous drugs for anyone, but particularly for people with any history of heart disease. Users of street cocaine may unknowingly consume amphetamines, as the two drugs are sometimes mixed together,

RECOGNIZING DRUG ABUSE

Warning signs of drug use include mood swings, irritability, and nervousness. Like alcoholics, drug users often miss work on Mondays, Fridays, and the day after payday. Their job performance may be erratic and marked by extra accidents and gross lapses in judgment. One may be tempted to protect drug-using friends, relatives, and coworkers. However, it is far better to confront the drug use, not cover up for it, and to urge the drug user to seek help. Many employers now offer employee assistance programs (EAPs) for workers who are having problems, including alcohol and drug abuse. For help and information, consult a doctor or check the yellow pages under “Drug Abuse Information and Treatment.”