

Chapter 10

Alcohol Misuse and Alcoholism

The Nature of Alcohol


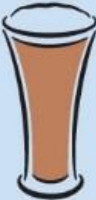





- Alcoholic beverages
 - Ethyl alcohol—the only alcohol that can be consumed
- Common alcoholic beverages
 - Beer: 3–6% alcohol by volume
 - Ales and malt liquors: 6–8% alcohol by volume
 - Wines: 9–14% alcohol by volume
 - Fortified wine (sherry, port, Madeira), 20% alcohol by volume
 - Hard liquors 35–50% alcohol by volume
- Proof value: two times the percentage concentration

The Nature of Alcohol

- Standard drink versus actual servings
 - Standard drink: amount of a beverage that contains 0.6 ounces of alcohol
 - Typical serving is usually bigger than a standard drink
- Caloric content
 - 7calories per gram
 - 1 drink, 14–17 grams or 100–120 calories

One Drink of Various Alcoholic Beverages

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Beer or cooler	Malt liquor	Table wine	Fortified wine	Cordial, liqueur, or aperitif	Brandy	Spirits
						
~5% alcohol	~7% alcohol	~12% alcohol	~17% alcohol	~24% alcohol	~40% alcohol	~40% alcohol
12 oz.	8.5 oz.	5 oz.	3.5 oz.	2.5 oz.	1.5 oz.	1.5 oz.

Serving Sizes versus Standard Drinks of Common Alcoholic Beverages

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Table 10.1

Serving Sizes versus Standard Drinks of Common Alcoholic Beverages

BEVERAGE	SERVING/ CONTAINER SIZE	NO. OF STANDARD DRINKS
Beer	12 oz.	1
	16 oz.	1.3
	22 oz.	2
	40 oz.	3.3
Malt liquor	12 oz.	1.5
	16 oz.	2
	22 oz.	2.5
	40 oz.	4.5
Table wine	750 mL (25 oz.) bottle	5
Hard liquor (80 proof)	1 mixed drink	1 or more
	1 pint (16 oz.) bottle	11
	1 fifth (25 oz.) bottle	17
	1.75 L (59 oz.) bottle	39

SOURCE: U.S. Department of Health and Human Services. 2007. *The Surgeon General's Call to Action to Prevent and Reduce Underage Drinking*. Washington, DC: HHS, Office of the Surgeon General.

Absorption

- When alcohol is absorbed
 - 20% is rapidly absorbed from the stomach
 - 75% is absorbed in the upper small intestine
 - Remainder enters blood stream along the gastrointestinal tract (GI)
- Absorption affected by varied factors
 - Carbonation/artificial sweeteners increase the absorption rate
 - Food in the stomach slows the absorption
 - Drink of high alcohol concentration slows absorption

Metabolism and Excretion

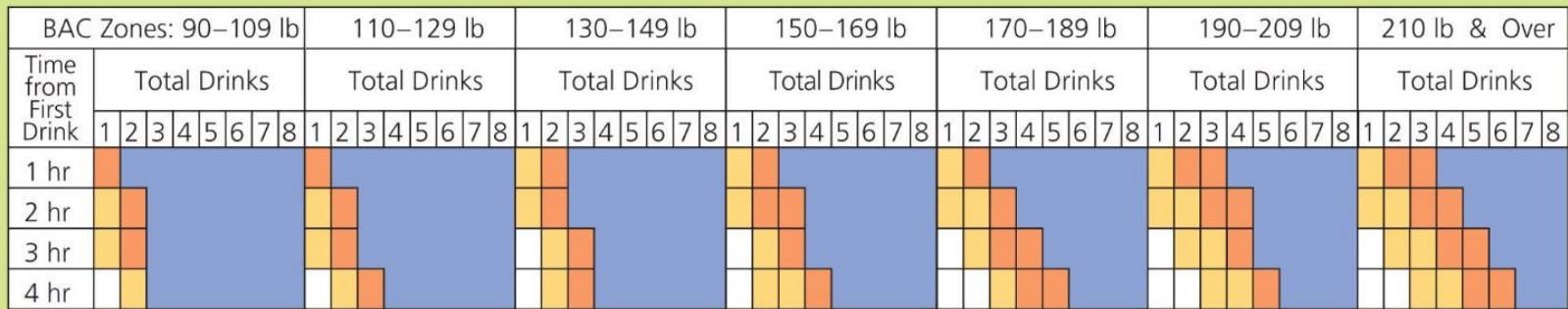
- Transported via the circulatory system
- Easily moves through most biological membranes
- The main site for metabolism is the liver
- 2–10% of ingested alcohol is not metabolized
 - Excreted by lungs, kidneys, sweat glands
- Readily enters the brain
 - Changes the ability of brain cells to receive messages, and disrupts networks within the brain
 - With heavy use, loss of brain function and changes in brain structure

Alcohol Intake and Blood Alcohol Concentration

- Blood alcohol concentration(BAC)
 - Ratio of alcohol in a person's blood by weight
 - Affected by body weight, percentage of body fat, sex
 - Also depends on the balance of alcohol absorbed and rate of metabolism
- Varies among individuals
 - Genetic factors
 - Drinking behavior
- *Not* affected by exercise, breathing deeply, eating, drinking coffee, taking other drugs, or sleep

Approximate Blood Alcohol Concentration and Body Weight

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(0.00%) Not impaired
 (0.05–0.07%) Usually impaired
 (0.01–0.04%) Sometimes impaired
 (0.08% and up) Always impaired

Alcohol and Health

- Effects depend on the individual, the circumstances, and the amount of alcohol consumed
 - BAC is a primary factor
 - Low concentrations, 0.03–0.05%: lightheadedness, relaxation, release of inhibitions
 - Higher concentrations, 0.1–0.2%: negative effects: interference with motor coordination, verbal performance, intellectual functions
 - Concentrations of 0.35% and higher: coma or fatality
 - Many other physical effects, including flushing, reduced testosterone levels, sleepiness

Alcohol and Health

- Alcohol hangover
- Alcohol poisoning
 - BAC can rise during unconsciousness
- Using alcohol with other drugs
 - New concerning trend: caffeinated alcoholic beverages
- Alcohol-related injuries and violence
- Alcohol and aggression
 - Contributes to 50% of all murders, assaults, and rapes

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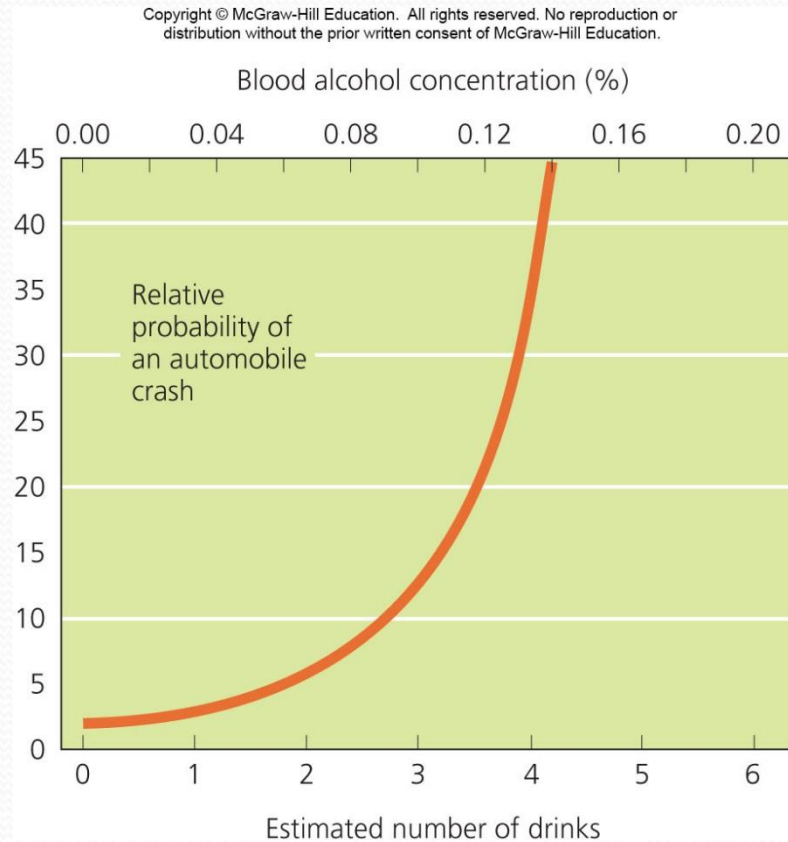
Alcohol and Health

- Alcohol and sexual decision making
 - Unplanned and unprotected sex becomes more likely
 - There is increased risk of rape and other forms of nonconsensual sex

Drinking and Driving

- In 2009, close to a third of all traffic fatalities involved drivers with a BAC of 0.08% or higher
 - Each year, 275,000 people are injured in alcohol-related car crashes
- Any amount of alcohol impairs the ability to drive
- Dose-response function: higher doses of alcohol are associated with a much greater probability of a crash
- Legal consequences
- Appoint a designated driver
- Be alert to the erratic driving of an impaired driver

The Dose-Response Relationship between BAC and Automobile Crashes



The Long-Term Effects of Chronic Misuse

- The digestive system
 - Functioning of the liver can be altered
 - “Fatty liver”; alcoholic hepatitis; cirrhosis
 - Risk of cirrhosis depends on genetics and the amount of alcohol consumed over time
 - Signs of cirrhosis: jaundice; accumulation of fluid in the abdomen and lower extremities
 - Inflamed pancreas
 - Bleeding in the gastrointestinal tract

The Long-Term Effects of Chronic Misuse

- The cardiovascular system
 - Moderate doses may reduce the risk of heart disease
 - Higher doses elevate blood pressure
 - May weaken the heart muscle (cardiac myopathy)
 - “Holiday heart”—abnormal heart rhythm after binge drinking

The Long-Term Effects of Chronic Misuse

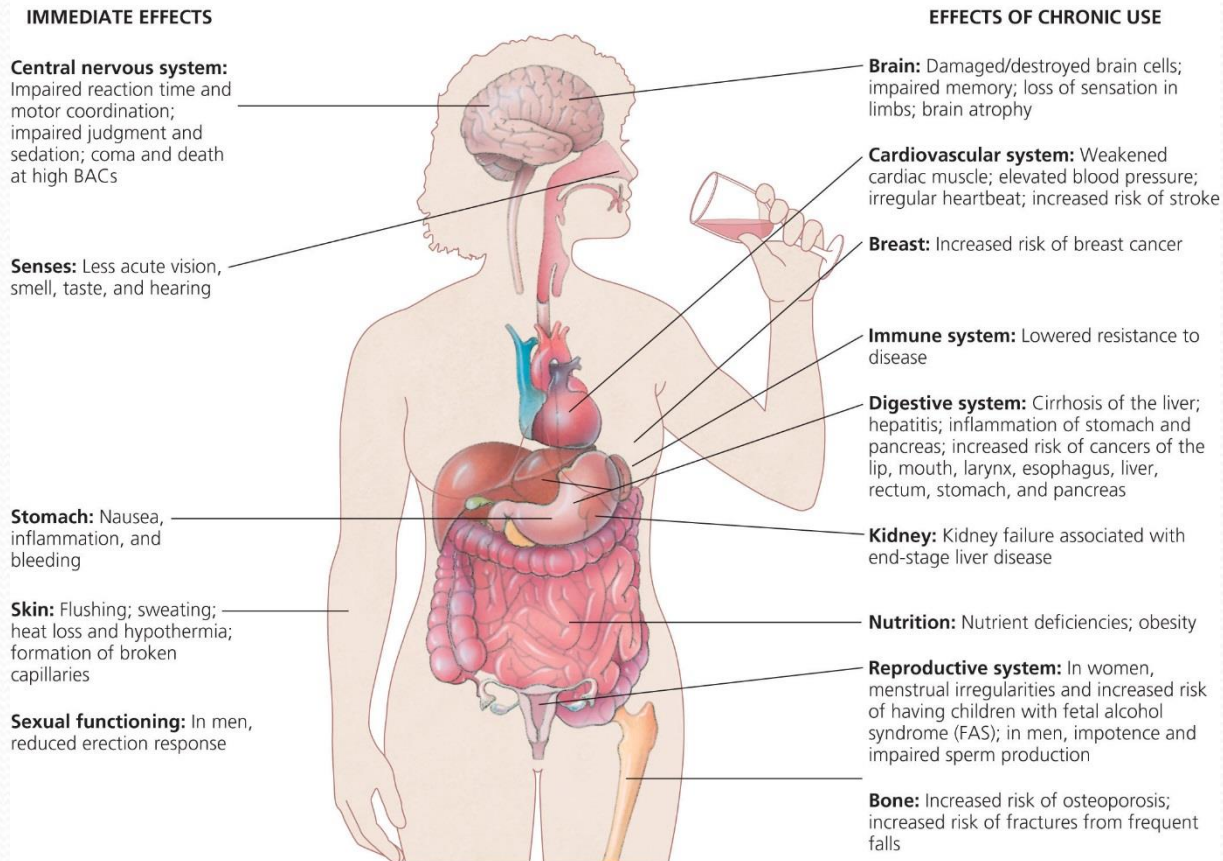
- Cancer
 - Increased risk for mouth, throat, larynx, and esophagus
 - 5–6 total drinks day increases risk by a factor of 50
 - Responsible for the most common form of liver cancer
 - Breast cancer
 - Even a small amount of alcohol could increase risk

The Long-Term Effects of Chronic Misuse

- Brain damage
 - Brain shrinkage
 - Cognitive impairments
- Mortality
 - Alcoholics' average life expectancy is about 15 years less than nonalcoholics

The Immediate and Long-Term Effects of Alcohol Misuse

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Alcohol Use during Pregnancy

- No safe level of alcohol consumption during pregnancy
- Spontaneous abortion (miscarriage) in early pregnancy

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Alcohol Use during Pregnancy

- Fetal alcohol spectrum disorder (FASD)
 - Fetal alcohol syndrome (FAS)
 - Cause of lifelong disability
 - Alcohol-related neurodevelopment disorder (ARND)
 - Children appear physically normal but often have significant learning and behavior disorders
- Alcohol consumed by a nursing mother quickly enters her milk

Possible Health Benefits of Alcohol

- Light to moderate drinkers live longer than abstainers or heavy drinkers
 - No more than 1 drink per day for women, 2 drinks per day for men
- Risks and benefits vary with age
 - 35 and younger, odds of dying increase in proportion to the amount of alcohol consumed
- Lower rates of coronary heart disease (CHD)
 - Raises blood levels of HDL

Excessive Use of Alcohol

- Alcoholic use disorder
 - Two criteria indicate at least a mild disorder; more than four—alcoholism
 - Criteria include:
 - Alcohol often consumed in large amounts over a long period
 - Unsuccessful efforts to control alcohol use
 - Excessive time spent in using alcohol or recovering from its effects
 - A strong desire or craving to use alcohol

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Excessive Use of Alcohol

- Alcoholic use disorder criteria (continued)
 - Persistent alcohol use, causing a failure to fulfill obligations at work, school, or home
 - Continued alcohol use despite recurrent physical or psychological problems caused by the effects of alcohol
 - Important social or recreational activities reduced because of alcohol use
 - Persistent alcohol use in situations that are physically risky
 - A need for increased amounts of alcohol to achieve a desired effect (increased tolerance)
 - Symptoms of withdrawal, such as sweating, increased pulse rate, hand tremor, insomnia, nausea, and anxiety

Statistics on Alcohol Use

- CDC estimates that about 60% of Americans 18 and older drink alcohol routinely or infrequently
 - 15% are former drinkers
 - 25% are lifetime abstainers
- In 2012, almost 7% of Americans were classified as heavy alcohol users
- Excessive alcohol use causes 80,000 deaths a year
 - Third leading lifestyle-related cause of death

Alcohol Use Disorder: From Mild to Extreme

- Alcohol misuse is recurrent alcohol use that has negative consequences
 - Drinking patterns that result in academic, professional, interpersonal, or legal difficulties
- Severe alcohol use disorder or alcoholism: more extensive problems, involving tolerance and withdrawal

Alcohol Use Disorder: From Mild to Extreme

- Warning signs
 - Drinking alone
 - Using deliberately and repeatedly to get through difficult situations
 - Using alcohol to “self-medicate”
 - Feeling uncomfortable on certain occasions when alcohol is not available
 - Escalating consumption
 - Consuming alcohol in risky situations
 - Getting drunk regularly or more frequently than in the past
 - Drinking in the morning

Binge Drinking

- Pattern of rapid, periodic drinking that brings a person's BAC up to 0.08% or higher
 - Within 2 hours, 5 or fewer drinks for men, 4 for women
- Most binge drinkers are not alcohol dependent
- Huge health risks and dangers
 - Binge drinking profoundly affects students' lives
 - More likely to engage in unplanned or unprotected sex
 - Cause of academic and social problems

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The Effects of Binge Drinking on College Students

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VITAL STATISTICS

Table 10.2

The Effects of Binge Drinking on College Students

ALCOHOL-RELATED PROBLEM	PERCENTAGE OF STUDENTS EXPERIENCING PROBLEMS	
	NON-BINGE DRINKERS	FREQUENT BINGE DRINKERS
Drove after drinking alcohol	18	58
Did something they regretted	17	62
Argued with friends	10	43
Engaged in unplanned sex	9	41
Missed a class	9	60
Got behind in schoolwork	9	42
Had unprotected sex	4	21
Got hurt or injured	4	28
Got into trouble with police	2	14
Had five or more of these problems since school year began	4	48

SOURCE: Wechsler, H., and B. Wuethrich. 2003. *Dying to Drink: Confronting Binge Drinking on College Campuses*, reprint ed. Emmaus, PA: Rodale.

Alcoholism

- Common patterns of excessive alcohol misuse
 - Regular daily intake of large amounts
 - Regular heavy drinking limited to weekends
 - Long periods of sobriety interspersed with binges of daily heavy drinking lasting for weeks or months
 - Heavy drinking limited to periods of stress
- Health effects
 - Tolerance, withdrawal
 - Seizure, confusion, hallucination; the DTs (delirium tremens)
 - Nutritional deficiencies; blackouts

Alcoholism

- Social and psychological effects
 - More serious problems than all other drugs combined
 - Alcoholics often also suffer from mental disorders
- Exact causes of alcoholism are unknown
 - Genetics: risk from genes may be as high as 50–60%
 - Personality disorders
 - Social and environmental factors
 - Psychological features
 - Denial
 - Rationalization

Treatment

- Most alcoholics require a treatment program in order to stop drinking
- No one program works for everyone
 - Alcoholics Anonymous
 - 12-step program
 - Mainstay of treatment for most
 - Rational Recovery and Women for Sobriety
 - Avoid emphasis on higher spiritual powers
 - Moderation Management
 - Al-Anon and Alateen
 - Employee assistance; inpatient hospital rehabilitation

Treatment

- Pharmacological treatments
 - Disulfiram (Antabuse) inhibits the metabolic breakdown
 - Naltrexone (ReVia, Depade) reduces the craving for alcohol and decreases its pleasant effects
 - Injectable naltrexone (Vivtrol)—a single monthly shot
 - Acamprosate (Campral) acts on brain pathways related to alcohol abuse
- Depression/anxiety drugs for those who need them can improve mental health and drinking behavior

Gender and Ethnic Differences

• Men

- More likely to drink, misuse, and develop an alcohol use disorder
- Excessive drinking usually begins in teens or 20s
- Account for majority of alcohol-related deaths
- Stereotypical gender roles and ideas regarding masculinity and drinking behavior are factors

• Women

- Women get intoxicated faster and feel effects of chronic drinking sooner
- Tend to become alcoholic at later ages
- Develop medical complications more often
- Greater biological risk

Gender and Ethnic Differences

- African Americans

- Drink less alcohol than most other groups
- Disproportionately high levels of alcohol-related medical problems and violence

- Latinos

- Drinking patterns vary depending on cultural background
- Treating family as a unit is an important part of treatment

- Asian Americans

- Lower than average rates of alcohol misuse
- Genetically based physiological aversion to alcohol

- Native Americans and Native Alaskans

- Alcohol misuse is the most widespread and severe health problem

Users and Abusers of Alcohol in the United States by Demographic Characteristics: 2010

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VITAL STATISTICS

Table 10.3

Users and Abusers of Alcohol in the United States by Demographic Characteristics: 2010

	PAST YEAR PREVALENCE (PERCENTAGE)	
	ALCOHOL USE	ALCOHOL ABUSE OR DEPENDENCE
Gender		
Male	69.4	9.5
Female	63.5	4.7
Ethnicity		
White	70.8	7.4
Black or African American	57.8	5.7
American Indian and Alaska Native	51.2	14.0
Native Hawaiian/Pacific Islander	N/A*	5.0
Asian American	55.6	3.2
Hispanic or Latino	58.8	7.6
Two or more races	62.8	7.4
Total Population	66.4	7.0

*N/A = Not available

SOURCE: Substance Abuse and Mental Health Services Administration. 2011. *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Rockville, MD: SAMHSA.

Helping Someone with an Alcohol Problem

- Make sure you are not enabling someone to continue using alcohol excessive
- An important step is honest labeling
- Guide him or her to the appropriate help
- Don't underestimate the power of families to help

Drinking Behavior and Responsibility

- Examine your drinking behavior
 - CAGE screening test
- Drink moderately and responsibly
 - Drink slowly
 - Space your drinks
 - Eat before and while drinking
 - Know your limits and your drinks

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Promote Responsible Drinking

- Encourage responsible attitudes
- Be a responsible host
- Hold the drinker responsible
- Take community action