Alcohol and Tobacco
Alcohol: An Overview

- 61 percent of Americans consume alcohol regularly.
- 25 percent abstain from drinking.

**Alcohol and College Students**

- Approximately 63 percent of students have consumed alcoholic beverages in the past 30 days.
- Almost **half are classified** as heavy drinkers.
Alcohol: An Overview

- **Binge Drinking**
  - A pattern of drinking alcohol that brings blood alcohol concentration (BAC) to 0.08 gram-percent or above
  - Binge drinking is defined as consuming within 2 hours:
    - 5 drinks in a row for a man
    - 4 drinks in a row for a woman
Trends of Alcohol-Related Problems among College Students, Nonbinge Drinkers vs. Frequent Binge Drinkers

<table>
<thead>
<tr>
<th>Condition</th>
<th>Nonbinge drinkers</th>
<th>Frequent binge drinkers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did something they later regretted</td>
<td>18%</td>
<td>62%</td>
</tr>
<tr>
<td>Missed a class</td>
<td>9%</td>
<td>63%</td>
</tr>
<tr>
<td>Drove after drinking</td>
<td>19%</td>
<td>57%</td>
</tr>
<tr>
<td>Forgot where they were or what they did</td>
<td>10%</td>
<td>54%</td>
</tr>
<tr>
<td>Argued with friends</td>
<td>10%</td>
<td>43%</td>
</tr>
<tr>
<td>Engaged in unplanned sexual activities</td>
<td>8%</td>
<td>42%</td>
</tr>
<tr>
<td>Got hurt or injured</td>
<td>4%</td>
<td>27%</td>
</tr>
</tbody>
</table>

*Each full glass = 4%
Alcohol: An Overview

High-Risk Drinking and College Students

- Why is binge drinking the number one cause of preventable death among undergraduate students?
- Alcohol exacerbates their already high risk for suicide, automobile crashes, and falls.
- Customs, norms, and traditions encourage dangerous drinking.
- Drinking is heavily advertised and promoted on campuses.
- Students are more likely to engage in drinking games.
- Students are more vulnerable to peer influences and peer pressure.
- College administrators often don’t admit to a problem on campus.
College Students’ Patterns of Alcohol Use

<table>
<thead>
<tr>
<th>Category</th>
<th>Women (%)</th>
<th>Men (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonbinge drinker</td>
<td>40.4%</td>
<td>31.3%</td>
</tr>
<tr>
<td>Frequent binge drinker</td>
<td>20.9%</td>
<td>25.2%</td>
</tr>
<tr>
<td>Occasional binge drinker</td>
<td>20.0%</td>
<td>23.4%</td>
</tr>
<tr>
<td>Abstainer (past year)</td>
<td>18.7%</td>
<td>20.1%</td>
</tr>
</tbody>
</table>
Alcohol in the Body

- **The Potency of Alcohol**
  - **Proof**
    - Measure of the percent alcohol
      - 80 proof whiskey = 40 percent alcohol
Alcohol in the Body

Absorption and Metabolism

- Absorption that occurs in stomach is about 20 percent
- Absorption that occurs in small intestine is about 80 percent
- Factors that influence absorption:
  - Concentration of the drink
  - Amount consumed
  - Food in the stomach
### What Is a Standard Drink?

<table>
<thead>
<tr>
<th>Standard drink equivalent (and % alcohol)</th>
<th>Approximate number of standard drinks in:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beer = 12 oz (~5% alcohol)</strong></td>
<td>12 oz = 1</td>
</tr>
<tr>
<td></td>
<td>16 oz = 1.3</td>
</tr>
<tr>
<td></td>
<td>22 oz = 2</td>
</tr>
<tr>
<td></td>
<td>40 oz = 3.3</td>
</tr>
<tr>
<td><strong>Malt liquor = 8.5 oz (~7% alcohol)</strong></td>
<td>12 oz = 1.5</td>
</tr>
<tr>
<td></td>
<td>16 oz = 2</td>
</tr>
<tr>
<td></td>
<td>22 oz = 2.5</td>
</tr>
<tr>
<td></td>
<td>40 oz = 4.5</td>
</tr>
<tr>
<td><strong>Table wine = 5 oz (~12% alcohol)</strong></td>
<td>750-mL (25-oz) bottle = 5</td>
</tr>
<tr>
<td><strong>80 proof spirits (gin, vodka, etc.) = 1.5 oz (~40% alcohol)</strong></td>
<td>mixed drink = 1 or more*</td>
</tr>
<tr>
<td></td>
<td>pint (16 oz) = 11</td>
</tr>
<tr>
<td></td>
<td>fifth (25 oz) = 17</td>
</tr>
<tr>
<td></td>
<td>1.75 L (59 oz) = 39</td>
</tr>
</tbody>
</table>
Alcohol in the Body Blood Alcohol Levels

- **Blood Alcohol Concentration (BAC)**
  - Ratio of alcohol to total blood volume
  - The legal limit for BAC is 0.08 percent in all states.
  - Both breath analysis (breathalyzer tests) and urinalysis are used to determine whether an individual is legally intoxicated, but blood tests are more accurate.

- *Learned behavioral tolerance*—though BAC may be quite high, the individual has learned to modify his behavior to appear sober
Approximate Blood Alcohol Concentration (BAC) and the Physiological and Behavioral Effects

<table>
<thead>
<tr>
<th>Blood Alcohol Concentration (BAC)</th>
<th>Psychological and Physical Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Impaired</td>
<td>Negligible</td>
</tr>
<tr>
<td>&lt;0.01%</td>
<td></td>
</tr>
<tr>
<td>Sometimes Impaired</td>
<td>Slight muscle relaxation, mild euphoria, slight body warmth, increased sociability and talkativeness</td>
</tr>
<tr>
<td>Usually Impaired</td>
<td>Lowered alertness, impaired judgment, lowered inhibitions, exaggerated behavior, loss of small muscle control</td>
</tr>
<tr>
<td>Always Impaired</td>
<td>Slowed reaction time, poor muscle coordination, short-term memory loss, judgment impaired, inability to focus</td>
</tr>
<tr>
<td>0.08–0.14%</td>
<td>Impaired consciousness, disorientation, loss of motor function, severely impaired or no reflexes, impaired circulation and respiration, uncontrolled urination, slurred speech, possible death</td>
</tr>
<tr>
<td>0.35% and up</td>
<td>Unconsciousness, coma, extremely slow heartbeat and respiration, non-responsiveness, probable death</td>
</tr>
</tbody>
</table>

### Women

<table>
<thead>
<tr>
<th>Body weight (pounds)</th>
<th>1 hour</th>
<th>3 hours</th>
<th>5 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
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<td></td>
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<tr>
<td>140</td>
<td></td>
<td></td>
<td></td>
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<td>160</td>
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<td>180</td>
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<tr>
<td>200</td>
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### Men

<table>
<thead>
<tr>
<th>Body weight (pounds)</th>
<th>1 hour</th>
<th>3 hours</th>
<th>5 hours</th>
</tr>
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<tbody>
<tr>
<td>120</td>
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<tr>
<td>140</td>
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<td>180</td>
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<td></td>
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<tr>
<td>200</td>
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<tr>
<td>220</td>
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</tbody>
</table>
Effects of Alcohol on the Body and Health

**Short-Term Health Effects**

**NERVOUS SYSTEM**
- Slowed reaction time, slurred speech
- Impaired judgment and motor coordination
- High BACs can lead to coma and death

**SENSES**
- Dulled senses of taste and smell
- Less acute vision and hearing

**SKIN**
- Broken capillaries
- Flushing, sweating, heat loss

**HEART AND LUNGS**
- Decreased pulse and respiratory rate
- Lowered blood pressure

**STOMACH**
- Nausea
- Irritation and inflammation

**URINARY SYSTEM**
- Increased urination

**SEXUAL RESPONSE**
- Women: decreased vaginal lubrication
- Men: erectile dysfunction

**Long-Term Health Effects**

**BRAIN**
- Memory impairment
- Damaged/destroyed brain cells

**IMMUNE SYSTEM**
- Lowered disease resistance

**HEART**
- Weakened heart muscle
- Elevated blood pressure

**LIVER**
- Increased risk of liver cancer
- Fatty liver and cirrhosis

**DIGESTIVE SYSTEM**
- Chronic inflammation of the stomach and pancreas
- Increased risk of cancers of the mouth, esophagus, stomach, pancreas, and colon

**BONES**
- Increased risk of osteoporosis

**REPRODUCTIVE SYSTEM**
- Women: menstrual irregularities and increased risk of birth defects
- Men: impotence and testicular atrophy
- Both sexes: increased risk of breast cancer
Alcohol and Your Health

• **Immediate and Short-Term Effects of Alcohol**
  ○ Reduces frequency of nerve transmissions
  ○ Dehydration
  ○ Water is lost from cerebrospinal fluid.
  ○ Alcohol irritates the gastrointestinal system.
  ○ Hangovers

• **What are some symptoms experienced by someone with a hangover?**
Alcohol and Your Health

- Alcohol and Injuries
  - 13 percent of emergency room visits by undergrads are for alcohol-related injuries.
  - Patients with a BAC over 0.08% are 3.2 times more likely to have a violent injury than an unintentional injury.
  - Most people admitted to the ER are men aged 21 and over, most as a result of accidents or fights in which alcohol was a factor.
Alcohol and Your Health

- **Alcohol and Sexual Decision Making**
  - Alcohol lowers inhibitions, impairing the ability to make wise decisions regarding sexual activity.
  - 70 percent of college students admit to having engaged in sexual activity primarily as a result of being under the influence of alcohol.
  - Less likely to use safer sex practices:
    - Risk of contracting sexually transmitted infections (STIs) or pregnancy increases among those who drink heavily.
Alcohol and Your Health

- **Alcohol Poisoning**
  - Consuming large amounts of alcohol in a short period of time can be lethal.
  - Alcohol alone or mixed with another drug is responsible for more toxic overdose deaths than any other substance.
  - Deaths are caused by either central nervous system and respiratory depression or by inhalation of vomit or fluid into the lungs.
  - Signs include inability to be roused; weak and rapid pulse; unusual breathing pattern; cool, damp, pale, or bluish skin.
  - Call 9-1-1 immediately.
Alcohol and Your Health

- **Long-Term Effects of Alcohol**
  - Effects on the nervous system
  - Cardiovascular effects
  - Liver disease
    - Cirrhosis
    - Alcoholic hepatitis
  - Cancer
  - Chronic inflammation of pancreas
  - Impairs ability to recognize and fight bacteria and viruses
Comparison of a Healthy Liver with a Cirrhotic Liver

(a) A normal liver

(b) A liver with cirrhosis
Alcohol and Pregnancy

- Alcohol and Pregnancy
  - Alcohol will harm fetal development.
  - Even a single exposure to high levels can cause damage.
  - Fetal alcohol syndrome (FAS)
    - Mental retardation, small head, tremors, and abnormalities of face, limbs, heart, and brain
    - FAS is the third most common birth defect in the United States.
Alcohol and Your Health

- **Alcohol and Pregnancy**
  - **FAS Symptoms Include**
    - Impaired learning
    - Poor memory
    - Impulsive behaviors
    - Reduced attention span
    - Poor problem solving
    - Fetal alcohol effects are less severe than FAS
Drinking and Driving

- 32 percent of all traffic fatalities were alcohol related.
- Many college students drink and drive.
- In 2008, there were 11,773 alcohol-impaired driving fatalities in the United States.
  - This represents one alcohol-related fatality every 45 minutes.
- At BAC 0.10 a person is approximately 10 times more likely to be in an accident.
- When death results from alcohol impairment, mandatory prison time.
Alcohol Abuse and Alcoholism

- **Identifying a Problem Drinker**
  - Abuse interferes with work, school, and relationships.
  - Alcohol abuse: Alcoholic
    - Characterized by craving, loss of control, physical dependence, and tolerance
Alcohol Abuse and Alcoholism

**Alcohol and Prescription Drug Abuse**
- Young adults aged 18 to 24 are at most risk for concurrent or simultaneous abuse of both alcohol and drugs.
- Alcohol and prescription drugs taken together can cause
  - Alcohol poisoning
  - Unconsciousness
  - Respiratory depression
  - Death
- Opiates, stimulants, sedatives, and sleeping aids are most often combined with alcohol.
The Causes of Alcohol Abuse and Alcoholism

- **Biological and family factors**
  - Alcoholism is 4 to 5 times more common among children of alcoholics
  - Heredity accounts for two-thirds of the risk for becoming an alcoholic.

- **Social and cultural factors**
  - Family attitudes
  - Weakening of family links
  - Combination of heredity and environment
Alcohol Abuse and Alcoholism

**Costs**

- It is estimated that alcohol is directly or indirectly responsible for over 25 percent of U.S. medical expenses and lost earnings.
- Cost of underage drinking is estimated at $61.9 billion annually.
  - Includes crashes, violent crime, FAS, high-risk sex, poisoning, psychosis, and treatment for alcohol dependence.
Alcohol Abuse and Alcoholism

- **Women and Alcoholism**
  - Female alcoholics approaching the rate of male alcoholics
  - Women are addicted faster than men.
  - Risk factors include
    - Family history
    - Pressure to drink from peers
    - Depression
    - Stress
Alcohol Abuse and Alcoholism

• Alcohol and Ethnic or Racial Differences
  ○ Different minority groups have unique problems related to alcohol consumption and abuse.
  ○ Alcohol most widely used drug among Native American populations
  ○ Generally, African Americans drink less than white Americans, but are more likely to be heavy drinkers when they do drink.
  ○ Latino men have higher-than-average rates of alcohol abuse and alcohol-related health problems than other groups.
  ○ Asian Americans have a defect in the gene that manufactures alcohol dehydrogenase, leading to unpleasant side effects of alcohol consumption.
Recovery

The Family’s Role in Recovery
- Intervention is a planned confrontation.

Treatment Programs
- Psychologist and psychiatrists specializing in treatment
- Alcoholics Anonymous (AA)
- Private treatment centers
- Family, individual, and group therapy
- Alanon
Recovery

- **Relapse**
  - There is roughly a 60 percent rate of relapse (resuming drinking) in the first three months.
  - Many say they are recovering their whole life.
  - To be effective, one must work on self-esteem and personal growth.
Tobacco Use in the United States

- **Tobacco and Social Issues**
  - Single most preventable cause of death
  - 438,000 Americans die a year
  - 50 times that of illegal drug deaths
  - Teen smokers = 27.5 percent of all smokers

- **Advertising**
  - $36 million per day spent on tobacco-related advertising.
  - Children and teens constitute 90 percent of new smokers.
  - Women, minorities, and college students are new targets.
### Percentage of Population That Smokes (Aged 18 and Older) among Select Groups in the United States

<table>
<thead>
<tr>
<th></th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States overall</td>
<td>19.8</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td>36.4</td>
</tr>
<tr>
<td>Asian</td>
<td>9.6</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>19.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13.3</td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>21.4</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>18–24</td>
<td>22.2</td>
</tr>
<tr>
<td>25–44</td>
<td>22.8</td>
</tr>
<tr>
<td>45–64</td>
<td>21.0</td>
</tr>
<tr>
<td>65+</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22.3</td>
</tr>
<tr>
<td>Female</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>11.4</td>
</tr>
<tr>
<td>Some college</td>
<td>20.9</td>
</tr>
<tr>
<td>High school</td>
<td>23.7</td>
</tr>
<tr>
<td>9–11 years</td>
<td>33.3</td>
</tr>
<tr>
<td><strong>Income Level</strong></td>
<td></td>
</tr>
<tr>
<td>Below poverty level</td>
<td>28.2</td>
</tr>
<tr>
<td>At or above poverty level</td>
<td>20.3</td>
</tr>
</tbody>
</table>

Tobacco Use in the United States

• **Financial Costs**
  - $193 billion in annual health-related economic losses
  - $95 billion in medical expenditures

• *Does tobacco appear to be a big problem on your campus?*
Trends in Prevalence of Cigarette Smoking in the Past Month among College Students
Tobacco and Its Effects

- **Nicotine**
  - It is the main addictive substance in tobacco.
  - Stimulates CNS.
  - Stimulates adrenal glands.
  - Increases production of adrenaline.
  - Increases heart rate.
  - Increases respiratory rate.
  - Constricts vessels.
  - Increases blood pressure.
Tobacco and Its Effects

- **Tar and Carbon Monoxide**
  - Tar is a thick, brownish sludge, that contains various carcinogenic (cancer-causing) agents.
  - Tar accounts for about 8 percent of tobacco smoke.
  - 92 percent of the remaining tobacco smoke consists of various gases.
  - The most dangerous gas is **carbon monoxide**, which is 800 times higher than the level considered safe by the EPA.
  - Carbon monoxide causes oxygen deprivation in many body tissues.
Tobacco and Its Effects

- Tobacco Addiction
  - Between 60 and 80 percent of people have tried a cigarette.
  - Smoking delivers the drug to the brain in just a few seconds.
  - *Nicotine poisoning*—dizziness, light-headedness, rapid and erratic pulse, clammy skin, nausea, vomiting, and diarrhea
  - When a person continues to smoke because stopping is too difficult, that person is addicted.
  - *Pairing*—an environmental cue triggers a craving for nicotine
  - Two specific genes may influence smoking behavior by affecting dopamine.
Tobacco and Its Effects

- **Tobacco Products**
  - Cigarettes
  - Cigars
  - Pipe
  - Bides (hand-rolled, flavored cigarettes)
  - Spit (smokeless) tobacco
    - Chewing tobacco
    - Dipping
    - Snuff
Health Hazards of Tobacco Products

- **Cancers**
  - Lung 85 to 90 percent associated with smoking
  - Pancreatic
  - Lip
  - Esophagus
  - Tongue

- **Cardiovascular disease**
  - Smokers have a 70 percent higher death rate than nonsmokers.

- **Stroke**
  - Smokers are 2 times more likely to suffer a stroke than nonsmokers.
Effects of Smoking on the Body and Health

**Short-Term Health Effects**

- **BRAIN**: Lightheadedness; aroused mental state
- **NOSE AND MOUTH**: Irritates throat and airways; dulls senses of smell and taste; increases mucus and phlegm
- **LUNGS**: Increases respiratory rate
- **HEART AND BLOOD VESSELS**: Constricts blood vessels; increases pulse and blood pressure
- **ENDOCRINE SYSTEM**: Increases blood sugar levels; increases production of adrenaline
- **STOMACH**: Suppresses appetite
- **MUSCLES**: Induces fatigue

**Long-Term Health Effects**

- **NERVOUS SYSTEM**: Addiction and nicotine craving
- **SKIN**: Stained fingers; excess wrinkling
- **MOUTH**: Increased risk of gum disease; increased risk of cancers of the oral cavity, throat, and larynx; stained teeth
- **RESPIRATORY SYSTEM**: Increased susceptibility to colds, flu, pneumonia, and asthma; greatly increased risk of lung cancer, emphysema, and other lung diseases
- **CARDIOVASCULAR SYSTEM**: Increased risk of stroke; increased risk of heart disease, atherosclerosis
- **REPRODUCTIVE SYSTEM**: Increased risk of impotence, infertility in pregnant women, increased risk of miscarriage, stillbirth, and low-birth-weight babies
Health Hazards of Tobacco Products

- **Respiratory Disorders**
  - Chronic bronchitis
  - Emphysema
- **Sexual Dysfunction and Fertility Problems**
  - Males are twice as likely to suffer impotence as are females.
  - Women are likely to suffer infertility and problems with pregnancy.
- **Other Health Effects**
  - Gum disease, macular degeneration, premature skin wrinkling, and risk of Alzheimer’s disease
  - Cancer
    - Lung
    - Pancreas
    - Bladder
    - Mouth
    - Tongue
    - Esophagus
Comparison of Cross Sections with a Healthy Lung and with the Lung of a Smoker

(a) A healthy lung

(b) A smoker’s lung permeated with deposits of tar
Environmental Tobacco Smoke

- **Risks from Environmental Tobacco Smoke (ETS)**
  - *Mainstream*—smoke drawn through tobacco while inhaling
  - *Sidestream*—smoke from the burning end of a cigarette or smoke exhaled by a smoker
    - Contains 2 times more tar and nicotine, 5 times more carbon monoxide, and 50 times more ammonia than mainstream smoke
    - Causes more deaths a year than any other environmental pollutant
  - Every year, ETS is estimated to be responsible for 3,000 lung cancer deaths, 46,000 coronary and heart disease deaths, and 430 SIDs deaths in newborns.
Quitting

- **Breaking the Nicotine Addiction**
  - 70 percent attempt to quit a year
  - Fewer than 5 percent succeed

- **Nicotine Replacement Products**
  - Nicotine chewing gum
  - Nicotine patch
  - Nicotine nasal spray
  - Nicotine inhaler
  - Nicotine lozenges

- **1-800-NO BUTTS**
Tips for Quitting

If you’re a smoker and you’re ready to quit, try these tips to help kick the habit:

- Use the four Ds to fight the urge to smoke:
  - Delay—put off smoking for 10 minutes; when the 10 minutes are up, put it off for another 10 minutes.
  - Deep breathing
  - Drink water
  - Do something else

- Keep “mouth toys” handy: hard candy, gum, toothpicks, and carrot sticks can help.

- If you’ve had trouble stopping before, ask your doctor about nicotine chewing gum, patches, nasal sprays, inhalers, or lozenges.

- Tell your family and friends that you’ve stopped smoking so they won’t offer you a cigarette.

- Aim to spend your time in places that don’t allow smoking.

- Take up a new sport, exercise program, hobby, or organizational commitment. This will help shake up your routine and distract you from smoking.

- Throw out your cigarettes or keep them in a place that’s harder to access or that makes smoking inconvenient, such as the freezer, in your car’s glove compartment, or at a friend’s house.
Smoking Cessation Medications

- Bupropion (Zyban) works on dopamine and norepinephrine receptors in the brain.
- Chantix reduces nicotine cravings and it blocks the effects of nicotine at nicotine receptor sites in the brain.
  - Both drugs are associated with changes in behavior such as hostility, agitation, depressed mood, and suicidal thoughts or actions.
- NicVAX, an antismoking vaccine, is due out on the market soon.
  - Intended to prevent nicotine from reaching the brain, making smoking less pleasurable.
**Benefits of Quitting**

- Many tissues will repair themselves, according to the American Cancer Society.
- Gain more energy, sleep better, and feel more alert.
- Women less likely to bear babies with low birth weight.
- Can save about $1,772.68 per year.
When Smokers Quit

START HERE

8 hours
- Carbon monoxide level in blood drops to normal.
- Oxygen level in blood increases to normal.

48 hours
- Nerve endings start regrowing.
- Ability to smell and taste is enhanced.

1 to 9 months
- Coughing, sinus congestion, fatigue, shortness of breath decreases.
- Cilia regrow in lungs, which increases ability to handle mucus, clean the lungs, reduce infection.
- Body’s overall energy increases.

5 years
- Lung cancer death rate for average former smoker (one pack a day) decreases by almost half.

15 years
- Risk of coronary heart disease is that of a nonsmoker.

20 minutes
- Blood pressure drops to normal.
- Pulse rate drops to normal.
- Body temperature of hands and feet increases to normal.

24 hours
- Chance of heart attack decreases.

2 weeks to 3 months
- Circulation improves.
- Walking becomes easier.
- Lung function increases up to 30%.

1 year
- Excess risk of coronary disease is half that of a smoker.

10 years
- Lung cancer death rate similar to that of nonsmokers.
- Precancerous cells are replaced.
- Risk of cancer of the mouth, throat, esophagus, bladder, kidney, and pancreas decreases.