Chapter Ten

Alcohol
Patterns of Alcohol Use

• About 65% of American adults drink at least occasionally

• 35% of the adult U.S. population are non-drinkers (abstainers)

• Of the two-thirds who do consume alcohol, 28% are at-risk drinkers (18% overall)

• Low-risk drinkers are men who drink no more than 14 drinks per week (2/day) or women who drink no more than 7 drinks per week (1/day)
Drinking Patterns and Statistics

- Alcohol consumption is highest between 18 and 25 for Whites and between 26 and 30 for Hispanics and African Americans.

- Women drink less than men and start drinking later in life.

- 100,000 deaths and 300,000 disfigured people yearly

- 20 million alcoholics or alcohol abusers in US
What Causes Drinking Problems?

• **Psychosocial Factors**
  - Family history of alcoholism
  - Family dysfunction in general

• **Socio-cultural/Environmental Factors**
  - Cultural attitudes
  - Economic factors
  - Laws (drinking age, sale of alcoholic beverages)
  - Stresses
How much is One Drink?

- Beer: 12 oz.
- Wine: 5 oz.
- Shot: 1.5 oz.
- Mixed drink: 1.5 oz.
Binge Drinking

- Consumption of 5 or more drinks in a row for a man or 4 or more drinks in a row for a woman
- A Harvard School of Public Health College Alcohol Study determined that about half of all college students were binge drinkers
- College students under the age of 21 consume 48% of all alcohol consumed by college students*

*Is legal drinking age of 21 effective in preventing irresponsible alcohol consumption?
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.
Effects of Alcohol on the Body

• Alcohol is quickly distributed to all the cells of the body (total volume of blood is circulated in 1 minute)

• Once it reaches the brain, crosses BBB, alcohol alters brain chemistry and neurotransmitter functions; inhibits glucose transport across BBB to the brain cells

• Alcohol is a central nervous system depressant that impairs thinking, balance, and motor coordination
Absorption v. Metabolism

- Absorption into bloodstream
  - 20% absorbed through stomach (80% through intestines)
  - Carbonation speeds absorption
  - Food already in the stomach slows absorption

- Metabolism (breakdown/elimination of alcohol)
  - Mainly in the Liver (90%)
  - Some in the Stomach
  - ~2-10% is not metabolized (broken down) at all but leaves the body thru skin, urine, breath
  - The liver allows conversion of alcohol to acetaldehyde
Gender Differences in Alcohol Absorption and Metabolism

- Women generally have a higher BAC than men based on the following:
  - Generally smaller than men
  - Higher body fat percentage
  - Metabolize alcohol less efficiently
- These differences make women more vulnerable to health consequences, such as:
  - Liver Disease
  - Heart Disease
  - Brain Damage
  - Breast Cancer
Factors Affecting Alcohol Absorption

- Food in the stomach
- Gender
- Age
- Body fat
- Drug interaction
- Cigarette smoke
- Mood and physical condition
- Alcohol concentration
- Carbonation
- Tolerance
Blood Alcohol Concentration (BAC)

- Measure of intoxication
- Individual factors affect BAC
  - Lower body weight = higher BAC
  - Higher body fat = higher BAC
  - Stomach enzyme for metabolizing (breaking down) alcohol is 3-4x more active in men than in women
- Lower Rate of Absorption = Lower BAC
- Higher Rate of Metabolism = Lower BAC
Alcohol Proof Value

• Concentration of pure alcohol in a drink
  • Proof = 2 x % alcohol concentration
  • 100 proof = 50% alcohol concentration
### Drink Size

1 drink = one-half ounce pure alcohol

<table>
<thead>
<tr>
<th>Drink</th>
<th>Size</th>
<th>Proof</th>
<th>Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beer</td>
<td>12 oz.</td>
<td>10</td>
<td>.60 oz</td>
</tr>
<tr>
<td>Wine</td>
<td>5 oz.</td>
<td>20</td>
<td>.50 oz</td>
</tr>
<tr>
<td>Liquor</td>
<td>1.5 oz.</td>
<td>80</td>
<td>.60 oz</td>
</tr>
</tbody>
</table>
## Stages of Acute Alcoholic Influence/Intoxication

### Table 10.1  Stages of Acute Alcohol Influence/Intoxication

<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>
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<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 & Health Risks of Alcohol Use

- **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
Possible Short-Term Results of Alcohol Consumption

• *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
Some Consequences of College Drinking

Binge drinking can have serious physical, academic, social, and legal 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 use drinking for a variety of reasons:

- To ease social inhibitions
- To fit in with peers
- Imitate role models
- Reduce stress
- Soothe negative emotions
- Cope with academic pressure
- Mistaken belief of increased sexual arousal and performance
College Drinking Prevention

Addressing the Problem of College Drinking

- 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
Social Problems Associated with Alcohol Use

- Reduces 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
Health Benefits of Alcohol

• The Dietary Guidelines for Americans notes that the lowest rates of death occur among people who consume one to two drinks a day
  • Moderate consumption may increase high-density lipoproteins (HDL, the “good cholesterol”)
  • Anti-clotting effect on the blood
  • Reduces stress

• In younger adults, alcohol use…
  • Appears to have fewer, if any, health benefits
  • Associated with more deaths, injuries, and accidents
Alcohol Misuse

- **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 abuse 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
  • Primary care physician

• Inpatient Treatment
  • Residential facilities
    • Detoxification and withdrawal
    • Medications
    • Counseling

• Outpatient Treatment
  • Counseling

• Self-Help Programs
  • Support groups (AA, Al-Anon, Alateen, Adult Children of Alcoholics)