Cigarettes: What the Warning Label Doesn't Tell You—

Information Tobacco Companies Don't Want Teens to Know About the Dangers of Smoking

Library of Congress Control Number: 2003114541
ISBN: 0972709452

First Edition, 2003

Printed in the United States of America

Cover design by Yelena Ponirovskaya

Cigarettes: What the Warning Label Doesn't Tell You—

Information Tobacco Companies Don't Want Teens to Know About the Dangers of Smoking

AMERICAN COUNCIL ON SCIENCE AND HEALTH

Foreword by
Justin Guarini

Editor-in-Chief:
Kathleen Meister, M.A.

Editors:
Kimberly C. Bowman
Gilbert L. Ross, M.D.
Karen L. Schneider
Elizabeth M. Whelan, Sc.D., M.P.H.

AMERICAN COUNCIL ON SCIENCE AND HEALTH
1995 Broadway, 2nd Floor, New York, NY 10023-5860
Tel. (212) 362-7044 • Fax (212) 362-4919
URL: http://www.acsh.org • E-mail: acsh@acsh.org

ACKNOWLEDGMENTS

ACSH gratefully acknowledges the comments and contributions of the following individuals, who reviewed *Cigarettes: What the Warning Label Doesn't Tell You* with specific attention to chapters related to their medical specialty fields.

Wilma F. Bergfeld, M.D., the Cleveland Clinic Foundation; Past President, American Academy of Dermatologists (Chapter 7: What Smoking Can Do To Your Skin)

Russell N.A. Cecil, M.D., Ph.D., orthopedic surgeon, Mohawk Valley Orthopedics (Chapter 9: How Smoking Affects Your Bones, Chapter 10: How Smoking Affects Your Joints)

Stephen K. Epstein, M.D., M.P.P., instructor in medicine, Harvard Medical School; Clinical Operations Director, Department of Emergency Medicine, Beth Israel Deaconess Medical Center (Chapter 22: Why Smoking Might Land You in the Emergency Room)

I. Allan Feingold, M.D., Chief of Pulmonary Medicine, South Miami Hospital (Chapter 4: What Smoking Can Do to Your Lungs)

Frederick I. Ferris, M.D., National Eye Institute (Chapter 17: What Smoking Can Do to Your Eyes)

Caryl J. Guth, M.D., Anesthesiologist, Mills-Peninsula Hospital (Chapter 8: How Smoking Can Affect You When You Have Surgery)

Robert G. Lahita, M.D., Ph.D., Professor, Department of Medicine, New York Medical College; Chief of Rheumatology, Saint Vincent's Medical Center (Chapter 10: How Smoking Affects Your Joints, Chapter 21: How Smoking Affects Your Immune System)

Stephen J. Moss, D.D.S., Health Education Enterprises, Inc.; Professor Emeritus, Department of Pediatric Dentistry, New York University (Chapter 18: What Smoking Can Do to Your Mouth and Teeth)

Harris M. Nagler, M.D., Chairman, Department of Urology, Chief of Academic Affairs/Graduate Medical Education, Beth Israel Medical Center; Professor of Urology, Albert Einstein College of Medicine of Yeshiva University (Chapter 12: Boys, Sex, and Smoking; Chapter 13: Smoking's Effects on the Kidneys and Bladder)

David R. Nielsen, M.D., F.A.C.S., Executive Vice President, American Academy of Otolaryngology—Head and Neck Surgery Foundation (Chapter 16: How Smoking Affects Your Ears, Nose, and Throat)

ACKNOWLEDGMENTS

John Patrick O'Grady, M.D., Professor, Department of Obstetrics and Gynecology, Chief, Maternal-Fetal Medicine, Tufts University School of Medicine (Chapter 11: Girls, Sex, Pregnancy, and Smoking)

Thomas S. Riles, M.D., Chairman and Director, Department of Surgery, New York University School of Medicine (Chapter 6: How Smoking Can Damage Your Heart and Arteries)

Burt Sharp, M.D., Chair and Van Vlect Professor, Department of Pharmacology, University of Tennessee at Memphis (Chapter 19: How Smoking Affects Your Hormones and the Glands that Produce them)

Robert B. Sklaroff, M.D., American College of Physicians/American Society of Internal Medicine (Chapter 5: How Smoking Affects Your Chances of Getting Cancer)

Dennis L. Sprecher, M.D., Section Head, Preventative Cardiology, Department of Cardiology, Cleveland Clinic; Professor, Department of Internal Medicine, Ohio State University (Chapter 6: How Smoking Can Damage Your Heart and Arteries)

Glenn Swogger Jr., M.D., Will Menninger Center for Applied Behavioral (Chapter 15: Smoking and Your Mental Health)

Miles M. Weinberger. M.D., Professor, Department of Pediatrics; Director, Pediatric Allergy and Pulmonary Division, University of Iowa Hospitals and Clinics (Chapter 23: How Smoking Can Affect Other People's Health)

Steven D. Wexner, M.D., F.A.C.S, F.R.C.S., F.R.C.S. (Ed), Chief of Staff, Chairman, and Residency Program Director, Department of Colorectal Surgery, Cleveland Clinic Florida (Chapter 20: How Smoking Affects Your Digestive Tract)

Robert J. White, M.D., Ph.D., Professor and Former Chairman, Department of Neurosurgery, Case Western Reserve University School of Medicine (Chapter 14: How Smoking Affects Diseases of the Nervous System)

Michael Zahalsky, M.D., Chief Resident, Department of Urology, Beth Israel Medical Center (Chapter 12: Boys, Sex, and Smoking; Chapter 13: Smoking's Effects on the Kidneys and Bladder)

ACKNOWLEDGMENTS

ACSH appreciates the help of following young reviewers who read the book with special attention to its ability to communicate with a teenage audience.

Edward Hernandez, Westford, NY, age 17

Melanie Korn, Long Island, NY, age 15

Sheila Raju, Basking Ridge, NJ, age 19

Tara Raju, Basking Ridge, NJ, age 15

Morgan Ross, Great Neck, NY, age 19

Michael Weinberg, Westfield, NJ, age 13

Emmanuel Cespedes, New York, NY, age 16

ACSH would also like to thank the **F.M. Kirby Foundation**, a New Jersey-based family foundation that supports projects in the areas of education, health and medicine, the arts and humanities, and civic and public affairs, for their generous support of this project.

TABLE OF CONTENTS

Foreword

By Justin Guarini

Cigarettes: What the Warning Label Doesn't Tell You—Information Tobacco Companies Don't Want Teens To Know About The Dangers of Smoking should be like a "Driver's Ed" manual for those considering whether to take up smoking. Tobacco executives, despite hypocritical statements such as "We aren't marketing to teens anymore" and "We're not advertising in magazines for young people," are truly fearful that the word will get out in the teen community about all the damage smoking can do. They fear this because this is where their customers, the next generation of smokers, must come from. If teens refused to be tricked into trying cigarettes, the big bucks that have always flowed right into the pockets of Big Tobacco would soon dry up.

Someone has to stand up and tell teens about this—the movies and newspapers sure don't. What about the warning label on each pack? Doesn't that help? Actually, no. Who reads it anyway? Does it say anything about the 4,000 toxic chemicals in tobacco? Or the nearly 500,000 Americans (among millions around the world) who die each and every year from smoking—people such as George Harrison and Bobby Bonds? No, they don't breathe a word of it—and you can find similar labels on many harmless consumer products, so these labels become meaningless as a warning.

Don't let them fool you. Tell the cigarette execs that you are going to be smarter than your older friends, even smarter than your parents, and not take the risk of early disease and death by smoking.

Justin Guarini

Preface

By Dr. Gilbert L. Ross

PREFACE

When the ACSH collection of smoking's health effects—both the well-known ones and the largely unknown—was first assembled only seven years ago, it was a remarkable achievement, groundbreaking, unique. The second adult edition, published a few months ago, is also a groundbreaking work.

But this book, aimed at and written for teenagers, is even more important. While it covers all the health dangers of cigarettes thoroughly, as does the adult version, the young people who read it will have the opportunity to learn from it before they are under the thumb of tobacco, before they are fully addicted to this truly deadly habit.

The first adult "Warning Label" book came out in 1996, and it catalogued literally hundreds of health effects suffered by smokers, their coworkers, families, and even their unborn children. Many of these effects, probably most, were unknown to a large majority of the public—including, tragically, the smoking public.

Some will no doubt be surprised to learn that the list of known damaging effects from smoking continues to grow with each passing year. The new, revised adult edition of *Cigarettes: What the Warning Label Doesn't Tell You* has found conclusive evidence in the scientific literature linking cigarette smoking to many more diseases and conditions, far more than just the ones that everyone knows about like lung cancer, emphysema, bronchitis, and heart disease.

So why have a teenage version? The large majority of smokers take up the habit as teenagers. The reasons for this are complex, but many teens are not yet able to make mature judgements on health-related issues,

despite the fact that choices made as youngsters may last a lifetime. By the time maturity and judgement regarding lifestyle choices has taken hold, many have experimented with smoking and many are already addicted. This simple fact explains why the cigarette industry and its defenders cannot simply attribute smoking to an "adult choice."

Our new chapter on addiction is of crucial importance. Smokers of any age know better than experts just how addictive smoking is; they can see how hard it is to quit. Smokers, even those committed to quitting, often attempt to quit five, six, or more times before finally quitting for the long haul. The concept of addiction is of utmost importance when discussing approaches to dealing with the public health issues surrounding cigarettes: those who advocate leaving smokers alone to make their own "choice" ignore the fact that addicted smokers—i.e., almost all smokers—have little role in the "decision" they make every few minutes to light up yet again.

For this reason alone, all teens—smokers, those who love them, those who have to be in their company, and especially those who are contemplating starting to smoke—*must* read this book. After doing so, they will be truly informed as to the gravity of the assault their health is (or may soon be) undergoing when they smoke.

Gilbert L. Ross, M.D.

Chapter 1

Myths and Facts About Cigarette Smoking

CHAPTER 1

Cigarette smoking is bad for you.

You knew that. Almost everybody knows that. After all, there have been warning labels on cigarette packages since before you were born.

But the problem with warning labels is that they're short—far too short to give you the complete picture of what cigarettes can do to your body. To give you all of the facts you need about cigarette smoking, it would be necessary to have a warning label the size of a book—specifically, the book you're now reading.

The people at the American Council on Science and Health wrote this book because we want you to have the facts—all of the facts—about smoking. We wrote this book especially for people your age because knowing the truth about smoking is particularly important for you.

You see, most smokers start to smoke while they are in middle school or high school. Almost 90% of all smokers start to smoke before reaching the age of 18. People make the decision to smoke—one of the most important decisions of their lives—when they are your age or just a little bit older. And unfortunately, many of them don't have all the facts about cigarettes when they decide to start smoking. In fact, some of them believe myths about smoking that are just plain wrong.

So let's start by talking about ten common myths about smoking—none of which is mentioned on the warning labels.

Myth #1: Most people smoke.

Actually, most people *don't* smoke. This is true both for adults and for teenagers.

Among adults in the U.S., 77% are nonsmokers.

Among high school students, 71% are nonsmokers.

If all of these people don't smoke, should you?

Myth #2: Smoking is cool.

Actually, most teenagers *don't* think that smoking is cool. In fact,
- 67% of teenagers say that seeing someone smoke turns them off.
- 65% say that they strongly dislike being around smokers.
- 86% would rather date people who don't smoke

Many teenagers think that kissing a smoker is like licking a dirty ashtray; perhaps this is why the percentage who don't want to date smokers is so high!

Even teenagers who smoke don't think that smoking is cool. More than half of all teenage smokers want to quit, and about 70% of teenage smokers wish that they had never started smoking in the first place.

If you've gotten the impression that smoking is cool, it may be because smoking is portrayed that way in cigarette advertising. Ads for cigarettes—like ads for other products—are designed to associate the product with positive images. Cigarette ads usually show smiling, healthy-looking young adults, in an outdoor setting, having fun with friends. That's a "cool" image. But letting advertising manipulate you into making poor choices is not cool. What's really cool is thinking for yourself and making smart personal decisions.

Myth #3: Sure, smoking is unhealthy. But a lot of other things are just as bad for you. After all, practically *everything* seems to have a warning label.

Smoking is far, far worse than most other health hazards. Let's look at some of the numbers:

- Smoking is the number one cause of avoidable deaths in the United States.
- Every year, more than 400,000 Americans die as a result of smoking.
- One out of every five deaths in the U.S. is due to smoking.
- Worldwide, 4 million people a year die from smoking—that's 11,000 people every day.
- Smoking kills about one-half of all people who smoke.

To put the impact of smoking into perspective, it may help to consider six other major causes of death in the United States: alcohol abuse, drug abuse, AIDS, motor vehicle crashes, homicide, and suicide. All of these are important problems. All of them kill substantial numbers of people every year. Yet all six of these causes *combined* account for only *half* as many deaths each year as smoking does.

Let's try another comparison. For the rest of your life, you will undoubtedly remember the terrorist attacks on the World Trade Center and the Pentagon that occurred on September 11, 2001. About 3,000 people died in those attacks. But that number is small compared to the number of people killed by smoking every year. In fact, cigarette smoking kills that many Americans *every three days.*

Of course, cigarettes aren't the only products that carry warning labels. If you look around your home, you can probably find warning labels on a lot of other products. For example,

- Your hair dryer has a warning label that tells you that you shouldn't use it while taking a bath because you could be electrocuted.
- The plastic bags that you bring home from the grocery store have warning labels saying that they can suffocate small children.
- The charcoal that your parents use in their barbecue grill has a warning label that says that it shouldn't be used indoors because it could cause carbon monoxide poisoning.

How do the hazards of these products compare to the hazards of cigarettes?

- Each year, an average of four Americans are electrocuted by hair dryers.
- Each year, approximately 25 U.S. children are suffocated by plastic bags.
- Each year, roughly 20 Americans are killed by carbon monoxide poisoning due to the indoor burning of charcoal.
- Each year, more than 400,000 Americans are killed by cigarette smoking.

In other words, the other three products aren't even in the same league with cigarettes.

There's another important difference between the other three products and cigarettes. Hair dryers, plastic bags, and charcoal are all safe if you use them correctly. They're only dangerous if you misuse them. *Cigarettes are deadly when they're used in the way that they're supposed to be used. There is no such thing as a "safe" cigarette.*

Cigarettes are harmful to everyone who uses them. This is different from the situation for some other products that carry warning labels. Let's consider a warning label that most people your age have seen many times—the warning on video games that tells you that light flashes in the games can cause some people to have seizures. How does this hazard compare to the hazard of smoking cigarettes?

- 1 out of every 4,000 people is at risk of having a seizure from light flashes associated with video games.
- 4,000 out of every 4,000 people are at risk of damaging their health by smoking cigarettes.

Please don't misunderstand us here. We're not saying that warning labels on products such as hair dryers and video games aren't justified. Those labels give people useful information, and they may help to save lives. It's a good idea to have them. But don't let the proliferation of warning labels fool you into thinking that cigarettes are "just like everything else." They're not. Cigarettes are worse. Much worse.

Myth #4: Smoking only causes a few health problems—the ones listed on the warning labels.

The only health problems specifically mentioned on the warning labels are lung cancer, heart disease, emphysema, and special problems that can happen when a pregnant woman smokes (complications of pregnancy, injury to the unborn child, low birth weight, and premature birth). But smoking also increases your risk of a wide variety of other diseases. And for people who already have health problems, smoking can make many of those problems worse.

Smoking causes so many problems in so many parts of your body that we've devoted 19 chapters of this book to explaining them (Chapters 4 through 22).

Smoking is able to cause such widespread damage because harmful substances from cigarette smoke reach every part of your body. Within seconds after a person inhales cigarette smoke, about 4,000 toxic substances are absorbed into the bloodstream. They then travel to every cell in the body. Thus, smoking doesn't just affect your lungs and heart—it affects everything. But warning labels that mention only heart and lung diseases and pregnancy problems don't give people this message.

Myth #5: Smoking won't affect my health until I'm much older.

Actually, if you smoke now, it can hurt you now. Some of the harmful effects of smoking occur right away. Chapter 2 of this book will give you the full story about these immediate health effects.

You also need to know that smoking-related diseases can kill people at surprisingly young ages. Some of the victims are in their 30s or 40s. For example,

- Nancy Gore Hunger, sister of former Vice President Al Gore, died of lung cancer due to smoking at 46.
- Actress Carrie Hamilton, daughter of TV star Carol Burnett, died of lung cancer due to smoking at 38.

You were planning to live a lot longer than these people did, weren't you?

Myth #6: I only smoke a little. That won't hurt me.

Even smoking a little can hurt you. Research has shown that even "occasional" (less-than-daily) smoking, smoking only a few cigarettes per day, or smoking "without inhaling" can increase your risk of heart disease and shorten your life.

Actually, the idea that smoking "just a little" can be harmful to your health should not come as a surprise. The amount of tobacco smoke exposure that results from occasional smoking is similar to the amount that results from frequent exposure to tobacco smoke in the environment. Scientists know that exposure to environmental tobacco smoke can be harmful to your health (you can find more details about this in Chapter 23). So it makes sense that smoking just a little would also be unhealthy.

In terms of health effects, cigarette smoking is quite different from eating candy or drinking coffee. People can consume candy and coffee in moderate amounts without hurting themselves. It's only when they go overboard and use these things in excess that they get into trouble. But there is no such thing as smoking "in moderation." Any amount of smoking is bad for you.

In terms of health effects, smoking is also very different from going out in the sun. You probably know that a little exposure to sunlight is good for you; it helps your body make vitamin D. But too much exposure to the sun can give you a sunburn and increase your chances of getting skin cancer. Smoking is not like this. There is no beneficial level of smoking. While it is true that smoking may actually protect against a few diseases, such as Parkinson's disease (a disease of the nervous system), probably as a result of the actions of nicotine (a drug found in tobacco), these potential benefits are more than outweighed by the extensive harm caused by tobacco smoke's other effects in the body.

Another problem with smoking "just a little" is that most people can't do it for long. As you will learn in Chapter 3, cigarettes are physically addictive. If you become a smoker, your body will adapt to cigarettes so that you will come to need them—and need them several times a day—in order to feel normal. Because cigarettes are addictive, most people can't continue to be occasional smokers for long. Soon, they

find themselves smoking every day, several times a day. And the more they smoke, the more they are damaging their health.

Myth #7: I'm only going to smoke for a few years. Then I'll quit. So my smoking doesn't really matter.

People who assume that all of the health hazards of cigarettes will disappear in a puff of smoke when they quit are wrong—dead wrong. Many of the harmful effects of smoking are irreversible, meaning that they do not go away completely after a person quits smoking.

Smoking for as short a time as five years can cause permanent damage—to the lungs, heart, eyes, throat, urinary tract, digestive organs, bones and joints, and skin. Although it is true, as one of the cigarette warning labels says, that quitting smoking reduces health risks, many of those risks are only partially reversible. Ex-smokers continue to have increased risks of many smoking-related diseases and health problems, including lung cancer, bladder cancer, chronic obstructive lung disease, the bone disease osteoporosis, serious diseases of the eyes (cataracts and macular degeneration), and muscle and bone pain. Only for heart disease and stroke is there good evidence that the risk faced by an ex-smoker ever returns to that of a lifelong nonsmoker—and even that takes from five to 15 years after a person quits smoking.

Scientists estimate that between 10 and 37% of ex-smokers will die from diseases caused by their smoking. Although this is certainly better than the situation among people who continue to smoke (about half of whom will die of smoking), it is a clear indicator that some of the harm caused by smoking cannot be undone.

In addition, for many people, smoking itself is irreversible. Even with multiple attempts and the help of modern quit-smoking techniques, many smokers never succeed in stopping smoking permanently. The addictive power of nicotine (a topic discussed in detail in Chapter 3) is so strong that millions of people continue to smoke even though they know that cigarettes may kill them.

Myth #8: Smoking will help me lose weight.

Actually, it won't. Starting to smoke is not associated with a decrease in body weight.

Unfortunately, though, quitting smoking is followed by a gain in weight for many people.

So here's what's likely to happen if you start to smoke in the hope of losing weight:

- You start smoking.
- After a while, you realize that your weight has not changed. You're disappointed.
- Then you realize that instead of a better-looking body, what you have is a smelly, dirty, unattractive, expensive, dangerous addiction. You're horrified.
- You quit smoking. It's tough, but you manage to do it.
- You gain weight. Now you're heavier than you were when you started.

Does this make sense?

Myth #9: I don't smoke cigarettes. I just smoke cigars or bidis or use smokeless tobacco. So I don't have a problem.

Actually, you do have a problem. All of these other forms of tobacco are addictive, and all are seriously harmful to your health. You can find the facts about these other tobacco products in the Appendix to this book.

Myth #10: OK. I admit that smoking is bad for me. But that's my problem, not anybody else's. The only person I'm hurting is me, so it's nobody else's business.

Well, first of all, your smoking is a problem for all of the people who care about you. They don't like to see you harming yourself, and they would be thrilled if you would quit.

But beyond that, there's another problem. When you smoke, your cigarettes give off smoke into the environment. That smoke is harmful to other people's health. It's especially harmful to children—and that's important, because in another ten years or so, you may be starting a family. The last people in the world that you would want to hurt are your own children, but if you're a smoker, you may find yourself doing that. Women who smoke can even harm their children before they're born because smoking during pregnancy is bad for the baby. (For more details about how your smoking can harm other people, see Chapter 23, and for more information on smoking during pregnancy, see Chapter 11.)

So I guess it would be better if I never started smoking, right?

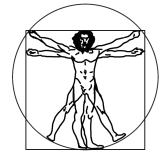
Exactly.

But you may still want more information before you make such an important decision.[1] In particular, you may want to know how smoking can affect your health right now. That's the topic of our next chapter.

[1] Readers who want even more information about the health effects of smoking than we have provided in this book may want to read the longer, more detailed book *Cigarettes: What the Warning Label Doesn't Tell You* (2nd edition), published by ACSH in 2003. The book includes an abundance of references to the scientific literature and would be a good starting point for further research on the subject (perhaps for a school paper — yes, that's a hint). Copies can be obtained from the American Council on Science and Health, 1995 Broadway, 2nd Floor, New York, NY 10023 Telephone: 212-362-7044. www.acsh.org

Chapter 2

How Smoking Can Affect Your Body Right Now



CHAPTER 2

If you're reading these words in March, you're probably not thinking much about the final exams that you're going to take in June. If it's September, you're probably not concerned about the science project that you have to finish by Christmas. But you probably are thinking a lot about the math test that you have to take today and the English paper that you'll be turning in tomorrow.

The way that most people think about their health is much like the way that they think about school. Most people—especially young people—are far more concerned about what's happening right now than about what may happen in the distant future. This may be one reason why people don't pay as much attention as they should to the warning labels on cigarette packages. Those labels focus on long-term concerns—such as an increased risk of lung cancer, heart disease, and emphysema. They don't mention the harmful things that smoking can do to your body right now. To find out about those, you need to read this chapter.

How Smoking Can Affect Your Respiratory System Right Now

If you smoke, your lungs won't work as well as they should. This isn't something that will happen thirty years from now; it happens as soon as you start smoking. Scientific studies have shown that lung function in teenagers who smoke is not as good as that in nonsmokers of the same ages. Abnormalities in lung function have been detected in smokers who are as young as 14 years old and in those who have been smoking for only one year.

While you're in your teens, your lungs are still growing, and their

ability to function is supposed to increase. But this process is impaired in teenagers who smoke. Smoking decreases the rate of lung growth and therefore decreases the level of maximum lung function reached in the late teens. This happens in both boys and girls, but girls seem to be particularly susceptible to smoking's effects on lung growth and function.

Many scientific studies have shown that teenagers who smoke have more respiratory symptoms, especially cough with phlegm (the kind of cough that brings up material from the lungs) than nonsmokers of the same age do. For example, in a recent study in Ireland, 13- and 14-year-olds who smoked were three times as likely as nonsmokers to have symptoms of cough and phlegm. In a study of more than 6,000 12- to 15-year-olds in Hong Kong, smokers were found to have higher rates of cough, phlegm, throat and nose problems, and wheezing than nonsmokers did. The more cigarettes a teenager smokes, the more likely that person is to have respiratory symptoms. Some studies indicate that girls have more symptoms than boys do at the same level of smoking.

How Smoking Can Affect Your Physical Fitness Right Now

Smoking hurts physical fitness—even among people who are physically active and generally in good shape. Scientists know that this is true because they have investigated the relationship between smoking and physical fitness in young people who are in the armed services. Many of these soldiers and sailors are only a few years older than you are right now, and most of them are in good physical condition—except for their smoking habits.

Among a group of 19-year-old male army recruits in Switzerland, the distance that the recruits could cover in a 12-minute run was lower for smokers than for nonsmokers. Even men who were light smokers and those who had been smoking for less than two years didn't do as well as the nonsmokers did in this running test. In a group of British soldiers, physical fitness didn't improve as much in smokers as in nonsmokers after a six-month training program. A study of U.S. soldiers in basic training has shown that the differences in fitness between smokers and nonsmokers are large enough to be of practical importance. In this group of soldiers, those who smoked were less likely than the others to successfully complete basic training.

The type of fitness that is most affected by smoking is endurance. Physical fitness tests of more than 3,000 sailors in the U.S. Navy showed that smoking was associated with lower physical endurance but not with a reduction in physical strength. It makes sense that smoking would decrease a person's endurance because a healthy heart and lungs are needed for maximum endurance, and smoking is harmful to both the heart and the lungs.

If you play sports, especially sports where endurance is important, such as soccer or basketball, you won't play as well if you smoke. Smart athletes know this. Smoking rates among high school students who play interscholastic sports are much lower than those of non athletes of the same ages.

How Smoking Can Affect Your General Health Right Now

In general, young people who smoke have poorer health than those who don't smoke. In a study of teenagers in Norway, researchers found that daily smokers, both boys and girls, had poorer general health than nonsmokers did. In addition to higher rates of respiratory symptoms (which you would expect), the smokers also had higher rates of headache, stomachache, nausea, nervousness, neck and shoulder pain, and sleep problems than the nonsmokers did.

A large survey of high school seniors in the U.S. has also found that general health is poorer in smokers. The smokers in this study were more than twice as likely as the nonsmokers to say that their overall health was poorer than average.

In a British study of 12- and 13-year-olds, those who smoked had higher rates of absence from school due to minor illnesses. One reason why smokers may be sick and miss school more often is that they are more susceptible to colds and other respiratory infections. For example, a study of a group of young U.S. soldiers showed that those who smoked were almost 50% more likely than the nonsmokers to catch colds during basic training.

Other Ways in Which Smoking Can Affect You Right Now

As you read through this book, you will find other examples of ways in which smoking can affect your health right now.

- In Chapter 4 (the chapter on lung disease), you will learn that if you have asthma, smoking can make it worse.
- In Chapter 8 (the chapter on surgery), you will learn that if you need to have an operation, you will be more likely to develop complications if you smoke, and you won't recover as quickly as a nonsmoker would.
- In Chapter 9 (the bones chapter), you will learn that if you break a bone, it will heal more slowly if you smoke.
- In Chapter 15 (the mental health chapter), you will learn that if you smoke, you are more likely to develop anxiety or depression.

But perhaps the most important effect that smoking can have on you right now is one that we haven't discussed yet—nicotine addiction. Becoming addicted to nicotine is a huge problem for teenagers who smoke, just as it is for adults. It can happen very quickly in young people. And it's the subject of our next chapter.

Chapter 3

How You Can Become Addicted to Cigarettes

CHAPTER 3

The majority of smokers—both adults and teenagers—say that they would like to stop smoking. Yet most of them continue to smoke. Why do people smoke even though they say they don't want to? They do it because they have become addicted to nicotine, a drug found in tobacco.

What Is Addiction?

People often use the word "addiction" in a very broad sense. They may say that someone is addicted to candy, television, or the Internet—actually, to almost anything that a person might enjoy and use excessively. However, when doctors and scientists use the word "addiction," they have something more specific in mind. They are talking about the repeated, habitual use of a substance that affects a person's mood. Truly addictive substances have the following properties:

1. The substance produces a pleasant feeling.
2. When people stop using the substance, they have unpleasant symptoms (called withdrawal symptoms). Therefore, they need to use the substance to feel normal. This is called physical dependence.
3. Over time, people need to use larger amounts of the substance to get a pleasant effect. This is called tolerance.
4. People often continue to use the substance even though it is harming them.

Smoking cigarettes, and especially the addictive nicotine in tobacco, has all of these characteristics. That's why scientists consider cigarettes to be truly addictive substances. The next few paragraphs will discuss each of these characteristics in more detail.

Pleasant Feelings

Smoking a cigarette produces a pleasant feeling almost immediately. This feeling is caused by nicotine. Within seconds after a person starts to smoke a cigarette, nicotine travels through the bloodstream to the brain, where it causes changes in brain chemicals that produce a pleasant effect. The feeling only lasts a few minutes; therefore, smokers usually want to smoke repeatedly, throughout the day, to maintain the effect.

Withdrawal Symptoms

Another reason why smokers want to smoke frequently is to avoid nicotine withdrawal symptoms. For someone who is accustomed to smoking, going without cigarettes can cause irritability, difficulty thinking and paying attention, increased appetite, difficulty sleeping, and a strong craving for cigarettes. Smoking a cigarette relieves these withdrawal symptoms and makes the person feel better. In other words, smokers don't just *want* to smoke; they *need* to smoke in order to feel normal.

Nicotine withdrawal is a real, physical effect. Scientists can even produce it in animals. If they give rats nicotine regularly for a long time and then stop giving it to them, the rats start to act weird. It's obvious that something is bothering them. If the scientists give the rats nicotine again, the abnormal behavior goes away. Scientists have also been able to show that giving animals nicotine for a long time and then taking it away causes changes in their brains. Similar brain changes can be demonstrated with other addictive substances, such as cocaine and amphetamines.

Withdrawal is one of the things that distinguishes a true addiction from an ordinary habit of doing something that you enjoy. For example, let's say that you really like to play computer games. You usually play them every day. But this week, you're at camp, where no computer games are available. You may miss having the chance to play your usual games, but you certainly won't feel physically sick because you have to go without them. And if the camp program is interesting enough, you might forget all about computer games, at least for a while. This is very different from what happens to smokers who have to go without cigarettes. Smokers don't just miss cigarettes; they actually feel bad, physi-

cally, without them. And because they are uncomfortable, smokers aren't likely to forget all about smoking, no matter how many interesting things are going on.

Thirty or forty years ago, people who smoked probably didn't have withdrawal symptoms very often. They could smoke almost anywhere they wanted to, at any time they wanted to—even in public places and at their jobs. Today, though, people usually have to interrupt what they're doing and go outdoors to have a cigarette. Often, this is inconvenient; sometimes, it is impossible. So today's smokers spend a lot of time in the uncomfortable situation of needing a cigarette but not being able to have one.

Tolerance

As is true for many other addictive substances, repeated exposure to nicotine results in the development of tolerance—the condition in which larger amounts of a substance are required to produce the same effect.

The human body processes and eliminates nicotine relatively quickly; the drug only stays in the body for a few hours. Therefore, some tolerance to nicotine is lost overnight. Smokers often say that the first cigarettes of the day have the strongest effect and that later cigarettes seem weaker. This happens because smokers build up a short-term tolerance to nicotine over the course of a day and lose some of that tolerance overnight.

Tolerance is also important over the long term. Because people develop a tolerance to nicotine, very few people can smoke just a little for a long period of time.

You probably know some teenagers who smoke only occasionally, or who smoke only one or two cigarettes a day. In most instances, these are people who have started smoking only recently. These new smokers may tell you that smoking only a little is comfortable for them and that they don't plan to increase the number of cigarettes that they smoke. But if you come back a year from now and ask the same people about their smoking habits, you will find that most of them have become regular, daily smokers and that the number of cigarettes that they smoke has increased. Approximately 90% of all smokers, even those who start out smoking only occasionally, eventually become regular daily smokers.

Use Despite Harmful Effects

It's easy to show that people use nicotine despite its harmful effects. After all, practically everyone knows that smoking is unhealthful (although few know the specific frightening consequences as discussed in this book), yet a lot of people continue to smoke.

In many cases, people even continue to smoke after they develop serious health problems that are made worse by smoking. A recent survey showed that 38% of people with the lung disease emphysema, 25% of those with asthma, 20% of those with heart problems, and 18% of those with diabetes continued to smoke, even though their doctors had told them that smoking makes these health problems worse.

How Addictive Is Tobacco?

The scientific evidence indicates that cigarettes are at least as addictive as illegal drugs such as cocaine.

Some people find this very hard to believe. They point out that illegal drugs often cause people to lose their ability to function normally, but cigarettes don't. They also point out that people who are addicted to illegal drugs often commit crimes in order to obtain drugs, but smokers don't do this.

However, these differences between cigarettes and other drugs are due to other differences between the substances, rather than differences in their addictive power. Unlike some other drugs, nicotine doesn't make a person unable to function normally. Cigarettes don't make people drunk or "stoned," the way that some other drugs do. Also, cigarettes are legal (for adults) and relatively inexpensive in comparison to most other drugs. So adults don't have to lie, cheat, or steal to get them (although teenagers sometimes do).

When researchers have compared cigarettes to other addictive substances strictly on the basis of how likely they are to produce symptoms of addiction, they have found that cigarettes are at least as addictive as other drugs—maybe even more so.

In a national survey on drug abuse, people who used cigarettes, alcohol, cocaine, or marijuana were asked whether they had experienced any of four symptoms of addiction: feeling that they needed the substance, needing larger amounts to get the same effect (tolerance), being unable to cut down on use even though they had tried, and feeling sick after stopping or cutting down on use (withdrawal). Cigarette smokers were more likely than users of the other substances to report three of these four symptoms (the exception was tolerance, which was reported more often by the cocaine users). Seventy-five percent of the cigarette smokers reported at least one of the four symptoms of addiction, as compared to 29% of cocaine users, 23% of marijuana users, and 14% of alcohol users.

Of course, to some extent, the greater rate of symptoms of addiction among the cigarette smokers might be due to the fact that most smokers smoke daily, while many users of the other substances use them less frequently. However, in the same survey, when the researchers looked only at the answers given by people who used a substance every day, they still found that cigarettes were more addictive than the other three substances. At least one symptom of addiction was reported by 91% of daily cigarette smokers, as compared to 79% of daily cocaine users, 58% of daily marijuana users, and 48% of daily alcohol users.

One reason why addiction to tobacco is so strong is that the cigarette is a highly efficient drug delivery system. It delivers nicotine rapidly and in relatively high concentrations to the brain—a situation that encourages continued use and promotes addiction. When smokers inhale cigarette smoke, they deliver nicotine rapidly to their brains with every puff. A smoker typically takes 10 puffs on a cigarette over the five-minute period that the cigarette is lit. Thus, a person who smokes 30 cigarettes (a pack and a half) daily gets 300 “hits” of nicotine to the brain each day, each of which encourages the person to continue smoking.

Teenagers Get Addicted More Easily than Older People Do

Research has shown that teenagers are more susceptible than older people to nicotine addiction. In fact, the younger people are when they start smoking cigarettes, the more likely they are to become strongly addicted to nicotine. People your age can become addicted to cigarettes very quickly, and they often develop symptoms of nicotine addiction

even while they are smoking only a small number of cigarettes each day. Some teenagers even become addicted to nicotine while they are still smoking only a few times a week rather than every day!

In a large U.S. national drug abuse survey, people of all ages were asked how many cigarettes they smoked daily and whether they had any symptoms of nicotine addiction (such as tolerance, withdrawal symptoms, or failed efforts to cut down or stop smoking). In this survey, smokers between the ages of 12 and 17 reported symptoms of addiction at lower rates of cigarette consumption than older smokers did. More than one-quarter of 12- to 17-year-olds who smoked one to five cigarettes per day had symptoms of addiction, and so did about 12% of those who were less-than-daily smokers.

In another study, in which a group of seventh and eighth graders were interviewed about their experiences with cigarettes several times over a two-year period, half of those who said that they had symptoms of addiction noticed those symptoms by the time that they were smoking two cigarettes per week. Many of the young smokers started to have symptoms of addiction very soon after they began to smoke. This was especially true among girls, many of whom became addicted within a month after starting to smoke occasionally.

Teenage smokers may become addicted more easily than older people do because their brains are still developing. Research in experimental animals indicates that nicotine has different and stronger effects on the brains of still-growing young animals than it does in full-grown animals. If this is also true in people, it could explain why teenage smokers often get addicted to nicotine even when they have only been smoking small numbers of cigarettes for a short time.

Quitting Smoking

Because cigarettes are addictive, quitting smoking can be difficult, and people who try to quit often fail. Recent surveys show that among current smokers, about 40% had attempted to quit at least once in the previous year, and nearly 70% want to quit. But only about 5% of smokers who try to quit each year succeed in stopping smoking permanently. These numbers look rather dismal, don't they? Actually, though, the sit-

uation is not quite that bad. The likelihood that a person will quit smoking successfully increases with each attempt to quit. After several tries, nearly 40 to 50% of smokers eventually succeed in quitting. More than 45 million Americans have stopped smoking.

If you have a friend or relative who would like to stop smoking, you might want to suggest that the person make a doctor's appointment to talk about quitting. People often don't think of going to their doctors for advice in this situation, perhaps because they don't consider smoking to be a medical problem, but doctors are actually a very useful resource. They usually know about organized stop-smoking programs in the community, and they can prescribe medicines that can help a person quit smoking successfully.

Smoking is both a habit and a physical addiction. Experts say that the best way to stop smoking is to get help with both of these aspects of the problem.

To deal with the "habit" aspects of smoking, it helps for the prospective quitter to get some type of counseling—either by joining a support group or by going to a doctor or other professional for advice. Counseling can help a smoker learn practical techniques that help in quitting smoking, such as avoiding situations that trigger the urge to smoke and finding ways to deal with stress without resorting to smoking.

There are medicines that can help a person deal with nicotine addiction. The most commonly used medicines are various forms of nicotine replacement therapy, such as the nicotine patch or nicotine gum. The idea behind nicotine replacement therapy is to minimize withdrawal symptoms by replacing the nicotine from cigarettes with an alternative—and less dangerous—nicotine source. This helps the smoker to get used to not smoking and to develop behavioral techniques to break the cigarette habit, while still receiving the nicotine "fix" in a controlled manner. As time goes on, the ex-smoker can then slowly taper the nicotine dose until it is no longer needed.

Some types of nicotine replacement therapy, such as nicotine patches, are available to adults without a doctor's prescription. People under the age of 18, however, cannot buy these products on their own and should not use them without seeing a doctor first. Young people who are trying

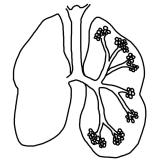
to quit smoking should also be aware that nicotine replacement therapy products are regarded as medicine by school authorities and are often subject to rules and regulations pertaining to the use of medicine at school.

Besides nicotine replacement therapy, a few other types of medicine have been found to be useful in helping some smokers quit. These medicines are only available with a doctor's prescription.

Counseling and medication—especially if they're used together—can increase the likelihood that a smoker will be able to quit permanently. However, even with these types of help, quitting smoking is difficult. Everyone who has ever quit smoking will tell you that quitting is one of the toughest things they have ever done. The best way to avoid facing this tough problem, of course, is never to start smoking to begin with.

Chapter 4

What Smoking Can Do to Your Lungs



CHAPTER 4

This is the first in a series of chapters that explain how smoking harms different parts of your body and how it affects your chances of developing various diseases. We chose to start with the lungs because smoking is especially bad for this part of your body. When you smoke a cigarette, you inhale the smoke into your lungs. This means that your lungs are directly exposed to the 4,000 toxic substances in cigarette smoke. These substances can impair your lungs' ability to function and interfere with the mechanisms that protect your lungs against disease.

How Smoking Affects Lung Function

Your lungs have an extremely important job to do with every breath you take. In your lungs, oxygen is extracted from the air and transferred into your bloodstream, which carries it to every cell in your body. At the same time, carbon dioxide, a waste product, is removed from the bloodstream and exhaled. This crucial gas exchange takes place in little air sacs in the lungs called alveoli.

Your lungs have much more contact with the outside world than most internal organs do. Anything that's in the air—including dirt, germs, and smoke—can find its way into your respiratory system (the lungs and the tubes that lead to the lungs). To protect against these contaminants, your body produces mucus, which helps to trap and carry away irritating substances from the air. The mucus-contaminant mixture is moved through the respiratory system by tiny hairs called cilia that move rapidly back and forth.

One way in which smoking damages the respiratory system is by

interfering with this defense mechanism. Smoking damages the cilia, making it more difficult for mucus and contaminants to move out of the body. Smoking also changes the composition of mucus, and it may cause the glands that produce mucus to become plugged and less able to do their job. As a result of all of these changes, contaminated mucus is more likely to become trapped in your lungs if you smoke.

Smoking also damages the alveoli, the tiny air sacs where gas exchange occurs. This damage makes your lungs less able to exchange oxygen and carbon dioxide. Smoking also decreases both the amount of surface in the lungs and the number of tiny blood vessels (capillaries) where gas exchange takes place. This robs both the lungs and other body tissues of the nutrients and oxygen that they need in order to be healthy and function normally.

Smoking also causes the airways (the lungs and the tubes leading to them) to overreact to harmful substances by tightening up, making breathing more difficult. This can cause wheezing and shortness of breath (the feeling that you can't get enough air).

All of these physical changes in the lungs lead to impaired lung function. Doctors have several different tests that they use to measure people's lung function. When they perform these tests on smokers, they find that the results are much poorer than those seen in nonsmokers.

Smoking and Asthma

You probably know some people who have asthma. About six out of every 100 adults and two out of every 10 children have this problem. In asthma, the tubes that lead to the lungs overreact to various triggers (for example pollen, mold, colds, and irritants such as cigarette smoke and pollution), causing attacks of wheezing, coughing, and difficulty in breathing.

In people who have asthma, smoking or exposure to other people's cigarette smoke can increase asthma symptoms, leading to a greater number of emergency room visits. Smokers have more severe asthma attacks and more bothersome asthma symptoms than nonsmokers do.

People can even die from severe asthma. This is much more likely to occur in smokers than in nonsmokers. In one study, researchers found that the asthma death rate among current and former smokers was more than double the death rate among nonsmokers.

Smoking and Respiratory Infections

Many diseases of the respiratory system are infections; this means that they are caused by germs, such as bacteria or viruses. Examples of respiratory infections include colds, influenza (the flu), pneumonia, and tuberculosis.

Smokers are more likely than nonsmokers to get all of these respiratory infections. For example, in one outbreak of the flu among a group of men in a military unit, 68% of the smokers got sick, but only 47% of the nonsmokers did.

When smokers get respiratory infections, they often get sicker than nonsmokers do. Both pneumonia and tuberculosis are more likely to be fatal in smokers than in nonsmokers.

Smoking and Chronic Obstructive Pulmonary Disease (COPD)

Chronic obstructive pulmonary disease (COPD) is the term that doctors use to refer to permanent conditions that interfere with the flow of air into and out of the lungs. There are two main types of COPD, chronic bronchitis and emphysema. In chronic bronchitis, the airways become inflamed and clogged with mucus, causing coughing and difficulty breathing. In emphysema, the alveoli of the lungs become damaged as a result of years of exposure to cigarette smoke. Over time, people with emphysema have more and more difficulty breathing; they may eventually need extra oxygen from a tank in order to breathe. Emphysema cannot be cured, and it tends to get worse over time, interfering more and more with a person's everyday life. Frequently, people die of this disease.

Cigarette smoking accounts for about 90% of all cases of COPD. It is the main cause of this disease, although heredity and other factors may

also play a role in some cases. Smokers are ten times as likely as non-smokers to develop COPD.

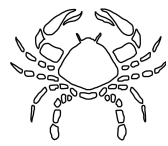
Smoking and Lung Cancer

In Chapter 5, you will learn that if you smoke, you are increasing your chances of developing many types of cancer. Lung cancer is by far the most common of all the smoking-related cancers. It is also one of the most deadly types of cancer. About 85% of people who get lung cancer die of it within five years; more than half die within one year.

Many years ago, before the invention of cigarettes, lung cancer was a rare disease. Today, though, it is a common type of cancer; about 13% of all cases of cancer are lung cancer, and this type of cancer accounts for about 28% of all cancer deaths. Smoking causes about 87% of all cases of lung cancer. Smokers are five to 10 times as likely as non-smokers to get this type of cancer and at least 12 times as likely to die of it. Each year, more than 140,000 American smokers die of lung cancer. That's about one-fourth of the total smoking-related deaths. The more you smoke and the longer you smoke, the more likely you are to get lung cancer. The risk of lung cancer is especially high for people who start to smoke when they are very young. Thus, any of your friends who have already started smoking are at particularly high risk of developing lung cancer when they get older.

Chapter 5

How Smoking Affects Your Chances of Getting Cancer



CHAPTER 5

You probably already know that cigarette smoking can cause cancer. That fact is common knowledge, and it's mentioned on one of the four rotating warning labels on cigarette packages. A lot of people don't realize, though, just how important smoking is as a cause of cancer and how many types of cancer it can cause. In this chapter, we'll take a brief look at what cancer is, and then we will discuss the impact that smoking has on your risk of getting cancer.

Some Basic Facts about Cancer

Cancer is not one disease but many. There are more than 100 different types of cancer, but they all have one thing in common—abnormal cells. In cancer, normal cells in some part of the body are changed into abnormal cells, which grow and reproduce in uncontrolled, harmful ways. Most types of cancer, such as lung cancer and breast cancer, have been named for the part of the body in which they start, but a few have been named in other ways. You may have heard of leukemia (a cancer of the white blood cells) or melanoma (a type of skin cancer).

Cancer is a relatively common disease, especially among older people. Each year, more than a million new cases of cancer occur in the United States. Cancer can sometimes be treated successfully, allowing people to live for many years. In other instances, though, cancer is fatal. Each year, more than 500,000 Americans die of cancer. Some types of cancer are more likely than others to be fatal. For example, most people who develop lung cancer die of their disease, but most people who develop skin cancer or breast cancer do not.

Smoking Is the Number One Preventable Cause of Cancer

Cigarette smoking is the single most important preventable cause of cancer. Each year, about 180,000 Americans die from cancers caused by cigarette smoking. That's about one-third of all cancer deaths. Cigarette smokers are twice as likely as nonsmokers to die of cancer; for the heaviest smokers, the risk is even higher—as much as four times the risk faced by nonsmokers.

Cigarette smoke contains more than 40 substances that are known to be cancer-causing agents. Many of these substances are produced when tobacco is burned, but some are present even in unburned tobacco (this is why smokeless tobacco, which is not burned, can cause cancer of the mouth).

Of the more than 400,000 people who die each year as a result of cigarette smoking, about 40% die of cancer.

Types of Cancer Linked to Smoking

If you have read the cigarette warning labels—or Chapter 4 of this book—you know that cigarette smoking causes lung cancer. It is, in fact, the number one cause of lung cancer, and it is responsible for the large majority—about 90%—of deaths from this disease.

Lung cancer is not the only type of cancer linked to cigarette smoking, however. Smoking can also cause cancers of the mouth, nose, throat, esophagus (the tube that leads from the mouth to the stomach), salivary glands, bladder, kidney, pancreas (an organ in your abdomen that produces hormones and digestive juices), and lower intestinal tract (the colon and rectum). In women, smoking can cause cancer of two parts of the female reproductive system: the cervix and the vulva. In men, it can cause cancer of the penis. Some scientific evidence suggests that smoking may also be linked to cancers of the stomach and the prostate gland (a gland found only in men). Smoking has also been linked to one kind of leukemia and one kind of skin cancer.

Smoking can cause cancer in so many different parts of the body

because harmful substances from cigarette smoke find their way to all of these body parts. When you smoke a cigarette, substances from cigarette smoke enter your body through your lungs. From there, they circulate in the blood to every cell in your body. Some parts of your body are also exposed to cigarette smoke components in other ways. One example of this is your esophagus (the tube that leads from your mouth to your stomach); it is exposed to cigarette smoke components that you swallow with your saliva as well as to those that travel to your esophagus through your bloodstream.

Impact of Smoking on Cancer

Smoking greatly increases your chances of developing various types of cancer. In comparison to nonsmokers, smokers are

- Five to 10 times more likely to get lung cancer
- Three to 13 times more likely to get oral (mouth) cancer
- About 27 times more likely to get oral cancer if they're men; six times more likely if they're women
- 10 times more likely to get cancer of the larynx (vocal cords) if they're men; eight times more likely if they're women
- Eight to 10 times more likely to get esophageal cancer (and the chances are even greater if the smoker also abuses alcohol)
- Two to three times more likely to get bladder cancer
- Two to five times more likely to get pancreatic cancer

And remember—smokers face all of these risks *at the same time.*

Smoking is responsible for a high percentage of all cases of several types of cancer. Experts estimate that smoking causes

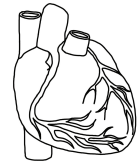
- 87% of all lung cancers
- 92% of all oral (mouth) cancers in men and 61% in women
- 82% of all cancers of the larynx (the vocal cords)
- At least 80% of all esophageal cancers
- At least 40%, and perhaps as many as 70%, of all bladder cancers
- 17% of all kidney cancers
- 30% of all pancreatic cancers
- 31% of fatal cervical cancers

Every one of these smoking-related cancers could have been prevented if people didn't smoke cigarettes or use tobacco in any other form.

Not using tobacco would also help to prevent many other serious diseases, including the other major cause of smoking-related deaths—diseases of the heart and arteries. Those diseases are the subjects of our next chapter.

Chapter 6

How Smoking Can Damage Your Heart and Arteries



CHAPTER 6

Each year, smoking kills more than 400,000 Americans. Almost half of these people—about 180,000—die from diseases of the heart or arteries, such as heart attacks or strokes.

This chapter will explain how smoking is linked to heart attacks and other diseases involving the blood vessels.

The Causes of Heart Attacks

People have heart attacks because there's something wrong with their coronary arteries—the blood vessels that provide the heart's blood supply. That something is a disease called *atherosclerosis.*

Atherosclerosis is a gradual clogging and narrowing of the arteries caused by damage to the inside layer of the walls of the arteries. It develops over many years, and it can happen in arteries anywhere in the body. When it happens in the coronary arteries (the arteries that supply blood to the heart), it causes a type of heart disease called *coronary heart disease*. In people who have coronary heart disease, the coronary arteries become so narrow and damaged that they can easily be blocked by a blood clot or other debris. When a blockage like this occurs, the heart can't get enough blood and oxygen. As a result, a portion of the heart muscle becomes damaged. This is the event known as a heart attack. Heart attacks occur mostly in middle-aged or elderly people, but the arterial damage that causes them begins when people are much younger.

Several factors increase a person's chances of developing atherosclerosis and having a heart attack. They include high blood pressure,

high blood cholesterol levels, a family history of heart disease, and smoking.

Smokers are twice as likely as nonsmokers to have heart attacks. About 30% of all heart disease deaths are due to smoking. Even people who smoke only a few cigarettes a day—half a pack or less—have an increased risk of dying of heart disease. Smoking is especially harmful for people who have other factors that increase their chances of having a heart attack, such as high blood pressure.

Unfortunately, many smokers do not seem to be aware that their habit can damage their hearts. In a national survey, only 29% of smokers said that they were at increased risk of having a heart attack. Actually, of course, 100% of them were at increased risk.

Effects of Smoking on the Heart and Arteries

Some of the effects of smoking on the heart and blood vessels can be detected almost immediately after a person starts to smoke a cigarette. Within one minute after smoking begins, the smoker's heart rate begins to increase; it may increase by as much as 30% during the first 10 minutes of smoking. Blood pressure also increases when a person smokes a cigarette. These increases are temporary, but since most smokers smoke cigarettes several times a day, they occur often and may play a role in long-term problems.

Less obvious, but even more important, are the long-term effects of smoking on the arteries. Smoking causes the arteries to tighten up; this increases the damage to the arterial walls. Smoking also causes abnormalities in the blood clotting process, and it has harmful effects on levels of cholesterol and related substances in the bloodstream. All of these factors together worsen atherosclerosis and increase the smoker's chances of having a heart attack.

Effect of Smoking on Treatments for Coronary Heart Disease

In addition to increasing a smoker's chances of developing coronary heart disease, smoking also decreases the effectiveness of some types of

treatment for this disease. For example, smokers who have special treatments to open up or replace clogged blood vessels don't do as well after treatment as nonsmokers do; if they continue to smoke, their blood vessels are likely to clog up again. Smoking also decreases the effectiveness of some of the medicines that are used to reduce blood cholesterol levels.

Effect of Smoking on Other Types of Heart Disease

The most common type of heart disease associated with smoking is coronary heart disease, which was described above. Smoking also increases a person's chances of developing other types of heart disease, including cardiomyopathy and congestive heart failure.

Cardiomyopathy is a disease that causes extensive damage to the heart muscle. Over time, the heart loses its ability to function. People with this disease get very tired and have trouble breathing; eventually, they may need heart transplants to stay alive.

The risk of cardiomyopathy is much greater in smokers than in nonsmokers. Smoking may bring on this disease by damaging small arteries, or the carbon monoxide in cigarette smoke may damage the heart muscle directly. It's also possible that smoking increases the heart muscle's susceptibility to a virus infection that can cause cardiomyopathy.

Congestive heart failure is a disease in which the heart's ability to pump blood is reduced. It often occurs as a result of other heart problems. Smokers are more likely than nonsmokers to develop congestive heart failure.

Smoking and Stroke

A stroke occurs when something interferes with the blood's ability to circulate in the brain. This causes some brain cells to die, and it can result in permanent brain damage. People can die from strokes, and those who survive may have permanent problems, such as difficulty speaking or paralysis (an inability to move) on one side of the body.

The most common type of stroke is caused by a blockage of a blood vessel in the brain or neck. This kind of stroke is much like a heart

attack, except that it occurs in the brain rather than the heart. Some experts like to call it a "brain attack," to emphasize the similarity between the two problems. Strokes of this type are an end result of atherosclerosis, just as heart attacks are.

Smoking increases the risk of the "brain attack" type of stroke, just as it does with heart attacks. In fact, smokers are about twice as likely as nonsmokers to have a stroke. About 24% of all strokes that occur in the U.S. population are due to smoking. People who smoke greater numbers of cigarettes have a higher risk of stroke than those who smoke fewer cigarettes.

There is another, less common type of stroke that is caused by bleeding in the brain. Although this type of stroke is not caused by atherosclerosis, it too is more common in smokers than in nonsmokers. Smoking is especially linked to a type of bleeding stroke called a subarachnoid hemorrhage, in which blood collects beneath the membrane that covers the brain. Subarachnoid hemorrhage is four times as common in smokers than in nonsmokers and it tends to occur at younger ages in smokers.

Smoking and Peripheral Vascular Disease

Smoking doesn't just promote the development of atherosclerosis in the arteries that supply blood to the heart and brain; it does this throughout the body. When atherosclerosis develops in the legs and feet, it causes a condition called peripheral vascular disease. ("Peripheral" means "out on the edges" and "vascular" means "having to do with a blood vessel"; thus, peripheral vascular disease is a disease of the blood vessels in the outer parts of the body.) People with peripheral vascular disease may have pain in their legs and difficulty in walking. In mild cases, the pain may occur only when the person walks around, but in more severe cases, the pain may be there all the time. In some instances, people with severe peripheral vascular disease may need to have a foot or leg amputated (removed by surgery). Peripheral vascular disease occurs mostly in older people, but the artery damage that causes it starts much earlier in life.

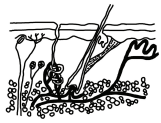
Smoking is a very important cause of peripheral vascular disease. Smoking accounts for about three-fourths of all cases of peripheral vascular disease. Experts estimate that the risk of peripheral vascular dis-

ease may be as much as 16 times higher in smokers than in nonsmokers. Smoking also makes peripheral vascular disease worse in people who already have it. Treatment for this disease is less successful in smokers than in nonsmokers.

There is a special kind of peripheral vascular disease called Buerger's disease that causes severe pain in the feet and hands and may result in amputation of toes or fingers. Almost all of the people who get Buerger's disease are men who smoke. Experts think that Buerger's disease is caused by a reaction to some substance in tobacco. Quitting smoking is a crucial part of treatment for Buerger's disease. People with this disease who continue smoking are much more likely than those who quit to need amputations.

Chapter 7

What Smoking Can Do to Your Skin



CHAPTER 7

If you want to find out whether people smoke—without sniffing their breath or clothing—take a look at their fingernails. One of the telltale signs of smoking is that it turns the fingernails an ugly yellowish-brown color, especially on the hand that holds the cigarette.

The fingers aren't the only place where you can notice the effects of smoking on the skin, however. Smoking can also affect skin on other parts of the body, especially the face, and it can increase your chances of getting some types of skin diseases. This chapter focuses on the impact cigarette smoking can have on your skin – and your risk of skin diseases. As you will see in other chapters of this book, while smoking has specific negative effects on many parts of the body, there are some diseases, such as the skin condition acne, that have a questionable association or have not been causally linked to smoking.

How Smoking Damages the Skin

Smoking can affect your skin in two different ways.

First, harmful substances from cigarette smoke can damage your skin from the outside. If you smoke a cigarette—or even if you're in a room with people who smoke—your skin is directly exposed to cigarette smoke in the environment. Substances in the smoke can irritate your skin, in much the same way that they irritate your eyes. This kind of irritation happens right away, and it only lasts for a little while. But if it happens often—as it does when a person smokes cigarettes several times each day—it may play a role in long-lasting skin problems.

Second, if you smoke a cigarette, harmful substances from cigarette

smoke travel from your lungs into your bloodstream. When they get there, they tighten up the blood vessels so that less blood gets through. This decreases the amount of blood that reaches your skin—and that's something that you don't want, since your blood contains nutrients that help to keep your skin healthy.

Smoking and Wrinkles

If you were to line up 10 smokers your parents' age on one side of a room and 10 nonsmokers of the same age on the other side, you would notice a big difference between them. The smokers would look much older than the nonsmokers. The reason? Smokers have more wrinkles in their skin. In fact, smokers in their 40s have as many wrinkles as nonsmokers in their 60s do.

Smokers tend to have particularly bad wrinkles around the mouth and eyes. You can see the wrinkles around the mouth really easily in women who wear lipstick. The lipstick bleeds into the wrinkles, making funny-looking jagged edges.

You may think of wrinkles as an old person's problem, but they start to develop when you're young, even though they don't become obvious until you reach middle age. By using special methods to examine the skin, scientists have found that smoking affects the development of wrinkles even among people in their 20s and 30s. Scientists have also learned that smoking may cause more wrinkles in women than it does in men.

Smoking and Psoriasis

Psoriasis is a skin disease in which patches of the skin become red and scaly. Psoriasis isn't contagious, but it looks bad and it itches. (In fact, the name of the disease comes from the Greek word for itch.) Also, if the rash develops on a joint, such as the elbow or knee, it may make it difficult to move that joint. Psoriasis is what doctors call a chronic disease—meaning that it lasts a long time. Unfortunately, once people have psoriasis, they may have it for the rest of their lives, with the disease sometimes getting worse and sometimes getting better. Psoriasis is mostly a disease of adults, rather than children or teenagers.

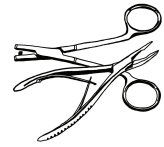
Doctors don't completely understand the causes of psoriasis. But they do know that this disease is more common among smokers than nonsmokers. If you smoke, you are at least twice as likely as a nonsmoker—maybe even three times as likely—to have psoriasis at some time in your life. And the longer you smoke, the more likely you are to get this disease.

Smoking and Skin Cancer

If you've read Chapter 5, you know that smoking increases your chances of getting many different types of cancer. This includes one kind of skin cancer—a kind called squamous cell carcinoma. This particular kind of cancer isn't as dangerous as most other cancers; in fact, it almost never kills people. However, it does need to be treated so that it doesn't spread, and the treatment can leave permanent scars.

Chapter 8

How Smoking Can Affect You When You Have Surgery



CHAPTER 8

Each year, about 70 million Americans—including more than 2 million children and teenagers—have surgery. For most of these people, the operation will go well. Some people, however, will have problems—such as complications from the anesthetic or poor healing after the operation. If you smoke, you are more likely than a nonsmoker to have problems when you have surgery. As a result, you may feel worse than a nonsmoker would, and it may take you longer to get back to normal after your operation.

Smoking and Anesthesia Complications

When people have surgery, the doctors use medicines called anesthetics to make sure that the patient doesn't feel any pain. One type of anesthesia that is commonly used during surgery is general anesthesia, which puts the patient to sleep during the operation.

Sometimes, when people have surgery with general anesthesia, they have problems afterward. For example, they are especially susceptible to respiratory problems, such as infections, at this time. People who have respiratory problems after an operation may have to spend extra time in the hospital. Smokers are much more likely than nonsmokers to develop respiratory problems after surgery because their lungs are already in bad shape from smoking.

One reason why smokers have more complications from anesthesia is that they need larger doses of anesthetic medicines than nonsmokers do. One of the purposes of anesthesia—besides stopping pain—is to make sure that the patient doesn't cough during the operation. It takes more medicine to accomplish this in a smoker because smokers cough a

lot, since their respiratory systems are always irritated.

After having surgery, patients must stay in a recovery room or intensive care unit until they are well enough to be moved to a regular hospital room. It takes longer for smokers to recover enough to leave the recovery room than it does for nonsmokers, at least partly because they have more problems from anesthesia.

Smoking before undergoing surgery with anesthesia is particularly risky for people who have asthma—a condition that is common among people your age, as well as adults. Smoking aggravates asthma, and the combination of the two factors increases the risks of anesthesia.

Smoking and Healing after Surgery

Smokers take longer to heal after having surgery than nonsmokers do. Smoking causes several different changes in your body that interfere with healing, including the following:

- Smoking causes blood vessels to tighten up, and this decreases the flow of blood to the healing area. With less blood, it's harder for damaged tissues to get the nutrients and oxygen they need to heal properly.
- Smoking decreases the level of oxygen in the blood. Healing tissues need plenty of oxygen, but they don't get it if you're a smoker.
- Smoking decreases the formation of collagen—a kind of connective tissue that is needed for a wound to heal properly.
- Smoking increases the level of hydrogen cyanide in the bloodstream, and this makes it harder for chemicals in the body to transport oxygen from cell to cell—an action that is necessary for healing.

Slow healing is an especially serious problem for people who have plastic surgery. The term "plastic surgery" refers to operations that reshape a part of the body. For example, a person might have plastic surgery to fix an abnormally shaped ear or to improve the appearance of a bad scar or birthmark. Cosmetic procedures such as "nose jobs" are also a type of plastic surgery. Because of poor healing, smokers are much more likely than nonsmokers to have poor results from plastic surgery. In fact, doctors sometimes recommend that people who smoke shouldn't have certain types of plastic surgery at all because it's so likely that the operation will turn out badly.

Smoking and Infections After Surgery

Smoking makes it more likely that you will develop an infection at the site of your operation. If you get this kind of infection, an operative wound infection, you will feel sicker, you will have to take extra medicines, and you may need to stay in the hospital for a longer time than you had expected.

Does It Help to Quit Smoking Before Surgery?

Because smoking can cause problems with surgery, smokers sometimes wonder whether it would be worthwhile to quit smoking before having an operation. The answer to this question is yes. But unfortunately, quitting smoking just a few days before an operation doesn't help much. It takes six months after a person quits smoking before the risk of problems during surgery returns to normal. Many operations can't be postponed for that long. So the best way to avoid smoking-related problems during surgery is never to start smoking at all.

Chapter 9

How Smoking Affects Your Bones

CHAPTER 9

The warning labels on cigarette packages don't mention anything about your bones, but they should. Cigarette smoking can cause serious problems with your bones. As you will learn in this chapter, smoking weakens your bones, and this can cause you to develop a disease called osteoporosis as you grow older. But that isn't all that smoking can do. It can also cause problems with your bones right now—especially if you break a bone or need bone surgery.

How Smoking Harms Your Bones

Some people are surprised to learn that smoking can affect their bones. After all, the bones seem hard and strong, like rocks. It's hard to imagine that they could be damaged by anything less than a serious accident or bad fall.

Actually, though, bones aren't solid like rocks. They are living, changing tissues, just like all of the other parts of your body. Every day, some of the tissue in your bones is broken down, and new bone is made to replace it. This process, which is called remodeling, takes place throughout your life.

A good blood supply is essential for proper remodeling of the bones. To be healthy, bones, like any other living tissue, need the oxygen and nutrients that blood supplies. Smoking reduces the flow of blood to the bones—just as it reduces the flow of blood to other parts of the body. This is one reason why smokers' bones aren't as healthy as nonsmokers' bones.

The bones can also be harmed directly by toxic substances from

tobacco smoke. These substances travel from the lungs, through the bloodstream, to all parts of the body—including the bones. Substances in tobacco smoke that can damage your bones include nicotine (the drug in tobacco that makes it addictive) and carbon monoxide and hydrogen cyanide (two poisonous gases that rob your body of oxygen).

Smoking and Broken Bones

You probably know people who have broken an arm or a leg. Perhaps you have had a broken bone yourself. Broken bones are a relatively common type of injury among young people. Fortunately, though, most broken bones in young people heal quickly and well.

If you smoke, however, your bones will not heal so well. It takes much longer for broken bones to heal in smokers than in nonsmokers. For example, in one group of people who had broken their legs, complete healing took an average of 269 days in smokers, as compared to 136 days in nonsmokers.

Because smokers' bones don't heal well, smokers are much more likely than nonsmokers to need special medical procedures such as bone grafting to help heal their broken bones.

Smoking interferes with the healing of broken bones because it decreases the body's ability to manufacture new bone tissue—a process that is essential for healing. Several different substances in cigarette smoke, including nicotine, carbon monoxide, and hydrogen cyanide, all interfere with the bone healing process.

Smoking and Bone Surgery

Having an operation on a bone is a lot like having a broken bone; in both situations, the bone tissue must heal afterward. So you probably won't be surprised to learn that smoking causes slow healing after bone surgery, just as it does in people with broken bones. In one group of patients who had surgery on their wrist bones, complete healing took an average of seven months in smokers, as compared to four months in nonsmokers.

When people have surgery on their bones, the doctors have to cut

through soft tissues, such as skin and muscles, in order to reach the bone that they need to work on. These soft tissues need to heal after the operation, just as the bone does. However, soft tissues don't heal as well in smokers as in nonsmokers. Because of this, smokers are more likely than nonsmokers to have complications, such as infections, after bone surgery. (For more about smoking and surgery, see Chapter 8.)

Because smoking is associated with poorer healing and increased complications after bone surgery, the doctors who operate on bones (orthopedic surgeons) often ask patients who are going to have bone surgery to quit smoking at least several weeks before the operation.

Smoking and Bone and Muscle Pain

Smokers are more likely than nonsmokers to have back pain and other types of bone and muscle pain. They are also more likely to have bone and muscle injuries. The reduced blood flow to the bones and muscles that results from smoking is at least partly responsible for these problems.

Smoking and Osteoporosis

Osteoporosis is a disease in which the bones become fragile because some of the bone tissue is lost. The bones stay the same size, but their density and strength decrease. People with osteoporosis can break their bones very easily; they are especially likely to break their hip, spine, and wrist bones.

Earlier in this chapter, we mentioned the process of bone remodeling, in which some bone is broken down and some new bone is formed every day. In people who have osteoporosis, the amount of bone broken down is greater than the amount of new bone formed. That's why the amount of bone decreases.

Ten million Americans have osteoporosis. Most of them are older people. However, the loss of bone that leads to osteoporosis doesn't just happen in old age. It starts when people are relatively young and continues over a very long period of time. To prevent osteoporosis, it is important to build up strong bones as a child and teenager and to avoid factors that cause excessive loss of bone later in life.

Smoking is one of the factors that cause people to lose too much bone. Smoking increases your chances of developing osteoporosis and of breaking bones as a result of this disease.

One reason why you're more likely to develop osteoporosis if you smoke is that smoking interferes with your body's handling of the mineral calcium. Calcium is essential for strong bones. Your body obtains calcium from the food you eat, especially milk and other dairy products. The calcium is absorbed from your digestive tract into your bloodstream, where it travels to your bones and is used in bone remodeling. Smoking interferes with this process by decreasing the amount of calcium absorbed from food. This means that less calcium reaches your bones.

Smoking may stop teenagers from building up as much bone as they should. A recent scientific study showed that the bones of teenage girls who smoke are less dense than the bones of nonsmoking girls of the same age. As a result, girls who smoke during their teenage years may be more likely to develop osteoporosis later in life.

Chapter 10

How Smoking Affects Your Joints

The bones in your body are connected by joints, which make it possible for you to move. Diseases of the joints, such as arthritis, can make movement difficult or painful.

Smoking increases your chances of developing two diseases that affect the joints—rheumatoid arthritis and lupus.

Smoking and Rheumatoid Arthritis

Rheumatoid arthritis is a disease in which the linings of the joints become inflamed, causing pain, stiffness, redness, and swelling. It is a disease that lasts a long time; sometimes it gets better, sometimes it gets worse. It is not contagious. Scientists believe that rheumatoid arthritis is caused by a malfunction of the body's immune system (the system that defends the body against germs and other outside invaders). More than 2 million Americans have rheumatoid arthritis. Usually, this disease starts in middle age, but younger adults can have it, too.

If you smoke, you are about twice as likely as a nonsmoker to develop rheumatoid arthritis. And if you already have rheumatoid arthritis, smoking can make the disease worse. Smokers with rheumatoid arthritis are especially likely to develop complications of rheumatoid arthritis that affect parts of the body other than the joints.

The good news about smoking and rheumatoid arthritis is that if you quit smoking, your chances of getting this disease will decrease. However, it will take about 10 years after you quit before your risk will completely return to normal.

Smoking and Lupus

Systemic lupus erythematosus, usually called lupus, is a disease that can affect many different parts of the body, especially the joints, skin and kidneys. Like rheumatoid arthritis, it is a chronic disease, and it is caused by a malfunction of the immune system. Lupus usually starts in adulthood, but some people develop this disease as teenagers. Lupus is not contagious. About two and a half million Americans have lupus. Lupus can be quite severe, even fatal.

If you smoke, you are more likely than a nonsmoker to get lupus. Recent scientific studies have shown that smokers have an increased risk of this disease. Smoking is also a problem for people who already have lupus because it decreases the effectiveness of medicines used to treat this disease. When people who have lupus involving the skin quit smoking, they often feel better because their medicines can work more effectively.

Chapter 11

Girls, Sex, Pregnancy, and Smoking

Two of the four rotating warning labels required on cigarette packages in the U.S. mention the effects of smoking during pregnancy.

One says
- Smoking causes lung cancer, heart disease, emphysema, and may complicate pregnancy.

The other says
- Smoking by pregnant women may result in fetal injury, premature birth, and low birth weight.

The information on the labels is correct, but it's only a small part of the total picture of how smoking can affect your reproductive system and how smoking during pregnancy can harm both you and your baby.

Problems that Smoking Can Cause Before and During Pregnancy

Infertility

The warning labels tell you that smoking can cause problems during pregnancy. They don't tell you, though, that smoking also makes it less likely that you will be able to become pregnant.

When a woman has difficulty becoming pregnant, doctors call the problem infertility. Women who smoke are 60% more likely than nonsmokers to be infertile. Their increased risk of infertility is believed to result from a combination of at least three harmful effects of tobacco. First,

tobacco smoke contains substances that are toxic to a woman's egg cells. Second, smoking lowers the level of the female hormone estrogen in a woman's body and affects the way that the body handles this hormone. Third, smoking can damage the tubes through which an egg cell must travel from the ovary (the place where the egg is made) to the uterus (the place where the fertilized egg develops into a baby).

Not only are smokers more likely to be infertile, they are also more likely to have unsuccessful infertility treatments. Smokers are about one-third less likely than nonsmokers to become pregnant after in vitro fertilization (a procedure in which an egg cell is fertilized outside the woman's body).

Miscarriage

Another problem that is not mentioned on cigarette warning labels is that women who smoke are more likely to have miscarriages. A miscarriage is the loss of a pregnancy during the first half of pregnancy, before the unborn child would have any chance of survival outside the mother's body. This occurs more often in smokers than in nonsmokers.

Ectopic Pregnancy

Women who smoke are also more likely than smokers to have ectopic pregnancies. An ectopic pregnancy is one in which the fertilized egg settles and starts to grow in the wrong place—that is, somewhere other than the uterus (womb). Because the uterus is the only place in which a baby can grow properly, ectopic pregnancies are unsuccessful pregnancies; they don't lead to the birth of a baby. In addition, ectopic pregnancies can cause serious medical complications, such as severe bleeding, in the woman, and she may need to have surgery to remove the abnormal pregnancy. The risk of an ectopic pregnancy is about 50% higher for women who smoke than for those who don't.

Problems During Pregnancy

When a pregnant woman smokes, so does her baby. The only difference is that the mother is exposed to tobacco smoke through her lungs, while the baby is exposed through the placenta (the afterbirth; the special organ that connects the mother and baby during pregnancy). Toxic substances from tobacco smoke travel through the mother's bloodstream to the placenta and from there to the baby's bloodstream. These sub-

stances interfere with the baby's ability to get enough of the oxygen and nutrients needed for normal growth and development.

Women who smoke have an increased risk of several complications of pregnancy that can have serious consequences for both the mother and the baby, including premature rupture of the membranes (a condition that can lead to infection in the mother and to premature birth); placenta previa (a condition in which the placenta is in the wrong place—it can cause bleeding in the mother and sometimes results in loss of the baby); and abruptio placentae (a condition in which the placenta separates from the wall of the uterus too early, which may result in the death of the baby and even, in rare cases, of the mother).

Premature Birth

Babies of mothers who smoke are more likely to be born prematurely (before a full nine months of pregnancy). Babies who are born too soon may die, and if they survive, they may have to stay in the hospital for a long time. Some of them have lasting health problems as a result of their early births. It has been estimated that smoking is responsible for 15% of all premature births. Smoking during any stage of pregnancy, not just the last few months, increases the risk of premature birth.

Small Size, Even in Babies Who Are Not Premature

Even if a smoker's baby is not born prematurely, the baby may be smaller than usual because smoking slows down the baby's growth in the uterus. Having a small baby doesn't sound like an important problem, but it actually is. Small size at birth (low birth weight) increases the likelihood that a baby will have health problems. Smoking accounts for 20 to 30% of all cases in which babies are abnormally small when they are born. The longer a woman smokes during pregnancy, the greater the effect on the baby's size. Smoking during the last few months of pregnancy is particularly harmful because the baby needs to grow rapidly during this time.

Babies Suffer Nicotine Withdrawal

Smoking does not only affect a baby's size at birth, but also affects the baby's nervous system and behavior. A recent study found that babies born to smokers—even those who do not smoke that often—suffer from nicotine withdrawal after birth. These babies are more excitable and

tense, show various signs of stress, and require more handling to calm down. This can occur even when the new mother smoked less than 10 cigarettes per day.

Stillbirth or Death in Early Infancy

Smokers are more likely than nonsmokers to have a baby who dies at birth or very soon afterward. Research has shown that smokers' babies are at least 40% more likely than nonsmokers' babies to be stillborn (born dead) and about 20% more likely to die in the first month after birth.

Birth Defects

Babies born to mothers who smoke have a higher risk of having some kinds of birth defects, particularly cleft lip and cleft palate (abnormalities of the mouth that need to be corrected by surgery).

Smoking During Pregnancy and Sudden Infant Death Syndrome

When a seemingly healthy baby dies suddenly and no cause for the death can be found, it is called sudden infant death syndrome or SIDS. In the U.S., about 3,000 babies a year die of SIDS.

Babies born to mothers who smoked during pregnancy are twice as likely as other babies to die of SIDS. About 24% of SIDS deaths are related to smoking during pregnancy. Scientists don't fully understand exactly why babies born to mothers who smoke have an increased risk of SIDS, but part of the problem may be that these babies are harder to wake up when they're sleeping, a situation that may be linked to SIDS.

Long-Term Problems in Children of Mothers Who Smoke

A woman's smoking during pregnancy may affect the health of her child long after birth and in several different ways. Some of these effects may be due to the fact that smokers' babies are smaller than other babies when they are born. Others may be due to mechanisms that are not yet understood.

Long-term problems associated with the mother's smoking during pregnancy include

- An increased risk of allergies
- Higher blood pressure in childhood
- A greater likelihood of obesity
- Being shorter in childhood
- Poorer lung function
- A greater likelihood that the child will have asthma
- Possibly, an increased risk of learning and behavior problems (scientists aren't sure about this one)
- Possibly, an increased risk of mental retardation (this, too, is uncertain)

Smoking and Breastfeeding

A woman's smoking affects her ability to breastfeed her baby in two ways.

First, women who smoke are less likely to breastfeed and that those who do breastfeed continue for a shorter time than nonsmoking mothers do. Scientists are not sure whether this is a matter of choice or whether smoking interferes with a woman's ability to breastfeed successfully.

Second, the breast milk produced by women who smoke contains nicotine, which is transferred to the baby. How this affects the baby's health is uncertain.

Effects of Smoking on Your Reproductive System

Smoking can affect your reproductive system even when you're not having a baby. The two most serious effects of smoking on the reproductive system are earlier menopause and an increased risk of two types of cancer of the reproductive organs.

Early Menopause

Sometime during middle age, women stop having menstrual periods permanently. This is called menopause. Smokers reach menopause earlier than nonsmokers do. Some women might welcome an earlier menopause because they no longer have to deal with the inconvenience of menstrual periods, but actually, reaching menopause early is undesir-

able. It increases a woman's risk of some types of health problems, especially the bone disease osteoporosis.

Increased Risks of Cervical and Vulvar Cancers

Cancer of the cervix (the lower, narrow part of the uterus that extends into the vagina) is a relatively common type of cancer; about 12,000 women a year in the U.S. get this disease, and about 4,000 die from it. Women who smoke have a higher risk of cancer of the cervix than other women do. The risk is greatest for women who have smoked many cigarettes per day for a long time. Experts estimate that about 30% of deaths from cervical cancer are due to smoking.

Scientists have learned that a sexually transmitted virus plays a role in causing many cases of cervical cancer. One way in which smoking may increase a woman's risk of cancer of the cervix is by increasing her susceptibility to this virus. Substances from cigarette smoke may also affect the cervix directly. Researchers have found cancer-causing substances from tobacco in the mucus on the cervix.

Women who smoke also have an increased risk of cancer of the vulva (the external part of the female sex organs). This type of cancer is rare, but it occurs twice as often in smokers as in nonsmokers.

Other Effects

In addition to the effects mentioned above, smoking also has some other, less serious effects on the female reproductive system. For reasons that are not well understood, smokers are more likely than nonsmokers to have problems with cramps during their menstrual periods. They are also more likely to have irregular menstrual periods. Women who smoke are also more likely than nonsmokers to have hot flashes during menopause.

Chapter 12

Boys, Sex, and Smoking

CHAPTER 12

Smoking affects practically all parts of your body, and your sexual and reproductive systems are no exception. Smoking can cause problems that can ruin your sex life. It may also interfere with your ability to father a child, and it increases your chances of developing cancer of the penis.

Smoking and Erectile Dysfunction

"Erectile dysfunction," or "ED," is when a man can't get or keep an erection that is hard enough or lasts long enough for him to have sex. It is also called impotence. This condition affects practically every man once in a while, but when it happens often or every time, it is a real medical problem and certainly affects the quality of the man's life. About 30 million American men suffer from ED regularly; most of them are older men, but younger men can have erectile dysfunction, too.

Smoking increases your chances of experiencing erectile dysfunction. Indeed, men who smoke are about twice as likely as men who don't smoke to suffer from ED and impotence. The longer you smoke, and the more cigarettes you smoke, the more likely you are to develop erectile dysfunction.

A few years ago, the California Department of Health Services ran a series of anti-smoking TV commercials to teach men about this hazard of smoking. In the commercials, cigarettes would go limp when the men smoking them saw an attractive woman. The commercials were funny. The problem isn't.

Scientists believe that smoking may increase a man's risk of erec-

tile dysfunction by damaging the blood vessels of the penis. If you have read Chapter 6, you know that smoking is bad for your arteries, and that it worsens the disease of the arteries called atherosclerosis. Atherosclerosis can affect the arteries that supply blood to the penis, just as it affects the arteries that supply blood to the heart, brain, and other parts of the body. When the arteries that supply blood to the penis don't work as well as they should, a man may not be able to get an erection.

It is uncertain whether quitting smoking can prevent erectile dysfunction or make the problem get better if a man already has it. In some studies of relatively young men with erectile dysfunction, quitting smoking seemed to be helpful. In other studies, however, which mostly involved older men, quitting didn't seem to help. If a man has smoked for many years, the damage to his arteries may be so extensive that the problem can't be resolved by giving up cigarettes late in life. So the best way to reduce your risk of getting erectile dysfunction is to never start smoking at all or to kick the habit as soon as possible if you already smoke.

Smoking and Peyronie's Disease

Peyronie's disease is a condition in which a hard lump forms on the penis and develops into a scar. The presence of the lump makes the penis less flexible. This can be painful and can also cause the penis to bend during an erection, which may make it difficult or impossible for a man to have sex. Sometimes, it can also prevent a man from having an erection. Men who smoke are seven times more likely than nonsmokers to develop Peyronie's disease. Scientists don't know why smoking is linked to an increased risk of this disease.

Smoking and Infertility

Sometimes, a woman doesn't get pregnant even though she and her partner have been trying to conceive for many months. ("Trying" means having unprotected sex frequently.) Doctors call this problem infertility. Infertility can be due to problems in the woman's body or in the man's body. If you've read Chapter 11, you know that smoking can cause infertility in women. Scientists suspect that smoking may also increase a man's risk of infertility because it causes several changes in the male

reproductive system that may interfere with its ability to work properly.

Toxic substances from cigarette smoke have been found in the semen (the fluid that contains the sperm) of smokers; they make their way there from the smoker's bloodstream. These toxic substances may damage the sperm. As a result, smokers have fewer sperm than nonsmokers do, and their sperm are more likely to be abnormal. Smoking may also modify the levels of reproductive hormones in men.

If a couple is having infertility problems and the man is a smoker, doctors usually advise the man to quit smoking, since this might increase the couple's chances of having a baby. Quitting smoking is actually a good idea for any man who wants to become a father, even if the man doesn't have infertility problems. As you will see in Chapter 23, smoking by parents is bad for the health of their children. And of course, parents who smoke are harming their own health as well.

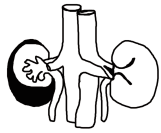
Smoking and Cancer of the Penis

Cancer of the penis is a rare but deadly disease. The treatment for this disease may involve amputation (surgical removal) of part or all of the penis. Men who smoke have an increased risk of developing cancer of the penis.

Scientists believe that cancer-causing substances in cigarette smoke called nitrosamines may account for the link between smoking and cancer of the penis. When these substances are inhaled, they travel from the lungs through the bloodstream to all parts of the body, including the penis. They might also reach the penis through the urine, which contains concentrated amounts of toxic substances from tobacco smoke that are being excreted from the body. There are also other factors linked to cancer of the penis, including multiple sexual partners, poor penile hygiene, and being uncircumcised.

Chapter 13

Smoking's Effects on the Kidneys and Bladder



CHAPTER 13

The idea that smoking can be harmful to your urinary tract may seem a bit strange at first, since your lungs and your kidneys are nowhere near each other in your body. But because of the way that substances circulate through your blood, toxic substances from cigarette smoke can reach your urinary tract quite easily.

If you smoke a cigarette, harmful substances from the smoke are absorbed from your lungs into your bloodstream. These substances then travel through your bloodstream to all parts of your body, including your kidneys. It is the job of the kidneys to filter waste products and toxic substances out of the blood, so that they can be removed from the body. The kidneys filter out many tobacco smoke components and collect them in the urine. The urine—now filled with harmful substances—then goes into the bladder before it is excreted from the body. Thus, both the kidney and bladder are exposed to harmful substances from cigarette smoke, and they may be damaged as a result.

Smoking and Kidney Damage

If this book had been written ten years ago, it would not have mentioned kidney damage as one of the harmful effects of smoking. It's only in the last few years that scientists have learned that smoking can cause or worsen kidney problems.

Several years ago, scientists discovered that smoking worsens kidney damage in people who have medical problems that affect the kidneys—such as diabetes or high blood pressure. Recently, scientists have also learned that men who smoke have poorer kidney function than nonsmoking men—even if they have nothing else wrong with them.

(Scientists have not found such a relationship in women—at least, not yet.) Smoking may damage the kidneys by causing brief increases in blood pressure each time a person smokes a cigarette.

Smoking and Urinary Tract Problems in Older People

Some older people are frequently bothered by urinary tract problems—such as the need to go to the bathroom in a hurry or the need to get up to use the bathroom many times during the night. These problems may be more common among smokers than among nonsmokers, probably because tobacco components in the urine may irritate the urinary tract.

Smoking and Urinary Tract Cancers

If you smoke, you have a higher risk of getting cancer of the bladder and cancer of the kidney than nonsmokers do.

The link between cigarette smoking and bladder cancer is especially strong. Smoking is the number one preventable cause of bladder cancer in the United States. Smokers are at least twice as likely as nonsmokers to get bladder cancer, and smoking accounts for about half of all cases of this disease. Each year, more than 7,000 Americans die from bladder cancer caused by smoking.

Chapter 14

How Smoking Affects Diseases of the Nervous System

CHAPTER 14

Your nervous system consists of your brain, your spinal cord, and the nerves that connect your brain and spinal cord to the rest of your body. Your nervous system is your body's central control system. It's involved in all of your body's functions and in everything that you do.

The nervous system is one of the most delicate, carefully balanced parts of your body. Most people your age—including most smokers—have healthy nervous systems. However, your nervous system is still developing, and therefore it is sensitive to toxic substances, such as those found in cigarette smoke. Smoking now could upset the delicate balance of your nervous system, leading to problems later in life.

Smoking can make several serious diseases of the nervous system worse. It may also increase your risk of developing some of these diseases in the first place. Most of the diseases that we will mention in this chapter are quite rare. However, smoking also worsens a relatively common nervous system disease called multiple sclerosis.

Smoking and Multiple Sclerosis

Multiple sclerosis is a disease that affects the nervous system's ability to send messages to various parts of the body. This disease can cause difficulty in walking, extreme tiredness, double vision, slurred speech, numbness in various parts of the body, and other problems. Some people with multiple sclerosis can live nearly normal lives much of the time, but others are more severely disabled. Multiple sclerosis is a long-lasting disease; once a person has it, it doesn't go away, although it may get better at some times and worse at others. Multiple sclerosis is

not contagious. In most cases, this disease first shows up when a person is between the ages of 20 and 50. About 400,000 Americans have multiple sclerosis.

If you smoke, you are more likely than a nonsmoker to develop multiple sclerosis. Scientists don't know why this is true. They only discovered recently that smoking is linked to multiple sclerosis, and they will need to do more research to understand the reasons for this link.

Smoking also makes the symptoms of multiple sclerosis worse in people who already have the disease. Smoking seems to have especially bad effects on multiple sclerosis patients' ability to use the upper parts of their bodies, such as their arms and hands, but it can also increase problems with weakness, walking, and eyesight.

Some doctors and scientists have noticed that there are more cases of multiple sclerosis among teenagers than they would have predicted. It is possible that smoking is at least a partial explanation for these unexpected cases of the disease.

Scientists think that the effects of smoking in patients with multiple sclerosis are at least partly due to nicotine—the drug in tobacco that makes it addictive. Nicotine can interfere with nerve function and disrupt normal communication between the nerves and the muscles. Two other ways in which smoking may make multiple sclerosis symptoms worse are by decreasing blood flow to the brain and by decreasing oxygen levels in the blood. Cigarette smoke has these effects in every smoker's body, but they may be especially undesirable in people who already have a problem with their nervous system.

Smoking and Other Nervous System Diseases

Reflex sympathetic dystrophy is a painful disease of the nervous system in which one type of nerve cell malfunctions, causing intense pain, abnormal sweating, and other problems. Smoking worsens this disease and may also increase a person's chance of developing it.

Smoking also seems to worsen spinocerebellar degeneration, an inherited nervous system disorder that causes people to have problems with movement.

Some people who drink excessive amounts of alcohol develop nervous system problems as a result. Smoking makes these problems worse.

Smoking also worsens Shy-Drager syndrome, an unusual disease in which people have balance and coordination problems along with a type of low blood pressure that makes them feel dizzy when they stand up.

Chapter 15

Smoking and Your Mental Health

CHAPTER 15

Smoking and mental health problems are linked to each other in complicated ways. As you will learn in this chapter, smokers have higher rates of several mental health problems—including depression, anxiety, schizophrenia, and drug abuse—than nonsmokers do. It has been difficult, though, for researchers to figure out whether smoking is a cause or an effect of mental illnesses. Does smoking make it more likely that a person will develop a mental illness? Or does the mental illness make it more likely that a person will take up smoking? The answers to these questions have not been easy to find, and they may differ for different kinds of mental health problems.

Smoking and Depression

Depression and smoking are linked to each other, both in adults and in teenagers. People who are depressed are more likely to smoke; smokers are more likely to be depressed; and depressed people have a tougher time of it than other people do when they try to quit smoking.

Researchers have long thought that being depressed increases the likelihood that a teenager will start to smoke. It probably does happen that way for some young people, but recent research indicates that the relationship may also work the other way around. A teenager may start to smoke first and later become depressed, at least in part as a result of smoking.

In one study, researchers interviewed several thousand teenagers on two occasions a year apart. They found that teens who were smokers at the time of the first interview were more likely than nonsmokers to be depressed a year later. Depression couldn't have caused these

young people to smoke because they started smoking first and became depressed afterward. Instead, it's likely that smoking contributed in some way to causing depression, perhaps through some action of nicotine or other tobacco components. Nicotine is known to affect certain brain chemicals called neurotransmitters, and neurotransmitters play a role in depression.

Smoking and Anxiety Disorders

As is the case with depression, the scientific evidence indicates that smoking may contribute to causing anxiety disorders.

One recent study showed that people who smoke as teenagers have a higher-than-usual risk of developing anxiety problems as young adults, but that people who are anxious as teenagers do not have an increased risk of later starting to smoke. Another study, which focused on a specific type of anxiety disorder called panic attacks, found that people who already smoke have an increased risk of developing this problem, but that people who already have panic attacks are not more likely to become smokers. Thus, it appears that smoking contributes to causing anxiety problems, rather than anxiety problems prompting people to smoke.

Smoking and Schizophrenia

Schizophrenia is a very serious mental illness in which people's thoughts and perceptions become distorted. People with this disease may have difficulty thinking clearly, hear voices that other people don't hear, and act in very abnormal ways.

Smoking is unusually common among people with schizophrenia. In the U.S., more than 70% of schizophrenics smoke, as compared to less than 25% of the general population. Many schizophrenics are very heavy smokers; they typically smoke many more cigarettes per day than most other smokers do.

Despite the very strong link between smoking and schizophrenia, however, experts do not think that smoking has anything to do with causing this disease. Instead, the most likely explanation for the link is that people with schizophrenia smoke a lot because smoking helps them feel

and function better. In interviews, people with schizophrenia have told researchers that they smoke because smoking calms them and controls some of the symptoms of their disease. The nicotine in cigarettes may also counteract unpleasant side effects of some medications used to treat schizophrenia.

Although people with schizophrenia may think that smoking is helpful to them, it is very harmful to their general health. Many schizophrenics are literally smoking themselves to death; they have very high death rates from smoking-related diseases. In fact, smoking is an important reason why people with schizophrenia don't live as long as other people do.

Smoking and Substance Abuse

Among teenagers, smoking is strongly linked to other types of substance abuse. In comparison to nonsmokers of the same age, teenagers who smoke are

- 3 times more likely to drink alcohol
- 8 times more likely to use marijuana
- 22 times more likely to use cocaine

Why does this happen? In part, it's because teenagers who are willing to take one kind of risk are often willing to take others. Teenagers who smoke are more likely than nonsmokers to do many kinds of risky things, such as fighting and having unprotected sex, as well as drinking alcohol and using illegal drugs.

Teenagers who smoke may also be more likely to use other drugs because they're using both substances for the same reason. They may be trying to find ways to deal with stress, for example, or they may be rebelling against adult authority. Of course, neither smoking nor using drugs is a good way to deal with the problems of growing up. But many young people don't realize this.

Teenage smokers may also be more likely to abuse other substances because they have more opportunities to try these substances than nonsmokers do. Smokers usually spend a lot of time with friends who smoke, and some of those friends may use alcohol or illegal drugs and may offer them to a smoker who has not yet tried them.

A recent study by the National Institute on Drug Abuse found that teenagers who smoked or drank alcoholic beverages were more likely than other teens to have opportunities to use marijuana or cocaine and were more likely to try these drugs when they were given the opportunity. Thus, the smokers' greater drug use may reflect both their willingness to try risky things and the fact that teenage smokers are more likely than nonsmokers to spend time with people who have access to illegal drugs.

In summary, smoking is linked to mental health problems in complex and hard-to-understand ways. Smoking may make some mental health problems worse, and it is associated with a type of risk-seeking attitude that contributes to serious life problems among young people.

Chapter 16

How Smoking Affects Your Ears, Nose, and Throat

CHAPTER 16

The ears, nose, and throat are all connected to one another, and all three of these parts of your body can be adversely affected by smoking.

Effect of Smoking on the Senses of Smell and Hearing

Throughout this book, you've learned that smoking can increase your chances of getting many different diseases, and that it can make many kinds of diseases worse. This is true for diseases of the ears, nose, and throat, just as it is for diseases in other parts of the body.

But here's something new that you haven't learned before: Smoking doesn't just affect diseases of the nose and ears—it also affects the way that these organs function. Smoking can actually decrease your ability to smell and to hear.

Smell

The sense of smell is more important than you may realize. Much of the flavor of food actually comes from its smell, rather than its taste. People who can't smell don't enjoy their food as much as other people do. The sense of smell is also important for safety. For example, people with an impaired sense of smell would be less able to detect the odor that is added to natural gas (the kind of gas used in gas stoves) to alert people to gas leaks.

If you smoke cigarettes, your sense of smell may not be as good as it should be. Smokers have more trouble identifying odors than nonsmokers do, and about twice as many smokers as nonsmokers have a reduced sense of smell. Smoking affects the sense of smell in both young

people and older ones. Fortunately, though, the sense of smell may improve after a person quits smoking.

Hearing

The two main causes of hearing loss are, first, simply getting older and, second, being exposed to excessive, loud noise. People who smoke are more at risk of hearing loss due to both causes.

Among middle-aged and elderly people, those who smoke are more likely than nonsmokers to have age-related hearing loss. When researchers tested the hearing of a large group of older Americans, they found that the smokers were 70% more likely than the nonsmokers to have difficulty hearing. Similarly, among people who have been exposed to a lot of loud noise, such as those who work at airports or shipyards, the risk of hearing loss is higher in smokers than in nonsmokers.

Scientists aren't exactly sure how smoking makes hearing loss worse, but they think it may have something to do with blood flow to the ears. Like all the other cells of the body, the cells in the ear that help you to hear need a good blood supply in order to function properly. Smoking decreases the blood flow to these crucial cells.

The cells responsible for hearing may also be damaged by carbon monoxide, a poisonous substance found in cigarette smoke. Smokers have high levels of carbon monoxide in their blood. When blood containing carbon monoxide circulates to the ears, it may cause damage that can interfere with normal hearing.

Smoking and Dizziness

Your inner ear has two different functions: in addition to being responsible for hearing, it's also responsible for your sense of balance. If you have a problem in your inner ear, you may lose your balance easily or feel dizzy.

The nicotine in cigarette smoke can disturb the functioning of the part of the inner ear that is responsible for balance. This is especially likely to happen in people who are not accustomed to nicotine. Many people

feel dizzy the first few times they smoke cigarettes; this is due to smoking's effect on the inner ear.

Smoking and Snoring

Snoring isn't just an adult problem; children and teenagers may snore, too. And although snoring may seem to be a trivial problem, it really isn't. Snoring can disrupt sleeping patterns so that the snorer doesn't get as much rest as he should. Snoring can also make it impossible for other people sleeping in the same room to get a good night's sleep.

If you smoke, you are more likely to snore. Researchers who studied a large group of high school students found that snoring was more common among the smokers than among the nonsmokers, and it was almost twice as common among heavy smokers as among those who smoked fewer cigarettes.

Smoking and Middle Ear Disease

If you're like most people, you have had a middle ear infection at least once in your life, and you probably didn't enjoy the experience. Ear infections hurt, and the fluid that builds up in the ear during an infection can interfere with normal hearing. (It's like trying to hear underwater, except that the water is inside your ear.) The fluid—and the difficulty hearing—sometimes persist for weeks or months even after the infection is gone.

Sometimes, when people have ear infections over and over, or when doctors can't get rid of the infection with medicine alone, surgery is needed to correct the problem. Doctors are especially likely to recommend surgery if the ear problem is interfering with the person's ability to hear. Smokers are more likely than nonsmokers to have middle ear problems that are severe enough to require surgery, and the results of the surgery aren't as good in smokers as they are in nonsmokers.

One person's smoking can also cause problems in another person's ears. Research has shown that children who live in homes with adults who smoke are more likely than other children to have repeated ear infections and to have fluid in their ears.

Smoking and Nose Problems

Practically everybody has a runny or stuffy nose occasionally, when they have a cold. But some people have runny or stuffy noses most of the time. Doctors call these persistent nose problems rhinitis. In some people, rhinitis is caused by allergies; in other people, it has other causes.

Rhinitis is annoying and uncomfortable, and it can interfere with sleeping. It can also cause people to breathe through their mouths rather than their noses, which makes the mouth and throat dry and reduces the sense of taste. Mouth breathing may also increase a person's chances of catching colds and other infections because the mouth doesn't filter germs and other gunk out of the air the way that the nose does. Smokers are more likely than nonsmokers to have rhinitis. And in people who have allergies that cause rhinitis, smoking makes the symptoms worse.

Some people who smoke, especially those who have only been smoking for a relatively short time (such as teenage smokers) may not notice any nose discomfort. However, damage to this part of the body is happening regardless. The inside of the nose—and of the sinus cavities behind the nose—is lined with tiny hairs called cilia, which sweep back and forth and help clear away mucus and irritants. Smoking interferes with the normal movement of the cilia; this is something that happens in all smokers, not just some of them. The malfunctioning cilia cannot do a good job of protecting the inside of the nose. As a result, nose problems will eventually develop. Even though some smokers may not notice problems at first, the symptoms will "catch up" with the person at some point.

Smoking and Throat Problems

Many people who smoke have problems with coughing, hoarseness, and difficulty in swallowing. These symptoms result from smoking's irritating effect on the throat.

Smoking and Cancers of the Nose and Throat

Smoking can cause cancer of the nose. This is a rare type of cancer, but the few people who get it usually die from it, and those who survive

may be permanently disfigured as a result of their surgery. Smoking can also cause cancers in various parts of the throat, including the pharynx (the tube that goes from the nose down into the neck) and the larynx (the voice box, which contains the vocal cords). People who have throat cancer may need to have an operation in which the vocal cords are removed. After this type of operation, a person can never talk normally again. Many people who have this operation do learn to talk again using special techniques or equipment, but their new voices may sound strange, and they may be difficult to understand. People who have surgery for throat cancer may also have to learn to swallow again and may never be able to chew and swallow food normally. About 30,000 people in the U.S. die from these types of cancers every year, and even teenagers and young adults can get these cancers and die from them. For more information about cancer, see Chapter 5.

Chapter 17

What Smoking Can Do to Your Eyes

If you've ever been in a room with people who were smoking, you know that cigarette smoke is hard on your eyes. Chances are, by the time you left that smoke-filled room, your eyes were uncomfortable, red, and watery.

Simple irritation, however, is the least important of the eye problems that smokers have to worry about. Smoking can also cause or worsen more than half a dozen serious eye diseases, including several diseases that can lead to permanent vision problems, such as blindness, that can't be corrected with eyeglasses or contact lenses.

Smoking and Cataracts

When a person has a cataract, parts of the lens of the eye become cloudy. If the cataract is small, this may not matter much. But cataracts can grow larger over time, making a person's vision dull and blurry. Stronger eyeglasses and brighter lights may help for a while, but eventually, many people with cataracts need to have an operation to correct the problem. In this operation, the lens is removed and replaced by an artificial one. Cataracts occur primarily in older people, and they are very common. More than a million operations to treat cataracts are performed every year in the U.S.

Smoking increases the risk that you will develop cataracts. Compared with people who have never smoked, those who smoke a pack or more of cigarettes a day are at least twice as likely to get cataracts. The more you smoke and the longer you smoke, the greater your chances of having cataracts.

Scientists aren't sure whether smoking promotes cataracts from the inside or the outside of the smoker's body. It's possible that the tobacco smoke that swirls around the smoker's face may damage the lens from the outside, but it's also possible that harmful substances from tobacco smoke may travel through the bloodstream to the eye, damaging the lens from the inside.

Smoking and Macular Degeneration

You probably learned in science class that the part of your eye that actually enables you to see is the retina. Macular degeneration is a disorder of the retina—specifically, of the central part of the retina, which is called the macula. When people have macular degeneration, they develop a blurry spot or blind spot right in the middle of their field of vision. People with macular degeneration have normal peripheral (on the side) vision, but they have impaired central, or "straight-ahead" vision. They can't see things properly when they look straight at them.

Macular degeneration is an age-related disease; it occurs mostly in older people and is the most common cause of impaired eyesight in older Americans. The visual impairment that results from macular degeneration cannot be corrected with eyeglasses, contact lenses, or surgery. In many people who have macular degeneration, the visual impairment becomes so severe that the person cannot read normal print without special magnifying devices and cannot drive a car at all. There are some treatments that may slow down macular degeneration if it is getting worse, but this disease cannot be cured.

Smoking significantly increases your risk of developing macular degeneration. Smoking is particularly linked to a severe form of macular degeneration that causes a rapid loss of vision. This form of macular degeneration is more than twice as likely to occur in smokers as in nonsmokers.

Smoking and Abnormal Eye Movements

Smoking can cause abnormal jerky or circular movements of the eye—a problem called nystagmus. Scientists think that this is probably due to nicotine, which can disrupt the brain's balance center.

Smoking and Optic Neuropathy

Optic neuropathy is an eye disease that results in a sudden, painless loss of vision, often leading to permanent blindness. It occurs because of a loss of blood flow in certain arteries that supply blood to the eyes. Clogging of the arteries—what doctors call atherosclerosis—may play a role in causing this disease.

If you've read Chapter 6 of this book, you know that smoking is bad for your arteries, and that it worsens atherosclerosis. That's true in the eyes, as well as in the heart, brain, and other parts of your body. So it isn't surprising that smoking is linked to optic neuropathy. But you may be surprised at just how strongly smoking can affect your chances of getting this disease.

Recent scientific research has shown that smokers are *16 times* more likely than nonsmokers to develop optic neuropathy. They also tend to get it at younger ages than nonsmokers do. In one group of patients, the smokers developed the disease at an average age of 52, while nonsmokers didn't get it until an average age of 64.

Smoking and Optic Neuritis

In order for you to see, messages have to travel from your eye to your brain along a nerve called the optic nerve. The optic nerve is like a cable of electrical wires; it consists of more than a million separate tiny nerve fibers, each of which carries part of the message. In order for you to have good vision, most of these fibers must be working properly.

In the disease optic neuritis, some of the tiny fibers in the optic nerve become inflamed. If enough fibers are affected, pain, blurred vision, or a blind spot may result.

Smokers who develop optic neuritis are far more likely than nonsmokers to develop an additional problem—not being able to see colors properly. Scientists think that this occurs because less oxygen reaches the eye in smokers as compared to nonsmokers.

Tobacco Amblyopia

Tobacco amblyopia is a rare condition that can cause a permanent loss of vision in both eyes. Experts used to think that this disease only occurred in smokers who also had other problems such as malnutrition or alcoholism. But recently, they have discovered that this disease can occur as a result of smoking alone. Fortunately, quitting smoking may lead to an improvement in vision in people with this disease.

Smoking and Eye Problems Due to Other Diseases

Smoking increases the risk of diabetes, a disease that can have serious complications affecting the eyes. It also promotes the development of eye complications in people who have Graves' disease, a disorder of the thyroid gland. (Diabetes and Graves' disease are discussed in Chapter 19.)

Cigarette smoking is the leading preventable cause of visual disorders and blindness in the United States.

Chapter 18

What Smoking Can Do to Your Mouth and Teeth

CHAPTER 18

If you smoke a cigarette, the very first part of your body that comes into contact with the smoke is your mouth. So it's easy to understand why smoking can be harmful to your mouth and teeth.

Some of the problems that smoking can cause in your mouth—such as stained teeth—affect your appearance more than your health. But smoking can also have more serious effects in your mouth, as you will learn in this chapter. Smoking can cause you to lose teeth, give you problems when you have dental work done, and even cause mouth cancers.

Smoking and Kissing Don't Mix

Smoking causes bad breath, leaves stains on your teeth and tongue, and promotes the build-up of ugly tartar on your teeth. Much of this is due to the fact that substances from tobacco remain in your mouth after you smoke, but some of it may be due to diseases caused by smoking. For example, smoking can cause gum disease, and gum disease can cause bad breath.

Considering smoking's effects on the appearance and smell of a smoker's mouth, it's not surprising that 86% of teenagers say that they would rather date people who don't smoke.

Smoking Impairs Your Sense of Taste

If you smoke, you won't be able to taste your food as well as nonsmokers do. Fortunately, though, this problem will go away if you quit smoking. In fact, one of the first things that many ex-smokers notice after they kick the smoking habit is that everything tastes much better

than it used to. This happens very quickly. Many ex-smokers notice an improvement in their sense of taste within two days after they quit smoking.

Smoking Promotes Gum Disease—and Can Cause You to Lose Your Teeth

Do you know what causes people to lose their teeth?

The most common cause of tooth loss isn't cavities, and it isn't accidents. It's gum disease—what dentists call periodontal disease. Gum disease is caused by plaque, the sticky film of bacteria that constantly forms on your teeth. The bacteria in plaque can damage your gums. If the damage gets bad enough, your teeth may become loose. They may fall out or have to be removed by a dentist.

People who smoke are much more likely than nonsmokers to develop gum disease. Smoking hurts the gums by promoting the development of a hardened form of plaque on the teeth and by weakening the body's defenses against bacteria in the mouth. Current smokers are about four times as likely as people who have never smoked to have gum disease. More than 40% of all cases of gum disease are due to smoking.

Because smoking promotes gum disease, it increases the risk of tooth loss. A pack-a-day smoking habit costs smokers, on average, two teeth every ten years. Smokers are also more likely than nonsmokers to lose all of their teeth. Among people age 65 and older, about 20% of smokers have none of their teeth left, as compared to 10% of nonsmokers.

Smoking Causes Poorer Healing after Mouth Surgery

If you're like many teenagers, you may need to have your wisdom teeth removed during the next few years. Having your wisdom teeth removed is a form of surgery. In fact, the dentists who remove wisdom teeth are called oral surgeons. Smokers heal more slowly after all kinds of surgery—including oral surgery—than nonsmokers do, and they are more likely to have complications after surgery. So if you smoke, it may take you longer to get back to normal after having your wisdom teeth removed than it would if you were a nonsmoker. For more information on smoking and surgery, see Chapter 8.

Smoking Can Cause Dental Implants to Fail

If you ever lose a tooth—perhaps in an accident—your dentist may recommend that you get a dental implant to replace it. A dental implant is a very modern, high-tech way to replace a missing tooth. When you get an implant, the dentist places a metal post into the bone under the gums. After the bone heals, a replacement tooth is attached to the post.

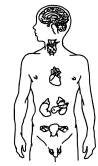
Unlike other kinds of replacement teeth, implants look and feel like the real thing. But they aren't always successful. Sometimes problems develop, and the implants have to be removed. Implants are especially likely to fail in people who have unhealthy gums. Because smoking is bad for the health of your gums, it increases the risk that a dental implant won't work.

Smoking Can Cause Cancers of the Mouth

You probably already know that using smokeless tobacco can cause mouth cancer. But you may not have realized that smoking also puts you at risk for this disease. Smoking can cause cancers on the lip, tongue, or other locations in the mouth. The surgery that's needed to treat oral cancer can cause permanent changes in the appearance of a person's face. Even worse, some people who get oral cancer die of this disease. The more cigarettes you smoke and the longer you smoke, the higher your risk of oral cancer. For more information on smoking and cancer, see Chapter 5.

Chapter 19

How Smoking Affects Your Hormones and the Glands that Produce Them



CHAPTER 19

Hormones are substances that are produced by one part of your body and that affect the functioning of other, faraway parts of your body. The organs that manufacture hormones are called glands, and the general term for all of the body's glands is the endocrine system.

Smoking has several different effects on the endocrine system. It decreases levels of an important female hormone, alters the hormonal regulation of body weight and the distribution of body fat, and increases the risk of several diseases of the endocrine system, including one of the deadliest types of cancer.

Smoking and Estrogen

Estrogen is one of the female sex hormones. It plays important roles in a woman's menstrual cycle and her ability to have children. Smoking lowers the level of estrogen in a woman's body. Women who smoke reach menopause (the time during middle age when a woman stops having menstrual cycles) earlier than nonsmoking women do. Reaching menopause early is undesirable because it increases a woman's risk of certain health problems, such as the loss of bone due to osteoporosis. This condition causes the bones to be more likely to break.

Relationship of Smoking to Body Weight and Body Fat

Smoking influences body weight and the distribution of fat in the body; these effects are believed to be caused by changes in various hormones.

Some people think that if you start to smoke, you will lose weight.

But this is not true. Starting to smoke is not associated with any change in weight. However, as smokers grow older, they do gain less weight over the years than typical nonsmokers do; hormone-related changes in the rate at which the body burns calories may be responsible.

When people gain weight, they do it in different ways. Some people gain weight in their upper bodies, giving them an "apple" shape; others gain weight in their lower bodies and therefore become "pear" shaped. The "apple" shape is less healthful than the "pear" shape; it has been associated with increased risks of several diseases, including heart disease, high blood pressure, and diabetes. Smokers tend to gain weight in the less desirable "apple" pattern, while nonsmokers tend more toward the "pear" shape.

Smoking and Diabetes

The hormone insulin is produced by a gland in your abdomen called the pancreas. Your body needs insulin to process the carbohydrates in the food you eat and to keep your blood sugar levels normal. In people with diabetes, either the pancreas doesn't make enough insulin or the person's body doesn't use the insulin properly. As a result, blood sugar levels get too high, leading to problems such as excessive thirst, weight loss, tiredness, the need to urinate frequently, and infections that don't go away. Diabetes can't be cured, but it can be controlled with medication, monitoring, and changes in eating and exercise habits. If diabetes is not treated or if it is poorly controlled, it can cause serious complications involving the eyes, kidneys, heart, and other organs.

If you smoke, you have an increased chance of developing diabetes. Recent studies have indicated that smokers are at least 50% more likely than nonsmokers to get this disease.

Smoking also makes the effects of diabetes worse. Among people with diabetes, those who smoke are more likely to develop diabetes-related kidney damage, nerve damage, eye problems, and heart disease. The death rate of people with diabetes who smoke is higher than that of people with diabetes who don't smoke.

Smoking and Diseases of the Thyroid Gland

Your thyroid gland, which is located in your neck, manufactures thyroid hormone. This hormone controls the rate at which various organs in your body perform their functions. Smoking can influence two different diseases of the thyroid gland—goiter and Graves' disease.

Goiter is a thyroid disease that is often easy to spot because it can cause a big swelling in the person's neck. There are several kinds of goiter, which have different causes. One kind is caused by not getting enough of the mineral iodine from food. This kind of goiter is rare in the United States because most people get enough iodine, either from foods that are naturally rich in iodine or from iodized salt. However, this kind of goiter is common in some other parts of the world where the amount of iodine in people's diets is lower. In those regions, smokers are more likely than nonsmokers to develop goiter because a substance called thiocyanate in cigarette smoke interferes with the body's ability to make use of iodine from food.

Smoking and Graves' Disease

Graves' disease is a condition in which the thyroid gland becomes too active, producing too much thyroid hormone. People with this disease may feel nervous, lose weight, feel hot when other people don't, sweat a lot, have rapid heartbeats, and have diarrhea; all of these symptoms result from an abnormal speeding up of the body's functions. Graves' disease can be treated with medication or with radiation aimed at the thyroid gland; people with this disease usually don't have to have surgery.

Graves' disease can cause serious complications that affect the eyes, such as protrusion of the eyes, double vision, and eye muscle abnormalities. Cigarette smoking increases the likelihood that a person with Graves' disease will develop eye problems. Smoking also increases the chance that Graves' disease will come back after it has been successfully treated.

Smoking and Cancer of the Pancreas

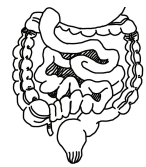
Earlier in this chapter, we mentioned the pancreas, a gland in your abdomen. The pancreas manufactures the hormone insulin. It also manufactures chemicals that help your body to digest food.

Cancer of the pancreas is one of the deadliest types of cancer. Four out of five people who develop pancreatic cancer die of it within a year. If you smoke, you are increasing your chances of getting pancreatic cancer. Smokers are at least twice as likely as nonsmokers to get this disease.

The good news about smoking and pancreatic cancer is that your chances of getting this disease will go down if you quit smoking. The risk of pancreatic cancer starts to decrease within two years after a person stops smoking.

Chapter 20

How Smoking Affects Your Digestive Tract



CHAPTER 20

Your digestive tract is the set of organs in your body that processes the food that you eat and eliminates waste products. From top to bottom, the digestive tract consists of your mouth, esophagus, stomach, small intestine, and colon (large intestine).

If you've gotten this far in this book, you have probably realized that practically every part of your body can be affected by smoking. Smoking has particularly strong effects in the digestive tract. It increases a person's risk of several digestive tract diseases, and it can cause deadly cancers of the digestive organs.

Smoking and Heartburn

Heartburn has nothing to do with your heart. It's a digestive tract problem. It happens when acid from the stomach moves up into the esophagus (the tube that leads from the mouth to the stomach), causing a burning pain. The name "heartburn" comes from the fact that the pain is usually up high, near where the heart is, rather than down low like some other kinds of stomachaches. Heartburn is very unpleasant, but it's usually not serious. It is a common problem, though. More than 10% of all people have heartburn at least once a week.

Smokers are more likely than nonsmokers to have heartburn. This is because smoking weakens the valve between the esophagus and stomach that is supposed to keep acid down in the stomach where it belongs. Because the valve doesn't work as well in smokers, more acid gets up into the esophagus, where it can cause trouble. And when acid gets into the esophagus, it stays there longer in smokers than in nonsmokers.

Therefore, when a smoker gets heartburn, it tends to last longer than a nonsmoker's heartburn does.

Smoking and Ulcers

An ulcer is an open sore, either in the stomach or in the top part of the small intestine. Ulcers hurt, and if they get very bad, they can cause bleeding inside the digestive system—a serious problem. About 10% of all people will have an ulcer at some time in their lives. Ulcers happen mostly in adults, rather than children or teenagers.

A bacterium called *Helicobacter pylori* plays an important role in causing ulcers, but other factors are involved, too. Smoking is one of the most important of those other factors. If you smoke, you are more likely than a nonsmoker to get an ulcer. The longer you smoke, and the more cigarettes you smoke, the higher your chances of getting an ulcer. About one-fifth of all ulcers are due to smoking.

Scientists believe that smoking increases the risk of ulcers in several ways. Smoking interferes with the mechanisms that usually protect the lining of the stomach and intestine, increases the production of a substance called pepsin that makes ulcers worse, and allows the contents of the small intestine to move back into the stomach, where they can irritate the stomach lining. Smokers are also more susceptible than nonsmokers to the bacterium that causes ulcers.

Doctors have very effective medicines to treat ulcers. But unfortunately, if you smoke, ulcer medicines may not work as well as they should. It's more difficult for doctors to treat ulcers in smokers than in nonsmokers. Smoking also increases the chances that an ulcer will come back after it has been treated.

Smoking and Crohn's Disease

Crohn's disease is a disease of the small and large intestines. It can cause the intestines to become inflamed (red and swollen), resulting in pain, diarrhea, weight loss, and bleeding inside the intestines. Crohn's disease is a chronic (long-lasting) problem; it may stick around for years, or it may go away and come back over and over again. It is not a contagious disease, but it can be a serious one. It can occur in children

and teenagers, as well as adults.

Smoking increases a person's chances of developing Crohn's disease, and it makes the disease worse. Smokers with Crohn's disease feel sicker than nonsmokers do, and they need to take more medicine to treat their illness. If Crohn's disease gets very serious, it may need to be treated with surgery. Smokers are more likely than nonsmokers to need this kind of surgery because their illness tends to be worse than that of nonsmokers. Fortunately, though, if a person with Crohn's disease quits smoking, the disease is likely to become less severe.

Smoking and Cancers of the Digestive Tract

If you smoke, you are increasing your chances of getting many different types of cancer, including cancers in several different parts of your digestive tract. Smoking can cause cancer of the mouth, the esophagus (the tube that leads from the mouth to the stomach), or the colon (the large intestine). Scientists think that it can probably cause cancer of the stomach, too. All of these types of cancer are very serious diseases.

Smoking causes 80 to 90% of all cancers of the esophagus—almost always in combination with alcohol use—and is responsible for 15,000 deaths in the U.S. every year. If you drink alcohol and smoke cigarettes, you are more likely than a smoker who does not drink alcohol to get esophageal cancer because alcohol and smoking act together to increase a person's risk of this disease. However, there is no real evidence that tobacco smoking alone increases a person's risk.

The esophagus is especially susceptible to the cancer-causing effects of smoking because substances from cigarette smoke can reach this part of the body very easily. When a person smokes, cancer-causing agents from the smoke get into the mouth and the upper part of the throat. Then, when the person swallows, the cancer-causing substances move down into the esophagus.

Cancer-causing substances can also get into the esophagus as a result of coughing. When people cough, they bring up mucus from their lungs. Usually, the mucus is then swallowed—which means that it goes into the esophagus. If a person smokes, the mucus from the lungs is full of cancer-causing substances from cigarette smoke. So when smokers

swallow mucus, they're swallowing cancer-causing agents, too.

There's more information about cancer in Chapter 5, and there's information about cancer of the mouth in Chapter 18.

Chapter 21

How Smoking Affects Your Immune System

CHAPTER 21

The immune system is your body's system of defenses against germs and other foreign invaders. It consists of two components—a group of chemicals called antibodies that circulate in the bloodstream and a group of special cells that attack foreign substances. The two components of the immune system work together, policing your body for foreign substances and keeping you healthy. Both components are extraordinarily complex, and both are affected by smoking.

In smokers, levels of some types of antibodies increase, while levels of other types decrease. Smoking also alters the numbers of various types of immune cells and impairs the functioning of some of them.

As a result of these changes in immune system functioning, smokers are more likely to catch several types of infectious diseases, including the flu and other respiratory infections. Also, as discussed in other chapters, smokers have an increased risk of infections after surgery (Chapter 8) and an increased risk of gum disease (Chapter 18). Smoking-related impairments in the functioning of the immune system are believed to be responsible for these problems.

When you get immunizations (shots) to protect you against infectious diseases, the immunizations work by stimulating your immune system to respond to a certain type of foreign substance, which is given to you in a safe form. This prepares your body to respond effectively if you are exposed to the real disease. Because smokers' immune systems do not work as well as those of nonsmokers, smokers' bodies don't respond as well to immunizations, such as flu vaccine and hepatitis B vaccine. This means that smokers who get these shots are not as well protected

against the diseases as nonsmokers are.

Allergies happen when the immune system reacts inappropriately to a foreign substance that really isn't a threat to your body. One type of allergic reaction—called a contact allergy—consists of a red, itchy skin rash that occurs in response to touching a particular substance. Researchers in Denmark recently discovered that contact allergies occur more often in smokers than in nonsmokers, but they have not figured out why this happens.

One kind of contact allergy that seems to be particularly common in smokers is contact allergy to nickel. This is a very inconvenient allergy because nickel is used in a lot of things that people wear, including earrings, other jewelry, bra hooks, zippers, and the metal buttons on blue jeans. People with a contact allergy to nickel may need to stop wearing jewelry or letting other nickel-containing objects come into contact with their skin.

Smoking and HIV Infection

The human immunodeficiency virus (HIV) is the virus that causes AIDS (acquired immunodeficiency syndrome). Among people who carry this virus, those who smoke have poorer health than those who do not smoke.

People who are HIV-positive are at risk of getting a variety of unusual infections, called opportunistic infections. Some of these infections occur more often in HIV-positive people who smoke than in HIV-positive people who don't smoke. This is particularly true for infections of the mouth. Smoking increases the risk of three types of mouth infections common among HIV-positive people: oral warts, thrush (a fungal infection that can make eating and swallowing difficult), and hairy leukoplakia (a viral infection that causes white sores on the tongue). Smoking also increases an HIV-positive person's risk of getting warts on the sex organs.

People who are HIV-positive have a high risk of catching bacterial pneumonia. Smoking further increases this risk because it impairs the immune system and damages the lungs.

The combination of smoking and HIV also greatly increases a person's risk of heart disease. This interaction doesn't involve the immune system, though. Instead, the problem is that some of the medications used to treat HIV infection increase blood cholesterol levels—a situation that is especially undesirable in people who have other risk factors for heart disease, such as smoking.

Chapter 22

Why Smoking Might Land You in the Emergency Room

CHAPTER 22

People sometimes think that all of the health problems that result from smoking are long-term problems, such as cancer or lung disease. But smoking can be responsible for sudden emergencies as well. Two emergencies that frequently send smokers to emergency rooms—heart attacks and strokes—were discussed in Chapter 6, and we won't talk about them again here. Instead, this chapter will focus on other types of emergencies associated with smoking.

Fire Deaths and Injuries Caused by Smoking

Smoking causes only a small proportion of all fires—about 6%. However, it is the leading cause of deaths in fires, accounting for about 25% of all fire deaths in the United States. Smoking-related fires tend to be deadlier than other fires because they typically occur in people's homes, at night, when everyone is asleep. They usually start either when a person falls asleep while smoking in bed or when a lighted cigarette is dropped on upholstered furniture, where it slowly smolders for hours before starting a fire. There are about 140,000 smoking-related fires in the U.S. each year. These fires kill about 900 people and injure more than 2,000 others.

Smoking and Other Injuries

It's easy to understand why you're more likely to be hurt in a fire if you smoke. But you may be surprised to learn that smokers are more likely than nonsmokers to get hurt in other situations as well. Smokers are more likely than nonsmokers to be hurt in car crashes for which they are responsible. They are also more likely to get hurt at their jobs.

Why might smokers be more likely than nonsmokers to get injured? One possibility is that having to find, light, smoke, and put out a cigarette may distract smokers from the other things that they are doing at the same time. The eye irritation from cigarette smoke may also be a distraction. When people are distracted, they don't react as quickly or as well to dangerous situations, and therefore they are more likely to injure themselves. Another possibility is that smokers, because of their personalities and lifestyles, may be the kind of people who get hurt more often. Smokers are more likely than nonsmokers to drink alcoholic beverages and use illegal drugs; using these substances increases a person's chances of getting hurt. Smokers also tend to be risk-takers. People who are willing to take risks tend get injured more often than cautious people do.

Chapter 23

How Your Smoking Can Affect Other People's Health

Smokers aren't the only ones who can be harmed by cigarette smoke. Nonsmokers can be, too. When a person smokes a cigarette, much of the smoke finds its way into the surrounding air—and from there into the eyes, noses, and lungs of all the people in the vicinity. Tobacco smoke in the environment is an important form of air pollution, and it is known to be harmful to people's health.

The effects of environmental tobacco smoke also called "second-hand smoke" are worst in children, but even adults who spend time in smoke-filled places may be harmed. Research has shown that exposure to tobacco smoke in the environment causes irritation of the eyes, nose, and respiratory tract in adults; aggravates adult respiratory problems such as asthma; and, if exposure is extensive over prolonged periods of time, may increase the risk of lung cancer and heart disease to a small extent.

Exposure to tobacco smoke in the environment has decreased in recent years because smoking is now forbidden in many public places and workplaces where it was allowed in the past. However, many people are still exposed to tobacco smoke in their own homes, and this is a serious problem for some of them—especially babies and children, who are more sensitive than adults to the effects of environmental tobacco smoke.

How Adults' Smoking Affects Children's Health

Exposure to environmental tobacco smoke is an important—and preventable—cause of illness in infants and children. Unfortunately, a large proportion of children are exposed to tobacco smoke on a regular

basis. Approximately 38% of U.S. children are exposed in their homes, usually because at least one of their parents is a smoker. Since most young children spend large amounts of time in their own homes, they can be exposed to quite a lot of smoke in this environment.

At this point, you may be thinking, "Wait a minute. Even if I'm a smoker when I start my family, I don't have to expose my children to tobacco smoke. I'll just go outside when I want to smoke, the same way that I would if I'm working or shopping in a place where smoking isn't allowed."

This sounds good in theory, but it turns out to be impractical in many cases. If you ever baby-sit, you will understand why. A parent (or babysitter) who is taking care of a child is often alone with that child, indoors, for long periods of time. If the parent or babysitter wants to smoke a cigarette, he or she has three choices:

- *Leave the child indoors and go outside for a smoke.* This choice, as you probably understand if you baby-sit, is very dangerous if the child is less than about eight years old. Babies and young children need to be supervised at all times. They can't be left alone in their homes safely.
- *Go outside to smoke, and take the child with you.* This works sometimes. But what about those times when the child is sleeping, eating, taking a bath, or doing something else that can't be interrupted easily? What if the parent is doing something that can't be interrupted, such as cooking? What if you live in a tenth floor apartment? What if it's winter, and going outside for a few minutes means bundling the child (or perhaps several children) into many layers of clothing? Sometimes, bringing a child outside so that you can smoke can be very inconvenient, and you would be exposing the child to second hand smoke at the same time.
- *Wait until someone else is available to watch the child, then go outside to smoke.* This is probably the best solution, but it's not a pleasant situation for the smoker. Most smokers are addicted to nicotine (see Chapter 3). They don't just *want* to smoke; they *need* to smoke. Smokers who have to wait for hours to smoke a cigarette feel uncomfortable because of nicotine withdrawal symptoms. And the longer they go without cigarettes, the worse they feel. It's common for a parent to spend eight or nine hours alone with a child while the

other parent is working. It would be very difficult for an addicted smoker to go without a cigarette for this length of time.

Effects of Tobacco Smoke Exposure on Children

Exposure to environmental tobacco smoke has many different harmful effects on babies and children, including the following:

- Increased risk of pneumonia and other respiratory infections
- Increased risk of developing asthma, and a worsening of asthma in children who already have this problem
- More frequent ear infections
- More colds, coughs, sore throats, and stuffy noses
- Poorer lung function
- An increased risk of catching a very rare but extremely serious infection called meningococcal disease, "spinal meningitis"
- Increased heart rate
- An increased risk of complications if the child has surgery
- Higher blood levels of lead (a toxic metal)
- Higher rates of absence from school because of more frequent illnesses
- Higher medical bills because of more frequent illnesses
- A greater chance of needing to be hospitalized for respiratory infections or other problems

In summary, children who are exposed to tobacco smoke in the environment aren't as healthy as other children, in a wide variety of ways.

Parental Smoking and Sudden Infant Death Syndrome

In infants, exposure to tobacco smoke in the environment is associated with an increased risk that the baby will die of sudden infant death syndrome (SIDS). SIDS is the term that doctors use when a seemingly healthy baby dies suddenly and no cause for the death can be found. In the U.S., about 3,000 babies a year die of SIDS.

If you've read Chapter 11 (the chapter on female reproduction), you know that if a woman smokes during pregnancy, her baby has a higher-than-usual risk of dying of SIDS. If the baby is exposed to tobacco smoke after birth, it also increases the risk of SIDS, and this seems

to be a separate effect from that of smoking during pregnancy.

If Parents Smoke, Children Are More Likely to Smoke

If you smoke when you become a parent, there's one more way that your smoking may hurt your children, but it's not caused by tobacco smoke in the environment. It has to do with the example that your behavior sets for them. Research shows that children who have a parent who smokes are almost twice as likely as children of nonsmokers to become smokers themselves. However, there is some good news for parents who smoke—if the parents quit smoking, their children are less likely to become smokers, especially if they quit before the child is nine years old.

Appendix i

What Tobacco Products Other Than Cigarettes Can Do to Your Body

APPENDIX I

In addition to cigarettes, several other types of tobacco products, including cigars, bidis, and various types of smokeless (spit) tobacco, are sometimes used by young people. Here are the facts about what these tobacco products can do to your body.

Cigars

Cigars differ from cigarettes in three ways:

- Cigars consist of tobacco wrapped in tobacco leaves; cigarettes consist of tobacco wrapped in paper.
- Tobacco for cigars is prepared differently from tobacco for cigarettes. This is why cigar smoke smells different from cigarette smoke.
- Some, though not all, cigars are much larger than cigarettes.

These differences make cigars look and smell different from cigarettes, but there is not much difference between the two products in terms of what they can do to your body. Like cigarette smoke, cigar smoke contains a wide variety of toxic (poisonous) and cancer-causing substances. Cigar smoking can cause cancer of the mouth, throat, lung, and esophagus (the tube leading from the mouth to the stomach), just as cigarette smoking can. Smoking three or four cigars daily can increase your risk of oral (mouth) cancers to more than eight times the risk of a nonsmoker and increase your chance of getting esophageal cancer to four times that of a nonsmoker. Cigar smoking increases the risk of heart disease and serious lung diseases, just as cigarette smoking does. Cigar smoking also increases the risk and severity of periodontal disease (the gum disease that is responsible for most instances of tooth loss in adults) just as much as cigarette smoking does.

Like cigarettes, cigars contain the addictive substance nicotine. In fact, most cigars have as much nicotine as several cigarettes do. Therefore, you can become addicted to nicotine by smoking cigars, just as you can by smoking cigarettes.

People sometimes think that cigars are safe because most cigar smokers, unlike cigarette smokers, do not inhale the smoke. However, smokers do not have to inhale to increase their risk of serious diseases. Regardless of whether they inhale, smokers expose their mouths and throats to harmful substances in tobacco smoke, swallow some of those substances, and absorb some (including nicotine) through the linings of their mouths. The exposure to harmful substances that occurs in these ways is enough to greatly increase the cigar smoker's risk of serious diseases.

Another reason why some people may think that cigar smoking is safe is that warning labels were not required on cigar packages until the year 2000, even though they were required on cigarettes in the 1960s and on smokeless tobacco in the 1980s. However, this doesn't mean that scientists just found out a few years ago that cigars are dangerous. In fact, it has been known for a long time that cigar smoking is bad for you. But in the 1970s and 1980s, health authorities didn't consider warning labels on cigars to be a high priority because the popularity of cigars was decreasing. Then in the 1990s, when the use of cigars began to increase again, federal health officials decided that a warning was urgently needed. They realized that the failure to have warnings on cigar packages might give smokers the incorrect impression that cigars were a harmless alternative to cigarettes.

Actually, in one way, cigars are even worse than cigarettes. Because of differences in the way that cigars and cigarettes are made, the smoke released into the environment by a burning cigar is even more irritating and unhealthful than the smoke released by a burning cigarette. It's no wonder that many people go out of their way to avoid being in a room where people are smoking cigars!

Bidis

Bidis are small, brown, hand-rolled cigarettes made in India and some Southeast Asian countries. They consist of tobacco that is wrapped in a

leaf from a tendu or temburni plant and tied with a string at one end. Bidis are available in a variety of flavors, such as cherry, chocolate, and mango. Flavorings are used because bidis are made of poor quality tobacco, which would have an unpleasant taste to a smoker without the added flavor. Bidis are sold at about half the price of cigarettes.

In recent years, bidis have become popular among some teenagers because of the flavorings and low price. However, bidis are not a good alternative to cigarettes. For all practical purposes, bidis *are* cigarettes, and they have similar health risks. In fact, it may actually be more dangerous to smoke one bidi than one cigarette because the amount of nicotine, carbon monoxide, and other toxic substances produced by the bidi is higher.

Bidis are required to carry the same warning labels that cigarettes do because they are as harmful to your health as cigarettes. Unfortunately, though, some bidi smokers may not be aware that bidis are dangerous. Almost half of a group of teenagers surveyed in San Francisco thought that bidi smoking could not cause cancer. Some of the teenagers who participated in the survey didn't even realize that bidis contain tobacco! But the fact is that bidis do contain tobacco, and bidis, like other tobacco products, can cause cancers of the lung, mouth, throat, esophagus (the tube leading from the mouth to the stomach), and other organs, as well as heart disease and other smoking-related diseases. Studies in India, where bidi smoking is common, have shown that the death rates of bidi smokers are as high as those of cigarette smokers and much higher than those of nonsmokers.

Smokeless (Spit) Tobacco

Do any of your friends dip snuff or chew tobacco? If they do, they may be heading for serious health problems.

The types of tobacco that people dip or chew are sometimes called "smokeless" tobacco. Some health experts don't like this name for them, though, because they are worried that people might think that "smokeless" means "harmless." They prefer to call these products "spit tobacco," because this term doesn't suggest that the products are harmless—and because it also serves as a reminder that people who use these products have to spit tobacco juice—which is rather disgusting.

APPENDIX I

Smokeless (spit) tobacco may not be smoked, but it is still tobacco, and it is definitely *not* harmless. Like all tobacco, it contains nicotine, which is addictive. If you hold an average size dip or chew in your mouth for 30 minutes, you get as much nicotine as you do from three cigarettes. People can easily become addicted to dip or chew, just as they can become addicted to cigarettes, and this can make quitting very difficult.

Many people believe that smokeless tobacco is harmless because it doesn't cause lung cancer. Though this is true, it does not mean that smokeless tobacco is completely safe. Using smokeless (spit) tobacco is very hard on your mouth and can cause a lot of damage there.

As you probably know if any of your friends dip or chew, smokeless tobacco stains your teeth—and tooth-brushing doesn't remove the stains. It can also stain any white fillings that your dentist may have put in your teeth when you had cavities; the staining makes the fillings more noticeable.

Grit in smokeless tobacco scratches teeth and wears away the hard surface (enamel). This can make your teeth sensitive (meaning that they are more likely to hurt), and you may need dental treatment to correct the problem.

Using dip or snuff can also injure your gums, especially in the spot in the mouth where you hold the tobacco. The injured gums will pull away from your teeth, exposing the roots of your teeth to decay and making your teeth more sensitive. Your teeth may become loose and eventually fall out or have to be removed by a dentist.

Using smokeless tobacco also increases tooth decay (cavities). When smokeless tobacco is manufactured, sugar is added to improve the taste. The sugar reacts with bacteria in your mouth, causing the production of acid, which leads to tooth decay.

Smokeless tobacco users sometimes think that they can avoid mouth problems by being very conscientious about brushing and flossing their teeth. But there is no scientific evidence that taking good care of your teeth will undo the harm that dip or chew can cause.

APPENDIX I

People who use smokeless tobacco may develop various kinds of sores, white patches, red patches, and lumps inside their mouths. These changes are signs that your mouth is being damaged by contact with tobacco and tobacco juice. The beginnings of these changes can be detected within seven days after a person starts to use smokeless tobacco. Some of these changes—especially the white and red patches—are precancerous, meaning that they can turn into cancer.

This brings us to the most serious problem that smokeless tobacco can cause—oral (mouth) cancer. Oral cancer is one of the most difficult cancers to treat. People with this type of cancer may need to have surgery that permanently changes their appearance. Oral cancer can also spread quickly to other parts of the body. That's why people who get this kind of cancer often die from it. Only half of the people who get oral cancer live for more than five years.

The longer you dip or chew, the higher your risk of oral cancer. However, long-term users of smokeless tobacco aren't the only ones who are at risk of getting oral cancer. Cancers have been found in the mouths of people who have used smokeless tobacco for as few as six years. There's even a very well known case in which a young athlete who used smokeless tobacco died of oral cancer at the age of 19!

Using smokeless tobacco can also worsen health problems in parts of the body other than the mouth. Because nicotine tightens up blood vessels, using smokeless tobacco can make high blood pressure worse. Smokeless tobacco can also contribute to ulcers (a disease of the stomach or upper small intestine) because smokeless tobacco users tend to swallow some tobacco juice by accident, and that juice irritates the lining of the stomach.

As you can see, smokeless tobacco can do a lot of things to your body. But there's one important thing that it doesn't do—it *doesn't* help you to perform better in sports. A study of professional baseball players found no connection between the use of smokeless tobacco and player performance. In fact, the "buzz" or rush that people feel when they use smokeless tobacco may actually worsen an athlete's performance because it is caused by an increase in heart rate and blood pressure that puts a strain on the heart.

Appendix ii

Celebrities Who Have Died from Smoking-Related Illnesses

APPENDIX II

Lucille Ball (actress, "I Love Lucy")	77	Heart Disease
Leonard Bernstein (musician and conductor)	72	Lung Cancer
Humphrey Bogart (actor, "Casablanca")	57	Esophagus Cancer
John Candy (actor/comedian)	43	Heart Disease
Jack Cassidy (actor)	50	Fire (smoking in bed)
Luiz Jose Costa (Brazilian music star)	36	Lung Cancer
Nat "King" Cole (singer and musician)	45	Lung Cancer
Sammy Davis Jr. (singer, dancer, actor)	63	Emphysema
Walt Disney (cartoonist)	63	Lung Cancer
T.S. Eliot (writer)	76	Emphysema
Duke Ellington (jazz musician)	75	Lung Cancer
Ian Fleming (creator of "James Bond")	56	Heart Disease
Bob Fosse (choreographer)	60	Heart Disease
Clark Gable (actor, "Gone With the Wind")	59	Heart Attack
King George VI (father of Queen Elizabeth II)	56	Lung Cancer
Jerry Garcia (musician, Grateful Dead)	54	Heart Attack
Ulysses S. Grant (19th President of the U. S.)	63	Throat Cancer
George Harrison (musician, the Beatles)	58	Throat Cancer
Moe Howard (actor, Three Stooges)	77	Lung Cancer
Eddie Kendrick (singer, the Temptations)	52	Lung Cancer
Michael Landon (actor)	54	Pancreas and Liver Cancer

Larry Linvelle (actor, T.V. show "MASH")	60	Lung Cancer
Roger Maris (baseball player, New York Yankees)	51	Lung Cancer
Wayne McLaren (Marlboro Cowboy model)	51	Lung Cancer
Steve McQueen (actor)	50	Lung Cancer
Edward R. Murrow (reporter)	57	Lung Cancer
Roy Orbison (singer, "Pretty Woman")	52	Heart Attack
R.J. Reynolds (tobacco company founder)	58	Emphysema
R.J. Reynolds II (tobacco company heir)	58	Emphysema
R.J. Reynolds III (tobacco company heir)	60	Emphysema
Rod Serling (creator of "The Twilight Zone")	51	Heart Attack
Robert Shaw (actor, "Jaws")	51	Heart Attack
Ed Sullivan (T.V. host)	72	Lung Cancer
Babe Ruth (baseball player)	53	Oral Cancer
Spencer Tracy (actor)	66	Lung Cancer
John Wayne (actor)	72	Lung Cancer
Carl Wilson (singer, Beach Boys)	51	Lung Cancer

Though it may seem that many of these victims died at an old age, some of them suffered painfully for 10 or more years with their illness. You should also keep in mind that the average life expectancy for an individual today is around 80 years of age.

Appendix iii

Suggestions for Further Reading

APPENDIX III

If you want to learn more about smoking and how it can affect your health, the Internet is a great place to look. It is not a good idea, though, to simply enter a key word such as "smoking" or "tobacco" into a search engine. Sure, you'll get a lot of hits that way, but you won't necessarily be getting your information from the most reliable sources. It's safer to start with a website that you know is reliable, such as a site sponsored by a government agency or a major independent health organization such as the American Cancer Society, and then search that site to see what information it can give you. Below are some of our favorite sites.

Here at the American Council on Science and Health, we have published a report that can give you the up-to-date facts about quitting smoking. It's called *Kicking Butts in the Twenty-First Century: What Modern Science Has Learned about Smoking Cessation*. You can download it at http://www.acsh.org/publications/booklets/cessation2003.html or order a hard copy at http://www.acsh.org/order/index.html.

The U.S. government's Centers for Disease Control has a collection of links and resources specifically aimed at young people. You'll find it at http://www.cdc.gov/tobacco/tips4youth.htm. You will also find links there to many U.S. government publications, including several recent Surgeon General's Reports on tobacco-related topics.

The National Library of Medicine's web site has a huge, frequently updated collection of links and articles about a wide variety of health topics, including tobacco. You may want to check out the following pages:

- Smoking (general information): http://www.nlm.nih.gov/medlineplus/smoking.html
- Smoking and youth: http://www.nlm.nih.gov/medlineplus/smokingandyouth.html
- Smokeless tobacco: http://www.nlm.nih.gov/medlineplus/smokelesstobacco.html
- Smoking cessation: http://www.nlm.nih.gov/medlineplus/smokingcessation.html

The American Cancer Society (www.cancer.org), American Heart Association (www.americanheart.org), and American Lung Association (www.lungusa.org) all have excellent information about the health effects of tobacco on their web sites.

The U.S. government's National Institute on Drug Abuse has a site especially for teenagers called NIDA for Teens: The Science Behind Drug Abuse (http://teens.drugabuse.gov/). It includes extensive information about nicotine and tobacco.

If you're interested in anti-tobacco activism, you may want to visit the site of the Campaign for Tobacco-Free Kids at http://www.tobaccofreekids.org/.

Finally, if you want to research a tobacco-related health topic in depth, the detailed, fully referenced ACSH book *Cigarettes: What the Warning Label Doesn't Tell You* (2nd edition) can provide you with extensive scientific information. You can order a copy at http://www.acsh.org/publications/books/warning/index.html.

Index

A

B

C

R

S

T