Who Drinks?

Patterns of Alcohol Use

- About 65% of American adults drink at least occasionally
- 35% of the adult U.S. population are abstainers
- Of the two-thirds who do consume alcohol, 28% are at-risk drinkers
- Low-risk drinkers are men who drink no more than 14 drinks per week or women who drink no more than 7 drinks per week
- “One drink” is defined by the NIAAA as 0.5 ounce (or 15 grams) of alcohol
One Drink

Beer 12 oz.
Wine 5 oz.
Shot 1.5 oz.
Mixed drink 1.5 oz.

(beer): © iStockphoto.com/Bjorn Heller; (wine): © iStockphoto.com; (shot): © C Squared Studios/ Getty Images; (drink): © Comstock Images/Alamy
Who Drinks?
Patterns of Alcohol Use

- Alcohol consumption is highest between 18 and 25 for Whites and between 26 and 30 for Hispanics and African Americans
- People are most likely to drink as adolescents and during early adulthood
- Older adults drink significantly less than younger adults do
- Women drink less than men and start drinking later in life
Why Do Some People Have Problems with Alcohol?

- Psychosocial factors
  - Family history of alcoholism
  - Family dysfunction in general

- Sociocultural/environmental factors
  - Cultural attitudes
  - Economic factors
  - Laws
  - Stresses
Drinking on the College Campus

- Binge drinking
  - Males: five or more drinks within two hours, at least once in the previous two-week period
  - Females: four or more drinks within two hours for women, at least once in the previous two-week period
  - Harvard School of Public Health College Alcohol Study found that 44% of college students binge drank in the previous 30 days
  - Same study found 23% were frequent binge drinkers, meaning they had binged three or more times in the previous two weeks or more than once a week on average
Some health experts believe the current definition of binge drinking is too broad and classifies a large number of people as binge drinkers who may not have a problem.

Other terms, such as heavy drinking or high-risk drinking, may be preferable to describe the drinking currently labeled binge drinking.

Binge drinking could be reserved for a prolonged period of intoxication (two days or more).

Extreme drinking used to describe alcohol consumption beyond binge drinking—10 to 15 drinks a day for men and 8 to 12 for women.
Drinking on the College Campus

- Binge drinking can have serious consequences, including:
  - Death
  - Injury
  - Assault
  - Sexual assault
  - Unsafe sex
  - Academic problems
  - Health problems

- Suicide attempts
- Drunk driving
- Vandalism
- Property damage
- Police involvement
- Alcohol abuse and dependence
Why Do College Students Binge Drink?

- Students may drink for a variety of reasons
  - Ease social inhibitions
  - Fit in with peers
  - Imitate role models
  - Reduce stress
  - Soothe negative emotions
  - Cope with academic pressure
  - Mistaken belief of increased sexual arousal and performance
Drinking on College Campuses

- *Pre-gaming* is the excessive consumption of alcohol prior to attending an event or activity in which alcohol will be served
  - Freshmen more likely to pre-game

- Spring break environment made to be conducive to excessive drinking
  - Collapse, sexual assaults, and unprotected sex are common
Addressing the Problem

Strategies for addressing the problem:

- Screening interviews to identify high-risk students
- Enforcing college alcohol policies
- Punishing students who violate policies or break the law
- Mandating treatment for substance-related offenses
- Educating students to resist peer pressure
- Helping students cope with stress and time management issues
- Targeting prevention messages to high-risk events
Effects of Alcohol on the Body

- Alcohol is quickly distributed to all the cells of the body.
- Once it reaches the brain, alcohol alters brain chemistry and neurotransmitter functions.
- Alcohol is a central nervous system depressant that impairs thinking, balance, and motor functions.
- As alcohol concentrations increase, more functions are depressed, and greater impairment occurs.
The Path of Alcohol

1. Alcohol enters the body.

2. Some alcohol is absorbed in the stomach, but most goes on to the small intestine.

3. Most of the alcohol is absorbed into the bloodstream through the walls of the small intestine.

4. The heart pumps alcohol throughout the body.

5. Alcohol alters brain chemistry and disrupts brain functions.

6. Alcohol is metabolized by the liver at a rate of about 0.5 ounce (about one drink) per hour.
Alcohol Absorption

Factors affecting alcohol absorption:

- Food in the stomach
- Gender
- Age
- Body fat
- Drug interaction
- Cigarette smoke
- Mood and physical condition
- Alcohol concentration
- Carbonation
- Diet soda
- Tolerance
Alcohol Metabolism

- A small amount of alcohol is metabolized in the stomach; however, 90% is metabolized by the liver.
- Between 2% and 10% is not metabolized at all but is excreted unchanged through the skin, urine, or breath.
- The liver allows conversion of alcohol to acetaldehyde by an enzyme, alcohol dehydrogenase (ADH).
Alcohol Metabolism

- **Blood alcohol concentration (BAC):** the amount of alcohol in grams in 100 milliliters of blood, expressed as a percentage
  - 100 mgs of alcohol in 100 milliliters of blood is equivalent to a BAC of .10%
  - Breath analyzers are valid based upon alcohol concentrations in the breath that correspond well to levels of alcohol in the brain
  - The amount of body water and body fat a person has influences the BAC levels in the body
Blood Alcohol Concentration Over Time
Gender Differences in Alcohol Absorption and Metabolism

- Women are generally more susceptible to the effects of alcohol and have a higher BAC than men do based on the following:
  - Generally smaller than men
  - Higher body fat percentage
  - Metabolize alcohol less efficiently

- As a result, women more vulnerable to health consequences such as:
  - Liver disease
  - Heart disease
  - Brain damage
<table>
<thead>
<tr>
<th>Blood Alcohol Concentration (grams/100 ml)</th>
<th>Physiological and Psychological Effects</th>
<th>Impaired Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01–0.05</td>
<td>Relaxation</td>
<td>Decreased alertness</td>
</tr>
<tr>
<td></td>
<td>Sense of well being</td>
<td>Impaired concentration</td>
</tr>
<tr>
<td></td>
<td>Loss of inhibition</td>
<td>Impaired judgment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impaired coordination (especially fine motor skills)</td>
</tr>
<tr>
<td>0.06–0.10</td>
<td>Euphoria</td>
<td>Slower reflexes</td>
</tr>
<tr>
<td></td>
<td>Blunted feelings</td>
<td>Impaired reasoning</td>
</tr>
<tr>
<td></td>
<td>Nausea</td>
<td>Impaired visual tracking</td>
</tr>
<tr>
<td></td>
<td>Sleepiness</td>
<td>Reduced depth perception</td>
</tr>
<tr>
<td>0.11–0.20</td>
<td>Emotional arousal</td>
<td>Slowed reaction time</td>
</tr>
<tr>
<td></td>
<td>Mood swings</td>
<td>Staggering gait</td>
</tr>
<tr>
<td></td>
<td>Anger or sadness</td>
<td>Slurred speech</td>
</tr>
<tr>
<td></td>
<td>Boisterousness</td>
<td>Impaired balance</td>
</tr>
<tr>
<td>0.21–0.30</td>
<td>Aggression</td>
<td>Lethargy</td>
</tr>
<tr>
<td></td>
<td>Reduced sensations</td>
<td>Increased pain threshold</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>Severe motor impairment</td>
</tr>
<tr>
<td></td>
<td>Stupor</td>
<td>Memory blackout</td>
</tr>
<tr>
<td>0.31–0.40</td>
<td>Unconsciousness</td>
<td>Loss of bladder control</td>
</tr>
<tr>
<td></td>
<td>Coma</td>
<td>Impaired temperature regulation</td>
</tr>
<tr>
<td></td>
<td>Death possible</td>
<td>Slowed breathing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Slowed heart rate</td>
</tr>
<tr>
<td>0.41 and greater</td>
<td>Death</td>
<td>Respiratory arrest</td>
</tr>
</tbody>
</table>

Effects of Alcohol on the Body

- *Acute alcohol intoxication* is a life-threatening blood alcohol concentration which can produce collapse of vital body functions.

- A *blackout* is a period of time during which a drinker is conscious but has partial or complete amnesia for events.

- *Hangovers* are a result of a common reaction to alcohol toxicity characterized by headache, stomach upset, thirst, and fatigue.
Effects of Alcohol on the Body

- Effects of mixing alcohol and energy drinks
  - Up to 28 percent of college students reportedly mix alcohol and energy drinks, despite evidence that doing so is dangerous
  - College students who mix alcohol and energy drinks are three times more likely to leave a bar drunk and four times more likely to drive drunk
- Other dangerous trends in alcohol consumption include vaporized alcohol and alcohol enemas
Medical Problems Associated with Alcohol Use

- *Fetal alcohol syndrome (FAS)*: set of birth defects associated with use of alcohol during pregnancy
- Heart disease and stroke
  - Alcoholic cardiomyopathy
  - Coronary heart disease
- Liver disease
  - Fatty liver: liver swells with fat globules
  - Alcoholic hepatitis: inflammation of the liver
  - Cirrhosis: scarring of the liver
Medical Problems Associated with Alcohol Use

- Alcohol is associated with several types of cancer, particularly cancers of the head and neck, cancers of the digestive tract, and breast cancer.
- Heavy alcohol consumption causes anatomical changes in the brain and directly damages brain cells.
- Recent studies suggest that alcohol abuse causes dysfunction in lung cells.
- Long-term heavy drinkers are at risk for weight loss and malnutrition.
- *Drunkorexia*: excessive alcohol consumption, excessive exercising, and disordered eating.
Effects of Alcohol on the Body

**Brain**
- Neurotransmitter function disrupted
- Slowed reaction time
- Impaired coordination, balance, judgment, thinking

**Ears**
- Decreased hearing

**Skin**
- Broken capillaries ("whiskey nose")

**Heart**
- Weakened heart muscle
- Enlarged heart
- Irregular heartbeat
- Elevated blood pressure
- Increased risk of stroke

**Breasts**
- Increased risk of cancer

**Liver**
- Fatty liver
- Alcoholic hepatitis
- Cirrhosis
- Increased risk of liver cancer

**Eyes**
- Decreased acute vision

**Nose**
- Decreased sense of smell

**Tongue**
- Decreased sense of taste

**Bones**
- Bone loss
- Increased risk of osteoporosis

**Digestive system**
- Increased risk of cancer of the mouth, larynx, esophagus, pancreas, colon
- Stomach inflammation, bleeding

**Reproductive system**
- Irregular menstrual cycle
- Risk of fetal alcohol syndrome
- Increased sexual dysfunction
- Testicular atrophy in men
- Reduced vaginal lubrication in women

© Getty Images
Social Problems Associated with Alcohol Use

- Reduction of inhibitions, which may lead to high-risk sexual activity and a lowered likelihood of practicing safe sex
- Violence, including robbery, assault, rape, domestic violence, and homicide
- Risk of injury
- Drunk driving
- Alcoholism
- Suicide risk
Another View: Health Benefits

- The *Dietary Guidelines for Americans* notes that moderate alcohol consumption can be beneficial
  - Anticlotting effect on the blood
  - Enhances body’s sensitivity to insulin
  - Stress reduction
  - Diuretic effect of high water content in beer
  - Increase in HDL

- In younger adults, alcohol appears to have fewer if any health benefits and is associated with more deaths, injuries, and accidents
Alcohol Misuse, Abuse, and Dependence

- **Problem drinking**: pattern of alcohol use that impairs the drinker’s life, causing difficulties for the drinker and for others
- **Alcohol abuse**: pattern of alcohol use that leads to distress or impairment, increases the risk of health and/or social problems, and continues despite awareness of effects
- **Alcohol dependence**: disorder characterized by a strong craving for alcohol, development of tolerance for alcohol, and withdrawal symptoms
- **Alcoholism**: primary chronic disease characterized by excessive, compulsive drinking
Treatment Options

- **Brief interventions**
  - Alcohol Skills Training Program; Brief Alcohol Screening and Intervention for College Students (BASICS); AlcoholEdu

- **Inpatient and outpatient treatment**
  - Residential facilities
    - Detoxification and withdrawal
    - Medications
    - Counseling

- **Self-help programs**
  - Support groups (AA, Al-Anon, Alateen, Adult Children of Alcoholics, others)
Treatment Options

- The harm reduction approach to treatment focuses on reducing the harm associated with drinking, both to the individual and to society
  - Controlled drinking, which emphasizes moderation rather than abstinence, is an example of harm reduction
- Public policies and laws aimed at harm reduction
  - Minimum drinking age laws
  - Drunk driving laws
  - Ankle bracelet breathalyzers
  - Restrictions on liquor sales and outlets
  - Taxes on alcohol
Developing a Behavior Change Plan

- Following a behavior change plan can assist you with reducing alcohol consumption
  - Record behavior patterns
  - Analyze your drinking diary
  - Establish goals
  - Implement your plan
  - Evaluate your results
Who Smokes?
Patterns of Tobacco Use

- 19 percent of the adult population in the United States are smokers, down from 42 percent in 1965
- 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
Who Smokes?
Patterns of Tobacco Use

- 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
- Smoking is more prevalent among the White population than among African Americans, Hispanics, or Asian Americans and Pacific Islanders
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; it is a poison and a psychoactive drug.
Tobacco Products

- Cigarettes
  - The most popular tobacco product
- Electronic cigarettes
- Hookahs
  - Potentially greater risk than cigarettes because of more puffs
- Cigars
  - Nicotine absorbed in mucus membranes of the mouth: higher risk for oral cancers
- Pipes
  - Pipe smoke has more toxins than cigarette smoke
Tobacco Products

- Smokeless tobacco
  - Snuff
  - Chewing tobacco
  - Snus
  - Use of spit tobacco is believed to cause about 10 to 15 percent of oral cancers

- Dissolvable tobacco products
  - Small pellets, sticks, or strips that consist of finely ground and pressed tobacco
  - Ingested orally like a breath mint
Why Do People Smoke?

- Nicotine is a highly addictive psychoactive drug
  - Some health experts believe it is the most addictive of all the psychoactive drugs
  - Increases in release of the neurotransmitter dopamine produce feelings of pleasure and a desire to repeat the experience

- Behavioral dependence
  - Many smokers have a harder time imagining their future life without cigarettes than they do dealing with the physiological symptoms of withdrawal
Why Do People Smoke?

- **Weight control**
  - Nicotine suppresses appetite and slightly increases basal metabolic rate
  - People who start smoking often lose weight, and continuing smokers gain weight less rapidly than nonsmokers
  - Weight control is one of the major reasons young women give for smoking

- **Tobacco marketing and advertising**
  - Because most smokers get hooked in adolescence, children and teenagers are prime targets of tobacco advertising
Short-Term Effects of Tobacco Use

- Nicotine effects can reach the brain within 7-10 seconds, producing stimulation and sedation.
- Smoke quickly affects 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

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

- **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.

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

- **Kidneys**: Nicotine inhibits production of urine.

- **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.

- **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.
Long-Term Effects of Tobacco Use

- Cardiovascular disease
- Cancer
- Chronic obstructive pulmonary disease
- Emphysema
- Chronic bronchitis
- Asthma
- Premature skin wrinkling
- Increased risk of 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 at risk for the following:
  - Problems with sexual function (impotence)
  - Fertility (motility and number of sperm)
Special Health Risks for Ethnic Minority Groups

- Mortality rates from several diseases associated with tobacco use, including cardiovascular disease, cancer, and SIDS, are higher for ethnic minority groups than for Whites.

- African American men and women are more likely to die from lung cancer, heart disease, and stroke than are members of other ethnic groups, despite lower rates of tobacco use.
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 nonsmokers
- Quitting increases quality of life
<table>
<thead>
<tr>
<th>Time</th>
<th>Health Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately</td>
<td>You stop polluting the air with secondhand smoke; the air around you is no longer dangerous to children and adults.</td>
</tr>
<tr>
<td>20 minutes</td>
<td>Blood pressure decreases; pulse rate decreases; temperature of hands and feet increases.</td>
</tr>
<tr>
<td>12 hours</td>
<td>Carbon monoxide level in blood drops; oxygen level in blood increases to normal.</td>
</tr>
<tr>
<td>24 hours</td>
<td>Chance of heart attack decreases.</td>
</tr>
<tr>
<td>48 hours</td>
<td>Nerve endings start to regrow; exercise gets easier; senses of smell and taste improve.</td>
</tr>
<tr>
<td>72 hours</td>
<td>Bronchial tubes relax, making breathing easier; lung capacity increases.</td>
</tr>
<tr>
<td>2–12 weeks</td>
<td>Circulation improves; lung functioning increases up to 30 percent.</td>
</tr>
<tr>
<td>1–9 months</td>
<td>Fewer coughs, colds, and flu episodes; fatigue and shortness of breath decrease; lung function continues to improve.</td>
</tr>
<tr>
<td>1 year</td>
<td>Risk of smoking-related heart attack is cut by half.</td>
</tr>
<tr>
<td>5 years</td>
<td>Risk of dying from heart disease and stroke approaches that of a nonsmoker; risk of oral and esophageal cancers is cut by half.</td>
</tr>
<tr>
<td>10 years</td>
<td>Risk of dying from lung cancer is cut by half.</td>
</tr>
<tr>
<td>10–15 years</td>
<td>Life expectancy reaches that of a person who never smoked.</td>
</tr>
</tbody>
</table>

Effects of Environmental Tobacco Smoke

- *Environmental tobacco smoke (ETS)*: smoke from other people’s tobacco products, also known as secondhand smoke or passive smoke
- Significant evidence indicates that inhaling ETS has serious health consequences
- In 2006, the U.S. surgeon general stated that there is no safe level of ETS exposure
- Infants and children are especially vulnerable to the effects of ETS
Treatment Programs and Medications to Quit Smoking

- **Treatment programs**
  - Of smokers who enter good treatment programs, 20-40% 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

- Develop a behavior change plan
  - Record and analyze your smoking patterns
  - Establish goals
  - Prepare to quit
  - Implement your plan
  - Prevent relapse
### Table 9.3
What to Expect When You Quit

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Reason</th>
<th>Duration</th>
<th>Relief</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irritability</td>
<td>Body craves nicotine.</td>
<td>2–4 weeks</td>
<td>Take walks, hot baths; use relaxation techniques.</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Nicotine is a stimulant.</td>
<td>2–4 weeks</td>
<td>Take naps; don’t push yourself.</td>
</tr>
<tr>
<td>Insomnia</td>
<td>Nicotine affects brain waves.</td>
<td>2–4 weeks</td>
<td>Avoid caffeine after 6:00 p.m.; use relaxation techniques.</td>
</tr>
<tr>
<td>Coughing, dry throat, nasal drip</td>
<td>Body is getting rid of excess mucus.</td>
<td>A few days</td>
<td>Drink fluids; try cough drops.</td>
</tr>
<tr>
<td>Poor concentration</td>
<td>Nicotine is a stimulant, boosts concentration.</td>
<td>1–2 weeks</td>
<td>Get enough sleep; exercise; eat well.</td>
</tr>
<tr>
<td>Tightness in chest</td>
<td>Muscles are tense from nicotine craving or sore from coughing.</td>
<td>A few days</td>
<td>Use relaxation techniques, especially deep breathing; take hot baths.</td>
</tr>
<tr>
<td>Constipation, gas, stomach pain</td>
<td>Intestinal movement decreases for brief time.</td>
<td>1–2 weeks</td>
<td>Drink fluids; add fiber to diet (fruits, vegetables, whole grains).</td>
</tr>
<tr>
<td>Hunger</td>
<td>Nicotine craving can feel like hunger.</td>
<td>Up to several weeks</td>
<td>Drink water or low-calorie drinks; have low-calorie snacks on hand.</td>
</tr>
<tr>
<td>Headaches</td>
<td>Brain is getting more oxygen.</td>
<td>1–2 weeks</td>
<td>Drink water; use relaxation techniques.</td>
</tr>
<tr>
<td>Craving for a cigarette</td>
<td>Withdrawal from nicotine.</td>
<td>Most acute first few days; can recur for months</td>
<td>Wait it out; distract yourself; exercise; use relaxation techniques.</td>
</tr>
</tbody>
</table>

Confronting the Tobacco Challenge

- Tobacco has been part of the economy of the country since colonial times
- It is a multibillion-dollar industry with tremendous lobbying power and a huge impact on the nation’s economic health
- Significant inroads have been made in confronting the challenge posed by tobacco in the U.S.
By 2003, thousands of local laws and ordinances were in place across the country, creating smoke-free indoor spaces.

Lawsuits and court settlements:
- The 1998 Master Settlement Agreement (MSA), in which the tobacco industry agreed to pay $206 billion to 46 states over a 25-year period.

Limiting access to tobacco:
- Raising cigarette taxes reduces demand
- Laws restricting sales to minors
- Restrictions on tobacco advertising
Confronting the Tobacco Challenge

- The Family Smoking Prevention and Tobacco Control Act of 2009 granted authority to the FDA to regulate tobacco
  - Larger and more explicit health warning labels required on tobacco product packaging successfully challenged by cigarette makers
  - “Light,” “low,” or “mild” on packaging prohibited
  - Cigarette machines only allowed in 18+ venues
  - Single cigarette sales prohibited
  - Free samples prohibited
  - Product tie-ins prohibited
Who Uses?
Patterns of Illicit Drug Use

- Rates of illicit drug use vary by age, gender, race and ethnicity, education, employment status, and geographical region
- Among Americans aged 12 or older, more than 47% report having used an illicit drug in their lifetime
- The most commonly used drug is marijuana
- There is also a substantial misuse of psychotherapeutics (prescription-type drugs)
Who Uses?
Patterns of Illicit Drug Use

- The number of college students who abuse prescription drugs increased dramatically between 1993 and 2005
  - Pain relievers (e.g., OxyContin, Vicodin, Percocet): use increased by 343%
  - Stimulants (e.g., Ritalin, Adderall): use increased by 93%
  - Tranquilizers (e.g., Xanax, Valium): use increased by 450%
  - Sedatives (e.g., Nembutal, Seconal): use increased by 225%
What Is a Drug?

- **Drug**: substance other than food that affects the structure or function of the body through its chemical action
  - *Psychoactive drugs* change brain chemistry and alter consciousness, perception, mood, thought (*intoxication*)
- Drug of abuse: medical drug used for nonmedical (recreational) purposes, or a drug that has no medical uses
- **Substance**: drug of abuse, a medication, or a toxin; the term is used interchangeably with *drug*
Types of Drugs

- Drugs are classified in several different ways
- *Legal drugs* include:
  - Medication prescribed by physicians
  - Over-the-counter (OTC) medications
  - Herbal remedies
- *Pharmaceutical drugs* are developed for medical purposes, whether over-the-counter or prescription
- *Illicit drugs* are unlawful to possess, manufacture, sell, or use
Drug Misuse and Abuse

- **Drug misuse**: use of prescription drugs for purposes other than those for which they were prescribed or in greater amounts than prescribed, or the use of nonprescription drugs or chemicals for purposes other than those intended by the manufacturer.

- **Drug abuse**: use of a substance in amounts, situations, or a manner such that it causes problems, or greatly increases the risk of problems, for the user or for others.
Substance use disorders is defined by the DSM-5 as a number of cognitive, behavioral, and physiological symptoms that persist even as the individual experiences a number of significant life-changing substance-related problems.

- DSM-5 does not separate substance use disorders and dependence.
Drug Misuse and Abuse

Many will continue to view substance use problems in terms of drug abuse, addition, dependence, withdrawal symptoms, and tolerance

- *Addiction* is the chronic relapsing brain disease characterized by compulsive drug seeking and use, despite harmful consequences
- *Tolerance* is reduced sensitivity to the effects of the drug
- Withdrawal symptoms are uncomfortable feelings when drug use stops
Routes of Administration

- **Oral**—most drugs are taken orally
- **Injection**
  - Involves a hypodermic syringe to deliver drug into the bloodstream by
    - Intravenous injection
    - Intramuscular injection
    - Subcutaneous injection
- **Inhalation**: smoking or huffing
- **Application to mucous membranes**
- **Application to skin**
<table>
<thead>
<tr>
<th>Route</th>
<th>Time to Reach Brain</th>
<th>Drug Example</th>
<th>Potential Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>7–10 seconds</td>
<td>Marijuana</td>
<td>Irritation of lungs</td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
<td>Crack cocaine</td>
<td></td>
</tr>
<tr>
<td>Huffing</td>
<td></td>
<td>Tobacco</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhalants</td>
<td></td>
</tr>
<tr>
<td>Injection</td>
<td>15–30 seconds</td>
<td>Heroin</td>
<td>Danger of overdose</td>
</tr>
<tr>
<td>Intravenous</td>
<td>3–5 minutes</td>
<td>Cocaine</td>
<td>Collapsed veins</td>
</tr>
<tr>
<td>Intramuscular</td>
<td>5–7 minutes</td>
<td>Methamphetamine</td>
<td>Infection at injection site</td>
</tr>
<tr>
<td>Subcutaneous</td>
<td></td>
<td></td>
<td>Blood infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transmission of HIV, hepatitis C, and other pathogens</td>
</tr>
<tr>
<td>Mucous membranes</td>
<td>3–15 minutes</td>
<td>Cocaine</td>
<td>Irritation or destruction of tissue</td>
</tr>
<tr>
<td>Snorting</td>
<td></td>
<td>Methamphetamine</td>
<td>Difficulty controlling dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heroin</td>
<td></td>
</tr>
<tr>
<td>Oral ingestion</td>
<td>20–30 minutes</td>
<td>Alcohol</td>
<td>Vomiting</td>
</tr>
<tr>
<td>Eating, drinking</td>
<td></td>
<td>Pills</td>
<td></td>
</tr>
<tr>
<td>Skin contact</td>
<td>1–7 days</td>
<td>Oils, ointments</td>
<td>Irritation of skin</td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td>Nicotine patch</td>
<td></td>
</tr>
<tr>
<td>Transdermal</td>
<td></td>
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</tr>
</tbody>
</table>
Factors Influencing the Effects of Drugs

- Characteristics of the drug
  - Chemical properties of the drug and its actions
- Characteristics of the person
  - Age
  - Gender
  - Body weight and mass
  - Physical condition
  - Mood
  - Experience with the drug
  - Expectations
- Characteristics of the situation
  - Environmental experience
Effects of Drugs on the Brain

- Many addictive drugs act on neurons in three brain structures:
  - The ventral tegmental area (VTA) in the midbrain
  - Nucleus accumbens
  - Prefrontal cortex
- Neurons in these structures form a pathway referred to as the *pleasure and reward circuit*
- Addictive psychoactive drugs activate and cause surge in levels of dopamine and associated feelings of pleasure
Effects of Drugs on the Brain

- All or nearly all addictive drugs operate via the pleasure and reward circuit
- Some also operate via additional mechanisms, i.e., the opioids
  - Similar structure to endorphins, which block pain when the body undergoes stress
- Individuals trying to recover from addiction must overcome:
  - Altered brain chemistry
  - Drug-related memories
  - Impaired impulse control
Drugs of Abuse

- Drugs of abuse are usually classified as
  - Stimulants
  - Depressants
  - Opioids
  - Hallucinogens
  - Inhalants
  - Cannabinoids
Central Nervous System Stimulants

- Drugs that speed up activity in the brain and sympathetic nervous system
- Effects similar to the “fight-or-flight” reaction
- May stimulate movement, fidgeting, and talking, and produce intense feelings of euphoria and create a sense of well-being

Examples:
- Cocaine
- Amphetamines
- MDMA (Ecstasy)
- Bath salts
- Caffeine
Central Nervous System
Depressants

- Slow down activity in the brain and sympathetic nervous system
- Can be deadly if misused, especially when mixed with alcohol
- CNS depressants carry a high risk of dependence
- Examples:
  - Barbiturates and hypnotics
  - Anti-anxiety drugs (benzodiazepines)
  - Rohypnol
  - GHB (gamma hydroxybutyrate)
Opioids

- Natural and synthetic derivatives of opium
- Currently prescribed as pain relievers, anesthetics, antidiarrheal agents, and cough suppressants
- Produce feelings of pleasure and block the sensation of pain
- Examples:
  - Morphine
  - Heroin
  - Synthetic opioids (OxyContin, Vicodin, Demerol, Dilaudid, Percocet, Percodan)
Opioids

- With low doses opioid users experience:
  - Euphoria
  - Drowsiness
  - Constriction of the pupils
  - Slurred speech
  - Slowed movement
  - Impaired coordination, attention, and memory

- At high dosage users can experience depressed respiration, loss of consciousness, coma, and death

- Opioids have a high potential for dependence
Hallucinogens

- Also known as *psychedelics*
- Alter perceptions and thinking in characteristic ways
- Intensify and distort visual and auditory perceptions and produce hallucinations
- Examples:
  - LSD (lysergic acid diethylamide)
  - PCP (phencyclidine)
  - Peyote
Inhalants

- Breathable chemical vapors that alter consciousness, producing a state that resembles drunkenness
- Active ingredients are all powerful toxins and carcinogens
- The most significant negative effect for chronic users is widespread and long-lasting brain damage
- Examples:
  - Paint thinner, gasoline, glue, and spray-can propellant
Marijuana is the most widely used illicit drug in the United States

- Derived from the hemp plant, *Cannabis sativa*
- Active ingredient is delta-9-tetrahydrocannabinol (THC)
- Use produces mild euphoria, sedation, lethargy, short-term memory impairment, increase in appetite, distorted sensory perceptions, distorted sense of time, impaired coordination, and an increase in heart rate

Researchers have found that THC has a variety of effects on the brain, perhaps accounting for some impairments in problem solving and decision making.
Emerging Drugs of Abuse

Newest set of drugs being experimented with include:

- “Krokodil” - synthetic form of heroin
- “N-Bomb” - synthetic hallucinogen more powerful than LSD
- “Syrup”, “Purple Drank”, “Sizzurp”, and “Lean” - prescription-strength cough syrup mixed with soda
- “Devils Breath”—hypnotic effects; can be used to take advantage of people
Approaches to the Drug Problem

- Supply reduction strategies:
  - *Interdiction*: interception of drugs before they get into the country
  - Pressure on supplying countries to suppress production and exportation
  - Prevent domestic production and selling via law enforcement
Approaches to the Drug Problem

Demand reduction strategies:

- Incarceration for drug-related crimes
  - Half the people in U.S. prisons meet the diagnostic standards for substance use disorders
  - Only 7-17% who need drug treatment receive it

Prevention strategies

- Primary prevention: designed to reach and educate entire population
- Secondary prevention: focus on subgroups that are at greatest risk for use or abuse
- Tertiary prevention: target at-risk individuals rather than groups
Approaches to the Drug Problem

- Strategies on college campuses include *environmental management*
  - Send clear messages that drug use not acceptable
  - Change climate of drug tolerance on campus
  - Engage parents
  - Provide alternative activities
  - Involve students in planning and prevention

- Implementation of harm-reduction strategies
  - Provide containers for needle and syringe disposal
  - Provide condoms
  - Make naloxone (Narcan) available in case of opioid overdoses
Approaches to the Drug Problem

- Demand reduction strategies:
  - Drug treatment programs
    - Narcotics Anonymous (NA)
    - Treatment is more successful when the program lasts at least three months
Approaches to the Drug Problem

- Harm reduction strategies:
  - Focus on helping addicts reduce the harm associated with drug use
    - Needle exchange programs
    - Drug substitute programs (ex: methadone instead of heroin)
    - Controlled availability
    - Medicalization
    - Decriminalization