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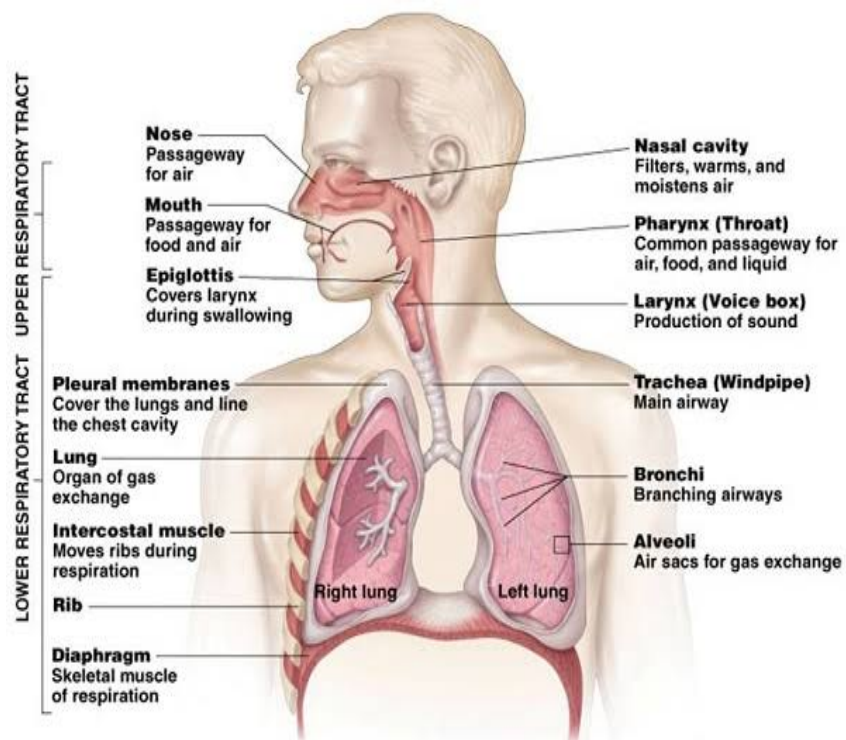
Chapter #14: Smoking & Tobacco

Functioning of the Respiratory System

- The exchange of oxygen and carbon dioxide occurs Deep in the lungs.
- To get air into the lungs,
- the diaphragm And the muscles between the ribs (intercostals Muscles) contract, increasing the volume within the Chest.
- As the space inside the chest increases, the pressure within the chest falls below atmospheric pressure, Forcing air into the lungs.

Figure illustrates where air goes on its way to The lungs. The nasal passages, pharynx, larynx, trachea, Bronchi, and bronchioles conduct air into the lungs.

These passages have little ability to absorb oxygen, But in the process of inhalation, the air is warmed, Humidified, and cleansed. Millions of alveoli, are located there.



Smoke is the major cause of chronic bronchitis, but Environmental air pollution and occupational hazards May also underlie chronic bronchitis.

- The most common of the chronic lower respiratory Diseases is *Emphysema*, which occurs when scar Tissue and mucus obstruct the respiratory passages, Bronchi lose their elasticity and collapse, and air is trapped in the alveoli. The trapped air breaks down The alveolar walls, and the remaining alveoli become Enlarged. The loss of efficiency in the respiratory system means that respiration delivers a limited amount of oxygen. People with emphysema experience problems with breathing and usually cannot exercise strenuously.

Chronic bronchitis, emphysema, and lung cancer are all diseases of the respiratory system associated with the inhalation of irritating, damaging particles such as smoke.

Figure 12.2 shows how smoke can damage the lungs,

Producing bronchitis and emphysema. Thus, smoking is the target for much negative publicity and for interventions for change.

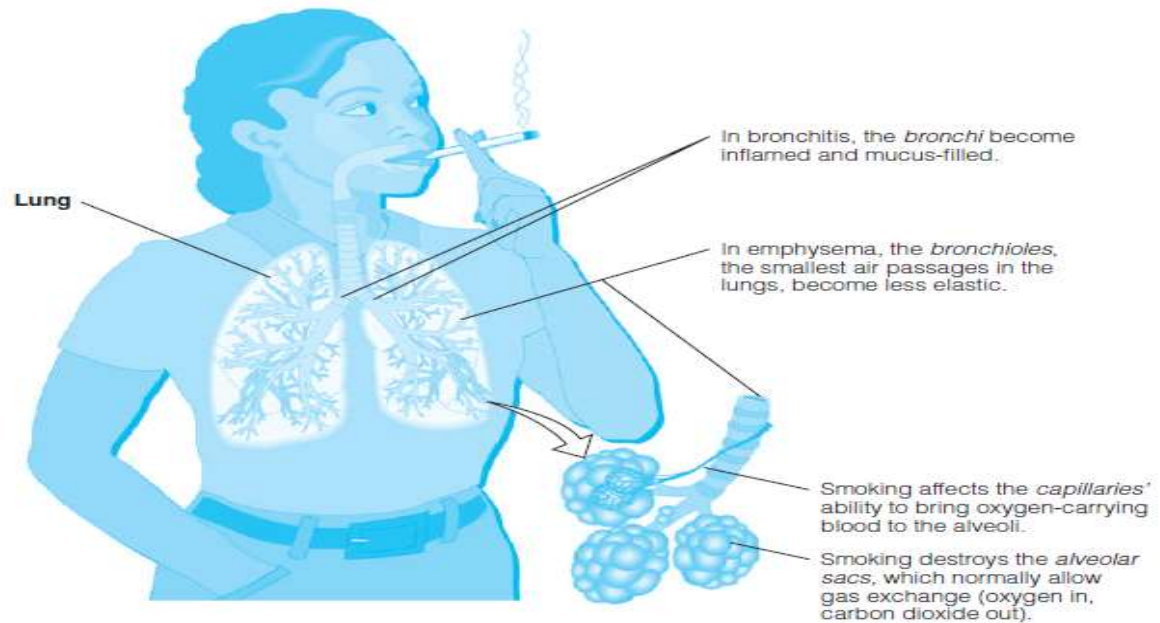


FIGURE 12.2 How smoking affects the lungs.

What Components in Smoke Are Dangerous?

The processed tobacco in cigarettes contains at least 4,000 compounds; at least 60 of these are known carcinogens. A substance that is capable of causing cancer nicotine is the pharmacological agent that underlies addiction to cigarette smoking.

Effects of Nicotine in the body

Nicotine is a stimulant drug, an “upper,” which affects both the central and peripheral nervous systems. Certain central nervous system receptor sites are specific for nicotine; that is, the brain responds to nicotine, as it does too many drugs.

But smoking is a particularly effective means of delivering drugs to the brain.

- When nicotine is delivered to the brain, it occupies receptor sites and affects the release and metabolism of several neurotransmitters, including acetylcholine, epinephrine, norepinephrine, glutamate, and dopamine.

- The overall action is to increase cortical arousal. In addition, smoking releases beta-endorphins, the brain's natural opiates.
- The pleasurable effects of smoking may be due to the release of these neurotransmitters.
- Nicotine also increases the metabolic level and decreases appetite, which explains the tendency for smokers to be thinner than nonsmokers.

Choosing to Smoke

Unlike many health hazards, smoking is a voluntary behavior, with each person choosing to smoke or not to smoke.

Several historical and social events in the United States have accompanied the increasingly popular choice not to smoke. First was the 1964 report of the Surgeon General of the United States that spelled out the adverse effects of smoking on health

Who Smokes and Who Does Not?

Currently, slightly more than 21% of adults in the United States are classified as smokers, a percentage that is half of the 42% who smoked in 1965 (National Center for Health Statistics). The number of former smokers has declined recently as the number of never-smokers has increased (see Figure 12.4); President Barack Obama is now among that group of former smokers.

How Do Smokers Differ From Nonsmokers?

- Smokers differ from nonsmokers in gender, ethnicity, age, occupation, educational level, and a variety of other factors.
- By gender, about 23.5% of adult men and 17.9% of adult women in the United States are current smokers (Centers for Disease Control and Prevention [CDC], 2010b).
- From 1965 to about 1985, the quit rate was higher for men than it was for women, thus producing a sharper decline in the number of men who smoked.
- During the past 20 years, the quit rates for women and men have been nearly identical, with both genders showing a small decline in smoking rates and a slightly higher smoking rate for men than for women.

Why Do People Smoke?

Social Pressure

Teenagers tend to be sensitive to social pressure, and having friends, parents, or siblings who smoke increases the chances that a teen will. Teenagers may be encouraged to smoke and to continue smoking by peers who offer them cigarettes.

However, the behavior of friends is important.

A growing body of evidence implicates the influence of movies in beginning smoking.

John Pierce and his colleagues examined the influence that movies have on young adolescents and found that viewing their favorite movie stars smoking on film influences these teens.

In a longitudinal study with a representative sample of adolescents in the United States viewing smoking in movies appeared to influence positive attitudes about smoking and to prompt affiliating with friends who smoked. Both attitudes and friends who smoke relate to smoking initiation.

A systematic review of media influence on smoking found a strong association between media exposure and smoking.

Anti-smoking

- Media campaigns can be effective, but probably not as effective as advertising to promote smoking. A mass media antismoking campaign showed little effect.
- Another study found that both antismoking and pro-smoking advertising can be effective, but the antismoking messages were not strong enough to counteract the pro-smoking appeals.

Thus, antismoking advertising is not yet sufficiently effective to be an antidote to Tobacco Company advertising.

Weight Control

Many girls and some boys begin smoking because they believe it will help them control their weight.

A longitudinal study with Dutch adolescents showed that weight concerns were positively related to smoking initiation. Smoking also appeared as a weight control strategy in another study (Fulkerson & French, 2003), which showed a more widespread effect—only young African American women were immune from this tactic.

This study also showed that young men were willing to use smoking for weight control, with Native American and Asian American men adopting this strategy more often than young men from other ethnic groups. Young women who were dieting reported that they used smoking as a strategy to lose weight.

Why Do People Continue to Smoke?

Different people smoke for different reasons, including being addicted to nicotine, receiving positive and negative reinforcement, having an optimistic bias, and fearing weight gain.

1. Addiction

Once people begin to smoke, they quickly become dependent. The Centers for Disease Control and Prevention (CDC, 1994) surveyed smokers 10 to 22 years old and found that nearly two thirds of those who had smoked at least 100 cigarettes during their lifetime reported that “It’s really hard to quit,” but only a small number of those who had smoked fewer than 100 lifetime cigarettes gave this response. In addition, nearly 90% of participants who smoked more than 15 cigarettes a day found quitting to be very hard. These results suggest that people will become dependent on smoking and have great difficulty quitting once they have smoked about 100 cigarettes or have increased their cigarette consumption to more than 15 per day.

2. Fear of Weight Gain

Adolescents are not the only age group using cigarette smoking as a means of weight control. Adults, too, often continue to smoke for fear of weight gain.

In a later section, we examine the validity of those concerns, but here we look at the magnitude of fears concerning weight gain. Concern about weight gain extends to a wide range of smokers, but concern varies with age, gender, and ethnicity.

Weight control is a factor that may influence some young people to begin smoking. These results point to a factor of weight concern, which some people attempt to manage through choosing to smoke and to whom quitting presents a threat.

Health Consequences of Tobacco Use

Tobacco use is responsible for more than 443,000 deaths yearly in the United States, or more than 1,200 deaths a day and almost 6 million per year worldwide (American Cancer

Society, 2012). All forms of tobacco use have health consequences, but smoking cigarettes is the most common and thus the most hazardous. Those hazards include cardiovascular disease, cancer, chronic lower respiratory disease, and a variety of other disorders.

Cigar and Pipe Smoking

Are cigar and pipe smoking as hazardous as cigarette smoking?

People from Australia, Canada, the United Kingdom, and the United States expressed the opinion that smoking cigars or pipes is less hazardous than smoking cigarettes.

- The tobacco used in pipes and cigars differs somewhat from the tobacco used to make cigarettes, but pipe and cigar tobacco is similarly carcinogenic.
- Whereas male, cigarette-only smokers have a risk for lung cancer of about 23 times that of nonsmokers, cigar and pipe smokers' risk is elevated only about 5 times that of nonsmokers.

These findings suggest that cigar and pipe smoking may be less hazardous than cigarettes, but they are not safe. The dangers of pipe smoking are of increasing concern with the spread of water pipe smoking.

Passive Smoking

Many nonsmokers find the smoke of others to be a nuisance and even irritating to their eyes and nose.

This annoying exposure still occurs commonly but less often than in the past, decreasing from 52% of nonsmokers in 1999 to about 40% in 2008.

This decline occurred in all age, ethnic, and gender groups. But is passive smoking, also known as environmental tobacco smoke (ETS) or secondhand smoke more than annoying.

is it harmful to the health of nonsmokers?

In the 1980s, some evidence began to accrue that passive smoking might be a health hazard. Specifically, passive smoking has been linked to lung cancer, breast cancer, heart disease, and a variety of respiratory problems in children.

Passive Smoking and Cancer

The effect of passive smoking on lung and other cancers is difficult to determine because of problems in assessing the intensity and duration of exposure.

- Research has focused on workplace exposure and nonsmokers who live in households with a smoker. In general, the more environmental tobacco smoke people are exposed to and the longer the exposure, the higher the risk for cancer. People whose jobs expose them to high levels of smoke have an increased risk of lung cancer mortality.
- A meta analysis that drew from studies worldwide found that exposed workers showed a 24% increase in lung cancer. For workers whose exposure was heavy, the risk of lung cancer was doubled.

Nonsmokers who live in a household with a smoker are also exposed to cigarette smoke unless the smoker refrains from smoking indoors, which is true for an increasing number of smokers. Indeed, the restriction on places where smokers are allowed to smoke is a major factor in the decrease in exposure to environmental tobacco smoke.

Passive Smoking and Cardiovascular Disease

Although the effect of environmental exposure to tobacco smoke exerts a modest increase in risk for cancer, its effects on cardiovascular disease are substantial.

Exposure to smoke prompts some of the same physiological reactions as smoking, inflammation, formation of blood clots, and changes to the lining of arteries. which increases the risks for heart disease.

- A meta-analysis of studies showed that the excess risk of heart disease for passive smokers is about 25%, a risk similar to the risk for stroke. However, even this small elevation of risk for heart disease translates into thousands of deaths each year from passive smoking, but this large number is only about one tenth of the number of those who die from active smoking.

Effects of Quitting

When smokers quit, they experience a number of effects, almost all of which are positive. However, one possible negative effect is weight gain.

Quitting and Weight Gain

Many smokers fear weight gain if they give up smoking; this fear applies to men as well as women.

When people quit smoking, the variation in **weight gain** is large. Some people experience increased appetite as a symptom of nicotine withdrawal, which leads to eating more. Unfortunately, overweight ex-smokers are more likely to gain a great deal more weight than normal-weight ex-smokers,

For example, research on female smokers revealed that women who increased their level of exercise and used nicotine replacement after quitting smoking gained less weight than women who quit but did not become more physically active.

Health Benefits of Quitting

An extensive review compared a large group of smokers who continued to smoke with another large group who were able to stop smoking. The result: Smokers who quit reduced their all-cause mortality by 36%.

- Quitting improves a range of “risks for health problems” produced by smoking. The earlier analysis indicated that former light smokers (fewer than 20 cigarettes a day) who were able to abstain for 16 years had about the same rate of mortality as people who had never smoked.
- Research shows that *men’s mortality risk* reduces steadily for up to 16 years. Longtime smokers who quit reduce their chances of dying from heart disease much more rapidly than they lower their risk of death from lung cancer.
- The *risk of lung cancer* remains elevated for 10 years or longer, especially among men. Thus, men who quit smoking for 30 years reduce their risk of both cardiovascular disease and lung cancer, but their risk for lung cancer remains substantially higher than that of men who have never smoked.
- Women also reduce their risks by quitting, and the younger they are when they quit, the less likely they will be to die of lung cancer. Quitting at younger ages also lowers the risk of cardiovascular disease events.

These studies suggest that by quitting smoking, both male and female smokers can reduce their risk of cardiovascular disease to that of nonsmokers, although their elevated risk of lung and other cancers declines much more slowly. Smokers who quit earlier realize even greater extension of life expectancy, and in addition, smokers who quit also add years of healthy life, not just years of life.

- Many smokers fear that if they stop smoking, they will gain weight, and they may, but most people do not gain a lot of weight. For most smokers, excessive weight is less risky than continuing to smoke.
- On a more positive note, stopping smoking improves health and extends life expectancy.
- Some evidence suggests that 16 years after quitting, former smokers' all-cause mortality rate returns to that of nonsmokers, although they may continue to have an excess risk for cancer mortality.