Chapter Ten

Respiratory System and Tobacco Use
Respiratory System

Pages 10.1 – 10.2
Tobacco Use is the #1 Preventable Cause of Death

Responsible for more than 430,000 deaths each year in the U.S.

= 3 fully loaded 747s crashing every day for a year with no survivors
Patterns of Tobacco Use

• 20.6% of the adult population in the United States are smokers

• The decline of smoking since 1965 is largely because of public health campaigns about the hazards of smoking

• Although smoking in the United States has declined, the rate of decline has slowed since 1990
Gender and Age Group Differences

- Smoking is more prevalent among men than women
- Rates of smoking are higher among young people than among older people
- Most smokers get hooked in adolescence and think they can stop at any time
- College students are more likely to smoke than the general population
Substances in Tobacco

- **Tar** is a thick, sticky residue formed when tobacco leaves burn, containing hundreds of chemical compounds and *carcinogenic* substances.

- **Carbon Monoxide** is an odorless gas that interferes with the ability of red blood cells to carry oxygen to vital body organs.

- **Nicotine** is the primary *addictive* ingredient in tobacco; a *poison* and a *psychoactive* drug.
Tobacco Products

- Cigarettes
  - Electronic cigarette
- Cigars
- Pipes
  - Hookahs
  - Water pipes
- Smokeless Tobacco
  - Snuff
  - Chewing tobacco
Why Do People Smoke?

• Nicotine addiction
• Behavioral dependence
• Weight control
• Tobacco marketing and advertising
Short-Term Effects of Tobacco Use

- Nicotine effects can reach the brain within 7-10 seconds, producing stimulation and sedation
- Smoke quickly affects the heart rate, blood pressure, and body temperature
- Tar and toxins damage cilia, the hair-like structures that prevent toxins and debris from reaching delicate lung tissue
- The cardiovascular system cannot effectively deliver oxygen to muscle cells
Short-Term Effects of Tobacco Use

Skin  Nicotine causes constriction of blood vessels and decreased blood flow to skin; smoke contains chemicals that damage collagen and elastin, causing excess wrinkling.

Nose  Tar and toxins irritate membranes in nose, dull sense of smell.

Liver  Liver converts glycogen to glucose, causing an increase in blood sugar.

Kidneys  Nicotine inhibits production of urine.

Reproductive system  Toxins in tobacco smoke are secreted into cervical mucus and increase risk of cervical cancer. In pregnant women, nicotine and tobacco chemicals are passed to fetus.

Brain  Nicotine reaches the brain within 7 to 10 seconds, triggering release of chemicals that affect mood; effects are both sedating and stimulating. Effects peak in about 10 minutes and are reduced by half within about 20 minutes.

Mouth and throat  Tar and toxins irritate membranes in mouth, dull taste buds, stain teeth, cause raspy voice.

Lungs  Smoke increases mucus production and damages cilia in airway, preventing them from filtering out particles. Tar collects in lungs, creating conditions conducive to cancer. Tobacco smoke is absorbed into bloodstream and travels throughout body.

Heart and blood  Nicotine causes heart rate to increase, blood pressure to rise, blood vessels to constrict. The heart must work harder to deliver oxygen to cells. Tobacco smoke makes blood stickier and adversely affects cholesterol levels.

Adrenal glands  Adrenal glands increase production of adrenaline, causing stimulating effects throughout body.

Digestive system  Nicotine is secreted from the bloodstream into saliva, swallowed, and reabsorbed in the stomach, increasing risk for cancers of the digestive tract.
Long-Term Effects of Tobacco Use

- Cardiovascular disease
- Cancer
- Chronic obstructive pulmonary disease
- Emphysema
- Chronic bronchitis
- Asthma
- Premature skin wrinkling
- Increased risk during surgery

- Infertility
- Sexual dysfunction
- Periodontal disease
- Duodenal ulcers
- Osteoporosis
- Cataracts
- Reduced effects of some medications
- Compromised lung function
Special Health Risks for Women

- Lung cancer
- Heart disease
- Respiratory disease
- Fertility problems
- Menstrual disorders
- Early menopause

Women who smoke during pregnancy are at increased risk for the following:
- Miscarriage
- Stillbirths
- Preterm delivery
- Low birth weight in infants
- Perinatal death
- High risk for SIDS
Special Health Risks for Men

- Greater use of other forms of tobacco (cigars, pipes, smokeless tobacco) places men at higher risk for cancers of the mouth, throat, esophagus, and stomach.

- Men who smoke also are risk for the following:
  - Problems with sexual function (impotence)
  - Fertility (motility and number of sperm)
Environmental Tobacco Smoke (ETS), or Secondhand Smoke

- Smoke from other people’s tobacco products is also known as second hand smoke or passive smoke.
- Significant evidence indicates that inhaling this form of smoke has serious health consequences.
- Human Carcinogen.
- Just 30 minutes exposure/day = heart damage similar to that of a habitual smoker.
- Infants and children are especially vulnerable to the effects of ETS.
- EPA report (1993)
  - Led to ban & limits on smoking in public and in the workplace.
- In 2006, the U.S. surgeon general stated that there is no safe level of ETS exposure.
“ Quitting smoking is easy. I’ve done it a thousand times. ”

Mark Twain
Benefits of Quitting

- Risks for many health problems are reduced when smokers quit
- Health benefits begin immediately and are more significant over time
- Within a year, the risk for heart attack and coronary artery disease is reduced by half
  - Within 5 years, the risk approaches that of non-smokers
- Quitting increases quality of life
Quitting and Treatment Options

• Treatment programs
  • 20-40% of smokers who enter good treatment programs are able to quit for at least a year

• Medications
  • Nicotine replacement therapy (NRT)
    • Transdermal patch, nicotine inhaler, nicotine patch, hand gel (Nicogel)
  • Prescription drug (Zyban, Wellbutrin, Chantix)
  • Experimental vaccine (NicVax)

• Quitting on your own
  • Behavior change plan
    • Record and analyze your smoking patterns
    • Establish goals
    • Prepare to quit
    • Implement your plan
    • Prevent relapse