

### LEADERSHIP EDUCATION AND TRAINING (LET 2)

With material selected from:

Health: Skills for Wellness, Third Edition by B.E. Pruitt, Ed.D., Kathy Teer Crumpler, M.P.H., and Deborah Prothrow-Stith, M.D.

World Geography: Building a Global Perspective, Second Edition by Thomas J. Baerwald and Celeste Fraser

CUSTOM EDITION FOR ARMY JROTC
A Character and Leadership Development Program



Cover images courtesy of Army JROTC.

#### Excerpts taken from:

Health: Skills for Wellness, Third Edition by B.E. (Buzz) Pruitt, Ed.D., Kathy Teer Crumpler, M.P.H., and Deborah Prothrow-Stith, M.D. Copyright © 2001 by Prentice-Hall, Inc. A Pearson Education Company Upper Saddle River, New Jersey 07458

World Geography: Building a Global Perspective, Second Edition by Thomas J. Baerwald and Celeste Fraser Copyright © 2002 by Prentice-Hall, Inc.

Copyright © 2005, 2002 by Pearson Custom Publishing All rights reserved.

This copyright covers material written expressly for this volume by the editor/s as well as the compilation itself. It does not cover the individual selections herein that first appeared elsewhere. Permission to reprint these has been obtained by Pearson Custom Publishing for this edition only. Further reproduction by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system, must be arranged with the individual copyright holders noted.

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

ISBN 0-536-85201-4

2004420243

DG/JS

Please visit our web site at www.pearsoncustom.com



# **Brief Contents**

unit 4 W	eliness, Fitness, ana First A	aia 1
Chapter 1	Achieving a Healthy Lifestyle	2
	First Aid for Emergency and ergency Situations	22
Chapter 3	Drug Awareness	96
Unit 5 Ge Earth S Chapter 1	-	139 140
_	tizenship in American and Government	149
Chapter 1 Citizensi	You the People— hip skills	150

	Foundations of the	702
America	n Political System	193
Chapter 3	Creating the Constitution	266
Chapter 6	The Bill of Rights	<i>30</i> 4
Chapter 7 Democra	Citizen Roles in American acy	324
Appendix Learnii	Mandatory Core Service	355
	Making a Difference with Learning	356
Index		377

# Table of Contents

Unit 4	Wellness, Fitness, and First Ai	d 1
Chapter	1 Achieving a Healthy Lifestyle	2
Lesson 3 Lesson 4		3 10
•	2 First Aid for Emergency and Emergency Situations	22
Lesson 1	The Need for First Aid/Your Response	23
Lesson 2	The First Life-Saving Steps	<b>30</b>
Lesson 3	Controlling Bleeding	<b>39</b>
Lesson 4	Treating for Shock and Immobilizing	46
Fractu	ires	
Lesson 5	First Aid for Burns	<b>54</b>
Lesson 6	First Aid for Poisons, Wounds,	
and B	ruises	64
Lesson 7	Heat Injuries	<b>72</b>
Lesson 8	Cold Weather Injuries	77
Lesson 9	Rites, Stings, and Poisonous Hazards	86

Chapter	3 Drug Awareness	96
	Use and Effects of Drugs, Alcohol, ibstances Critical Decisions about Substances	97 122
Unit 5	Geography and Earth Science	139
Chapter	1 Map Skills	140
Lesson 2	Introduction to Maps	141
Unit 6	Citizenship in American Histo	ry
and (	Government	149
-	1 You the People— enship Skills	150
Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5	Small Group Meetings	151 156 168 180 186
-	2 Foundations of the American cal System	193
	Our Natural Rights Developing Republican Government British Origins of American	194 210
Lesson 4	tutionalism	226 239
Lesson 5	State Constitutions	256

Chapter 3 Creating the Constitution	266
Lesson 1 Articles of Confederation 1781	267
Lesson 2 Creating Our Constitution	277
Lesson 3 Balancing the Power	288
Chapter 6 The Bill of Rights	<i>304</i>
Lesson 6 Protection of Rights Within the	
Judicial System	305
Lesson 7 Military Justice System	314
Chapter 7 Citizen Roles in	
American Democracy	<i>324</i>
Lesson 1 Roles of Citizens	325
Lesson 2 New Citizenship and	
Constitutional Issues	337
Lesson 3 Constitutionalism and	
Other Countries	347
Appendix Mandatory Core Service	
Learning	<i>355</i>
Chapter 8 Making a Difference with	
Service Learning	356
Lesson 1 Orientation to Service Learning	357
<b>Lesson 2</b> Plan and Train for Your Exploratory	
Project	363
Lesson 3 Project Reflection and Integration	369
Index	377

# Wellness, Fitness, and First Aid

# Unit 4

# Achieving a Healthy Lifestyle

# Lesson 3

## You Are What You Eat



#### **Key Terms**

calories
carbohydrates
deficient
diabetes
fats
fiber
metabolism
minerals
nutrients
osteoporosis
protein
stimulant
vitamins

#### What You Will Learn to Do

• Evaluate how diet impacts life

#### Linked Core Abilities

• Take responsibility for your actions and choices

#### Skills and Knowledge You Will Gain along the Way

- Explain how calories consumed verses calories used affects body weight
- Identify the daily-required food and portions
- Identify sources and benefits of fiber in diet
- Describe the importance of water

**Key Note Term** 

nutrients - sub-

stances found in food that nourish

deficient - having

too little of some-

thing, such as a nutrient in the body.

**fats** – nutrients made up of fatty acids that are insolu-

ble in water and

the body.

provide energy to

the body.

- Describe the possible effects of a diet high in fat and cholesterol
- Explain why salt, sugar, and caffeine should be used in moderation
- Define key words contained in this lesson

#### Introduction

A healthy lifestyle includes good nutrition as well as exercise. You need to eat well to maintain an exercise program. After all, just as a car will not run without fuel, your body will not work properly without the right **nutrients**. Eating a balanced diet also helps you maintain proper weight and lowers your risk of disease. This lesson explains the importance of a proper diet to your health.

Americans live in a fast-paced environment and frequently eat on the run. Eating on the run too often, however, may affect your nutrition and weight. You can end up consuming too many **fats** and too few vegetables and fruit, leaving you overweight and/or **deficient** in certain nutrients. Learning to eat balanced meals, even on the run, contributes to your overall well-being by:

- helping to maintain proper weight
- providing energy for physical activity
- supplying nutrients for good health

#### Note

Although too many fats can be bad for you, your body needs a certain amount of fat from the foods you eat. Many necessary vitamins are fat-soluable only, and without fat, these vitamins cannot be absorbed.

#### **Key Note Term**

calories – the amount of energy it takes to raise the temperature of one kilogram of water one degree Celsius; a measurement of energy.

metabolism – the chemical process by which the body produces energy and maintains vital functions.

#### **Balancing Calories**

You must eat to fuel your body. The more active you are, the more fuel your body requires. Even if you remain very still, your body uses a certain amount of energy, or **calories**, on basic functions that work automatically all the time to keep you alive—such as your heart beating, your lungs inhaling, and your nerves delivering information. You do not have much control over the amount of calories used for these basic functions. Some people's bodies naturally use more calories to sustain their basic functions some people use less. It's often said that those who use more have a high **metabolism**, meaning they can eat more and not gain weight.

Your body also uses calories to do everything else throughout the day, from brushing your teeth, to studying, to stretching. Unlike your basic functions; however, you can control how many calories you voluntarily use throughout the day by how active you are. For example, you will use more calories if you choose to walk for an hour instead of watching television for an hour. Also, the more effort you put into an activity, the more calories you burn. For example, walking at a brisk pace uses more calories than walking at a leisurely pace.

When your body uses the same amount of calories daily than you eat daily, your weight stays the same. If you eat more calories than your body uses, your body stores the unused calories as fat and you gain weight. If you eat fewer calories than your body needs, your body uses the stored fat for energy and you lose weight. It's a balancing act between numbers of calories eaten and calories used.

Karen wonders why she keeps gaining weight—10 pounds over the last year. One Saturday, she and her friend, Andrea, meet at the local fast food restaurant for lunch. While they wait in line, Andrea says she played tennis that morning. Karen admits she slept late and watched television. Andrea orders a small soda and a salad with grilled chicken and light Italian dressing; then Karen orders a double hamburger with mayonnaise only, large French fries, and a large chocolate milkshake.

Andrea shakes her head and asks Karen if she ever eats fruit or vegetables. Karen shrugs and says "sometimes." Andrea explains that she eats hamburgers and French fries every once in a while—in fact, she had that for lunch a few days ago, which is why she ordered a salad today. Andrea tells Karen that eating fruit and vegetables more often than fried foods and sweets helps her maintain her desired weight, and she feels better, too. Karen thinks about this for a moment as they sit down to eat.

Perhaps if Karen had access to the following calorie counts, she would reconsider what she ordered. Keep in mind that most people need only between 2,000 and 3,000 total calories a day. Table 1.2.1 shows the difference between the two food orders.

#### Note

The calories listed here are approximate; actual calories of these food items at different restaurants may vary.

Table 1.2.1: Karen and Andrea's lunch orders				
Karen's Order	Calories	Andrea's Order	Calories	
Plain double hamburger with bun (¼ pound of beef)	540	Salad with grilled chicken	200	
Mayonnaise (1 tablespoon)	100	Light Italian salad dressing (2 tablespoons)	50	
French fries (large order)	360			
Chocolate milkshake (large)	540	Soda (small)	150	
TOTAL	1540	TOTAL	400	

Even if Karen did not want a salad, she could cut her calories considerably by ordering a single hamburger with mustard and ketchup, a small milkshake, and a regular order of fries. She could also have lettuce and tomato on the burger to eat some vegetables. Her new calorie intake would look simliar to Table 1.2.2.

If Karen really wants to lose those extra 10 pounds, however, she should skip the milkshake and replace the fries with a small salad and light dressing. This would reduce her calorie intake to about 400 for lunch. She should then get some exercise like her friend Andrea. Playing tennis for an hour uses three

Table 1.2.2: An alternative to Andrea's lunch order			
Andrea's order	Calories		
Plain single hamburger with bun (2 ounce patty)	275		
Lettuce (½ cup)	5		
Tomato (1 slice)	5		
Mustard (1 tablespoon)	8		
Ketchup (1 tablespoon)	15		
French fries (regular order)	220		
Chocolate milkshake (small)	330		
TOTAL	858		

times as many calories as watching television for an hour. If Karen sticks to eating sensibly and exercises daily, she will start using more calories than she eats, losing those extra pounds.

#### The Importance of a Proper Diet to Your Health

Just as important as eating the correct amount of calories to supply your body with energy and maintain proper weight is what you eat to get those calories. If you eat like Karen every day, you are giving your body too much fat, cholesterol, salt, and sugar, and denying your body many necessary nutrients. Many health problems are related to poor diets, and these problems can start when you are young. At your next physical examination, ask your doctor about your cholesterol, blood pressure, and blood sugar levels. You may be surprised to find you need to change your diet to improve your health.

#### What Should You Eat?

The United States Department of Agriculture (USDA) developed the Food Guide Pyramid to indicate how many servings of six different food groups you should eat daily to get the nutrients your body needs. If you follow these guidelines, you will get enough **vitamins** and **minerals** to keep your body's processes functioning properly, and you will have enough **carbohydrates**, **protein**, and fat to supply your body with energy. When you do not get enough of certain nutrients, you increase your risk of disease. For example, if you do not get enough calcium, a mineral found in milk products, almonds, sardines, leafy vegetables, and beans, you can develop **osteoporosis**.

#### Note

To see the current Food Guide Pyramid as offered by the USDA, check out http://www.nal.usda.gov/fnic/Fpyr/pyramid.html.

Your body also needs fiber, the only form of carbohydrate that is not an energy source. Fiber aids in digestion. It prevents cholesterol, fats, and other toxic materials from entering the bloodstream, and for this reason may lessen your chances of cancer and heart disease. It also helps balance your blood sugar levels, so it helps control **diabetes**. To obtain fiber, eat raw or lightly cooked vegetables, fresh fruit, beans, nuts, and whole wheat or bran breads, cereals, and crackers.

One final nutrient that you do not get from food that is vital to keeping you alive is water. More than 65 percent of the body is water, and, as the body loses water through normal activity and exercise, it must be replaced. Water aids in digestion, regulates temperature, carries vitamins and minerals to all parts of the body, and is important for the removal of waste products from the kidneys. Drink a minimum of five to six glasses of water a day. On the days you exercise, you may need to drink more.

#### **Key Note Term**

carbohydrates – one of the various neutral organic compounds composed of carbon, hydrogen, and oxygen (including starches and sugars) produced by green plants and used to provide energy necessary for growth and other functions.

minerals – natural chemical elements of the earth used by the body to supply necessary nutrition.

osteoporosis – a condition characterized by a calcium deficiency in the bone mass in which the body pulls calcium from the bones, causing them to lose their density and possibly leading to fractures.

protein – nutrients that are made of amino acids and that maintain body tissues and supply energy to the body.

vitamins – nutrients that occur naturally in plant and animal tissue and are required for proper function of the body.

diabetes – a disease that causes too much blood sugar to build up in the body.

#### Key Note Term

fiber – coarse food made mostly of carbohydrates, such as bran or lettuce that serves to stimulate and aid the movement of food through the intestines.

stimulant – a drink, drug, or other substance that speeds up the activity of the mind or body; a drug that speeds up the activities of the central nervous system, the heart, and other organs.

Figure 1.2.1: Cholesterol shown in artery walls.

#### **Eating in Moderation**

Your body needs fat for energy, but too much fat in your diet can make you gain weight and can lead to high cholesterol. Cholesterol, a type of fat, is a natural, waxy substance produced by your body and found in animal products. Your body needs some cholesterol to remain healthy, but too much is harmful. As shown in Figure 1.2.1, cholesterol forms plaque on artery walls, restricting the flow of blood within blood vessels. This leads to high blood pressure and an increased risk of heart disease. To lower cholesterol levels, lower your intake of fat by eating less meat, using oil-free dressings, avoiding fried foods, eating low-fat dairy products, and consuming lots of **fiber**.

Many foods, especially prepackaged foods and restaurant foods, already have added salt, so do not shake on more. Too much salt in your diet forces your body to retain unnecessary water and may contribute to high blood pressure.

Sugary foods like candy, soda, syrup, and table sugar supply you with calories and few (if any) nutrients. These foods contain "empty calories"—they give your body calories and nothing else. Avoid them while dieting, and do not eat them as a replacement for other foods that provide nutrition. Many fruits and vegetables naturally contain sugar, but they also provide many other important nutrients.

Limit your intake of coffee, tea, and sodas that contain caffeine, a **stimulant**. Although caffeine temporarily reduces drowsiness and makes you more alert, in large quantities it can upset your stomach, make you nervous and irritable, keep you awake when you want to sleep, and give you diarrhea.



#### Conclusion

Your body needs food for energy, just like a car needs fuel to run. How much food your body needs depends on how active you are and how many calories your body uses to keep its basic functions operating. You know you are getting the right amount of calories from food when you maintain your ideal weight. Not only does food supply you with energy, but the right foods also provide the nutrients your body needs to operate properly and lower your risk of disease. Eating a healthy, balanced diet and exercising regularly increase your chances of a long, strong, and disease-free life.

#### Lesson Review

- 1. Think about what you had for breakfast. How could you have balanced your calories better?
- 2. Do you feel you have a slow or fast metabolism? How can you plan your meals with this in mind?
- 3. Looking at the food pyramid, what food group do you need to eat more or less of?
- 4. Define the term "metabolism."

# Lesson 4

# Nutrition— Nourishing Your Body



#### **Key Terms**

amino acids
complex carbohydrates
fat soluble vitamins
mono-unsaturated fats
poly-unsaturated fats
Referenced Daily Intake (RDI)
saturated fats
simple carbohydrates
water soluble vitamins

#### What You Will Learn to Do

• Analyze how well you meet nutrient guidelines

#### Linked Core Abilities

• Take responsibility for your actions and choices

#### Skills and Knowledge You Will Gain along the Way

- Explain the six nutrients your body requires
- Explain the difference between simple and complex carbohydrates
- Describe the role fat and cholesterol play in body functioning
- Compare saturated and unsaturated fats
- Describe ways to reduce cholesterol levels

- Compare the functions of vitamins, carbohydrates, fats and proteins
- Identify food sources of vitamins and minerals
- Define key words contained in this lesson

#### Introduction

Nutrition is the science of nourishing the body properly to reach the higher levels of dynamic living. This lesson will introduce you to the six nutrients, and show you how to best provide them in a diet that is well rounded yet diversified. You will learn the newest methods available in how to choose your foods and how to read labels. Finally, you will better understand how to maintain a lean body, free from the damaging effects of carrying too much personal fat.

Our diets have radically changed during the past 35 years. With the advent of fast-food outlets, an increase in dual-career parents, and sky-rocketing numbers of single-parent households, most Americans now have a hurry-up lifestyle where proper eating habits take a back seat to convenience and lack of time.

Knowing that our lifestyles are busy and sometimes hurried, it is very important that young adults have at least a basic understanding of nutrients, how to obtain them, and how to control fat. This knowledge will lead to a more dynamic life and a higher quality lifestyle. The six types of nutrients are carbohydrates, fats, proteins, vitamins, minerals, and water.

We also refer to the first three nutrients, carbohydrates, fats, and proteins, as foodstuffs. They give us the energy for all of the bodily processes. When our body uses the foodstuffs, it releases energy. We measure this energy in calories.

#### Note

To learn more about calories, see Unit 4, Chapter 1, Lesson 2, "You Are What You Eat."

#### **Carbohydrates**

Carbohydrates are the starches and sugars found in fruits, grains, and vegetables. They have a caloric value of four calories per gram and supply us with short- and long-term energy to accomplish everything from thinking and breathing to running a race.

#### **Key Note Term**

simple carbohydrate – a sugar that is found in the body in its simple state and supplied the body with shortterm energy.

complex carbohydrates – a carbohydrate that is formed by the body after the conversion of extra glucose; it supplies the body with long-term energy.

#### Key Note Term

fat soluble vitamin – a vitamin that is absorbed through the intestinal tract with the help of fats and is stored in the body.

mono-unsaturated fats – oil or fat that is liquid at room temperature, is low in hydrogen, and can lower the level of blood cholesterol.

poly-unsaturated fats – an oil of fatty acid containing more than one double or triple bond and is therefore cholesterol defensive.

saturated fats – a fat that does not melt at room temperature and can raise the blood cholesterol level. The short-term carbohydrates are the sugars, or **simple carbohydrates**, which are quickly digested and absorbed into the blood. The most important simple sugar is glucose, or blood sugar. Before the body's cells can use other simple sugars (such as fructose, sucrose, and lactose) for energy, a change must occur converting them into glucose. Many sugary foods are sources of simple carbohydrates; however, those such as soda and candy have few other nutrients while fruit is an excellent source of simple carbohydrates and contains many other vitamins and minerals as well.

The long-term carbohydrates are starches, or **complex carbohydrates**, which are made up of combinations of simple sugars. They take longer to digest because the body must break them into simple sugars (glucose) before they can enter the bloodstream. When your body has extra glucose that it does not need immediately for energy, it converts it into the complex carbohydrate glycogen and stores it in the muscles and liver to be released later when energy is needed, usually for short periods of strenuous activity. After your muscles and liver store as much glycogen as they can hold, your body changes the rest to body fat for long-term energy. Long distance runners use carbohydrate loading (eating large quantities of carbohydrates) to have the long-term energy they need to complete the race.

Good sources of complex carbohydrates are grains (such as bread, cereal, pasta, and rice) and starchy vegetables (such as peas, corn, beans, and potatoes). These starchy foods are also important sources of vitamins, minerals, and fiber. Fiber provides no calories, but is roughage that aids in the movement of food through the digestive system.

#### Nourishing Your Body's Fuel with Fats

Fats, or lipids, perform the vital roles of maintaining body temperature, insulating body organs, providing the body with stored energy, and carrying the **fat soluble vitamins** A, D, E, and K to the cells. One gram of fat is the equivalent of nine calories of energy, more than twice the amount of carbohydrates; therefore, minimum consumption of fats is the most sensible approach to maintaining a lean body fat content.

Triglycerides are the primary fats in the foods we eat, as well as the fats stored in body tissue. They include saturated fat, which mainly comes from animal sources and does not melt at room temperature, and **mono-unsaturated** and **poly-unsaturated fats**, which are usually liquid oils of vegetable origin. When you eat too many calories, your liver changes them into triglycerides and stores them as fat. When you eat too many saturated fats, your liver makes more cholesterol than your body needs, which is unhealthy.

#### Cardiovascular disease is the main killer of Americans

Your liver already produces about 1,000 milligrams (mg) of cholesterol daily and diet adds another 400 to 500 mg. Cholesterol, a waxy, sticky substance found in animal and human tissue, insulates nerves and forms hormones, cell membranes, vitamin D, and bile to aid in food digestion.

Your blood carries cholesterol by way of lipoproteins, with low density lipoproteins (LDL) carrying cholesterol from the liver to the cells to accomplish the functions mentioned. Unfortunately, the LDLs deposit any cholesterol that is not needed by the cells in the arteries, giving them the nickname of the "bad guys." Cholesterol accumulated on the inside walls of the arteries is a factor in the development of atherosclerosis. Eventually, cardiovascular disease, in the form of a heart attack or stroke, may result.

The high density lipoproteins (HDL) carry the extra cholesterol in your blood to the liver to dispose of it, thus preventing cholesterol from building up in the arteries. For this reason, HDLs are known as the "good guys." To keep cholesterol at a normal level in the body, you must lower LDL levels and raise HDL levels. Steps you can take to accomplish this are to eat less fat, especially saturated fat, maintain appropriate body weight, and participate in a regular exercise program. Eating more fiber will also help because it binds with cholesterol and carries it out of the body; and consuming mono-unsaturated fats, such as olive, canola, and peanut oils, raises HDLs.

#### Nourishing Your Body with Proteins

The body contains substances called proteins in every cell. They aid in the development and maintenance of muscle, bone, skin, and blood. Proteins are also the key behind keeping the immune system strong. They control the chemical activities in the body that transport oxygen, iron, and nutrients to the body cells. The body can also use protein for energy if it is low on carbohydrates and fats; but in most cases, its role as an energy source is minor. Proteins, like carbohydrates, contain four calories per gram.

The building blocks of protein are the **amino acids**. These chains of carbon, hydrogen, oxygen, and nitrogen linked together in different ways control all of the activities mentioned above. There are 22 amino acids found in the human tissue, but the body cannot manufacture all of them. Eight (nine for children) amino acids, known as the essential amino acids, must come from the food we eat since the body cannot produce them. We refer to the food products that contain all eight essential amino acids as having complete proteins. The best sources of complete proteins are meat, fish, poultry, and dairy products. Plant foods generally contain incomplete proteins since they are either low on or lack an essential amino acid. However, plant foods can be combined easily, such as rice and beans or peanut butter and bread, to include all essential amino acids in high enough amounts to form a complete protein.

The remaining 14 amino acids are known as the nonessential amino acids. They are still necessary for bodily functioning, but are called "nonessential" because they do not have to be supplied in the diet. Instead, the body manufactures nonessential amino acids itself.

#### Key Note Term

amino acids – the basic units of proteins, produced by living cells or obtained as an essential component of a diet. Keep in mind that although animal and dairy products are sources of complete proteins, many are often high in fat as well. As you will read later in this text, Americans get most of their protein from animal sources instead of from combinations of complex carbohydrates. You will have a healthier diet and still meet your protein needs if you consume less fatty foods and more carbohydrates in the forms of grains and vegetables.

# Regulating Your Body with Vitamins, Minerals, and Water

Vitamins are promoters of health and wellness. Unlike the carbohydrates, fats, and proteins, the body does not digest vitamins; instead, food products release them and your body tissues absorb them. Vitamins are classified as either fat soluble or water soluble. With the help of fats, the intestinal tract absorbs fat soluble vitamins (A, D, E, and K) and stores them in the body. The water in the tissues dissolves the **water soluble vitamins** (B complex and C).

Many countries have standards for vitamin and mineral requirements to recommend daily amounts needed for good health. For example, the standards for the United States are the **Referenced Daily Intakes (RDI)**. From time to time, the federal government reviews these standards and proposes new ones as research continues and more complete information about vitamins and minerals is discovered. Table 1.3.1 shows the current U.S. RDI for vitamins and minerals.

#### **Key Note Term**

water soluble vitamin – a vitamin that is dissolved in the water of tissues.

Referenced Daily Intake (RDI) – standards developed by the United States government for the regulation of vitamin and mineral requirements.

#### **Minerals**

Minerals are elements found in the environment that help regulate the bodily processes. Without minerals, the body cannot absorb vitamins. Macrominerals, shown in Table 1.3.2, are minerals that the body needs in large amounts. These are calcium, phosphorus, magnesium, potassium, sulfur, sodium, and chloride.

Although sodium is a macromineral, many Americans consume too much of it, which can contribute to high blood pressure. High blood pressure, in turn, can contribute to cardiovascular disease. On the other hand, many Americans do not consume enough calcium, and a calcium deficiency can lead to osteoporosis later in life.

Although the body only needs trace minerals (such as selenium, manganese, molybdenum, iron, copper, zinc, iodine, and chromium, shown in Table 1.3.3) in very small amounts, they are also essential for proper functioning of the body. For example, an iron deficiency can reduce the number and size of red blood cells, causing weakness, sleepiness, and headaches.

Vitamin	U.S. RDI	Functions	Sources
A	5000 International Units (IU)	Helps maintain eyes, skin, and linings of the nose, mouth, digestive, and urinary tracts	Liver, dairy products, fortified margarine, orange fruits and vegetables, dark-green vegetable
B-1 (Thiamin)	1.5 mg	Helps convert carbohydrates into energy	Yeast, rice, whole-grain and enriched breads/cereals, liver, pork, meat, poultry, eggs, fish, fruits, vegetables
B-2 (Riboflavin)	1.7 mg	Helps convert nutrients into energy; helps maintain skin, mucous membranes, and nervous structures	Dairy products, liver, yeast, fruits, whole-grain and enriched breads/cereals, vegetables, meat, poultry
B-3 (Niacin)	20 mg	Helps convert nutrients into energy; essential for growth; aids in synthesis of hormones	Liver, poultry, fish, milk, eggs, whole-grain and enriched breads/cereals, fruit, vegetables
B-5 (Pantothenic Acid)	10 mg	Helps convert nutrients into energy	Liver, yeast, whole grains, eggs, beans, milk
B-6 (Pyridoxine)	2.0 mg	Aids in more than 60 enzyme reactions	Milk, liver, meat, green, leafy vegetables, whole-grain and enriched breads/cereals
B-7 (Biotin)	0.3 mg	Helps convert nutrients to energy	Liver, yeast, milk, oatmeal, beans, nuts, egg yolk
B-9 (Folic Acid)	0.4 mg	Aids in blood cell production; helps maintain nervous system	Liver, green, leafy vegetables, beans
B-12 (Cobalmin)	6 micrograms (mcg)	Helps form new cells	Meat, seafood, poultry, dairy products, eggs
С	60 mg	Helps maintain and repair connective tissue, bones, teeth, cartilage; promotes wound-healing	Broccoli, brussels sprouts, citrus fruit, tomatoes, potatoes, peppers, cabbage, other fruits and vegetables

Table 1.3.1: Vitamins (continued)				
Vitamin	U.S. RDI	Functions	Sources	
D	400 IU	Helps regulate calcium and phosphorus metabolism; promotes calcium absorption; essential for development/maintenance of bones and teeth	Fortified milk, eggs, fish-liver oils, sunlight on skin	
Е	30 IU	An antioxidant (prevents oxygen from interacting destructively with other substances) that helps protect cell membranes, maintain fats and vitamin A, and increase blood flow	Green, leafy vegetables, whole grains, seeds, nuts, vegetable oil/shortening, liver, egg yolks	
K	60 – 80 mcg*	Helps in blood clotting	Green, leafy vegetables, liver, tomatoes, egg yolks, milk	

<sup>\*</sup> No U.S. RDI established. Amount is an estimated recommendation for dietary intake.

#### Points of Interest: Vitamins

According to a 10-year study of 11,348 U.S. adults, vitamin C was effective at cutting death rates from heart disease and stroke. The study tested three groups getting:

- 50 mg or more a day in food, plus an average supplement of 500 mg
- 50 or more mg and no supplement
- less than 50 mg with no supplement.

Men in Group 1 had a 35 percent lower mortality rate and 42 percent lower death rate from heart disease and stroke. Women in Group 1 were 25 percent less likely to die of heart disease or stroke and had a 10 percent lower mortality rate.

Taking supplements of 2,000 mg of vitamin C daily might be helpful to allergy sufferers.

A new study also found vitamin E cuts the risk of certain cancers. Plus, two other studies with 130,000+ people reported vitamin E helps prevent coronary heart diseases.

Mineral	U.S. RDI	Functions	Sources
Calcium	1000 mg	Structure of bones and teeth; muscle contraction; maintenance of cell membranes; blood clotting; nerve impulse transmission; heart activity Helps convert carbohydrates into energy	Dairy products, small fish (such as sardines) with bones, dark-green vegetables, dried beans and peas
Phosphorus	1000 mg	Structure of bones and teeth; muscle contraction; maintenance of cell membranes; blood clotting; nerve impulse transmission; heart activity Helps convert carbohydrates into energy	Dairy products, small fish (such as sardines) with bones, dark-green vegetables, dried beans and peas
Magnesium	400 mg	Structure of bones and teeth; release of energy from nutrients; formation of enzymes	Meat, poultry, fish, eggs, dried beans and peas, dairy products
Potassium	3500 mg*	Building bones; release of energy from muscle glycogen; conduction of nerve impulse to muscle	Green, leafy vegetables, nuts, soybeans, seeds, whole grains
Sulfur	140 mg*	Muscle contraction; maintenance of fluid and electrolyte balance; transmission of nerve impulse; release of energy from nutrients	Orange juice, bananas, dried fruit, meat, bran, peanut butter, potatoes, coffee, tea, cocoa
Chloride and Sodium	No more than 2400 mg*	Part of sulfur-containing amino acids; firm proteins of hair, nails, and skin	Meat, wheat germ, dried beans and peas, peanuts
		Regulate blood and fluids; nerve impulse transmission; heart activity; metabolic controls	Table salt (sodium chloride), many canned soups and processed foods, pickles, soy sauce, sauerkraut, celery

 $<sup>\</sup>ensuremath{^{*}}$  No U.S. RDI established. Amount is an estimated recommendation for dietary intake.

Table 1.3.3: Trace Minerals

Mineral	U.S. RDI	Functions	Sources
Selenium	50–75 mcg*	Prevents breakdown of fats	Seafood, whole-grain cereals, meat, egg yolk, milk, garlic
Manganese	5 mg*	Central nervous system; normal bone structure; reproduction	Nuts, whole grains, vegetables, fruits, tea, cocoa powder
Fluoride	1.5 to 4 mg*	Tooth and bone formation	Drinking water in some places, seafood, tea
Molybdenum	75–250 mcg*	Part of enzymes	Legumes, cereals, liver, kidneys, dark-green vegetables
Iron	18 mg	Formation of hemoglobin; part of enzymes and proteins	Liver, kidneys, meat, egg yolk, green, leafy vegetables, dried fruit, dried beans and peas, whole-grain and enriched cereals
Copper	2 mg	Formation of red blood cells; part of respiratory enzymes	Oysters, nuts, cocoa powder, liver, kidneys, beans, corn oil, margarine
Iodine	150 mcg	Functioning of the thyroid gland and production of thyroid hormones	Iodized salt, seafood
Chromium	50–200 mcg*	Helps the body use carbohydrates and fats; aids in digestion of protein	Liver, nuts, whole grains, Brewer's yeast, meat, mush- rooms, potatoes, apples with skin, oysters
Zinc	15 mg	Part of many enzymes; essential to synthesis of DNA and RNA; metabolizes carbohydrates, fats, and proteins; dispose of carbon dioxide; strengthen immune system; helps wounds heal; helps body use vitamin A	Meat, liver, eggs, poultry, seafood

<sup>\*</sup> No U.S. RDI established. Amount is an estimated recommendation for dietary intake.

#### Point of Interest: Minerals

A study has found that heart-disease patients who received 150 mcg of chromium per day had a dramatic jump in the HDL cholesterol, the good stuff that helps keep arteries clear.

#### Water

About 60 to 70 percent of your body is water, with most of your blood, brain, and muscles being water and even 20 percent of your bones. Water carries the other nutrients, when dissolved, to all parts of the body where and when needed. It also aids in digestion, regulation of temperature, removal of wastes, joint lubrication, and biochemical processes taking place in the body all the time. Without water you would die in a few days. To maintain all the bodily functions water helps carry out, you need to consume the equivalent of six to eight glasses of water a day. If you exercise regularly, you may need as many as ten glasses, especially on the days you exercise.

#### **Hunger and Malnutrition**

As long as people can easily obtain an abundant and varied diet, it is not difficult for them to meet their nutritional needs. When such fortunate people become hungry, they can usually satisfy their need for food. However, many people in the world cannot obtain enough of the right foods—and in some cases cannot get much food at all. For them, hunger is a way of life—an ongoing, painful condition over which they have little control. Poor nutrition is a serious, worldwide problem.

#### **Malnutrition**

Technically, malnutrition is any condition in which a person's nutrient consumption is inadequate or unbalanced. Most cases, however, are the result of consuming too little of one or more nutrients. Malnutrition harms every system of the body and also damages emotional well-being.

When people are malnourished, they do not have the energy to perform well in school or at work. Malnourished people are also more susceptible to disease than those who eat a healthy diet. Malnourished children usually grow much more slowly than children whose diet is adequate. If malnutrition occurs during pregnancy, the baby may weigh less than normal and have serious health problems.

Figure 1.3.1: Famine victims, such as this Somalian woman, search in vain to try to find food. Source: Jean-Claude Coutausse/ Contact Press Images



There are various types of malnutrition, including the vitamin and mineral deficiencies discussed earlier in this lesson. In one especially serious condition known as protein-energy malnutrition, the diet does not contain adequate protein, nor does it supply enough calories to meet the body's energy needs. The effects of this condition are especially severe on children because their bodies need protein and calories for growth. Severe cases can cause death, either directly through starvation or indirectly through the diseases to which its victims become susceptible. Protein-energy malnutrition is the most serious nutrition problem affecting people in developing countries today.

Malnutrition has various causes. In some cases, people may be undernourished because they are unaware of the foods that they need for good health. Also, diseases and other conditions may prevent the digestive system from absorbing nutrients. But indirectly, poverty is by far the most common cause of malnutrition. Victims of severe poverty cannot afford to buy or grow the food they need.

#### A World Problem

Hunger and malnutrition are an especially severe problem in many of the world's poorer nations. Severe famines, for example, have devastated countries such as Somalia and Bangladesh. However, hunger is also a problem in more prosperous countries, including the United States. Although few people starve in the United States, many are not receiving adequate nutrition. Hungry people in the United States are those who have little or no income, such as homeless people, teenage runaways, families dealing with unemployment, and some elderly people.

Various programs and organizations are trying to solve the problem of malnutrition and provide food for those who need it. For example, the Food and Agriculture Organization of the United Nations combats hunger by helping people improve methods of agriculture and food distribution. The United States government sponsors the Food Stamp Program that enables low-income people to purchase the food that they need. Volunteers also work hard to help those who are hungry. For example, soup kitchens, which are often staffed by volunteers, provide meals for those in need.

#### Conclusion

Understanding what nutrition your body needs is essential to maintaining both physical and emotional health. Without the proper balance of carbohydrates, fats, proteins, vitamins, and minerals, you open the door to all kinds of health problems—some possibly fatal. Even with a fast-paced lifestyle, it's still possible to eat correctly and give your body the fuel it needs.

#### Lesson Review

- 1. How do carbohydrates help the body?
- 2. Compare and contrast mono-unsaturated fats and poly-unsaturated fats.
- 3. What roles do proteins play in nutrition?
- 4. What are the effects of malnutrition?

# First Aid for Emergency and Non-Emergency Situations

# Lesson 1

# The Need for First Aid/Your Response



#### Key Terms

cardiopulmonary resuscitation (CPR)
catastrophe
consent
emergency medical service
evaluate
first aid
Good Samaritan Law

#### What You Will Learn to Do

• Assess first aid situations

#### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

#### Skills and Knowledge You Will Gain along the Way

- Assess the need for knowing how to perform first aid
- Explain the significance of the Good Samaritan Law
- Identify the steps of first aid intervention
- Identify the information needed when calling an emergency number such as 911
- Identify the steps for checking the ABCDs
- Define key words contained in this lesson

# Chable Chable

#### Introduction

Most people encounter at least one situation requiring the use of first aid at some time in their lives. Whether a friend falls when rollerblading and breaks an arm, or your younger brother cuts himself on broken glass and requires stitches, someone should administer first aid until the injured person receives proper medical attention. That someone can be you if you acquire basic first aid knowledge of what to do and not to do in different accident situations. Remember that first aid may mean the difference between life and death, permanent and temporary disability, or long- and short-term recovery for an accident victim.

In addition to the first aid taught in this text, consider taking a first aid class from a qualified instructor. Many schools, hospitals, and fire departments offer first aid classes that provide demonstrations and hands-on experience with medical models of victims. Hands-on training is especially important before actually performing mouth-to-mouth resuscitation and **cardiopulmonary resuscitation** (**CPR**), both of which can be hazardous to a victim if performed improperly.

#### **Definition of First Aid**

**First aid** is the immediate care given to an injured or ill individual to keep him or her alive or stop further damage until qualified medical treatment can be administered. It is caring for people involved in accidents, **catastrophes**, and natural disasters such as hurricanes, tornadoes, and earthquakes. First aid includes dealing with the situation, the person, and the injury, as well as encouraging the victim and showing a willingness to help.

#### Good Samaritan Law

The **Good Samaritan Law** is designed to protect the rescuer and encourage people to assist others in distress by granting them immunity against lawsuits. This law protects people from lawsuits as long as the rescuer is acting in good faith, without compensation and administers first aid correctly and without malicious misconduct or gross negligence.

#### First Aid Kit

Administering first aid is easier with a first aid kit. It is a good idea to keep one in your house and car and take one along on camping trips and hikes. A well-stocked first aid kit contains an assortment of bandages, Band-Aids, tape,

#### **Key Note Term**

cardiopulmonary resuscitation (CPR) –

an emergency method to keep blood and oxygen flowing through a person whose heart and breathing have stopped.

**first aid** – the immediate care given to a victim of injury or sudden illness before professional medical help arrives.

**catastrophe** - a great and sudden misfortune.

#### **Good Samaritan**

Law – a law enacted in most states that protects people from lawsuits if medical complications arise after they have administered first aid correctly. aspirin or aspirin substitutes, antiseptic cream and cleanser, safety pins, scissors, tweezers, cotton, and tissues. To protect against infectious diseases, include rubber gloves and face shields in the kit. Rubber gloves will keep you from contact with blood and body fluids, and face shields will allow you to give mouth-to-mouth resuscitation and CPR without direct contact.

#### **Evaluating the Victim**

When you encounter an injured person, you must **evaluate** that person to determine what kind of first aid, if any, is needed. This preliminary check of the person follows a series of steps designed to pinpoint and correct the most serious health risks first and then continue with less life-threatening problems. These steps are explained in more detail later in this lesson. Basically, check for breathing and heartbeat first, for severe bleeding second, then for signs of shock, and finally for broken bones, burns, and head injuries. Depending on what problems your evaluation of an accident victim reveals, perform the life-saving steps in a sequence that parallels this evaluation sequence:

- 1. Open the airway
- 2. Assess breathing
- 3. Assess circulation
- 4. Assess disability

When evaluating a conscious victim, ask the victim if you can help and get **consent** to provide first aid; then get as much information as possible about the situation and how the victim feels. If the victim is unconscious and others witnessed the accident, get as much information from the witnesses as possible. Check the victim for medical alert identification. Many people with heart disease, epilepsy, diabetes, and allergies to medications wear medical alert identification bracelets or necklaces that can give you a clue as to their medical condition.

Have someone at the scene dial 911 for **emergency medical services** (**EMS**). If you are alone and the victim's condition is life-threatening, give first aid first, and then call 911. When calling 911, calmly state your name and exact location, the telephone number from which you are calling, details of what has happened, and the condition of the victim or victims.

Other important rules to follow at the scene of an accident include:

- Remain calm, but act quickly. This will reassure the victim and help him or her to remain calm as well.
- Do not move an injured person. If the person has a neck or spine injury or broken bones, moving him or her could worsen the condition. Only move a victim if there is potential danger in remaining at the accident location. If you must move the victim for this reason, pull him or her in a straight line from the shoulders keeping the head and body in line. Support the head and pull the victim as short a distance as possible.

#### **Key Note Term**

evaluate – to determine if an act, process, or method has been attained; to assess; to determine he significance of by careful appraisal and study.

#### **Key Note Term**

**consent** – to get approval for what is to be done or proposed by another.

emergency medical service (EMS) – medical professional dedicated to the reduction of morbidity and mortality of residents through the provision of Advanced and Basic Life Support care, medically directed rescue, and transportation of the ill and injured.

• If there is more than one injured person at an accident scene, evaluate them quickly; then help the most seriously injured first. For example, help the person with severe bleeding before you help the person with a broken arm.

#### The Life-Saving Steps

The following steps list evaluation procedures and specify treatment if necessary.

- 1. Check to see if the victim is conscious. To do so:
  - a. Ask in a loud but calm voice, "Are you okay?"
  - b. Gently shake or tap the victim on the shoulder.
  - c. Watch for response. If the victim does not respond, go to Step 2.
  - d. If the victim is conscious, ask where he or she feels different than usual or where it hurts. Go to Step 3.
  - e. If the victim is conscious but is choking and cannot talk, stop the evaluation and begin treatment for clearing the airway of a conscious victim.
- 2. Check for breathing and heartbeat.
  - a. Look for rise and fall of the victim's chest.
  - b. Listen for breathing by placing your ear about one inch from the victim's mouth and nose.
  - c. Feel for breathing by placing your hand or cheek about one inch from the victim's mouth and nose.
  - d. At the same time, check for a pulse in the victim's neck.
  - e. If there is a pulse but no breathing, stop the evaluation and begin treatment to restore the breathing.
  - f. If there is no pulse, stop the evaluation and begin CPR.
- 3. Check for bleeding.
  - a. Look for spurts of blood and blood-soaked clothing.
  - b. Look for entry and exit wounds.
  - c. If bleeding is present, stop the evaluation and begin treatment for stopping the bleeding.
- 4. Check for the following signs of shock:
  - a. Sweaty, but cool skin
  - b. Paleness
  - c. Restlessness or nervousness
  - d. Thirst
  - e. Loss of blood
  - f. Confusion
  - g. Faster than normal breathing rate
  - h. Blotchy or bluish skin
  - i. Vomiting or nausea

If any of these signs are present, discontinue the evaluation and treat for shock.

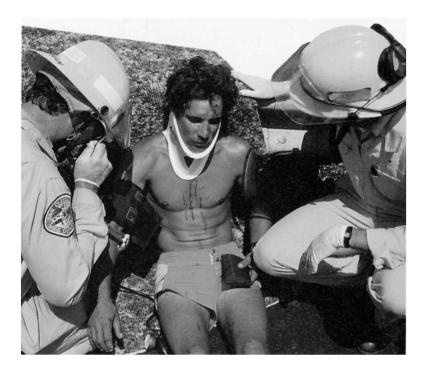
- 5. Check for fractures (broken bones).
  - a. Check for the following signs of neck or back injury:
    - Pain or tenderness of neck or back area
    - Wounds of neck or back area
    - Paralysis
  - b. Ask the victim if he or she can move.
  - c. Touch the victim's arms and legs and ask whether he or she can feel it.
  - d. If you suspect a neck or back injury, immobilize the victim by doing the following:
    - Tell the victim not to move.
    - If you suspect a back injury, place padding under the natural arch of the lower back.
    - If you suspect a neck injury, place padding under the victim's neck and place objects such as rocks or shoes on both sides of the head.
  - e. Check the victim's arms or legs for fractures or broken bones. Signs are:
    - Swelling
    - Discoloration
    - Unusual angle or position of arm or leg
    - Bones sticking through the skin

If you suspect a fracture, stop the evaluation and begin treatment for fractures.

- 6. Check for burns. If you find burns, cover them with a clean dry cloth.
- 7. Check for head injury. Some possible signs of head injury are:
  - a. Pupils of eyes unequal size
  - b. Fluid from ear(s), nose, mouth or wounds to the head or face
  - c. Slurred speech
  - d. Confusion
  - e. Sleepiness
  - f. Loss of memory or consciousness
  - g. Staggering when walking
  - h. Headache
  - i. Dizziness
  - j. Vomiting
  - k. Paralysis
  - l. Convulsion or twitching

When first aid is administered correctly and in a timely manner, it could mean the difference between life and death for the victim. Figure 2.1.1 shows emergency medical personnel assisting with an injured person.

Figure 2.1.1: Emergency personnel are trained to help victims of all types of injuries.



If a head injury is suspected, keep the person awake. Watch the victim for signs that would require restoring breathing or treating for shock.

#### When to Call 911 or Your Local Emergency Number

Call for an ambulance if the victim:

- Is or becomes unconscious
- Has trouble breathing
- Has persistent chest pain or pressure
- Is bleeding severely
- Has persistent pain or pressure in the abdomen
- Is vomiting
- Has seizures, slurred speech, or persistent severe headache
- Appears to have been poisoned
- Has injuries to the head, neck, or back
- Has possible broken bones

#### Also call if there is:

- A fire or explosion
- A downed electrical wire
- Swiftly moving or rapidly rising water
- Poisonous gas present
- A vehicle collision

## Chapter 2 Lesson Review

### Call the Emergency Number

Call or send someone to call for an ambulance. Calling your emergency number is often the most important thing you can do in an emergency. It is often critical to get professional medical help on the scene as soon as possible. In many communities, you can dial 911 for help in any type of emergency; otherwise, dial your local police or sheriff for medical emergencies, or dial 0, the operator, for assistance. Be prepared to follow the steps given below.

- 1. Speak slowly and clearly.
- 2. Identify yourself and the phone number from which you are calling.
- 3. Give the exact location of the accident. Give the town, street name, and number. If you are calling at night, describe the building.
- 4. Describe what has happened. Give essential details about the victim(s), the situation, and any treatments you have given.
- 5. Ask for advice. Let the person on the other end ask you questions and tell you what to do until help arrives. Take notes, if necessary.
- 6. Hang up last. The person on the other end may have more questions or advice for you. And they might want you to stay on the phone with them until help arrives. Whatever the case, let the other person hang up first.

### Conclusion

First aid is the help that you give an injured person until qualified medical personnel can administer treatment. In other words, think of first aid as aid given first before actual medical treatment. The type of first aid required by an individual depends on his or her injuries, and you determine what those injuries are by carefully and quickly evaluating the person. This evaluation and the administration of first aid follow a sequence that deals with the most life-threatening problems first—breathing and heartbeat, followed by bleeding; then other health problems—shock, broken bones, burns, and head injuries.

### Lesson Review

- 1. Do you know how to perform CPR? If so, where did you learn this skill? If not, where can you learn it?
- 2. What is the meaning of the Good Samaritan Law?
- 3. Why is it important to have rubber gloves and a face shield in your first aid kit?
- 4. What skill can you use to remain calm and aware in a medical emergency?

### Lesson 2

### The First Life-Saving Steps

### automated ex

automated external defibrillators cardiac arrest cardiopulmonary resuscitation (CPR) Heimlich maneuver rescue breathing stroke

### What You Will Learn to Do

• Demonstrate life-saving skills in an emergency situation

### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

### Skills and Knowledge You Will Gain along the Way

- Describe how to perform rescue breathing
- Identify the steps for performing CPR
- Explain how CPR can keep a victim's heart and brain alive
- Identify the steps for performing the Heimlich maneuver
- Define key words contained in this lesson

### Introduction

In emergency situations, the people involved may find it difficult to remain calm and think clearly. In the midst of this confusion, one simple trick you can use to remind yourself of the first and most important problems to check for and steps to take are the letters A-B-C.

- A stands for airway. Is the victim's airway blocked? If so, clear the airway.
- B stands for breathing. Is the victim breathing? If not, restore breathing.
- C stands for circulation. Is the victim's heart beating? If not, restore the heartbeat.

### Clearing the Airway of a Conscious Victim

Choking occurs when a person inhales something into the airway leading to the lungs, blocking the airway off and preventing breathing. In many choking cases, people inhale particles of food while eating. In an accident, injured people may choke on dirt, broken teeth, or dentures.

A person whose airway is completely blocked off cannot make any sound because no air is getting to the vocal cords. If a person can speak or cough, some air is getting through to the vocal cords and lungs, and you should let the person try to clear the airway on his or her own. If the person can make no sound and indicates choking by grabbing the throat, the best method to clear the person's airway is the **Heimlich maneuver**, shown in Figure 2.2.1. After performing the Heimlich maneuver, be sure the victim seeks professional medical help.

### Key Note Term

Heimlich maneuver – an upward push to the abdomen given to clear the airway of a person with a complete airway obstruction; procedure used to expel an object lodged in the airway of a choking victim.



Figure 2.2.1: The Heimlich maneuver can save the life of a choking victim.

To perform the Heimlich maneuver on a choking victim, follow these steps:

- 1. Stand behind the victim and wrap your arms around the victim's waist.
- 2. Make a fist with one hand and place the thumb side of the fist against the victim's abdomen slightly above the navel and well below the breastbone. Grasp the fist with the other hand.
- 3. Give six to ten quick backward and upward thrusts; repeat this until the airway is clear.

For an exceptionally overweight person or pregnant woman, use the same procedure, except place the fist in the middle of the breastbone.

If you are the victim of an airway obstruction and no one is around to help, lean forward over a railing, sink, or the back of a chair as shown in Figure 2.2.2, and thrust yourself down until you dislodge the obstruction.

### Note

Don't slap the victim's back. This could make matters worse. For more information about the Heimlich maneuver, check out <a href="http://www.heimlichinstitute.org/howtodo.html">http://www.heimlichinstitute.org/howtodo.html</a>.

### Clearing the Airway of an Unconscious Victim

If a person is unconscious and you know that individual has an obstructed airway, perform the following maneuver with the victim lying on his or her back. Figure 2.2.3 shows the position for this action.

- 1. Kneel astride the victim's thighs. Place the heel of one hand against the victim's abdomen, slightly above the navel, but well below the victim's breastbone, with your fingers pointing towards the victim's head.
- 2. Place your other hand on top of your first hand and press into the abdomen with a quick forward and upward thrust. Repeat this six to ten times.

Figure 2.2.2: You can save your life when choking if you know how to dislodge the obstruction.





Figure 2.2.3: Kneel over an unconscious victim to clear the airway.

3. Open the victim's mouth and sweep out any foreign matter using a hooked finger. Be careful not to push anything down the throat.

For an obese individual or a woman in the advanced stages of pregnancy, use the following procedure:

- 1. Kneel to the side of the victim's body. Locate the lower edge of the victim's ribs, and run the fingers up along the rib cage to the notch where the ribs meet the breastbone.
- 2. Place the heel of the hand two finger widths above the notch, and place the other hand over the first, interlocking the fingers.
- 3. Position your shoulders over your hands, and with the elbows locked, press down 1½ to 2 inches, six to ten times.
- 4. Open the victim's mouth and sweep out any foreign matter using a hooked finger. Be careful not to push anything down the throat.

### Restoring the Breathing

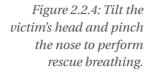
If you discover a victim who is not breathing, it is necessary to start breathing for the victim by forcing oxygen into his or her lungs as soon as possible. This process, called **rescue breathing** or mouth-to-mouth resuscitation, can prevent brain damage and death. By applying this first aid step it will most likely start the victim breathing independently; if not, continue it until you are replaced by a qualified person or medical help arrives. When you are giving mouth-to-mouth resuscitation to a victim, you are a life-support system! Figure 2.2.4 shows the basic position for applying mouth-to-mouth resuscitation.

The following steps describe how to give mouth-to-mouth resuscitation to adults. Procedures that are different for infants and small children are italicized.

1. Roll the victim gently over if he or she is not already facing up. Open the mouth and check to see if it is clear. Using a hooked finger, sweep out anything you find in the mouth, being careful not to push anything down the throat.

### Key Note Term

rescue breathing – the act of forcing air into and out of the lungs of a person by another person.





- 2. Tilt the victim's head back sharply by pressing down on the forehead and lifting on the jaw. This straightens out the passageway to the victim's lungs. For infants and small children, do not tilt the head back. Instead, place a finger under the chin and lift it slightly.
- 3. Keeping the victim's head tilted sharply back, pinch the nose closed, cover the victim's mouth completely with your mouth, and give the victim two full breaths. For infants and small children, do not pinch the nose closed. Instead, cover both the mouth and nose with your mouth and give small, slow, gentle breaths. Each breath should last 1 to 1½ seconds. Pause between breaths to let the air come out of the victim and to breathe in yourself. If the victim's chest does not rise when you breathe into his or her lungs, reposition the head slightly farther back and repeat the breaths. If the victim's chest still does not rise, perform abdominal thrusts to clear the airway as described in the previous section, "Clearing the Airway of an Unconscious Victim;" then repeat the breaths.
- 4. After the two breaths, listen and feel for breathing by placing your cheek close to the victim's mouth. At the same time, check the victim's pulse by placing two fingers in the groove of the neck next to the Adam's apple, as shown in Figure 2.2.5. This is the location of the carotid artery, which normally produces a strong pulse.
- 5. If there is no pulse, start CPR immediately as described in the next section.
- 6. If there is a pulse but no breathing, continue mouth-to-mouth resuscitation at the rate of one breath every five seconds or 12 times a minute. For infants and small children, give one slow breath every three seconds.
- 7. If the victim starts to breathe, stop mouth-to-mouth resuscitation and let the victim breathe on his or her own. Check for other injuries, treat as required, and observe the victim closely until medical help arrives.

### Cardiopulmonary Resuscitation (CPR)

As in mouth-to-mouth resuscitation, when you perform **cardiopulmonary resuscitation** (CPR), you are a life-support system for the victim. CPR is a first aid procedure performed to restore breathing and heartbeat. It is a combination

### Key Note Term

cardiopulmonary resuscitation (CPR) – an emergency method to keep blood and oxygen flowing through a person whose heart and breathing have stopped.



Figure 2.2.5: After two breaths, check for a pulse as you check for breath sounds.

of mouth-to-mouth resuscitation and a procedure known as closed chest heart massage. Mouth-to-mouth resuscitation supplies oxygen to the lungs, while the closed chest heart massage manually pumps blood through the victim's body, circulating it to the heart and brain. These actions help keep the heart and brain alive until the heartbeat is restored or medical help arrives.

CPR can be performed by a single rescuer or by more than one rescuer because CPR can be tiring and is easier if two rescuers are available. The CPR procedures discussed in this lesson are for a single rescuer. Before beginning CPR, you should turn the victim face up, clear the airway, give two full breaths as described in mouth-to-mouth resuscitation, and check for a pulse. Only proceed if there is no pulse, and therefore, no heartbeat present.

### Performing CPR on an Adult

To perform CPR on an adult, follow these steps:

- 1. With the middle and index fingers of the hand nearest the victim's legs, locate the lower edge of the rib cage on the side of the victim's chest closest to you.
- 2. Slide your fingers up the edge of the rib cage to the notch at the lower end of the breastbone. Place your middle finger in the notch and the index finger next to it on the lower end of the breastbone.
- 3. Place the heel of the hand nearest the victim's head on the breastbone next to the index finger of the hand used to find the notch.
- 4. Place the heel of the hand used to find the notch directly on top of the heel of the other hand. Only let the heel of your hand touch the victim's chest; keep your fingers lifted off of the victim's chest. If you place your hands correctly, they will be positioned slightly above the lowest part of the breastbone, known as the xiphoid process. Avoid pressing on the xiphoid process because it breaks easily.
- 5. Position your shoulders over your hands, with elbows locked and arms straight.
- 6. Press down on the breastbone  $1\frac{1}{2}$  to 2 inches at a very quick, continuous rate. This squeezes the victim's heart against the spine and forces blood through the body.
- 7. While compressing, count aloud "one and two and three and four ..." until you get to 15. It should take you about ten seconds to do 15 compressions. Push down as you say the number and release the pressure as you say "and." Compress up and down smoothly without removing your hands from the chest.

- 8. After the fifteenth compression, give the victim two full breaths. Be sure to pinch the nose closed and tilt the victim's head back to straighten the airway. Then return to the chest compressions.
- 9. When you complete four cycles of 15 chest compressions and two breaths, check for a pulse again. If there is no pulse, continue CPR.

### Performing CPR on an Infant

Performing CPR on an infant is slightly different than performing it on an adult. To do so, follow these steps:

- 1. Place your hand closest to the infant's head gently on the infant's forehead and leave it there throughout the procedure.
- 2. Place the middle and ring fingers of the hand nearest the infant's legs on the infant's breastbone about one finger width below the infant's nipples.
- 3. Give five compressions with those two fingers at a rapid pace, pushing the chest down about  $\frac{1}{2}$  to 1 inch.
- 4. Follow the five compressions with one breath as described in the italicized text in Step 3 of mouth-to-mouth resuscitation. Rapidly repeat the five compressions and one breath 20 times a minute until breathing and heartbeat resume.

### Performing CPR on a Child

To perform CPR on a child, follow these steps:

- 1. As with an adult, find the notched center of the child's ribcage with the hand closest to the child's legs. Measure two finger widths above the notch using the other hand, and then place the heel of the hand used to find the notch on the child's breastbone above the two fingers.
- 2. Place the hand that you used to measure two finger widths gently on the child's forehead and leave it there throughout the rest of the procedure.
- 3. Using the heel of your hand and keeping your fingers off of the child's chest, give five compressions 1 to  $1\frac{1}{2}$  inches deep, followed by one breath as described in the italicized text in Step 3 of mouth-to-mouth resuscitation. Repeat this sequence 12 times a minute until breathing and heartbeat resume.

### **Heart Attacks**

A heart attack occurs when the blood supply to part of the heart muscle is severely reduced or stopped. That happens when one of the coronary arteries (the arteries that supply blood to the heart muscle) is blocked by an obstruction or a spasm. Common signs and symptoms so of a heart attack include:

- Uncomfortable pressure, fullness, squeezing, or pain in the center of the chest that lasts more than a few minutes or that goes away and comes back.
- Pain spreading to the shoulders, neck, or arms.
- Chest discomfort with lightheadedness, fainting, sweating, nausea, or shortness of breath.

When a person's heart stops beating, the victims is said to be in **cardiac arrest**. Cardiopulmonary resuscitations (CPR) can keep the individual alive. If a person has a heart attack, call Emergency Medical Services (EMS). Monitor the ABC's and give CPR as necessary.

### Key Note Term

**cardiac arrest** – the sudden stoppage of the heart.

### Stroke

A **stroke** occurs when blood vessels that deliver oxygen-rich blood to the brain rupture or when a blood clot forms and blocks the flow of blood to the brain. Common signs and symptoms of a stroke include:

- \* Paralysis on one side of the body
- \* Blurred or decreased vision, pupils of unequal size
- \* Problems speaking, slurred speech
- \* Difficulty breathing
- \* Mental confusion
- \* Dizziness or loss of balance
- \* Sudden, severe, or unexplained headache
- \* Loss of consciousness

If a person has a stroke, call Emergency Medical Service (EMS). Lay the victim down on one side and cover with blanket. Monitor the ABC's and give CPR as necessary.

### Note

To learn more about strokes, check out www.strokeassociation.org to see the American Stroke Association website.

### **Automated External Defibrillators (AED)**

Recently there has been a breakthrough in how Emergency Medical Technicians (EMTs) treat victims of sudden cardiac arrest. The **Automated External Defibrillator** (**AED**) is a device that uses a computer chip to analyze the heart rhythm and determines whether a shock is needed. This device allows victims suffering a sudden cardiac arrest a greatly improved chance of survival. Because of the ease of operation, people can be trained in AED use in a few hours, and some say the techniques are easier to learn than CPR. Many AEDs offer voice prompts, which provide operators with clear and concise instructions. Most AEDs have only three buttons: On/Off, Analyze, and Shock. Many airlines have installed AEDs on all their planes, and several cities are locating them in areas where there are large concentrations of people, such as malls, arenas, and stadiums.

### **Key Note Term**

**stroke** – a reduction of blood flow to a part of the brain.

### Key Note Term

automated external defibrillator – a device used to treat a patient with cardiac arrest whose heart is beating irregularly.

### **Conclusion**

This lesson presents the correct techniques for dealing with the most life-threatening conditions of an accident victim—loss of breathing and heartbeat. Use the letters **A-B-C** to remind yourself of the first problems to check for on an injured person: Airway blocked, loss of Breathing, and lack of Circulation. Perform the Heimlich maneuver to clear a victim's airway, mouth-to-mouth resuscitation to restore breathing, and CPR to restore circulation (heartbeat). For the best and safest results, take a class from a qualified instructor before performing mouth-to-mouth resuscitation or CPR on an injured person.

### Lesson Review

- 1. What are the A-B-Cs of life-saving steps?
- 2. Discuss the Heimlich maneuver, both performing it on another and performing it on yourself.
- 3. When performing CPR, what are the differences between performing this on an adult, an infant, and a child?
- 4. What are the common signs of a stroke?

## Lesson Review

### Lesson 3

### Controlling Bleeding



### Key Terms

arteries dressing elevated hemorrhage pressure bandage pressure point veins

### What You Will Learn to Do

• Determine first aid procedures for bleeding victim

### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

### Skills and Knowledge You Will Gain along the Way

- Identify the three types of bleeding
- Identify the best way to control most cases of bleeding
- Distinguish among direct pressure, pressure points and a tourniquet to control bleeding
- Describe how to clean wounds
- Define key words

# Mabl

### Key Note Term

arteries – blood vessels that carry blood away from the heart to all parts of the body.

**veins** – blood vessels that carry blood from all parts of the body to the heart.

**hemorrhage** – heavy or uncontrollable bleeding

### Introduction

In an accident situation, you may encounter injured persons bleeding from wounds such as scrapes, cuts, or punctures as well as tears or gashes in the skin. The deeper a wound goes, the more serious it is. Mild wounds to the outer layer of skin do not bleed heavily but still require cleaning to avoid infection. Deeper wounds in which **arteries** and **veins** are cut can be life-threatening. These kinds of wounds may involve great amounts of blood, and blood may often pulse or spurt out of the wound. Severe bleeding, or **hemorrhage**, can result in shock or death if not treated promptly. It is essential to stop the loss of blood in these cases. If a victim loses too much blood, even CPR will not keep the person alive because there will not be enough blood to deliver oxygen from the lungs to the body.

### Types of Bleeding

There are three types of bleeding you may encounter in an emergency situation. These are:

- **Arterial bleeding** is the loss of blood from an artery. Characterized by bright red blood that spurts with each heartbeat, arterial blood loss is severe and hard to control. Give it first priority for treatment.
- **Venous bleeding** is blood loss from a vein. Venous bleeding is characterized by a steady flow of dark blood.
- Capillary bleeding is the loss of blood from the capillaries (the smallest blood vessels), and is usually characterized by a slow flow of blood.

First aid treatment in all of these cases includes stopping the flow of blood and preventing infection.

### **Direct Pressure**

In most cases, applying continuous, direct pressure to a wound is the best way to control bleeding. To apply direct pressure, place a **dressing** over the wound and apply pressure to the dressing, as shown in Figure 2.3.1. A dressing should be:

- As sterile as possible. If a sterile dressing is not available, use a clean cloth (a washcloth, towel, or handkerchief).
- Larger than the wound.
- Thick, soft, and compressible so pressure is evenly distributed over the wound.
- Lint free.

### Key Note Term

**dressing** – ointment and bandages applied to a wound.



Figure 2.3.1: Apply direct pressure to the bandage to stop bleeding.

If a clean cloth or gauze is not available, use clothing or your bare hands or fingers—whatever is the cleanest. Continue applying pressure and the bleeding should begin to slow or stop within 30 minutes.

### Stopping Infection

Even the slightest wound requires immediate cleansing. The best way to clean wounds is to wash them with soap and water. At home, use water from the faucet. On a hike, use water from a canteen or the clear running water of a stream. If available, use an antiseptic cleanser instead of soap. Wait until the skin around the wound dries and then put on a bandage. If available, apply an antiseptic cream to the wound before bandaging it.

For a minor wound, cleaning and bandaging it is probably all that is required. Deep wounds, wounds made by animal or human bites, and wounds contaminated by dirt, rust, or other items require medical treatment. Clean and bandage these wounds, and get medical assistance as soon as possible. If a wound contains glass or other objects stuck into the flesh, do not remove them unless they wash out of the wound easily.

### Controlling Bleeding to Extremities

In most cases, direct pressure is the best way to stop bleeding of wounds to the extremities (arms and legs). As you apply direct pressure, keep the injured limb **elevated** above the heart to slow the flow of blood out of the body.

After initially applying direct pressure, you may want to apply a **pressure bandage** by wrapping a bandage snugly around the limb, using overlapping turns with a roll of gauze. Do not tie the pressure bandage so tightly that it restricts blood flow to the lower part of the limb. If fingertips or toes appear bluish or if

### **Key Note Term**

elevated - raised up.

**pressure bandage** – a snug bandage used to control bleeding.

### **Key Note Term**

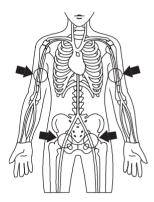
pressure point – a point on the body where a major artery lies near the skin surface and passes over a bone.

Figure 2.3.2: Use pressure points on the body to help slow or stop bleeding.

there is no pulse below the dressing, loosen the material used to secure the dressing immediately. After you apply a pressure bandage, only qualified medical personnel should remove it.

### **Pressure Points**

In the case of severe bleeding that does not slow or stop using direct pressure, finger pressure may be applied to the **pressure point** on the injured limb between the wound and the heart. Pressure points, shown in Figure 2.3.2, are locations on the body where arteries are close to the surface. By applying pressure at these points, you slow or stop the flow of blood through the artery.



As with mouth-to-mouth resuscitation and CPR, it is better to have first aid training on pressure points before actually using this technique to stop bleeding. If done incorrectly, you may damage healthy tissue fed by the artery you are constricting.

### **Tourniquet**

If heavy blood loss continues, as from amputation, it may be necessary to use a tourniquet.

**Caution**: Because a tourniquet is a constricting band that stops the flow of blood below it, it can kill the limb to which it is applied; therefore, only use a tourniquet if no other method works to stop the bleeding and you believe the injured person's life is in danger.

To apply a tourniquet, follow these steps:

- 1. Fold a cloth until it is approximately two inches wide and long enough to go around the injured limb (see Figure 2.3.3).
- 2. Tie the material in a loop and position it two to four inches above the wound, but not over a joint.
- 3. Pass a rigid object, such as a stick, under the tourniquet loop and twist it until the bleeding stops (see Figure 2.3.4).



Figure 2.3.3: Fold a cloth so it is long enough to go around the injured limb.



Figure 2.3.4: Use a stick or other rigid object to tie off the tourniquet.



Figure 2.3.5: Secure the end of the stick to keep the tourniquet from unwinding.

- 4. Tie off the end of the stick with another piece of cloth or string to prevent it from unwinding (see Figure 2.3.5).
- 5. Mark the victim's forehead with a "T" to alert medical personnel that you have applied a tourniquet.

If it is necessary to cover the victim with a blanket, do not cover the tourniquet to make it easier for medical personnel to spot. After you apply a tourniquet, do not loosen or remove it. As with a pressure dressing, only qualified medical personnel should remove a tourniquet.

### Note

Remember—use a tourniquet only as a last resort when all other attempts to stop the bleeding fail.

### Controlling Bleeding to the Head and Torso

There are different ways to control head and torso bleeding. This section details how to use the methods.

### Scalp Injuries

For wounds to the scalp, use a pressure dressing. If brain tissue is exposed, tie the dressing loosely over the wound. Do not press the brain tissue back into the open wound.

### **Facial Injuries**

Control bleeding from facial wounds by using a pressure bandage. Position the victim to prevent him or her from breathing blood. Victims who have sustained a severe blow to the head should be kept under close observation as they may have brain damage and could require rescue breathing.

### Chest Injuries

A chest injury may result in an open chest wound, which could lead to air leaking from a lung and the collapse of a lung. If conscious, have the victim breathe out and apply some material such as plastic wrap or foil to the wound. Bind a pressure bandage tightly to the wound to prevent leakage of air and slow down blood loss. Have the victim sit up, if possible, or lay that person on the injured side.

### **Abdominal Injuries**

When an open abdominal wound has exposed visceral (internal) organs, cover the abdomen loosely with dressings. Do not force the organs back into the body cavity and do not give victims with abdominal wounds any food or water.

### Conclusion

Severe bleeding from wounds in which arteries or veins are cut can be life-threatening to an injured person; therefore, controlling the loss of blood is second in importance only to restoring breathing and circulation. In most cases, applying direct pressure to a wound is the best way to control bleeding. Cleansing a wound to stop infection is also extremely important. If you know these two facts, and the other details on controlling bleeding to the extremities, head, and torso, you can successfully accomplish the second life-saving step in an emergency situation.

### Lesson Review

- 1. List and explain the three types of bleeding.
- 2. How does direct pressure help stop bleeding?
- 3. Why is it important to use bandages that are as clean as possible?
- 4. Define the term "hemorrhage."

### Lesson 4

### Treating for Shock and Immobilizing Fractures



### Key Terms

clammy
closed fracture
dislocation
fainting
ligament
open fracture
splint
sprain
strain
trauma

### What You Will Learn to Do

• Determine first aid treatment for shock, fractures, strains and sprains

### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

### Skills and Knowledge You Will Gain along the Way

- Explain causes and effects of shock
- Identify the signs of shock
- Demonstrate how to treat for shock

- Distinguish between closed and open fractures
- Identify procedures for immobilizing fractures using splints and slings
- Distinguish between strains and sprains
- Define key words contained in this lesson

### Introduction

Whenever you treat someone for a severe injury, you must also treat them for shock. Even if an injured person shows no signs of shock, treat them anyway; shock can follow all major injuries. By treating for shock, you lessen its severity. If left untreated, shock can become life-threatening. There have been cases where people died from shock even though their injuries would not have killed them. Knowing how to deal with shock is a very important part of first aid.

After treating for shock, take care of broken bones or suspected broken bones. If there is a question of whether a bone is broken, treat it as if it were broken. Follow the first aid procedures for splinting a fracture carefully because more damage can occur if a fracture is handled improperly.

### Shock

Shock from an injury is different from electric shock, although it can be brought on by electric shock, as well as blood loss, burns, psychological **trauma**, heart attack, and other injuries involving pain. Shock disrupts circulation. In an attempt to correct damage from an injury and to protect its blood supply, the body routes blood away from outer tissues to organs inside the body. This may keep adequate blood, and therefore oxygen, from reaching the brain. In severe cases, the injured person can lose consciousness and blood supply to vital organs like the heart, causing death.

Shock usually occurs within the first hour after a severe injury. How severe shock becomes depends on several factors including the type of injury, how much blood is lost, and characteristics of the injured person's nervous system. Increased pain, rough handling, delayed treatment, and emotional reactions such as fear and panic can worsen shock.

### Signs of Shock

When a victim is in shock, the skin is pale or bluish and cold to the touch. For a victim with dark skin, check the color of the mucous membranes on the inside of the mouth or under the eyelids, or check under the nail beds. The skin may be **clammy** from perspiration. Other signs that may develop in the early stages of shock include:

### **Key Note Term**

trauma – a behavioral state resulting from mention or emotional stress or physical injury that has a lasting effect on the mind; a physical wound or injury.

### **Key Note Term**

**clammy** – damp, soft, sticky, and unusually cool.

- Restlessness or nervousness
- Thirst
- Bleeding
- Confusion or loss of awareness
- Breathing rapidly
- Nausea and/or vomiting
- Blotchy or bluish skin around the mouth and lips
- Fainting

**Fainting,** or "blacking out," is a mild form of shock caused by a lack of blood to the brain. Fright, bad news, breathing polluted air, or standing too long can result in fainting. Before fainting occurs, a shock victim may turn pale, shake, or suddenly fall to the ground.

### **Treating Shock**

Procedures for treating shock include improving circulation of the blood, ensuring an adequate supply of oxygen, and maintaining normal body temperature. To treat a victim for shock, follow these steps:

- 1. Position the victim on his or her back, unless a sitting position allows easier breathing. If the victim is vomiting, position that person on the side to let fluid drain from the mouth.
- 2. Elevate the victim's feet higher than the heart, unless the victim has an abdominal or chest wound or an unsplinted leg fracture.
- 3. Loosen clothing that may bind around the neck and waist.
- 4. Keep the victim from becoming cold or overheating.
- 5. Reassure the victim, and do not give him or her any food or drink; however, if you know that help is not going to arrive for over an hour, give the victim small amounts of fluids, at room temperature, every 15 minutes. Add an eighth of a teaspoon of salt, if available, to each half glass of fluid. This will help the victim retain more fluids in his or her system.

### Key Note Term

fainting – to lose consciousness briefly because of temporary decrease in the amount of blood that flows to the brain.

### Key Note Term

closed fracture – a fracture in which the broken bone does not push through the skin's surface.

**open fracture** – a fracture in which the broken end of a bone pierces the skin.

### **Fractures**

Bone fractures resulting from falls are common injuries. A **closed** or simple **fracture** is a break in the bone that does not penetrate the skin. An **open** or compound **fracture** occurs if the sharp edges of a splintered bone have cut through the skin. Both types of fractures are shown in Figure 2.4.1.

In the case of an open fracture, it is obvious that a bone is broken. In the case of a closed fracture, indications of a broken bone include swelling, discoloration, and unusual positioning of the limb in question.

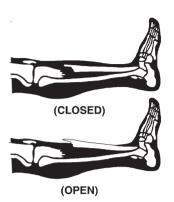


Figure 2.4.1: Closed (simple) and open (compound) fractures.

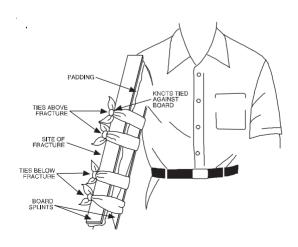
### Do's and Don'ts

When treating fractures, what you do is important, and what you don't do is equally as important.

- Do call for medical assistance immediately.
- Do keep the victim from moving.
- Do treat for shock while waiting for medical assistance.
- Don't try to set the bone.
- Don't put the victim in a car to rush him or her to a hospital. That is the easiest way of turning a closed fracture into an open one.
- Don't give stimulants if there is severe bleeding.

### **Splints**

The most important action to take when dealing with a fracture is to immobilize the injured bone to prevent further damage. The best way to immobilize bones is with a **splint**, shown in Figure 2.4.2.



### **Key Note Term**

**splint** – to support and immobilize a body part with a stiff material.

Figure 2.4.2: Splints help immobilize bones to prevent further injury.

For open fractures, control the bleeding before splinting. Keep the exposed bone moist by covering it with a moist, sterile dressing. The rules of splinting are:

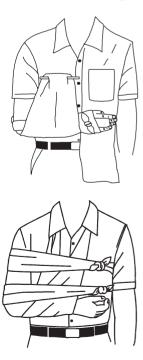
- 1. Pad all splinting material. Make splints from sticks, boards, cardboard, rolled newspaper, or any other unbendable material.
- 2. Splint the broken leg or arm in the position in which you found it. Do not try to straighten or reposition the fracture. In most cases, support an arm from above and below and a leg from the sides.
- 3. Use splinting material that is long enough to immobilize the joint above and below the break. For example, immobilize the ankle and the knee for a fracture in the vicinity of the calf.
- 4. Tie the splints above and below the suspected fracture. Make two ties above and two below the break. Never make a tie directly over the break.
- 5. Tie all knots on the outside of the splints.
- 6. Check that circulation is not restricted by splints tied too tightly.

If no splinting material is available, immobilize a leg fracture by placing padding between the injured leg and the uninjured leg and tying them together. Using the uninjured leg as the splint, draw two ties above and two below the suspected break.

### Slings

For arm fractures in which the entire arm is not splinted, use a sling (see Figure 2.4.3) to support the weight of the arm. If necessary, pin the victim's shirttail up to serve as a field expedient sling.

Figure 2.4.3: Placing a sling on an injured arm can support the injury.



### Joint Injuries

Joint injuries occur when excess stress or strain is placed on the joint. This can happen during normal activities such as walking or running, and is common in sports activities. Dislocations and sprains are the most common joint injuries.

### **Dislocations**

A **dislocation** occurs when a joint comes apart and stays apart with the bone ends no longer in contact. The shoulders, elbows, fingers, hips, kneecaps, and ankles are the joints most frequently affected. Dislocations have signs and symptoms similar to those of a fracture: severe pain, swelling, and the inability of the victim to move the injured joint. The main sign of a dislocation is deformity; its appearance will be different from that of a comparable uninjured joint. The procedures for treating a dislocation include:

- 1. Do not try to set the joint. Immobilize and support the injured joint as if treating for a fracture.
- 2. Use the RICE procedures (discussed later in this lesson).
- 3. Seek medical attention.

### Sprain

A **sprain** is an injury to a joint in which the **ligament**s and other tissues are damaged by violent stretching or twisting. Attempts to move or use the joint increase the pain. The skin about the joint may be discolored because of bleeding from torn tissues. It is often difficult to distinguish between a severe sprain and a fracture, because their signs and symptoms are similar. If you are not sure whether an injury is a sprain or a fracture, treat it like a fracture. It is better to immobilize a sprain than to take the chance of a victim sustaining further damage from an unsplinted closed fracture.

Treatment for a sprain consists of rest, ice, compression, and elevation (RICE). Seek medical attention.

### **Muscle Injuries**

Muscle injuries are as common as joint injuries. These can be very painful and need treatment as soon as possible after the injury occurs. The most common muscle injury is a strain.

### Key Note Term

**dislocation** – the separation of a bone from its joint.

### **Key Note Term**

**sprain** – an injury caused by twisting a ligament or tendon around a joint.

**ligament** – a fibrous band of tissue that holds bones together at a joint.

### Key Note Term

**strain** – an injury caused when a muscle or tendon is overstretched.

### Strain

A muscle **strain**, or muscle pull, occurs when a muscle is stretched beyond its normal range of motion, resulting in the muscle tearing. Signs and symptoms include: sharp pain, extreme tenderness when the area is touched, slight swelling, and difficulty moving or using he affected part. Treatment for a strain consists of rest, ice, compression and elevation (RICE).

### RICE Procedures for Bone, Joint and Muscle Injuries

RICE is the acronym for the first aid procedures—Rest, Ice, Compression, and Elevation—for bone, joint, and muscle injuries. What is done in the first 48–72 hours following such an injury can greatly affect the recovery.

- 1. **Rest**—Injuries heal faster if rested. Rest means the victim stays off the injured part.
- 2. **Ice**—An ice pack should be applied to the injured area for 20–30 minutes every 2–3 hours during the first 24–48 hours. When the skin becomes numb, remove the ice pack.
- 3. **Compression**—Compression of the injured area may squeeze some fluid and debris out of the injury site. Compression limits the ability of the skin and of other tissues to expand. Applying compression may be the most important step in preventing swelling. The victim should wear an elastic bandage continuously for 18–24 hours.
- 4. **Elevation**—Gravity has an important effect on swelling. The force of gravity pulls blood and other tissue to the lower parts of the body. After fluids get to your hands or feet, they have nowhere else to go; therefore, those parts of the body tend to swell the most. Elevating the injured areas, in combination with ice and compression, limits circulation to that area, which in turn helps limit internal bleeding and minimize swelling. Whenever possible, elevate the injured part above the level of the heart for the first 24 hours after an injury.

### Conclusion

This lesson explained the first aid procedures for treating shock and fractures. Remember that shock can follow severe injuries and can be life-threatening if left untreated. Treating a victim for shock involves improving circulation, ensuring an adequate oxygen supply, and maintaining normal body temperature. For fractures, the most important action to take is immobilizing the broken bone using splints. By following these first aid procedures, you can lessen the severity of shock caused by an injury and ensure that no further damage occurs to a victim because of a broken bone, sprain, or strain.

### Lesson Review

- 1. List one 'do' and one 'don't' when treating fractures.
- 2. What causes fainting?
- 3. What are the signs of shock?
- 4. Define the differences between a strain and a sprain.

### Lesson 5

### First Aid for Burns



### Key Terms

acids alkalis bases caustic compresses flush mottled neutralized scalding smoldering systemic

### What You Will Learn to Do

• Determine first aid treatment for burns

### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

### Skill and Knowledge You Will Gain along the Way

- Characterize degrees of burns
- Describe how to treat first, second, and third-degree heat burns

- Describe how to treat electrical burns
- Describe how to treat chemical burns to the eyes and skin
- Define key words

### Introduction

Burns can result from sources of heat, electricity, and chemicals. In situations where people are injured by these sources, your first aid knowledge should include how to treat them. This lesson covers different types of burns, how to treat them, and ways to prevent them.

### Burns

There are several types and degrees of burns that require different treatments. Heat, electricity, and chemicals can produce burn injuries; their severity depends upon the burn's depth, size, and location. Burns can be painful and may result in shock and infection. They can be very serious if they are spread over a large area of the body, there are other injuries involved, or the victim is very young or very old.

### Degrees of Burns

For burns caused by heat sources, there are different degrees (first, second, or third) based on the burn's depth. The deeper the burn, the more severe and the higher the degree. All electrical burns are third degree.

### Characteristics of First-Degree Burns

There are several characteristics of first-degree burns. These include:

- Least severe
- Injure only the top layer of skin
- Redden the skin
- Produce mild swelling
- Cause pain due to irritated nerve endings
- Heal quickly and completely if properly treated
- Caused by brief contact with hot objects, brief exposure to hot water or steam, and overexposure to sun (light sunburn) or wind

### Characteristics of Second-Degree Burns

There are several characteristics of second-degree burns. These include:

- Involve deeper layers of skin
- Cause skin to turn red and/or mottled
- Appear moist and oozing from the loss of fluid through damaged skin layers
- Produce blisters and swelling
- Usually the most painful type of burn because nerve endings are still intact even though tissue damage is severe
- Burns covering a large area may cause shock due to extensive loss of fluid from the burned skin
- Smaller second-degree burns that are properly treated should heal within two weeks with little or no scarring
- Caused by a deep sunburn, prolonged contact with hot objects, **scalding**, and flash burns from flammable liquids suddenly bursting into flame

### Characteristics of Third-Degree Burns

There are specific characteristics of third-degree burns. These include:

- Deepest and most severe type of burn
- May look white or charred (may appear to be a second-degree burn at first)
- Result in deep tissue destruction, reaching all layers of the skin and sometimes structures below the skin
- Often cause little or no pain since nerve endings are destroyed
- Often cause shock
- When healed, will be covered by scar tissue
- Caused by immersion in extremely hot water, prolonged contact with flames, and electric shock

### Treatment of Heat Burns

Treat heat burns based on their degree; therefore, before treating a burn, determine its degree and treat accordingly. When deciding the degree of a burn, in addition to the previous descriptions, it may help to know the source of the burn and/or how hot the source was, as well as how long the victim was exposed to it. If a victim appears to have a combination of burns of different degrees, determine the degree of the most burned part—usually in the middle of the burned area—and treat for that degree. If you are not sure about the degree of a burn, treat it as a third-degree burn.

Keep in mind that the goal of burn treatment is to relieve the victim's pain, prevent him/her from going into shock, and prevent infection of the burned area.

### Key Note Term

mottled – marked with irregular spots or splotches of different colors or shades of color.

scalding - the burning of the skin by a substance that is near boiling in temperature.

### Treating First-Degree Burns

To treat first-degree burns, follow these steps:

- 1. Loosen tight clothing and remove jewelry from the burned area before it swells. Have the victim put his/her jewelry in a safe place after removal.
- 2. Cool the burned part with water by either holding it under cold, running water, pouring cold water over it, immersing it in cold water, or applying cold, wet **compresses** to it. Cooling the burn with water helps remove heat from the skin, relieves pain and swelling, and cleans the injury. Continue this cooling treatment for between five and 15 minutes until the pain subsides.
- 3. Gently pat the burned area dry with a clean cloth.
- 4. Cover the injury with a sterile bandage or clean cloth to keep air off of it, thereby reducing pain, and providing protection against infection. Keep the bandage loose to keep pressure off of the injury.
- 5. After a first-degree burn is completely cooled, especially a sunburn, use a lotion or moisturizer to relieve pain and prevent drying of the skin.

### Treating Second-Degree Burns

To treat second-degree burns, follow these steps:

- 1. For second-degree burns, follow steps one through four for treating first-degree burns. If you use running water to cool the injured part, ensure the water is not so forceful that blisters on the burned skin are broken.
- 2. Elevate the burned part.
- 3. Ensure the victim drinks plenty of liquids to avoid dehydration.
- 4. Seek medical treatment for second-degree burns to the face, hands, feet, or genitals, or that are more than two to three inches in diameter.

### Note

For extensive second-degree burns, monitor the victim for signs of shock and treat accordingly until he/she receives medical treatment. See Lesson 4 for signs and treatment of shock. For second-degree burns to the face, especially if accompanied by smoke inhalation, the victim may have respiratory burns that can lead to swelling and blockage of his/her airway. Monitor the victim's breathing and treat accordingly until he/she receives medical treatment.

### Treating Third-Degree Burns

To treat third-degree burns, follow these steps:

- 1. Remove the victim from the source of heat if he/she is still in contact with it. (See the following section for removing a victim from a source of electricity.)
- 2. Call for Emergency Medical Services (EMS). All third-degree burns require medical treatment regardless of their size. Until the victim receives treatment, follow steps 3 through 9.
- 3. Ensure that the victim is breathing. If not, begin mouth-to-mouth resuscitation.

### Key Note Term

compresses – folded clothes or pads applied so as to press upon a body part to stop bleeding or cool a burn

### Key Note Term

**smoldering** – burning slowly without flame, but often with much smoke.

- 4. Remove any clothing that is still **smoldering** to stop further burning. If the victim is wearing jewelry that is near or on a burned area, remove it if it comes off easily. Place the jewelry in the victim's pocket, purse, and so on, if available. If not, reassure the victim that you will give his/ her jewelry to emergency medical personnel when they arrive.
- 5. If necessary, expose the burned area by cutting and gently lifting away any clothing. If any cloth sticks to the burn, leave it in place. Note: If you are in a chemically contaminated area, do not expose the burned area; simply apply a dressing over the victim's clothing.
- 6. Cover the burned area loosely with cool, moist compresses, sterile bandages, or clean cloth.

### Note

Unlike treatment for first and second degree burns, do not cool a third-degree burn with water because this can increase the risk of shock.

- 7. Elevate the burned part.
- 8. Treat the victim for shock. Pay special attention to the victim's body temperature, which can change rapidly due to the skin being burned.
- 9. Monitor the breathing of victims with burns to the face and burns resulting from fire accompanied by smoke inhalation. Treat accordingly.

### "Don'ts" When Treating Burns

It's important to know what to do when treating burns, but it's just as important to know what not to do. The following list details actions that should never be done when treating burns.

- Do not put butter, oil, or grease on a burn; they can keep heat in the burn and cause more damage, as well as increase the chance of infection.
- Do not use cotton or cottony bandages on burns as they may stick to the injury.
- Do not put ice or ice water on a burn; this can result in frostbite and cause more damage to the skin.
- Do not break any blisters that have formed; blisters help protect against infection.
- Do not put pressure on a burn.
- Do not try to remove stuck clothing, debris, or loosened skin from a burn.
- Do not try to clean a wound with soap, alcohol, or any other antiseptic product; only water should be used and only on first- and second-degree burns.
- Do not let a victim walk on burned feet even if he/she tells you it does not hurt; third-degree burns can cause little pain since nerved endings are destroyed, but damage is severe and pressure from walking will only increase it.

### **Prevention of Heat Burns**

There are many things you can do to prevent heat burns. Some of these include:

- Use caution when handling matches and starting a fire, particularly with a flammable liquid.
- If you have young brothers and sisters, store matches out of their reach.
- Use caution around hot liquids, steam, and heating and cooking equipment.
- Ensure hot tap water is not scalding before stepping into a tub or shower or putting your hands under a running faucet.
- Ensure your home has a fire extinguisher and smoke alarms.
- Never use water on an electrical fire; use a chemical fire extinguisher.
- If anyone in your household smokes, remind them not to smoke in bed.
- Keep a box of baking soda in the kitchen to smother grease fires.
- Turn pot handles on the stove so they are not sticking out where someone may bump them in passing.
- For electric cookware, do not let cords hang off the counter where they can be caught and pull the cookware off as well.
- If a pilot light goes out on a gas appliance, make sure all burners and the stove are turned off and ventilate the area before relighting it or before using electrical switches, which make tiny sparks.
- Do not leave flammable items (such as newspapers or dishcloths) near the fireplace or on or near the stove.
- Turn off space heaters before going to sleep or leaving the house.
- Know what actions to take if a fire starts in your home and practice them with family members.

### Treatment of Electrical Burns

Although an electrical shock will often produce only a minor mark on the skin, the injury can be a serious, deep-tissue burn, so treat all electrical burns as third degree. The current from an electrical shock passing through a victim's body can also result in unconsciousness and may slow or stop his or her breathing and/or heartbeat; therefore, treat electrical shock as a potentially life-threatening injury.

If you believe a person has been electrocuted, assess the situation first before touching the victim. He or she may still be in contact with the electrical current, and if you touch him or her, you could become a victim of electrical shock as well. Follow these steps to avoid a double accident and provide first aid treatment:

1. If the victim is still in contact with the source of electricity, stop the current. Shut off the electrical current by unplugging a cord, removing a fuse from the fuse box, or turning off the circuit breaker, as appropriate. Note: In many cases, just turning off a wall or appliance switch does not stop the electrical flow. Even though you have shut off the electrical current, to be completely safe, move the victim away from the electrical source before continuing. Proceed to step 3. If you cannot turn off the electricity or you are outside and the shock is due to a downed power line, either call the power company yourself if you have a phone near you, or if there are other people around, have someone else call the power company. Meanwhile, since it may take you less time to separate the victim from the current than to wait for the power to be cut off, proceed to step 2. Or, if

you are alone and/or there is no phone readily available in this situation, proceed to step 2.

2. Separate the victim from the source of electrical current.

Push the victim off of or away from the source of electricity—or push the source of electricity off of or away from the victim—using a dry non-conducting material (wood, plastic, cardboard) like a broom, stick, or chair. If available, also stand on something dry and non-conducting, like newspaper or a rubber mat, as you disengage the victim.

If pushing does not work, use a dry rope or dry clothing to lift or drag the victim off of or away from the source of electricity. This method works better if there are two rescuers: one to lift the victim off and the other to push the electrical source away.

### Note

**Special Precaution:** If the ground is wet, do not attempt to move a victim in contact with an electrical current. Water conducts electricity, and you can be electrocuted as well. In this case, the current must be stopped before you can administer first aid.

- 3. Check the victim's breathing and pulse. Be prepared to administer mouth-tomouth resuscitation or cardiopulmonary resuscitation (CPR) if the victim's breathing is shallow or nonexistent or his/her pulse is dangerously slow or non-existent.
- 4. After you are sure the victim is breathing, take the time to call EMS if you or someone else has not already done so.
- 5. Check the victim for two burn sites—one where the electricity entered the body and one where it exited the body. Treat the burns by following steps 4 through 9 for treating third-degree burns, including treating for shock and monitoring breathing.

### Note

About 1,000 people die each year in the United States due to electrical shock.

### Prevention of Electrical Burns

Electrical burns can be prevented if you know what to do. To prevent electrical burns:

- Do not use electrical appliances in the tub, while showering, or in or near swimming pools.
- Do not use electrical equipment outdoors if it is raining or the ground is wet.
- Ensure electrical equipment you use outdoors is made for outdoor use, with three-way ground plugs and heavier wiring.
- Ensure outdoor electrical outlets have weatherproof covers.
- If you have very young brothers or sisters, ensure there are child safety plugs in all electrical outlets.

- Do not overload an outlet by plugging in several appliances in a "piggy-back" fashion.
- Do not use electrical appliances or equipment that have exposed wiring or frayed cords, or that overheat or create sparks.
- Do not climb trees that have wires running through or near them.
- Look for overhead wires before using long tools like tree trimmers, pool skimmers, or ladders.
- Stay inside during electrical storms; keep away from windows; do not use appliances or the phone, since lightning can travel through wires; and do not take a shower or bath, since lightning can also travel through pipes.
- If you are caught outside during an electrical storm, avoid trees, poles, and metal objects; find low ground and crouch down.

### Treatment of Chemical Burns

Chemical burns occur when the skin or eyes come in contact with liquid or dry chemicals that are **caustic** or irritating. You may have products around your house, such as rust and paint removers and drain and cement cleaners that contain **acids** designed to eat away certain materials and **bases** (also called **alkalis**) used to cut through grease. If used carelessly or improperly, these products may also do the same to your clothes and skin.

The seriousness of a chemical burn depends on the:

- Length of time the chemical is in contact with the skin or eyes
- Concentration of the chemical—the more concentrated, the more damaging
- Temperature of the product containing the chemical—the higher the temperature, the quicker the damage

Treatment of chemical burns involves stopping the chemical action immediately by removing the chemical from the skin or eyes and by removing contaminated clothing that can transmit absorbed chemicals to the skin. Treatment will vary depending on the type of chemical involved, so if there are first aid instructions on the label of the chemical product causing the burn, follow those instructions. If not, use the following basic guidelines for treatment.

### Treating Chemical Burns to the Skin

To treat chemical burns to the skin, follow these steps:

- 1. Depending on the extent of chemical coverage on the victim or in the area, consider wearing gloves and/or safety goggles, if available, to protect yourself from chemical injuries while assisting the victim.
- 2. Remove any contaminated jewelry or clothing from the victim, including shoes and socks where chemicals can collect.
- 3. Remove the chemical from the skin.
  - For liquid chemicals, **flush** them from the contaminated skin with large amounts of cool running water for at least 15 minutes.

### Key Note Term

**caustic** – capable of destroying or eating away by chemical action; corrosive.

acids – chemical compounds with a sour taste that react with bese to form salt, have a pH value of less than 7, react with metals to form hydrogen gas, and have the capability to eat away or dissolve metals and other materials.

bases – chemical compounds with a slippery or soapy feel that react with acids to form salt, have a pH value above 7, and are used as cleaning materials.

alkalis – any base, as soda, potash, and so on, that is soluble in water, combines with fats to form soap, neutralizes acids, and forms salts with them.

**flush** – to cleanse or wash out with running water or another liquid. • For dry chemicals, brush them off the skin using a clean, dry cloth. Take care to keep the chemicals from blowing into your eyes or the victim's eyes, and avoid brushing the chemicals onto your own skin. Then, if large amounts of water are available, flush the contaminated area for at least 15 minutes. If large amounts of water are not available, do not apply any water to the contaminated area, since small amounts of water can react with dry chemicals causing more burning.

### Note

If the victim says he/she feels the burning has intensified after you have finished flushing the contaminated area, flush for several more minutes, or longer, as necessary.

- 4. Cover the burned area loosely with dry, clean bandages or cloth.
- 5. Minor chemical burns generally heal without further treatment; however, call for Emergency Medical Services for:
  - any chemical burn to the face, hands, feet, genitalia, or joints
  - second-degree chemical burns over two to three inches in diameter
  - all third-degree chemical burns
  - if there is a systemic reaction to the chemical burn and/or chemical exposure

### Note

For extensive or severe chemical burns, monitor the victim for signs of shock and treat accordingly until he/she receives medical treatment. For a victim with chemical burns to the face or who may have inhaled chemicals, monitor his/her breathing in case of possible respiratory burns and swelling. Treat accordingly until medical help arrives.

### Treating Chemical Burns to the Eyes

To treat chemical burns to the eyes, follow these steps:

- 1. Position the victim's head so that the injured eye is lower than the uninjured eye. This will prevent the chemical from getting into the uninjured eye. If both eyes are injured, proceed to Step 2.
- 2. If there is only one injured eye, hold the eyelids of the injured eye open and flush with water from the inner corner of the eye (closest to the nose) to the outer corner (closest to the ear). Flush for at least 15 minutes. If both eyes are injured, flush both at the same time.
- 3. To keep the victim from moving his/her injured eye(s), have the victim close both eyes, then cover them with cloth pads or gauze taped loosely into place. Because eyes move together, both eyes must be closed and covered to keep the injured eye still
- 4. Call for Emergency Medical Services or transport the victim to the emergency room.

### "Don'ts" When Treating Chemical Burns

Follow the "don'ts" listed earlier in this lesson in "Don'ts When Treating Burns." In addition, do not put any other chemicals on a chemical burn in an attempt to

### Key Note Term

systemic – affecting the body in general; acting throughout the body after absorption or ingestion.

### Key Note Term

**neutralize** – to counteract the activity or effect of; to make chemically neutral.

**neutralize** the chemical causing the burn—for example, putting an acid on an alkali and vice versa.

### **Prevention of Chemical Burns**

Chemical burns can be prevented, if you know what to do. To help prevent chemical burns:

- Before using any chemical product, read the label—including precautions or warnings—then follow the instructions for use.
- If you have younger brothers or sisters, ensure chemical products are stored out of their reach.
- Use chemical products in a well-ventilated area.
- Do not mix different chemical products; they may react with each other causing hazardous conditions; for example, mixing bleach and ammonia results in dangerous fumes.
- To avoid confusion and accidental misuse of chemical products, leave them in their original containers with their labels intact.

### Conclusion

You have just learned important procedures for treating burns as well as when to apply basic first aid and life-saving skills in these situations. Remember, although it is important to administer first aid treatment as quickly as possible in most situations, for your safety, some rescue situations require careful assessment before adminstering first aid. Remaining calm, thinking logically and clearly, and knowing what steps to take and when to take them will help you to successfully perform first aid. In addition, this lesson provided many tips on how to prevent accidents from occurring in the first place.

### Lesson Review

- 1. What are some of the characteristics of first, second, and third-degree burns?
- 2. How can you prevent electrical burns?
- 3. What determines the seriousness of a chemical burn?
- 4. Define the term "systemic."

### Lesson 6

### First Aid for Poisons, Wounds, and Bruises



### **Key Terms**

abrasions amputation avulsion incisions lacerations solvents

### What You Will Learn to Do

• Determine first aid treatment for wounds, bruises and poisoning

### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

### Skills and Knowledge You Will Gain along the Way

- Identify the causes and symptoms of poisoning
- Describe how to treat a poison victim
- Distinguish among the four types of wounds
- Describe how to treat minor wounds and bruises
- Define key words contained in this lesson

#### Introduction

Whenever there are small children left alone in the kitchen, accidents can happen, especially when cleaning products are left out in the open. The first section of this lesson introduces the treatment and prevention of injury from poisons. As an addition to your first aid abilities, the lesson ends with a discussion of different types of wounds and their treatments, as well as the treatment of bruises.

#### **Poisons**

As consumers, we buy more than a quarter of a million different household products—materials used in and around the house for medication, cleaning, cosmetic purposes, exterminating insects, and killing weeds. These items are valuable in the house and for yard maintenance, but misuse, especially when products are used in inappropriate applications or quantities, can cause illness, injury, and even death.

Each year more than 6,000 people die and an estimated 300,000 suffer disabling illnesses as a result of unintentional poisoning by solid and liquid substances. Poisonings can happen to anyone, at any time, in any situation.

Poisonings at home; however, can be prevented. Although child-resistant packaging has greatly reduced the number of fatalities among children under five years of age; parents, grandparents, and other caregivers must still be cautious. Following label directions for all products, including medication dosages, and proper storage of potentially toxic products are important precautions to heed.

- Poisonings from solids and liquids such as drugs, medicines, poisonous houseplants, and commonly recognized poisons caused 6,300 deaths in the home in 1998 alone.
- An additional 500 deaths in the home in 1998 were due to poisonings from gases and vapors such as carbon monoxide.
- These deaths are not all among children. Another age group at risk is adults age 25 through 44. Many adults are unintentionally poisoned when they do not follow label directions on medications or household chemicals.

Poisoning is the effect of one or more harmful substances on the body. Poisons can be inhaled or ingested. Fortunately, most poisonings happen with products of low toxicity or with amounts so small, that severe poisoning rarely occurs; however, the potential for severe or fatal poisoning is always present.

#### **Inhaled Poisons**

Inhaled poisoning occurs when a person breathes a poisonous substance into his/her lungs. Inhaled poisons include:

#### Key Note Term

solvents – liquid substances capable of dissolving or eliminating something unwanted.

- Smoke
- Gas used in outdoor cooking equipment and appliances in homes and recreational vehicles
- Hazardous fumes from household products such as paint and paint thinners, gasoline, solvents, and glues, as well as from chemicals used in industrial processes
- Carbon monoxide, which is always produced by wood, coal, and charcoal fires, and by gasoline engines, can also be produced by gas, oil, and kerosene appliances such as furnaces, space heaters, water heaters, and stoves

Carbon monoxide, in particular, is a very dangerous poisonous substance, because it is odorless, colorless, and tasteless, making it difficult to detect. When a person inhales carbon monoxide, it replaces oxygen in the blood, which results in oxygen starvation throughout the body. Exposure to low amounts of carbon monoxide can cause flu-like symptoms; continued exposure can cause permanent brain, nerve, and heart damage; exposure to very high concentrations can kill a person in a few minutes.

Running a car engine in a closed garage, using a charcoal grill indoors, and burning a fire in a fireplace with a blocked chimney can all result in carbon monoxide poisoning. In addition, because carbon monoxide forms when there is a lack of oxygen resulting in incomplete fuel combustion, operating fuel-burning equipment without an adequate supply of oxygen (proper ventilation) can result in carbon monoxide poisoning. For example, hundreds of people in the United States each year suffer carbon monoxide injuries from using portable heaters, lanterns, and camping stoves inside tents, campers, and vehicles.

#### Symptoms of Inhaled Poisoning

Symptoms of inhaled poisoning may not show up immediately. If you suspect inhalation poisoning, keep the victim under observation. If you know the victim has inhaled a poisonous chemical, get medical help whether or not symptoms are present. Symptoms will vary depending on the type and amount of poison inhaled, but can include any of the following:

- Dizziness
- Weakness
- Drowsiness
- Headache
- Mental confusion
- Breathing difficulties
- Heartbeat irregularities
- Unusual breath odor
- Discoloration of the lips and mucous membranes
- Nausea

- Vomiting
- Rashes or burns on the skin
- Unconsciousness

#### Treatment for Inhaled Poisons

Before rushing in to rescue a victim in a smoke, gas, or fume-filled environment, quickly assess the situation so that you do not end up a victim as well. If the poisonous substance is overwhelming and the danger to you is too great, do not attempt to rescue the victim unless you have been trained for rescue in this type of situation. Immediately call EMS and stay clear of danger.

However, if after assessing the situation you believe you can safely remove the victim from the poisonous environment, do so by following these steps.

- 1. If you are alone, call for help first before attempting the rescue. This will notify others of the situation—a precaution that will ensure help is on its way in case you are also overcome by the poison.
- 2. Take several deep breaths of fresh air, then take a final deep breath and hold it as you go in. If available, a damp cloth held over your nose and mouth is a good safety precaution.

#### Note

Do not use light switches, light a match, or use any other equipment or appliance that produces flames or sparks while you are in a gas or fume-filled area.

- 3. If you can see fumes or smoke, keep your head out of them. For example, fumes from car exhaust are heavy and settle near the floor, so keep your head above them; but in the case of smoke, which rises, keep your head below it.
- 4. Move the victim out into the fresh air. If for some reason this is not possible, open doors and windows to ventilate the area, returning out into the fresh air as necessary to ensure your safety. Do not administer first aid until you and the victim are out of the hazardous environment or the area is ventilated.

Check the victim's airway, breathing, and circulation (ABCs), and perform mouth-to-mouth resuscitation and CPR as necessary. After you are sure the victim is breathing, call EMS if you or someone else has not already done so. Even if the victim seems fine after he/she is in fresh air, call for medical help as symptoms may show up later. While you are waiting for medical help, treat the victim for any burns he/she may have suffered and monitor for shock.

#### **Oral Poisoning**

Oral poisoning occurs when a harmful substance, such as a common household cleaning product, is swallowed. First aid for oral poisoning depends on the substance swallowed.

#### Symptoms of Oral Poisoning

Symptoms will vary depending on the type and amount of poison inhaled but can include any of the following:

- Abdominal pain and cramping
- Nausea or vomiting
- Diarrhea
- Burns, odor, stains around and in mouth
- Drowsiness or unconsciousness
- Poison containers nearby

#### Treatment for Oral Poisons

Procedures for treating oral poisoning:

- 1. Determine critical information:
  - Age and size of victim
  - What was swallowed
  - How much was swallowed
  - When was it swallowed
- 2. If a corrosive or caustic substance was swallowed, immediately dilute it by having the victim drink at least one or two eight-ounce glasses of water or milk.
- 3. For a responsive victim, call a poison control center immediately. More than 70 percent of poisonings can be treated through instructions taken over the telephone from a poison control center.
- 4. For an unresponsive victim, or if the poison control center number is unknown, call EMS and monitor the ABCs.
- 5. Place the victim on his or her left side to position the end of the stomach where it enters the small intestine straight up. Gravity will delay advancement of the poison into the small intestine, where absorption into the victim's circulatory system is faster.
- 6. Induce vomiting only if a poison control center or physician advises it. Inducing must be done within 30 minutes of swallowing.
- 7. Save poison containers, plants, and so on to help medical personnel identify the poison.

#### Wounds

Wounds are soft tissue injuries that break the skin. Generally, they can be classified as follows:

- Scrapes (abrasions) are caused by sliding contact between the skin and a rough surface. They are generally shallow injuries with little bleeding.
- Cuts (incisions) are straight, even wounds made with sharp objects like knives or razor blades.
- *Tears* (lacerations) are caused by objects with sharp, irregular edges or by exerted force that leaves jagged, torn tissue.
- *Punctures* are caused by pointed objects such as pins and nails that make small holes in tissue, often with little bleeding.

All wounds can be minor or serious depending on their size, depth, location, and source. Minor wounds involve only the outer skin layer. They stop bleeding in a few minutes on their own or with gentle pressure and can be treated with just first aid. Serious wounds require first aid followed by medical treatment. Consider a wound serious if:

- The skin is cut or torn all the way through so that it gapes open.
- Fat, muscle, or tendons are visible.
- Bleeding is heavy and does not slow or stop after applying pressure for 15 to 20 minutes.
- Soil or other debris cannot be washed from the wound.
- There is loss of function such as the inability to move a cut finger.
- It is on the face; even a small wound may leave a scar.
- It is on the bottom of the foot.
- Its source is a rusty or dirty object, or an animal or human bite.

Some extremely serious injuries that generally contain a combination of the four kinds of wounds and always require immediate medical attention are **amputations**, **avulsions**, and crushing injuries. They are generally the result of motor vehicle or industrial machinery accidents or explosions.

- An amputation is the complete removal of an extremity, such as a finger or leg.
- An avulsion is tissue torn from or pulled away from and hanging off of the body. This type of injury may also result from an animal bite.
- Crushing injuries occur when parts of the body are caught between heavy objects or when the body is thrown against a heavy object or vice versa. In addition to wounds, crushing injuries include bone fractures, as well as possible injuries to internal organs and internal bleeding.

#### Treatment of Wounds

For a minor wound, clean it by flushing it with cool water and washing it with mild soap. Dry it thoroughly with a clean cloth, apply a thin layer of antibiotic

#### Key Note Term

**abrasion** – a part of the skin that has been lightly torn or scraped.

**incision** – a wound that is made by cutting into the body.

**laceration** – a wound that is torn and ragged.

#### **Key Note Term**

amputation – the removal of an external part of the body, most often a limb or part of it, when it has been severely crushed or following the death of an extremity due to impaired blood circulation.

avulsion – the tearing away of a body part accidentally or surgically. ointment to keep the wound moist and protect against infection, and cover it with a bandage to keep it clean. Change the bandage whenever it gets wet or dirty, and consider leaving the bandage off at night when sleeping since exposure to air also helps the healing process. Contact a doctor if the wound does not appear to be healing after several days or shows signs of infection like redness, draining, or swelling.

For any wound caused by a rusty or dirty object or an animal bite, ask if the victim has had a tetanus shot within the past 10 years. If not, suggest that he/she get one to guard against tetanus infection.

For extremely serious injuries such as amputations, avulsions, or crushing injuries, call EMS, control the bleeding, monitor breathing, treat for shock, and provide comfort to the victim until medical help arrives. Remember that tourniquets should only be used in extreme, life-threatening situations, and pressure points should only be used if you are trained to do so.

#### Bruises

Bruises are injuries that discolor but do not break the skin tissue. They can be caused by a fall, a blow, or bumping into something. Though sometimes very ugly and lasting for several weeks, they are usually not very serious.

Wrap ice or an ice pack in a clean towel and apply it to the bruise. To reduce swelling, elevate the bruised part for 20 to 30 minutes if the injury is mild or for a few hours if it is severe. Seek medical attention if swelling increases unusually, pain increases, the bruise site appears deformed, or there is an inability to move a body part associated with the bruise.

#### Conclusion

You have just learned important procedures for treating poisons, wounds, and bruises, as well as when to apply basic first aid and life-saving skills in these situations. Remember that while it is important to administer first aid treatment as quickly as possible in most situations, some rescue situations require careful assessment before you jump in to save someone, so that you do not become a victim yourself. Remaining calm, thinking logically and clearly, and knowing what steps to take and when to take them will help you to successfully perform first aid. In addition, this chapter provided many tips on how to prevent accidents from occurring in the first place.

#### Lesson Review

- 1. What are common types of inhaled poisons?
- 2. How can some in-home poisonings be prevented?
- 3. Compare and contrast scrapes, cuts, tears, and punctures.
- 4. How would you treat a bruise?

# Lesson 7

# Heat Injuries



#### **Key Terms**

dehydration fatigue heat exhaustion heatstroke heat cramps perspiring ventilation

#### What You Will Learn to Do

• Determine first aid treatment for heat related injuries

#### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

#### Skills and Knowledge You Will Gain along the Way

- Explain the causes and effects of heat injuries
- Associate the symptoms of the three types of heat injuries
- Explain how to treat heat cramps
- Explain how to treat heat exhaustion
- Explain how to treat heatstroke
- Define key words contained in this lesson

#### Introduction

Participating in any vigorous outdoor exercise or activity on an extremely hot day can lead to serious injuries if you are not prepared. Knowing how to recognize the signs and symptoms of heat related injuries can help you prevent a lifethreatening accident.

#### Causes

For your body to work properly, its temperature must be normal, which is around 98° Fahrenheit. You risk health problems, and even death, if your body gets too cold or too hot.

Heat injuries can occur when people are exposed to high temperatures and high humidity. When it is hot, your body cools itself by **perspiring**—sweat evaporates carrying heat away from your body. However, you risk heat injuries when you lose large amounts of water, salt, or both through perspiring, and do not replace the lost fluid, resulting in **dehydration**. You also risk injury in high humidity when sweat does not evaporate as rapidly as needed to keep the body cool, causing heat to build up. The body will then perspire even more in an attempt to cool itself, losing dangerous amounts of fluids in the process.

People who may be at risk of heat injuries include those who exercise or work outside in high temperatures and high humidity, or those whose bodies do not regulate heat well, such as older people, overweight people, or babies.

#### Factors to Consider

When perspiring, the body can lose more than a quart of water per hour. Therefore, since the body depends on water to cool itself, you should drink plenty of water when working or playing in hot weather. Salt, which helps the body to retain water, is also lost through perspiring. In most cases, however, you do not need to consume extra salt because you obtain adequate amounts through a balanced diet. In fact, consuming salt during hot weather activities may pull water away from muscles and other tissues where it is needed and into your digestive tract.

In addition to water intake and diet, consider the type of clothing you wear in hot weather. Wear clothes that fit loosely but also protect the body from sunburn. Wear natural fabrics, like cotton, through which perspiration evaporates better. Some activities require extra clothing or equipment, such as football or hiking with full camping gear. Soldiers may have problems acclimating to hot weather because of the type and amount of clothing and equipment they must wear. In all of these cases, protective gear and equipment may reduce **ventilation** needed to cool the body. So, ensure clothing or uniforms fit well but are not tight, and remove extra pieces of clothing and equipment as soon as they are no longer needed.

#### Key Note Term

**perspiring** – giving off moisture through the pores of the skin.

dehydration – the condition that results when fluids are lost from the body and are not replaced; symptoms can include thirst, weakness, exhaustion, confusion, and may result in death.

#### Key Note Term

ventilation – circulation of air; a system or means of providing fresh air.

#### **Key Note Term**

heat cramps – a condition that is marked by the sudden development of cramps in the skeletal muscles and that results from prolonged work in high temperatures accompanied by profuse perspiration with loss of sodium chloride from the body.

heat exhaustion – a condition that occurs when a person is exposed to excessive heat over a period of time, caused by the loss of water and salt from the body through excessive perspiration.

**heatstroke** – a lifethreatening condition caused by prolonged exposure to high heat.

#### Types of Heat Injuries

Overheating of the body progresses through stages. At first, a person may suffer **heat cramps**. If the person ignores the symptoms and continues exercising, working, or playing in the heat, he or she may experience **heat exhaustion**. If heat exhaustion is left untreated, **heatstroke** may follow and can be fatal.

#### **Heat Cramps**

Heat cramps are muscular pains and spasms caused by the loss of salt from the body through heavy perspiring. Other symptoms may include stomach cramps, wet skin, and extreme thirst. To treat heat cramps:

- 1. Move the victim to a shady area, or improvise shade.
- 2. Loosen the victim's clothing.
- 3. Give the victim large amounts of cool water slowly.
- 4. Monitor the victim and give more water as needed.
- 5. Seek medical aid if cramps continue.

#### **Heat Exhaustion**

When people work or exercise heavily in high temperatures or in a hot, humid place, the body loses fluids through heavy sweating. Heat exhaustion occurs when fluids are not adequately replaced or when sweat does not evaporate because of high humidity or too many layers of clothing, causing the body to sweat even more. When the body loses a great amount of fluid, less blood flows to vital organs, resulting in a form of shock. The symptoms of heat exhaustion are:

- Heavy sweating
- Weakness or faintness
- Dizziness or drowsiness
- Cool, pale, moist skin
- Headaches
- Loss of appetite
- Heat cramps
- Nausea with or without vomiting
- Confusion
- Chills
- Rapid breathing and pulse
- Body temperature above normal but below 102°F

Treat heat exhaustion as follows:

- 1. Move the victim to a cool, shady area, or improvise shade.
- 2. Loosen the victim's clothing.
- 3. Pour water on or apply cold, wet cloth to the skin. Fan the victim if it is a hot day.
- 4. Have the victim slowly drink at least one quart of water.
- 5. Elevate the victim's legs.
- 6. Monitor the victim until symptoms are gone. If symptoms continue, seek medical aid.
- 7. If possible, keep the victim from participating in heavy activity for the rest of the day.

#### Heatstroke

Heatstroke, also known as sunstroke, is a medical emergency that can be fatal if not treated as soon as possible. The victim's cooling mechanism stops working when the body perspires so much that no fluids remain to produce sweat. Because the body can no longer sweat and sweating is its defense against overheating, body temperature rises and skin becomes red and flushed. If body temperature rises high enough, brain damage and death can occur; therefore, when you encounter a heatstroke victim, you must cool the victim as fast as possible.

Symptoms of heatstroke are:

- No sweating
- Hot, dry, red skin
- Headache, dizziness, nausea, and vomiting
- Fast, weak pulse and shallow respiration
- Seizures and mental confusion
- Unconsciousness or sudden collapse
- Very high body temperature

Treat victims of heatstroke as follows:

- 1. Move the victim to a cool, shady area, or improvise shade.
- ${\bf 2. \ Loosen \ the \ victim's \ clothing.} \ Remove \ any \ outer \ garments \ and \ protective \ clothing.$
- 3. Pour water on the victim or immerse in water, and fan the victim so sweat can evaporate. If you cannot immerse the victim, massage arms and legs with cool water.
- 4. If the victim is conscious, have him or her slowly drink at least one quart of water.
- 5. Seek medical aid and transport the victim to a medical facility as soon as possible. Perform any necessary life-saving measures.

#### Key Note Term

**fatigue** – weakness or exhaustion due to hard work or mental effort.

# Chapter 2

# Lesson Review

#### **Prevention of Heat Injuries**

You can prevent heat injuries by taking just a few simple precautions and exercising a little common sense. If possible, limit your exposure to high temperatures and avoid working or exercising outside in hot, humid weather. During work or training periods, or in extremely hot climates, drink at least one quart of water every hour. Also, remember to dress for the hot weather and the activity being performed.

In the military or in the field, prevention of heat injuries is both an individual and leadership responsibility. Leaders should identify people who have a high risk of injury—basic trainees, overweight individuals, and individuals who have symptoms of **fatigue** or a previous history of heat injury. If possible, leaders should schedule heavy or strenuous activities during cooler morning or evening hours.

#### Conclusion

Vigorous exercise in hot weather can lead to heat cramps, heat exhaustion, or heatstroke. Familiarize yourself with the symptoms of these injuries, which can be serious or even fatal if left untreated. By knowing the signs of heat injuries, and taking precautions, you should be able to enjoy exercising outdoors, even in hot weather.

#### Lesson Review

- 1. What are the causes of heat injuries?
- 2. What are the types of heat injuries?
- 3. How would you treat heat exhaustion?
- 4. What are the symptoms of heat stroke?

## Lesson 8

# Cold Weather Injuries



#### Key Terms

dehydration frostbite hypothermia insulate precipitation subcutaneous superficial

#### What You Will Learn to Do

• Determine first aid treatment for cold weather injuries

#### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

#### Skills and Knowledge You Will Gain along the Way

- Describe factors to consider in cold weather situations
- Explain causes and effects of cold weather injuries
- Identify symptoms of cold weather injuries
- Explain how to treat frostbite, immersion foot/trench foot, hypothermia, and snow blindness
- Define key words contained in this lesson

# L M D L

#### Key Note Term

**frostbite** – an injury caused to body tissue by frost or extreme cold.

hypothermia – too little body heat with abnormally low internal body temperature.

#### Key Note Term

precipitation –Any form of water, such as rain, snow, sleet, or hail, that falls to the earth's surface.

#### Key Note Term

dehydration – the condition that results when fluids are lost from the body and not replaced; symptoms can include thirst, weakness, exhaustion, confusion, and may result in death.

#### Introduction

It is common to think that only in areas where snow and frost are present, people are susceptible to cold weather injuries. Prolonged exposure to low temperatures, wind, or moisture—whether it be on a ski slope or in a stranded car—can result in cold related injuries such as **frostbite** and **hypothermia**, no matter where you live if you are not prepared.

#### Factors to Consider

When thinking about cold weather injuries, there are several factors you need to consider. These factors include weather, stress, clothing, physical makeup, psychological factors, and more. This section discusses these factors.

#### Weather

Low temperature, high humidity, **precipitation**, and high wind may affect the loss of body heat. Wind chill (the temperature of both the wind speed and air temperature combined) speeds up the loss of body heat and may aggravate cold injuries. By studying the Wind Chill Chart shown in Figure 2.8.1, you can determine the chilling effect that wind speed has on temperature.

#### Stress

When in a stressful situation, people are more likely to experience fear, fatigue, **dehydration**, and lack of nutrition. These factors increase the possibility of cold injury.

#### Clothing

When in cold weather, you should wear several layers of loose-fitting clothing and dress as lightly as the weather permits. This reduces the danger of excessive perspiration followed by chilling. It is better if the body is slightly cold and producing heat rather than overly warm and sweltering toward dehydration. Wet clothing adds to the possibility of cold injury.

#### Physical Makeup

Physical fatigue leads to inactivity, personal neglect, carelessness, and less heat production. These, in turn, increase the risk of cold injury. Individuals who have had a cold injury before have a higher risk of being injured again.

#### **Psychological Factors**

Mental fatigue and fear lessen the body's ability to re-warm itself and thus increase the possibility of cold injury. Depressed or unresponsive individuals

Figure 2.8.1: The Wind Chill Chart.

#### HOW TO USE THE WIND CHILL CHART

Find the wind speed in the left-hand column, then read across to the column under the actual temperature. This number is the equivalent temperature which would be acting on any exposed skin. For example, if the wind is blowing at 20 mph and the actual temperature is  $10^{\circ}\,\text{F}$ , the effect on bare skin would be the same as a temperature reading of  $-25^{\circ}\,\text{F}$  under calm conditions. Any movement has the same cooling effect as the wind. Running, skiing, or riding in an open vehicle must be considered in using the wind chill chart.

**☆**GPO: 1983 0 - 417-503

WIND CHILL	CHART FOR	FAHRENHEIT TEMPERATURES	

ESTIMATED	ACTUAL THERMOMETER READING (° F)											
WIND SPEED IN MPH	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	EQUIVALENT TEMPERATURE (° F)											
CALM	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-21	-35	-51	-67	-82	-96	-113	-129	-145
40	26	10	-6	-24	-37	-53	-69	-85	-100	-116	-132	-148
WIND SPEEDS ABOVE 40 MPH HAVE LITTLE ADDITIONAL EFFECT.	LITTLE DANGER FOR INCREASING GREAT DANGER THE PROPERLY CLOTHED DANGER OF PERSON: MAXIMUM DANGER OF FALSE SENSE OF EXPOSED SECURITY. FLESH.											
TRENCH FOOT AND IMMERSION FOOT MAY OCCUR AT ANY POINT ON THIS CHART.												

are also at a higher risk of cold injury because they are less active and tend to be careless about protecting themselves.

#### **Other Factors**

Individuals are also at risk of cold injury if they are:

- In contact with the ground for an extended period
- Immobile for long periods of time, such as while riding in a crowded vehicle
- Standing in water
- Out in the cold for days without being warmed
- Deprived of an adequate diet and rest
- Careless about personal hygiene

#### Types of Cold Injuries

People exposed to severe cold can suffer from the following conditions: frostbite, immersion foot/trench foot, hypothermia, snow blindness, and dehydration.

#### **Frostbite**

Frostbite is the most common injury resulting from exposure to the cold. Ice crystals form in body tissues exposed to temperatures below freezing. The crystals restrict blood flow to the injured parts and are like daggers that puncture cell membranes as they grow larger. Body parts most easily frostbitten are the cheeks, nose, ears, chin, forehead, wrists, hands, and feet. People suffering from frostbite may not realize it because the injured part may be numb from the cold.

There are different degrees of frostbite depending on the extent of tissue damage. A **superficial** cold injury can usually be characterized by numbness and tingling or "pins and needles" sensations. It involves the skin and the tissue just beneath the skin. Deep frostbite, on the other hand, involves freezing of the **subcutaneous** tissue, and possibly even muscle and bone. With a deep cold injury, victims are often unaware of a problem until the affected part feels like a stump or block of wood. Severe frostbite may result in infection or gangrene and may require surgical removal of the injured part.

#### Signs of Frostbite

Signs of superficial frostbite include:

- Redness of the skin on light-skinned individuals; grayish coloring of the skin on dark-skinned individuals
- Blisters appearing in 24 to 36 hours
- Sloughing of the skin

Signs of deep frostbite include:

- Signs of superficial frostbite
- Painless or numb unthawed skin that is pale-yellowish and waxy looking
- Frozen, swollen tissue that is similar to wood to the touch
- Blisters in 12 to 36 hours

#### Treatment of Frostbite

Treat superficial frostbite as follows:

- 1. Move the victim out of the cold and wind.
- 2. Keep the victim warm; re-warm the affected parts gently and slowly. Explain to the victim that he or she will experience pain when warmth restores feeling to the injured part.
  - Cover cheeks, ears, and nose with the victim's and/or your hands.
  - Put fingertips under the victim's armpits.
  - Place the victim's feet under the clothing of another person next to that person's belly.

#### **Key Note Term**

**superficial** – not serious; on the surface; shallow.

**subcutaneous** – beneath the top layer of skin.

- 3. Insulate injured parts by covering them with a blanket or dry clothing.
- 4. Loosen tight clothing and remove wet clothing.
- 5. Encourage the victim to exercise carefully, avoiding further injury.
- 6. Seek medical treatment.

Deep frostbite is very serious and requires extra care to reduce or avoid losing all or parts of the fingers, toes, hands, or feet. If possible, transport the victim to a hospital or contact emergency medical services immediately; it is preferable that deep frostbite injuries be re-warmed under medical supervision. If this is not possible, re-warm the injured parts, protect them from re-freezing, and seek medical help as soon as possible.

#### The Don'ts of Treating Frostbite

Although there are many things you can do to help a frostbite victim, there are also several things you should not do.

- Do not attempt to thaw the affected part if you believe you cannot keep it warm until the victim receives medical treatment. It is extremely dangerous for an injured part to re-freeze after warming. It is less dangerous to leave the part frozen than to warm it and have it re-freeze.
- Avoid having the victim walk on frostbitten feet, especially if they thaw. If the victim must walk, it is less dangerous while his or her feet are frozen.
- Do not rub the injured part with snow or apply cold water packs.
- Do not warm the injured part by massage; ice crystals in the tissues will damage more cells when rubbed.
- Do not expose the injured part to open fire; the frozen part may burn because of lack of feeling.
- Do not have the victim move the injured part to increase circulation.
- Do not break any blisters.
- Do not use ointments or other medications.
- Do not let the victim use alcohol or tobacco. Alcohol reduces the body's resistance to cold, and tobacco decreases blood circulation.

#### Immersion Foot/Trench Foot

Immersion foot and trench foot result from long exposure of the feet to wet conditions at temperatures between approximately 32° and 50°F. Keeping your feet in damp or wet socks and shoes or tightly laced boots for long periods of time may affect circulation and contribute to injury. Inactivity also increases the risk of immersion foot/trench foot. This injury can be very serious, leading to loss of toes or parts of the feet.

#### Signs of Immersion Foot/Trench Foot

Symptoms of immersion foot/trench foot in the primary stage include affected parts that are cold, numb, and painless. These parts may then begin to feel hot with burning and shooting pains. In the advanced stage of immersion

#### **Key Note Term**

insulate – to use materials to protect or isolate from the elements of weather. foot/trench foot, the pulse decreases and the skin becomes pale with a bluish cast. Redness, blistering, swelling, heat, hemorrhages, and gangrene may follow.

#### Treatment of Immersion Foot/Trench Foot

Treat immersion foot/trench foot as follows:

- 1. Gradually re-warm the affected foot by exposure to warm air. Explain to the victim that he or she may experience pain and burning when you re-warm the foot.
  - Do not massage or moisten skin.
  - Do not apply ice.
  - Do not expose injured parts to open fire or other sources of heat. Warm by covering with loose, dry clothing or other coverings instead.
- 2. Protect the affected foot from trauma or infection.
- 3. Elevate the foot to relieve swelling.
- 4. Dry the foot thoroughly; avoid walking.
- 5. Seek medical treatment.

#### Hypothermia

Hypothermia is a general cooling of the body to a temperature below 95°F caused by continued exposure to low or rapidly dropping temperatures, cold moisture or wind, snow, or ice. With hypothermia, the body loses heat faster than it can produce it. Inadequate insulation, fatigue, poor physical condition, dehydration, faulty blood circulation, alcohol, trauma, and immersion in cold water can bring on this condition. People at high risk of hypothermia include infants, older people, people with limited mobility due to illness or other medical conditions, very thin people, and people with heart and lung problems.

Remember, cold weather affects the body slowly and almost without notice. Even when well-protected by clothing, a person may suffer cold injuries if exposed to low temperatures for long periods of time. As the body cools, it goes through several stages of discomfort and problems.

#### Signs of Hypothermia

The signs of hypothermia include:

- Shivering or trembling, which indicates mild hypothermia and will eventually stop as body temperature drops
- Cold skin
- Weakness
- Dizziness
- Drowsiness and mental slowness or confusion
- Uncoordinated movements and slurred speech
- Low body temperature; in severe hypothermia, 90°F or below
- Stiff or rigid muscles

- Decreasing pulse and breathing rate
- Unconsciousness
- Shock, coma, and death, which may result as body temperature drops and the body freezes.

#### Treatment of Hypothermia

Except in the most severe cases, the treatment for hypothermia is directed toward re-warming the body evenly and without delay. Treat mild hypothermia as follows:

- 1. Re-warm the victim slowly.
  - If possible, move the victim inside, remove any wet clothing, and cover him
    or her with blankets. Avoid warming the victim quickly with hot baths, electric blankets, or heat lamps.
  - If you cannot move the victim inside, remove any wet clothing and re-warm him or her beside a campfire or using the body heat from another person.
- 2. Keep the victim dry and protected with clothing, blankets, towels, a sleeping bag, or even newspapers.
- 3. Keep the victim awake.
- 4. Do not raise the victim's feet or legs, since blood in the extremities is colder than in the rest of the body and may further chill the body's core.
- 5. Give the victim warm liquids gradually. Do not give the victim alcohol. Do not force liquids on an unconscious victim.
- 6. Be prepared to start basic life-support measures.
- 7. Seek medical treatment immediately.

Treating a person with severe hypothermia is extremely dangerous because of the possibility of shock and disturbances of the heartbeat while re-warming. If possible, as you begin to re-warm the victim, transport him or her to a hospital or contact Emergency Medical Services immediately. If this is not possible, treat the victim gently because the heart is weak when the body is cold. Stabilize the victim's body temperature by keeping him or her from losing more body heat, and continue to keep the victim warm until you can get him or her medical treatment.

#### Snow Blindness

Snow blindness is the effect that the glare from an ice field, or snowfield, has on the eyes. It is more likely to occur in hazy, cloudy weather because people tend to protect their eyes when the sun is shining and believe protection is unnecessary on cloudy days. If a person waits until he or she feels discomfort or pain to use protective eyewear, a deep burn of the eyes may have already occurred.

#### Signs of Snow Blindness

There are several signs of snow blindness. These include:

- A sensation of grit in the eyes
- Pain in and over the eyes made worse with eye movement

- Watery and red eyes
- Headache
- Increased pain with exposure to light

#### **Treatment of Snow Blindness**

Treat snow blindness as follows:

- 1. Cover the eyes with a dark cloth to discourage painful eye movement.
- 2. Try to give the eyes complete rest without exposure to light. If this is not possible, protect the eyes with dark bandages or very dark glasses.
- 3. Seek medical treatment. In most cases, once exposure to sunlight stops, the eyes heal in a few days without permanent damage.

#### Dehydration

Dehydration from cold weather occurs when the body loses too much fluid, salt, and minerals. As mentioned in the previous lesson, you can lose large amounts of fluid and salt through sweating. This loss creates an imbalance of fluids, and dehydration occurs when fluids are not replaced.

Dehydration can occur in both hot and cold climates. In cold weather, sweat evaporates quickly and heavy layers of clothing absorb it, making dehydration more difficult to detect because the signs of sweating are less noticeable; therefore, the danger of dehydration during strenuous cold weather activities can become a serious problem.

The symptoms of cold weather dehydration are similar to those of heat exhaustion. Treat dehydration as follows:

- 1. Move the victim out of the wind and cold, and keep him or her warm.
- 2. Loosen the victim's clothes to promote circulation.
- 3. Ensure the victim receives proper fluid replacement, rest, and prompt medical treatment.

#### Prevention of Cold Injuries

You can prevent many cold weather injuries by taking proper care and precautions when participating in cold weather activities. Be sure to receive adequate nutrition, hot meals, and warm fluids. Get enough rest. Practice good hygiene. Wear the right clothing and protective gear. Do not forget to protect your eyes, ears, and face. Wear layers of clothing so you can remove outer layers if you begin to perspire. Avoid tight clothes that interfere with circulation. Replace or remove any clothing that gets wet as soon as possible.

You may not feel cold injuries because of cold's numbing effect, so always try to go out into cold weather with a partner. You can check each other for signs of injury. Exercise and keep active to maintain steady circulation and improve

resistance to the cold. Many cold weather injuries can be avoided by planning ahead, staying alert, and using common sense.

#### Conclusion

Whether or not snow and frost are present, cold weather injuries such as frostbite or hypothermia can be a threat to safety. Knowing the proper ways to treat these injuries is very important because although it might seem like a good idea to rewarm the victim, you may in fact be making the injury worse. Read the first aid measures outlined in this lesson, consider how to prevent these injuries in the first place, and you will not be caught off-guard when you are exposed to the cold.

#### Lesson Review

- 1. What factors should you consider when preparing for cold weather?
- 2. What are the signs of frostbite?
- 3. How would you treat hypothermia?
- 4. List the symptoms of cold weather dehydration.

### Lesson 9

# Bites, Stings, and Poisonous Hazards



#### Key Terms

allergic reaction antivenim calamine discoloration rabies tetanus venom

#### What You Will Learn to Do

• Determine first aid treatment for bites, stings, and poisonous hazards

#### Linked Core Abilities

 Do your share as a good citizen in your school, community, country, and the world

#### Skills and Knowledge You Will Gain along the Way

- Identify types of venoms
- Relate snakes to their bites
- Explain the effects of animal and human bites
- Identify the symptoms of insect bites and stings
- Associate the types of poisonous plants to the reactions they cause
- Determine how to treat for contact with poisonous plants
- Define key words contained in this lesson

#### Introduction

With so many outdoor activities to participate in, such as hiking, camping, bicycle riding, skate boarding, and skiing, it is common to come across emergencies involving bites, stings, and poisonous hazards. It is estimated that one of every two Americans will be bitten at some time by an animal. Dogs are responsible for about 80 percent of all animal bite injuries. Too, bee, wasp, and other types of insect stings can be not only painful, but fatal if the person is allergic. Depending upon where you live, the type of first aid you need to know for snakebites and plants will vary. Knowing what to do when outdoors can mean the difference between life and death.

#### Snakehites

If you spend much of your time outdoors, it may be common for you to come across snakes; however, your chances of a snakebite are remote if you remain alert and careful. There are both poisonous and nonpoisonous snakes, so the severity of a snakebite depends on whether the snake is poisonous or not. Beyond that, the severity of a snakebite depends on the type of snake, location of the bite, and the amount and type of venom injected.

#### Types of Snakes

There are approximately 130 different varieties of nonpoisonous snakes in the United States. They have oval-shaped heads and round pupils. Unlike pit vipers, nonpoisonous snakes do not have sensory pits with which to sense the body heat of their prey.

Poisonous snakes exist throughout the world, primarily in tropical to moderate climates. In the United States, there are four kinds of native poisonous snakes. Three of these four—the rattlesnake, copperhead, and cottonmouth (water moccasin)—are pit vipers. Pit vipers in other parts of the world include the bushmaster and fer-de-lance in Central and South America, the tropical rattlesnake in Central America, and the Malayan pit viper in eastern Asia. These snakes are shown in Figure 2.9.1.

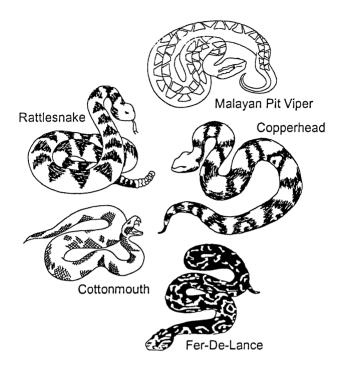
Pit vipers have slit-like pupils; flat, triangular-shaped heads; small, deep, heat-sensing pits between their nostrils and eyes; and in most cases, hemotoxic **venom**. When a pit viper bites, it injects this venom from sacs through long, hollow fangs. This produces a severe burning pain, along with **discoloration** and swelling around the fang marks. The hemotoxin destroys blood cells, which causes the discoloration of the skin. Blisters and numbness in the affected area follow this reaction. Pit viper bites attack the circulatory system, possibly causing weakness, rapid pulse, and shortness of breath; as well as nausea, vomiting, and shock.

#### Key Note Term

venom – a poison produced by animals such as snakes and spiders that is transmitted by a bite or sting.

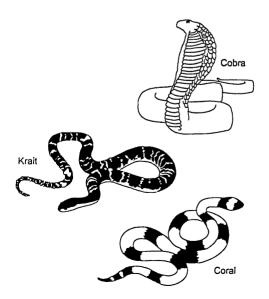
**discoloration** – altered or changed in color.

Figure 2.9.1: Common pit vipers.



Corals, cobras, kraits, and mambas belong to the cobra family (see Figure 2.9.2). The coral snake is the only one native to the United States. Rings of red, yellow, and black color encircle its body. Although other nonpoisonous snakes have the same colors, only the coral snake has a red ring next to a yellow ring. The cobra, found in Africa and Asia, forms a hood with its neck when on the defensive. The krait, found in India and southeast Asia, is brightly banded; the mamba in Africa is either almost black or green.

Figure 2.9.2: Members of the cobra family.



These snakes look very different, but all four inject their venom—a neurotoxin—through short, grooved fangs leaving a characteristic bite pattern, shown in Figure 2.9.3. There is minimal pain and swelling compared to a pit viper bite, but because their powerful venom affects the central nervous system, it can cause blurred vision, drooping eyelids, slurred speech, drowsiness, and increased salivation and sweating. Nausea, vomiting, shock, respiratory difficulty, paralysis, convulsions, and coma develop if the bite is not treated promptly.

Sea snakes are found in warm water areas of the Pacific and Indian Oceans. They have small heads, thick bodies, and tails flattened along the sides. Their fangs are only  $\frac{1}{4}$  inch long, but their venom is very poisonous.

#### Types of Venoms

Basically, venoms are categorized as neurotoxins that affect the nervous system and can cause death by paralysis, hemotoxins that digest tissue including blood cells, or cardiotoxins that affect the heart directly.

#### Treating Snakebites

Snakebites are rarely fatal if treated within an hour or two, but they can cause pain and illness and may severely damage a bitten hand or foot. Although snakes do not always inject venom, all snakes may carry tetanus (lockjaw); therefore, anyone bitten by a snake, whether poisonous or nonpoisonous, should receive immediate medical attention.

One of the most important parts of treating a snakebite is identifying the type of snake making the bite. The type of **antivenim** used in medical treatment of snakebites varies depending on the type of venom injected. If you can identify the type of snake causing the injury, let Emergency Medical Services know when you call for help or phone the information ahead to the hospital if you plan to transport the victim yourself. If you cannot identify the snake, try to kill it without risk to yourself or delaying first aid; then show it to emergency medical personnel or take it to the hospital along with the victim for identification.

To treat snakebites, follow these steps:

- 1. Get the victim away from the snake.
- 2. Reassure and keep the victim quiet and still. This will keep circulation to a minimum and keep the venom from spreading.
- 3. Immobilize the affected part in a position below the level of the heart.

#### Key Note Term

**antivenom** – an antitoxin used to counter-act venom.

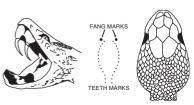


Figure 2.9.3: Poisonous snakebites leave characteristic bite patterns.

- 4. Remove rings, bracelets, watches, and other jewelry from any affected limb. In case of swelling, this will make the victim more comfortable and will keep the affected limb from losing blood flow.
- 5. Wash the bite thoroughly with soap and water. Do not apply any ointments.
- 6. Place an icepack or freeze pack, if available, over the area of the bite. Do not place ice directly on the skin or wrap the limb with ice. You are only trying to cool the bite area, not freeze it.
- 7. For bites to the arms, legs, hands, or feet, apply constricting bands two to four inches away from the bite (see Figure 2.9.4). For an arm or leg bite, place one band above and one below the bite. For a hand or foot bite, place one band above the wrist or ankle. To ensure a band is not too tight, you should be able to insert a finger between the band and the skin.
- 8. If swelling from the bite reaches the band, tie another band a few inches farther away from the bite and the old band; then remove the old band.
- 9. Do not give the victim any food, alcohol, tobacco, medication, or drinks with caffeine.
- 10. Seek medical aid immediately.

#### **Prevention of Snakebites**

Most snakes are shy and passive. Unless they are injured or disturbed, they tend to avoid contact with humans. You can prevent a snakebite by using caution and common sense. If you are working outside clearing dense undergrowth, wear gloves, long sleeves, long pants, and boots for protection. When hiking in the wilderness, wear boots and long pants. Try to walk in open areas or stay on established paths. Look where you are stepping or placing a hand if climbing or pushing away tree limbs. Check before sitting on a rock or fallen tree. If possible, stay away from brush, rocks, and undergrowth. If you must handle a snake, even a freshly killed one, use a long tool or stick.

#### **Human and Animal Bites**

Mouths of people and animals are full of bacteria, so human and animal bites that break the skin spread germs and may result in serious infection and disease.

Figure 2.9.4: Place constricting bands on either side of the snakebite.



A person bitten by a diseased animal may come down with **tetanus**, **rabies**, and various types of fevers. If you think an animal is carrying a disease, notify the proper authorities to have it captured.

To treat a victim of an animal bite, follow these steps:

- 1. If bleeding is severe, control it first before continuing with other first aid. Refer to the lesson on Controlling Bleeding for procedures to control bleeding.
- 2. Cleanse the wound thoroughly with soap or a detergent solution and water. Continue to cleanse and flush the wound with water for five minutes.
- 3. If there is minor bleeding, cover the wound with gauze or a clean cloth, press firmly on the wound, and if possible, raise the injury above the level of the victim's heart.
- 4. When minor bleeding stops, cover the wound with a sterile dressing and secure the dressing in place.
- 5. Immobilize an injured arm or leg.
- 6. Seek medical assistance as soon as possible.

#### **Insect Bites and Stings**

In the outdoors, you may come in contact with various types of biting and stinging insects—bees, mosquitoes, ticks, fleas, spiders, and so on. Most of these insect bites and stings result in minor reactions, such as itching, redness, swelling, and irritation; however, scorpions and certain spiders can inject powerful poisons when they bite, and some people may have an **allergic reaction** to an insect bite or sting, particularly made by bees or wasps. In these cases, seek medical treatment immediately.

The black widow and brown recluse spiders, tarantulas, and scorpions, shown in Figure 2.9.5, are some of the more harmful insects you may encounter. Venom from the black widow is neurotoxic and may cause stomach and muscle cramps, breathing difficulties, nausea, sweating, vomiting, and convulsions. Tarantula venom is basically neurotoxic and may produce symptoms similar to that of a black widow bite, but in some cases can affect the heart and may digest tissue producing a severe local wound. The brown recluse spider can produce severe tissue damage around the bite, possibly leading to gangrene. Although stings from certain types of scorpions are painful but not dangerous, some can cause nausea, fever, stomach cramps, and possible convulsions and shock.

In most cases, bee and wasp stings produce minimal swelling, pain, redness, itching, and burning at the site of the sting. Multiple stings may cause headaches, fever, muscle cramps, and drowsiness. Symptoms from an allergic reaction may include:

- Extreme pain at the site of the sting
- Itching and hives
- Weakness

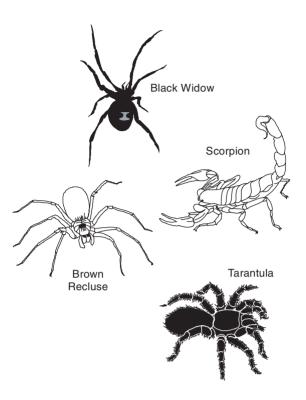
#### **Key Note Term**

tetanus – (also called lockjaw) an acute infectious disease caused by the poison of a certain bacterium that enters the body through a wound, resulting in muscle contractions, rigidity, and death; it is preventable by immunization.

rabies – a viral disease affecting the central nervous system of mammals that is transmitted by a bite from an infected animal; it can result in paralysis and death if left untreated.

allergic reaction – a physical reaction, often marked by sneezing, breathing difficulties, itching, rash, or swelling, that some people have when the come in contact with certain substances.

Figure 2.9.5: Some biting and stinging insects can cause serious health problems.



- Anxiety
- Headache
- Breathing difficulties
- Nausea and vomiting
- Diarrhea
- Collapse, shock, and even death from a serious allergic reaction.

Take the following basic first aid measures regardless of what caused the bite or sting:

- 1. Remove any stinger left in the skin by scraping the skin's surface with a fingernail or knife. Do not squeeze the stinger because it may inject more venom.
- 2. For tick bites, remove the tick with your fingers if it will come off the skin easily. Do not pull the tick off if it will not come easily; this may leave the head of the tick in the skin which can cause infection. Instead, cover the tick with vaseline or thick oil to make it let go and then remove it.
- 3. Wash the area of the bite/sting with soap and water. Apply an antiseptic, if available, to minimize the chances for infection.
- 4. Use an icepack or cold compresses on the site of the bite/sting to help reduce swelling. Do not apply the ice directly to the skin.
- 5. Apply **calamine** lotion or a baking soda and water paste to the bite to relieve pain and itching.
- 6. Treat more serious allergic reactions as you would a snakebite.
  - Apply constricting bands above and below the site.
  - Be prepared to perform basic life-support measures.

#### Key Note Term

calamine – a pink powder consisting of zinc oxide and some ferric oxide used in lotions and ointments.

- To positively identify the insect, attempt to capture it without putting yourself at risk.
- Seek medical aid right away.
- 7. If signs of infection such as pus, red streaks leading away from the bite, swollen glands, or fever occur within hours or several days after an insect bite, seek medical attention.

#### Prevention of Insect Bites and Stings

Wear insect repellent when outside in areas where biting insects are present. Reapply repellent every few hours when participating in activities that cause heavy perspiration. Wear appropriate protective clothing when hiking or camping in the wilderness or working in a yard, garden, or other woodsy or overgrown area.

#### Poisonous Plants

Most plants are harmless, but a few can cause allergic reactions upon contact (see Figure 2.9.6). For example, plants of the poison ivy group, including poison oak and poison sumac, produce an oily substance that irritates the skin of many people. Reactions to this substance include a rash characterized by redness, blisters, swelling, and intense burning and itching, as well as headaches and fever. Although the rash usually begins within a few hours after contact, it may appear 24 to 48 hours later.

In general, treat someone who has come in contact with a poisonous plant as follows:

- 1. Remove contaminated clothing. Set it aside to be washed.
- 2. Wash all exposed areas of the skin thoroughly with soap and water, then apply rubbing alcohol.
- 3. Apply calamine or other soothing skin lotion to relieve itching and burning. Avoid covering the rash with a dressing.
- 4. Seek medical treatment if a severe rash occurs, if the rash is on the face or mouth which may interfere with breathing, or if there is a known history of allergic reactions.

#### Prevention of Exposure to Poisonous Plants

Become familiar with what poison ivy and other poisonous plants look like so you can recognize a poisonous plant and avoid contacting it. The following are other precautions you should take to limit your exposure to poisonous plants:

- Dress appropriately when participating in outdoor activities.
- Avoid areas where you aware that poisonous plants grow.
- Do not eat plants or parts of plants that you do not recognize.
- Do not put grass, twigs, stems, or leaves in your mouth.

Figure 2.9.6: Poison ivy, oak, and sumac can cause severe allergic reactions in some people.

#### COMMON POISON IVY Grows as a small plant, a vine. Grows everywhere in the U.S. except California and parts of adjacent states. Leaves always consist of three glossy leaflets. Also known as Eastern three-leaf ivy, poison creeper, climbing sumac, poison oak, markweed, picry, and mercury. WESTERN POISON OAK Grows in shrub and sometimes vine form. ° Grows in California and parts of adjacent states. ° Leaves consist of three leaflets with wavv edges. Poison Oak POISON SUMAC ° Grows as a woody shrub or small tree from 5 to 25 feet tall. ° Grows in most of the eastern third of the U.S. Leaflets grow opposite each other with one leaflet at the tip. Also known as swamp sumac poison ash, poison dogwood, and thunderwood. Poison Sumac

#### Conclusion

Being able to adjust to new environments and protect yourself from harmful conditions is very important when participating in outdoor activities. Factors in nature such as extreme temperatures and humidity; animal, snake, and insect bites; and poisonous plants can pose a threat to you if you do not take precautions to guard against the possibility of injury. By being aware of potential hazards, knowing how to treat outdoor-related injuries, and exercising common sense, you can cope successfully with the environment and enjoy your time in the great outdoors.

#### Lesson Review

- 1. What are the three types of snake venom?
- 2. Why is it important to try and determine what type of snake caused the bite?
- 3. What are the symptoms of an allergic reaction to an insect bite or sting?
- 4. How would you treat someone who has come in contact with a poisonous plant?

# Drug Awareness

# Lesson 1

# Use and Effects of Drugs, Alcohol, and Substances



#### Key Terms

abuse

addiction alcohol controlled substance dependency depressed drugs distilled ethyl alcohol ferment gateway hallucinogens inhalants intoxicated misuse narcotics nicotine stimulants

#### What You Will Learn to Do

substance tobacco

• Assess the impact of drug and substance abuse on life today

#### Linked Core Abilities

- Communicate using verbal, non-verbal, visual, and written techniques
- Do your share as a good citizen in your school, community, country, and the world

#### Skills and Knowledge You Will Gain along the Way

- Identify commonly abused substances
- Recognize the difference between drug use, misuse, and abuse
- Describe reasons why people might use, misuse, or abuse alcohol or drugs
- Identify the risks associated with alcohol and various drugs
- Associate the consequences of alcohol and drug use, misuse, and abuse to life
- Define key words contained in this lesson

#### Introduction

Data presented by the teenGetgoing website (www.teengetgoing.com) advocated by the JROTC Program notes that teen alcohol and drug trends suggest that 90 percent of teens will use alcohol and/or other **drugs** during adolescence. Fifty percent of teens will abuse alcohol and/or drugs, and 15 percent will become addicted while still in adolescence. Look around your classroom. What kind of numbers does this represent? This lesson presents the latest information about alcohol and drugs, defines drugs, and explains the differences between drug use, drug **misuse**, and drug **abuse**. You will learn several types of drugs that people abuse, their side effects, indications of overdose, and you will learn to process it in a way that is meaningful both to you and your community.

#### Drug Use, Misuse, and Abuse

Used under proper conditions, drugs can relieve pain, cure illness, and save lives. When abused; however, drugs can ruin lives and even cause death.

Think about the word "drug" for a moment. It can bring many images to mind—over-the-counter aspirin to stop a headache, a news report about someone arrested for cocaine possession, a prescription for antibiotics from your doctor, a drug-related death covered on the front page of the paper, medical research to develop drugs to cure illnesses, the war on drugs, etc. So exactly what is a drug?

Broadly defined, a drug is any **substance** taken into the body that changes how the body functions, whether mentally or physically. This includes medications used for the prevention and treatment of disease, as well as any **controlled** 

#### Key Note Term

**drugs** – chemicals that cause a change in a person's body or behavior.

**misuse** – the incorrect or improper use of a substance.

**abuse** – improper or excessive use or treatment.

substance – something, such as a drug or alcohol, deemed harmful and usually subject to legal restrictions.

#### controlled substance

- a substance whose manufacture, possession, or sale is controlled by the law. **substance** to which a person can become addicted. Whether or not a drug is legal or illegal is no indication of whether or not it is addictive. For example, alcohol and the nicotine in tobacco products are addictive drugs. And, just because a drug has a medical purpose does not mean it is not addictive. Many medications, when misused or abused, can cause **addiction**.

Drug use is taking a legal drug as recommended or prescribed for medical reasons. Drug misuse is taking a legal drug for medical reasons but not as recommended or prescribed. For example, a person who doubles the recommended dosage of a pain reliever because they think it will make their headache go away quicker is misusing a drug. Drug abuse is taking a legal or illegal drug for a non-medical reason in a way that can injure your health or ability to function.

#### Why Do People Abuse Drugs?

Some people try drugs out of curiosity or as an act of rebellion. Others cannot resist the peer pressure to try drugs. After people have tried a drug, whether or not they continue to abuse it depends on their individual personalities and situations and on the kind of drug abused.

Most drugs that people abuse produce feelings of pleasure and well-being. When people are unhappy, lonely, or stressed; or are missing something in their lives such as friends, love, or satisfying work, they may abuse drugs to avoid their problems or fill a void. But when the effects of the drug wear off, they realize the problems and the void are still there. So, they turn to the drug again.

This cycle is what leads to addiction, a trap that can ruin a person emotionally, socially, economically, legally, and physically. Some drugs are far more addictive than others. For example, a first-time user of crack cocaine has a one in three chance of becoming an addict. This is why it is important to stop before you ever start taking drugs.

#### What Can You Do to Remain Drug-Free?

- Fill your life with activities and people you enjoy.
- Believe in yourself.
- Practice saying no before you are actually in a situation where someone offers you drugs, so you will not hesitate to say no when the time comes.
- Think through the consequences of abusing drugs. Where will drugs lead you in life? How long will your body remain healthy if you abuse drugs? How many of your plans can drugs ruin?
- Remember that drugs do not solve problems; they create them.

#### **Key Note Term**

addiction – physically or psychologically dependent on a substance, habit, or behavior that can lead to health, social, or economic problems; dependence on a drug.

Many people take drugs without knowing what effect they have on the mind and body. Knowing ahead of time what a drug can do is often enough to convince a person not to try it, especially if one of the potential dangers of abusing a drug is death. This lesson covers a variety of drugs, including alcohol and tobacco, and gives you an overview of what the dangers and effects are for each.

#### **Alcohol**

**Alcohol**, legal for those 21 years of age and older, is the most widely consumed and abused drug in the United States. It is socially acceptable in our society for adults to drink in moderation. In excess, however, alcohol is a dangerous drug.

Alcohol is a natural substance formed when sugar and yeast react and ferment. Some alcohols are **distilled**; other are simply **fermented**. Alcohol is a drug—a depressant that is absorbed into the bloodstream and transmitted to virtually all parts of the body. Many people don't realize that alcohol is a drug. Some hold the view that experimentation with or use of alcohol is considered normal or acceptable behavior. However, the use of alcohol can cause alcohol addiction, and often progresses to further drug abuse. Accordingly, some experts attach the term **gateway** to this substance. Use of drugs such as cocaine and heroin is unusual in those who have not previously used alcohol.

Alcohol abuse can cause serious chemical dependencies, harmful physical and psychological effects, and much suffering by family and friends. As awareness of these ill effects reaches new heights, more and more Americans are joining forces to fight alcohol abuse everyday.

When a person drinks alcohol, it follows the same pathway as food through the digestive system. Unlike food, however, alcohol does not have to be digested by the stomach to be absorbed into the blood. After alcohol reaches the blood, it is circulated throughout the body and affects every part, including the brain and the rest of the nervous system.

#### Alcohol Statistics

- Ninety percent of teenage automobile accidents involve alcohol.
- Drinking and driving accidents are the leading cause of death among 15- to 24-yearolds.
- Seventy percent of teenage suicide attempts involve alcohol.

#### Alcohol's Effects on the Body

The effects of **ethyl alcohol** on the human body can range greatly depending on:

- Size of the individual
- How empty the stomach is at the time of alcohol consumption

#### Key Note Term

**alcohol** – a beverage containing ethanol or ethyl alcohol which causes intoxication.

**distilled** – heated and condensed to purify, form a new substance, or concentrate.

**ferment** – to produce a chemical change in a carbohydrate material resulting in alcohol.

gateway – a term attached to alcohol and tobacco due to the fact that their use often leads to further drug abuse.

#### Key Note Term

ethyl alcohol – the type of alcohol found in beer, wine, and distilled spirits.

- State of health and fatigue
- Mental attitude
- Speed and amount of consumption.

Although alcohol may make a person feel "high," alcohol is actually considered a "downer" drug. It slows down or depresses the central nervous system causing slowed reactions, slurred speech, impaired coordination and judgment, and sometimes unconsciousness. Because alcohol affects reaction time, coordination, and judgment, people under its influence are more accident-prone and less likely to make wise decisions. For these reasons, drinking and driving are a very dangerous combination—and illegal.

#### **Long-Term Effects**

Long-term effects of alcohol abuse include alcoholism; cancers of the liver, stomach, colon, larynx, esophagus, and breast; high blood pressure; heart attacks; strokes; stomach ulcers; birth defects; premature aging; and a diminished immunity to disease due to non-function of infection-fighting cells. In men, hormone levels change causing lower sex drives and enlarged breasts; women's menstrual cycles become irregular, possibly resulting in infertility.

The list of effects goes on to include shrinking of the muscles, including the heart; kidney, bladder, and pancreas damage; brain damage affecting vision and memory; depression; and mental illness. Obviously, long-term damage from alcohol abuse can be irreversible and result in death.

#### **TOLERANCE**

When the body becomes accustomed to or builds up a resistance to a drug, the body has developed tolerance to the drug. Tolerance causes a drinker's body to need increasingly larger amounts of alcohol to achieve the effect that was originally produced.

#### **DEPENDENCE**

When the body develops a resistance to a drug and requires the drug to function normally, dependence occurs. The drinker's body develops a chemical need for alcohol. Dependence occurs as tolerance builds. Dependence is also called addiction.

A dependent person who stops taking a drug will suffer from withdrawal. Signs of alcohol withdrawal include shakiness, sleep problems, irritability, rapid heartbeat, and sweating. The drinker also may see, smell, or feel imaginary objects.

The major psychological symptom of dependence is a strong desire or emotional need to continue using a drug. This need is often associated with specific routines and events. For example, some people drink whenever they face a difficult task or when they feel angry about something.

#### **BRAIN DAMAGE**

Long-term alcohol abuse destroys nerve cells in the brain. Destroyed nerve cells usually cannot grow again. The loss of many nerve cells causes forgetfulness, an inability to concentrate, and poor judgment. These losses interfere with normal everyday functions.

#### **DIGESTIVE PROBLEMS**

Ongoing drinking irritates the tissues lining the mouth, throat, esophagus, and stomach. The irritation can cause the tissues to swell and become inflamed. Repeated irritation increases the risk of cancers of the mouth, tongue, esophagus, and stomach. Alcohol also affects the intestines and can cause recurring diarrhea. Large amounts of alcohol cause the stomach to produce too much stomach acid. The overproduction of acid may lead to indigestion, heartburn, or ulcers.

#### LIVER DAMAGE

Alcohol interferes with the liver's ability to break down fats. As a result of heavy drinking, the liver begins to fill with fat. The excess fat blocks the flow of blood in the liver, and the fat-filled liver cells die. Cirrhosis of the liver is a disease in which useless scar tissue replaces normal liver tissue. Since there is no blood flow in the scarred area, the liver begins to fail. Heavy drinkers suffering from cirrhosis may have high blood pressure, get infections easily, have swelling of the abdomen, and show a yellowing of the skin and eyes. Cirrhosis is the last stage of liver disease and can result in death.

Heavy drinkers often develop alcoholic hepatitis, or inflammation of the liver, caused by the toxic effects of alcohol. Hepatitis causes weakness, fever, yellowing of the skin, and enlargement of the liver. Recovery may take weeks. Sometimes hepatitis can lead to liver failure and even death.

#### HEART DISEASE

Excessive drinking contributes to increased blood pressure and heart rate, and irregular heartbeat. These problems can cause disruption in blood flow and possible heart damage. Also, alcohol causes fat to be deposited in heart muscle. Fatty heart muscle, in turn, causes the heart to pump blood through the body less efficiently. Alcohol abuse leads to heart disease, the leading cause of death in the United States.

#### FETAL ALCOHOL SYNDROME

Pregnant women who drink put the health of their child at risk. A disorder called fetal alcohol syndrome (FAS) refers to the group of birth defects caused by the effects of alcohol on the unborn child. FAS occurs when alcohol in the mother's blood passes into the fetal, or unborn baby's, blood. Babies born with FAS often suffer from heart defects, malformed faces, delayed growth, and poor motor development. Alcohol prevents FAS babies from ever developing the reasoning abilities of healthy babies. Tragically, it is the leading preventable cause of mental retardation in America.

If a woman who is pregnant does not drink, her baby will not be born with FAS. Any woman who is pregnant or planning to become pregnant should not drink alcohol at all.

#### Short-Term Effects

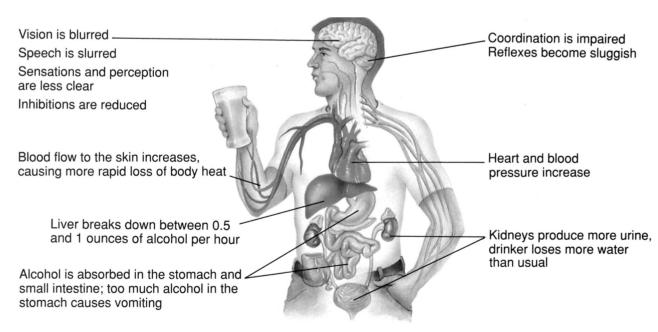
The short-term effects of alcohol include those that happen within minutes, and sometimes within days, of drinking alcohol. Figure 3.1.1 identifies the short-term effects of alcohol on the body.

#### **BLOODSTREAM**

When alcohol enters the blood, it causes the blood vessels to widen. More blood flows to the skin's surface. The drinker feels warm for a short time as the skin flushes; however, the drinker's body temperature drops as the increased blood flow to the surface allows body heat to escape. People who drink alcohol in cold weather to get warm actually accomplish the opposite.

#### **BRAIN**

Upon reaching the brain, alcohol immediately has a depressant effect and slows the speed of some brain activities. People who drink alcohol may describe the change as relaxing. What they actually experience are physical changes such as a loss of sensation and a decrease in sharpness of vision, hearing, and other senses. Alcohol also affects the parts of the brain that control muscle coordination, which is why drinkers may lose their balance or stumble.



*Figure 3.1.1: How the body reacts to the toxic effects of too much alcohol in the stomach.* 

If drinking continues, alcohol depresses the part of the brain that controls breathing and heartbeat. Breathing rates, pulse rates, and blood pressure, which initially increased, now decrease. A drinker may lose consciousness, slip into a coma, or die from alcohol poisoning.

Heavy drinkers and many first-time drinkers may suffer blackouts. Blackouts are periods of time that the drinker cannot recall. Other people recall seeing the drinker talking, walking, and in control. The following day, however, the drinker has no memory of some events from the day before.

#### LIVER

In the bloodstream, alcohol is carried to the liver. The liver chemically breaks down alcohol into energy and the waste produces carbon dioxide and water. The carbon dioxide is released from the body in the lungs. The water passes out of the body as breath vapor, perspiration, or urine. When people drink alcohol faster than the liver can break it down, they become **intoxicated**.

#### **KIDNEYS**

Alcohol prevents the release of body chemicals that regulate how much urine the kidneys make. The kidneys produce more urine than usual, and the drinker loses more water than usual. The drinker becomes very thirsty. In extreme cases, a drinker may lose water needed for the body to function properly.

#### **MOTOR-VEHICLE CRASHES**

Almost half of the fatal crashes and about two-thirds of all crashes involving personal injury in the United States are related to alcohol use. In addition, more than one-third of pedestrians who are struck and killed by motor vehicles are drunk.

Driving while intoxicated is illegal in all of the 50 states. Driving while intoxicated means a driver exceeds the level of blood alcohol concentration allowed by law in a state. Drivers who cause motor-vehicle crashes usually undergo blood, urine, breath, or saliva tests to determine their blood alcohol concentration (BAC, discussed later in this section). If their BAC is above the legal limit, drunk drivers can have their driver's license taken away and can be prosecuted.

#### **SYNERGISM**

Some drugs can interact to produce effects that are many times greater than either drug would produce by itself. When drugs increase each other's effects when taken together, the interaction is called synergism.

As previously stated, alcohol is generally a depressant drug. When a person drinks alcohol and takes another depressant, such as sleeping pills, the combination can cause drastic changes in the body. Together the depressants' effects are more than doubled and can cause a dangerous slowing of breathing and heart rates. In extreme cases, synergism of alcohol and other depressants can lead to coma or death.

#### Key Note Term

intoxicated – drunk; affected by alcohol to the point that physical and mental control are significantly impaired.

#### **OVERDOSE**

Taking an excessive amount of a drug that leads to coma or death is called an overdose. Severe intoxication causes the heart and breathing to stop, resulting in death from alcohol overdose. Many drinkers assume that they will pass out before drinking a fatal amount. This is not necessarily true. Alcohol continues to be absorbed into the blood for 30 to 90 minutes after the last drink. The drinker's BAC can increase even if the drinker becomes unconscious. First-time drinkers who participate in a drinking contest may die from alcohol poisoning.

#### **Blood Alcohol Concentration**

The amount of ethanol in a person's blood is expressed by a percentage called the blood alcohol concentration (BAC). BAC measures the number of milligrams of ethanol per 100 milliliters of blood. A BAC of 0.1 percent means that 1/10 of 1 percent of the fluid in the blood is ethanol. A BAC of 0.1 percent reduces a person's muscle coordination, perception, and judgment.

A variety of factors can affect a person's BAC, including:

- gender
- age, weight, and height
- amount of food in the stomach
- concentration of alcohol in beverages consumed
- · volume of alcohol consumed
- rate of consumption and absorption

The rate at which a person's liver can break down alcohol is fairly constant. In one hour, the liver can break down the amount of ethanol in a can of beer, a shot of liquor, or a glass of wine. Thus, someone who has three cans of beer in the last 45 minutes of a three-hour party will become more intoxicated than someone who drinks those three cans of beer over the three-hour period. The effects of BAC on the body are shown in Figure 3.1.2.

Provided the person does not continue to drink, the BAC decreases. The intoxicating effects of alcohol slowly diminish. As reflexes and coordination return to normal, a person gradually becomes steadier. Many people refer to this process as "becoming sober" or "sobering up."

You may have heard that cold showers, exercise, fresh air, or coffee will help a person sober up more quickly. But this is not true. Nothing can speed the liver's ability to break down alcohol. Coffee or fresh air may keep a person awake, but they do not eliminate the intoxicating effects of alcohol.

# **Behavioral Effects**

In addition to the physical effects of alcohol, certain behavioral, or learned, effects are connected to drinking. A person's mood and reason for drinking can alter the effects of alcohol. Sometimes the person's mood and reason for drink-

Blood Alcohol Concentration: Effects on the Body			
Number of Drinks	Effects	BAC Range*	Approximate Time to Eliminate Alcohol
	Inhibitions, reflexes, and alertness diminished. Judgment and reasoning affected.	.02–.03%	11/2 hours
	Drinker gets the mistaken idea that his or her skills and abilities have improved. Self-control declines.	.04–.06%	3 hours
	Unable to think clearly. Judgment, reasoning and muscular coordination is impaired.	.06–.09%	4 to 5 hours
	Most behaviors, including hearing, speech, vision, and balance, are affected.	.08–.12%	5 to 7 hours
*The BAC will vary depending on the alcohol content of the drinks and rate of consumption.			

Figure 3.1.2: In some states, a person with a BAC of 0.1 percent is legally drunk. Other states have lowered the legal BAC to 0.08 percent.

ing make the effects stronger; sometimes they make the effects weaker. The environment in which alcohol is consumed may influence its effects as well.

At a quiet family dinner, family members may consume wine with no negative effects. The calm nature of the event and the fact that both parents and children expect each other to behave politely creates an environment in which people drink responsibly.

At a party in which "getting drunk" is the main theme, alcohol consumption often leads to negative behaviors. The loss of coordination may be exaggerated for comic effect. People who have been drinking may insist that they are still perfectly able to drive. They may not want to admit that they cannot drink as much as others.

As alcohol takes effect, drinkers begin to lose judgment and self-control. At the same time, alcohol decreases drinkers' natural fears. When these two effects are combined, the person's inhibitions are reduced. Inhibitions are the controls that people put on their emotions and behavior in order to behave in socially acceptable ways.

After they lose their inhibitions, drinkers may behave in ways they normally would never consider. For example, a person under the influence of alcohol may express anger in violent or destructive ways. Shy people may behave in outgoing ways, and serious people may act foolishly.

#### **Alcoholism**

Some drinkers cannot control their drinking. Their major goal in drinking is to get drunk. People who have an addiction to alcohol suffer from the disease of

D DEFINE the problem

E EXPLORE alternatives

C CONSIDER the consequences

I IDENTIFY values

D DECIDE and act

EVALUATE results

#### **Drinking and Driving?**

anelle attended a party with some of her friends. She planned to get a ride home with Dave, but she had seen him drink four beers since he arrived. Dave was showing some signs of intoxication, and Janelle was not sure if he should drive. Unfortunately, she did not know anyone else at the party who could give her a ride, and Janelle knew that her parents had gone out with friends for the evening. Besides, three of her friends were getting a ride from Dave. "I'm probably getting worried for nothing," thought Janelle. "What could happen in the few miles to my house?"

- 1. Use the DECIDE process to decide what you would do if you were in Janelle's position. Explain your decision.
- 2. What role might peer pressure play in influencing Janelle's decision?
- 3. Suggest a realistic plan that you and your friends could use to avoid situations like the one described above.



Source: Ken Karp

alcoholism. Psychologically, alcoholics consider drinking a regular, essential part of coping with daily life. Physically, an alcoholic's body requires alcohol to function. An alcoholic's drinking patterns eventually control every aspect of life.

No one is sure why some drinkers become alcoholics, but anyone who drinks—even one drink—is at risk of becoming an alcoholic. Because alcoholism tends to run in families, there appears to be some genetic basis. On the other hand, the attitudes in the home in which a person grows up may play a role in whether or not a person develops a drinking problem

# Drugs

A drug is any chemical substance that changes the function of the mind or the body. Aspirin is a drug; allergy medication is a drug; marijuana is a drug; beer is a drug; the nicotine in cigarettes is a drug. A drug is neither good nor bad—it is what a person does with a drug that makes the difference.

Use, misuse, and abuse are terms thrown around quite a bit when talking about drugs. Use is taking a legal drug as prescribed or recommended for medical reasons. Misuse is taking a legal drug for medical reasons but not as recommended or prescribed. Abuse is taking any drug, legal or illegal, for a nonmedical reason in a way that can injure your health or ability to function. Taking drugs is a serious matter; there is no such thing as "recreational drug use."

Abusing drugs is not a sport or a hobby and always involves an unnecessary risk to your health.

When people talk about drugs, you often hear that someone is a drug addict or that a drug can or cannot cause dependence. Addiction and drug dependence mean basically the same thing; however, the term "addict" tends to make people think of a desperate individual living in the back alleys of a big city. But anyone from any background in any place can be addicted or drug dependent. People who are dependent cannot refuse the drug they have been abusing.

A person has a physical dependence on a drug when, after being deprived of the drug for any length of time, he or she experiences symptoms like nausea, vomiting, anxiety, watery eyes and nose, and an overwhelming desire to use the drug. Such symptoms are typical of withdrawal sickness. Withdrawal happens because the body's chemistry has been changed, causing the user to be unable to function comfortably without the drug.

Most people who are physically dependent are also psychologically dependent. Some have psychological dependence without the physical dependence, which can be an equally strong dependence. With this type of dependence, the user feels a powerful motivation to continue abusing a drug for the temporary pleasure or relief of discomfort the drug gives. Because the mind and the body work together very closely, it is often difficult to tell the difference between physical and psychological dependence. The mental craving for a drug may be so powerful that it seems to be a physical need.

# Marijuana (Pot, Grass, Weed, Dope, Reefer)

Marijuana (Acapulco Gold, Ganga, Grass, Mary Jane, Pot, Weed, Reefer, Stick, Smoke) comes from the dried flowers, leaves, and small stems of the cannabis plant. It is smoked in cigarettes, known as joints, and also in pipes. Marijuana use is illegal in the United States, but in the past was used medically to reduce swelling of the eyes caused by glaucoma and to counteract the intense nausea brought on by certain cancer treatments. Its legalization, especially for these medical purposes, has been a controversial subject in this country for years.

The chemical tetrahydrocannabinol (THC) produced by cannabis is the main psychoactive substance that produces marijuana's mind-altering effects. THC is quickly absorbed into the lungs and then travels through the blood to affect the brain. It distorts the senses, including hearing, taste, touch, and smell, and alters sense of time and place, as well as feelings. THC affects sleep patterns and remains in body fat for at least a month after only one joint has been smoked. It causes users to crave food (getting the munchies) and to enjoy eating, which is unusual for a drug. It also tends to dull sexual urges and pleasure.

There are several hundred other chemicals in marijuana that vary between different types of cannabis plants and between plants grown during different seasons. The active chemicals in marijuana affect the brain, altering hearing, taste, touch, smell, and sense of time and space. The effects of marijuana vary from person to person depending on each person's expectations and how much they smoke, and because the chemicals in different marijuana plants vary. People may experience anything from a mild euphoria to uncontrollable laughter to

hallucinations. Marijuana can also contain dangerous substances such as pesticides and molds, and is sometimes mixed with PCP to make the user believe it is more potent.

Because marijuana is widely abused today and has been around for thousands of years, many people believe that its use poses no harm. However, research studies prove this notion wrong. Effects include:

- Short-term memory loss and shortened attention span, both of which interfere with the ability to learn. Heavy, long-term use is often called "burn out" because the user's thinking is slow and confused.
- Increased heart rate and irregular heartbeat.
- Weakening of the immune system.
- Reduced hormone levels resulting in lower sperm counts in males and irregular menstrual cycles in females.
- Development of "amotivational syndrome," which results in apathy and loss of ambition and drive.
- Impaired judgment, unsteadiness, lack of coordination, and slowed responses, which make driving a dangerous activity.
- Lung damage and increased risk of lung cancer. This risk is higher than that of smoking tobacco cigarettes, since marijuana is inhaled more deeply and then held in the lungs for a longer period of time. Joints also lack filters to cut down on harmful chemical effects.
- Possible depression and moodiness. Some users feel tired and unhappy the morning after smoking marijuana and may respond by smoking a joint to feel better. This cycle may lead to psychological **dependency**.
- Possible intense fear and anxiety, called a "pot panic" and even paranoia and psychosis. This may occur if the marijuana contains higher levels of THC.
- Development of a tolerance to marijuana resulting in the need for greater amounts in order to feel any effects. This may also contribute to psychological dependence.

Harmful health effects of marijuana use may include rapid and irregular heart-beat, short-term memory loss, shortened attention span, a weakened immune system, fatigue, and a higher risk of lung cancer. In extreme cases, marijuana abuse can result in paranoia and psychosis. Similar to alcohol, marijuana abuse can affect driving ability. As with any illegal drug, marijuana is not tested for safety and purity. It may contain pesticides and molds and may be mixed with other dangerous drugs.

Because of all the effects marijuana has on the mind, body, and the ability to learn, its use may be particularly harmful to young people since they are still maturing physically, sexually, and mentally. Marijuana's effects may prevent you from becoming a healthy, normal adult.

# Cocaine, Crack, and Bazuco

Cocaine hydrochloride (Cocaine, Coke, Snow, Flake, Rock, White, Blow, Nose Candy) comes from the leaves of the coca bush and is an illegal drug that looks

#### **Kev Note Term**

**dependency** – addiction to a substance.

like white crystalline powder. It is often diluted with other ingredients and then inhaled through the nose, injected, or smoked.

It is a stimulant that affects the nervous system providing short bursts of euphoria, a feeling of excitement, increased blood pressure and pulse rate, and alertness. People often use it to increase mental activity and to offset drowsiness, fatigue, or as an appetite suppressant; however, the intense high of cocaine is followed by an intense low. Repeated abuse of cocaine can result in a strong physical and psychological dependency. The body will ignore all other drives, including hunger, in its drive for cocaine.

Regular use can lead to hallucinations of touch, taste, sound, or smell. Tolerance develops rapidly with repeated use. As cocaine's effects wear off, the user feels exhausted, **depressed**, and sometimes paranoid, similar to the crashing of amphetamines. Cocaine is considered to be one of the most potentially addictive drugs.

Cocaine stimulates the central nervous system. Immediate effects include dilated pupils and elevated blood pressure, heart rate, respiratory rate, and body temperature. Occasional use results in a stuffy nose, while chronic use decays the mucous membranes of the nose. Injecting cocaine, or any drug, with a shared needle may spread AIDS, hepatitis, and other diseases. Cocaine produces both psychological and physical dependency.

Dealers cut cocaine with other substances, usually table sugar, mannitol, lactose, dextrose, and other drugs (PCP, lidocaine, amphetamines). Strychnine, a poison, has been found in cocaine; talc, which damages the lungs, is also often used.

Occasional use of cocaine can lead to heavy, uncontrollable use, with the dependence becoming so strong that users will not quit even when cocaine severely damages their lives. When users do quit, they may not experience strong physical withdrawal symptoms, but they do become depressed, irritable, tired but unable to sleep, and constantly crave the drug.

Crack (Crack, Freebase Rocks, Rock) looks like brown pellets or crystalline rocks that resemble lumpy soap and is often packaged in small vials. It is smoked. Bazuco is a drug similar to crack. Both of these drugs are illegal.

Crack is street cocaine commonly processed with boiling water and baking soda, which produces a very pure form of cocaine. The effects and the risk of addiction to crack are so great, however, that it is like a completely different drug. It is many, many times more dangerous than cocaine hydrochloride. Its effects are felt within 10 seconds. Cocaine in this form creates a very intense high and a fast, strong addiction. The user also experiences an incredible low after the high has worn off, often throwing him or her into a deep depression. To offset this depression, the user then smokes more crack, starting the compulsive cycle that leads to a severe dependency. The only person who benefits from this vicious cycle is the drug dealer who now has a desperate customer in constant need of his or her product.

Physical side effects of crack include dilated pupils, increased pulse rate, elevated blood pressure, insomnia, loss of appetite, hallucinations of touch, paranoia, and seizures. A major concern with crack is that dependency is almost immediate. The first experience is often very pleasurable. Then, the extreme low

#### **Key Note Term**

**depressed** – low spirits; sadness; dejection.

afterwards is a strong motivator to use the drug again right away, this time to relieve bad feelings. Users of crack are addicted before they know it, turning their lives upside down.

Bazuco, another form of cocaine, is equally if not more dangerous and addictive than crack. Its use originated in Colombia and other South American countries and has now made its way to the United States. It is made from the intermediate step between the coca leaf and the cocaine hydrochloride, called cocaine sulfate. It is mixed with a number of other substances, among them marijuana, methaqualone, and acetone. Its effects are similar to those of crack, as are its dangers and its quick addiction.

The use of any type of cocaine can cause death by disrupting the brain's control of the heart and respiration.

#### Amphetamines and Methamphetamines (Speed)

Amphetamines (Speed, Uppers, Ups, Black Beauties, Pep Pills, Copilots, Bumblebees, White Crosses, Benzedrine, Dexedrine, Footballs, Biphetamine) look like capsules, pills, or tablets. Methamphetamines (Crank, Crystal, Meth, Crystal Meth, Methedrine, Ice) can be in the form of a white powder, pills, or a rock which resembles blue paraffin. Forms of both drugs are used medically to treat obesity, narcolepsy, and hyperactivity in children.

#### **Amphetamines**

Similar to cocaine, amphetamines are **stimulants**. They stimulate the nervous system, increasing physical activity, energy, mental alertness, and self-confidence, and producing euphoria. Medically, amphetamines are used to treat obesity, narcolepsy, and hyperactivity in children. For example, the amphetamine Ritalin is used to stimulate the brain center that helps hyperactive children sit still and pay attention.

As a drug of abuse, amphetamines are often referred to as "speed." Many people abuse amphetamines to increase energy and alertness, and in some cases to combat fatigue brought on by use of alcohol, marijuana, or depressants. The body builds up tolerance to amphetamines, however, and greater and greater doses are required to achieve the same effects. Addiction may become severe.

Medically, amphetamines are taken orally, but many abusers inject the drug directly into a vein increasing the risk of overdose and infection. Needles shared to inject the drug can spread hepatitis and HIV. After an injection of amphetamines, the user experiences intense, short-lived euphoria. An addict may inject the drug several times a day for several days feeling little need for food or sleep. Mental depression and overwhelming fatigue follow abuse, which may cause the abuser to turn to amphetamines again for relief.

In addition to fatigue and depression, other side effects of amphetamine abuse include extreme anxiety, temporary mental illness, and malnutrition. High doses can cause hallucinations, increased body temperature, high blood pressure, convulsions, kidney failure, lack of oxygen, bleeding of the brain, and death. Withdrawal symptoms include irritability, depression, disorientation, long periods of sleep, and not caring about anything.

#### Key Note Term

stimulants – drugs, drinks, or other substances that speed up the activity of the mind or body; a drug that speeds up the activities of the central nervous system, the heart, and other organs.

#### **Methamphetamines**

Methamphetamine is a nervous system stimulant similar to amphetamines that is used medically in much the same way as amphetamines. This drug is abused to produce heightened awareness, alertness, and self-confidence. A smokable form of methamphetamine is "ice." Like crack, it produces an intense high without the use of needles and is extremely addictive. Abuse of methamphetamine may result in bizarre behavior, sleeplessness, depression, high blood pressure, increased body temperature, convulsions, heart problems, seizures, and strokes.

Methcathinone, also called "cat" and "star," is a designer drug similar to methamphetamine that can cause paranoia, slurred speech, tremors, extreme weight loss, and sleeplessness

# Barbiturates, Methaqualones, and Tranquilizers

Barbiturates (Downers, Barbs, Blue Devils, Red Devils, Yellow Jacket, Yellows, Nembutal, Seconal, Amytal, Tuinals, Luminal, Amytal, Pentothal, Phenobarbital) look like red, yellow, blue, or red and blue capsules. Methaqualones (Ludes, Quaaludes, Quads, Sopors, Sopes, 714s) look like tablets. Tranquilizers (Valium, Librium, Equanil, Miltown, Serax, Tranxene, Thorazine) look like tablets or capsules.

#### **Barbiturates**

Barbiturates are a group of depressant drugs that include phenobarbital (goofballs), pentobarbital (yellow jackets), amobarbital (blue devils), and secobarbital (red devils). They lower body temperature and blood pressure, slow breathing and heart rate, and as such, have many medical uses. For example, doctors prescribe phenobarbital to reduce the frequency of convulsions in epileptics. Barbiturates are also used medically as an anesthetic and to treat insomnia. Barbiturates' effects vary from person to person and even change within one person from one time to the next.

When abused, the symptoms they produce are similar to those of alcohol. Small amounts can produce calmness and relaxed muscles, but larger doses cause slurred speech and staggering walk. Like alcohol, they distort perception and slow reaction time, which can cause serious accidents like car crashes. Very large doses can cause respiratory depression, coma, and death.

Signs of barbiturate abuse include fatigue, blurred vision, confused or slurred speech, lack of coordination and balance, a reduction of mental and physical activity, and decreased breathing. Abusers will often act like they are drunk, but there will be no smell of alcohol. Long-term abuse may result in double vision, depression, and forgetfulness.

Signs of an overdose of barbiturates include dilated pupils, a rapid pulse, shallow breathing, and clammy skin. An overdose can cause coma and death. Because barbiturates cause confusion and forgetfulness, accidental death occurs when a person has taken barbiturates, becomes confused, forgets, and takes more barbiturates. Accidental poisoning occurs when barbiturates are combined with alcohol. Withdrawal symptoms include anxiety, insomnia, tremors, delirium, and convulsions.

Barbiturate abusers often become extremely depressed, tired, and hopeless. They may reach for the rest of the bottle to "end it all" when in this mental state, or they may become confused, forget how many pills they have taken, and accidentally overdose. For this reason, barbiturates are one of the leading causes of drug-related deaths. The combination of barbiturates and alcohol can multiply the effects of both drugs, thereby multiplying the risks. This multiplication of the effects of two separate drugs when taken together is called the synergistic effect. It can be fatal.

#### Methaqualone

Methaqualone production has been banned in the United States since 1984 due to its widespread misuse and minimal medical value. Abusers take it to produce a feeling of elation; however, its side effects are headaches, nosebleeds, dizziness, loss of coordination, and leg and arm pain. Tolerance and psychological dependence can develop when used regularly. Using methaqualone with alcohol is known as "luding out" and can cause death.

#### **Tranquilizers**

Tranquilizers are used medically to treat anxiety, insomnia, and convulsions. It is very easy to become both physically and psychologically dependent on them. When mixed with alcohol, they can cause death.

#### **Narcotics**

Most **narcotics** are opiates, which come from the seed pods of opium poppies. Many are used medically to relieve pain and treat insomnia. Narcotics abuse initially produces a feeling of euphoria that is often followed by drowsiness, nausea, and vomiting. Users also may experience constricted pupils, watery eyes, and itching. An overdose may produce slow and shallow breathing, clammy skin, convulsions, coma, and death. Tolerance develops rapidly and dependence is likely. The use of contaminated syringes to inject certain kinds of narcotics may result in diseases such as AIDS and hepatitis. Narcotics include opium, codeine, morphine, and heroin. Other types of opiates include Percocet, Percodan, Tussionex, Fentanyl, Darvon, Talwin, and Lomotil and come as tablets, capsules, or liquids.

#### **Opium**

Opium (Paregoric, Dover's Powder, Parepectolin) can look like dark brown chunks or a powder. It comes from a specific type of poppy, generally grown in the Middle East. Opium is one of the weaker narcotics, but it has side effects that make it undesirable as a medication, including slowed heart rate, breathing, and mental abilities, and loss of appetite.

#### Codeine

Codeine comes in different drugs such as Empirin, Tylenol, and certain cough medicines. It is either a dark liquid varying in thickness or comes in capsules or tablets. Similar to opium, codeine is one of the weakest narcotics. Doctors prescribe it for coughs and pain relief.

#### **Kev Note Term**

narcotics – a drug medically used to relieve pain, produce sleep, and dull the senses.

#### Morphine

Morphine (Pectoral Syrup) is an opium derivative, and comes in the form of white crystals, hypodermic tablets, and injectable solutions. Morphine is a very strong painkiller, but because it is also very addictive, it is used in medicine only for severe cases, such as in the later stages of terminal cancer when patients are in extreme pain. Unfortunately, as a drug of abuse, morphine usually results in addiction. Withdrawal from it has painful and severe effects and generally requires the help of a professional to get an addict off the drug.

#### Heroin and Methadone

Heroin (Smack, Horse, Junk, Harry, H, Brown, Black Tar, Antifreeze) looks like a white to dark brown powder or a tar-like substance. Methadone Hydrochloride (Dolophine, Methadose, Methadone) comes in the form of a solution.

Heroin is a concentrated form of morphine and is so addictive that it is illegal in the United States even for medical use. Unfortunately, it is the most abused narcotic in this country, and its use is on the rise as of the late 1990s. Users of heroin often start by sniffing or smoking the drug in powdered form. Because tolerance develops quickly, they often turn to "mainlining," the practice of injecting a heroin solution into their veins to intensify the drug's effects.

Heroin dulls the senses, easing tensions, fears, and worries. A stupor follows that lasts for several hours in which hunger and thirst are reduced. After 12 to 16 hours without heroin, the user will experience severe withdrawal symptoms, including sweating, shaking, chills, nausea, diarrhea, abdominal pain, leg cramps, and severe mental and emotional pain. To relieve these symptoms, the user must take another dose of the drug. People addicted to heroin often die young, some from overdoses caused by unreliable drugs, others because they cannot distinguish between safe and dangerous doses.

Signs of an overdose include shallow and slow breathing, clammy skin, and convulsions. An overdose can result in a coma and death. When addicted, a person must have more of the drug to keep from experiencing withdrawal symptoms, which are severe and can include panic, shaking, chills, sweating, cramps, and nausea.

# Hallucinogens

**Hallucinogens** alter the physical senses, producing visions, sounds, and smells that are not real, and distorting the concepts of time and space in the user's mind. Because these drugs confuse fact and fantasy, a user may become irrational and resort to violence or suicide to avoid an imagined situation or attacker. Hallucinogens are not physically addictive, but users often become psychologically dependent on these drugs.

#### Lysergic Acid Diethylamide (Acid)

Lysergic acid diethylamide (LSD, Acid, White Lightning, Blue Heaven, Sugar Cubes, Microdot) can come as brightly colored tablets, imprinted blotter paper, thin squares of gelatin, or as a clear liquid.

#### Key Note Term

hallucinogens – drugs that cause hallucinations.

A "trip" from an average dose of LSD can last as long as 8 to 10 hours. LSD's effects are unpredictable, tolerance to it develops quickly, and its use frequently results in psychological dependence.

LSD is a powerful hallucinogen that scrambles and confuses the senses. A tiny drop taken with sugar or food can cause a person to "trip" or experience false visions, smells, and sounds for hours. Sensations may be confused and feelings may change rapidly. Music may appear as colors and colors as flavors or odors. Some people say these experiences are exciting; others say they are nightmares. Those having a "bad trip" may take dangerous or irrational actions to escape from this imaginary situation. In addition to these affects, LSD can cause nausea, vomiting, and misinterpretations of time and distance. Some people experience flashbacks of LSD's effects days, weeks, and years after the original trip. An overdose of LSD can result in psychosis, accidental death, and suicide.

#### Phencyclidine Hydrochloride

Phencyclidine hydrochloride (PCP, Angel Dust, Hog, Superjoint, Busy Bee, Green Tea Leaves, DOA <dead on arrival>) can be in the form of a liquid, capsules, white crystalline powder, or pills. Of the various types of hallucinogens, only PCP has a medical use as a tranquilizer for animals.

PCP interrupts the functions of the neocortex, which is the section of the brain that controls the intellect and keeps instincts in check. The effects of PCP are unpredictable, but users frequently report a sense of distance and alienation from the world and others. Sometimes a user may feel drunk, but at other times the same dose may cause depression, paranoia, hallucinations, and suicidal thoughts. Time and movement are slowed down; muscular coordination worsens; senses are dulled; and speech is blocked and incoherent.

PCP stays in the system for a long time. Chronic users report persistent memory problems and speech difficulties as well as psychological and behavioral changes. Some of these effects may last six months to a year following prolonged daily use. Mood disorders such as depression and anxiety also occur, and users may exhibit paranoid and violent behavior. In fact, many deaths attributed to PCP do not occur from the drug itself, but from accidents, like falling from high places, drowning, or car wrecks, related to the behavior PCP produces. Large doses of PCP can cause convulsions and coma, heart and lung failure, or ruptured blood vessels in the brain. Treatment for an overdose is very difficult and requires hospitalization.

PCP, used as a tranquilizer for animals, can cause frightening hallucinations when used by humans. Abuse can result in seizures, coma, and death or in violent, unpredictable behavior. Some abusers have committed murder and suicide.

# Psilocybin (Mushrooms, Shrooms) and Mescaline (Mesc, Buttons, Cactus)

Two other hallucinogens are psilocybin, produced from a type of mushroom, and mescaline, produced from a type of cactus. Similar to other hallucinogens, use of these drugs can cause hallucinations, perception problems, nausea, vomiting, and, in extreme cases, mental illness, suicide, or accidental death. Mescaline

effects, while compared to a mild LSD trip, are often accompanied by sweating and severe abdominal cramps. Eating mushrooms poses another danger since many mushrooms look alike and some are poisonous enough to cause death.

# **Inhalants (Air Blast)**

**Inhalants** are toxic chemicals like glue, freon, nail polish, spray paint, and gasoline that are huffed (sprayed into a cloth and held over the mouth and nose) or bagged (sniffed from a bag, bottle, or can) to achieve a brief, mild euphoria. All of these products contain labels warning against inhaling their fumes because of the hazards involved. Some inhalants used medically are also abused, such as amyl nitrate which relieves heart pain and nitrous oxide which relieves anxiety.

Risks involved with inhaling these chemicals include nausea; dizziness; vomiting; headaches; unconsciousness; pneumonia; permanent brain and nerve damage; bleeding of the brain; eventual liver, brain, and kidney cancer; and death due to heart failure and suffocation. Effects of inhalants are unpredictable and depend on what chemical or chemicals are inhaled and how much. Brain damage and death may result after only one use depending on the inhalants involved.

# Ecstasy (xtc, Love Drug)

Ecstasy is a "designer drug" that closely resembles cocaine. It produces euphoria that lasts several hours, heightens pleasure, and may even produce hallucinations in high doses. Ecstasy is taken orally and may cause mood swings, overly friendly behavior, insomnia, anxiety, and nausea. In extreme cases, abuse may result in seizure and death.

# Rohypnol (Roofies, Forget Pill, Date-rape Pill)

Rohypnol is used legally as a medical sedative in Europe and Latin America. As a drug of abuse, it is called roofies, forget pill, and date-rape pill. At first, it produces an alcoholic type of high, but then heavy sedation and short-term memory loss that lasts up to eight hours. It earned its reputation as the date-rape pill by being slipped into the drinks of females, who were taken advantage of in a state of sedation brought on by the drug and then unable to remember exactly what happened to them. In addition to the drawback just discussed, dangers of abusing rohypnol include impaired motor skills and slow respiration.

# Tobacco

Many people hold the view that experimentation with or use of **tobacco** is considered normal or acceptable behavior. However, the use of tobacco often progresses to further drug abuses. Accordingly, some experts attach the term "gateway" to this substance. Use of drugs such as cocaine and heroin is unusual in those who have not previously used tobacco.

# **Key Note Term**

**inhalants** – medications or chemicals that are inhaled.

#### Key Note Term

tobacco – the leaves of cultivated tobacco plants, prepared for use in smoking, chewing, or as snuff. Tobacco's hazards include cancer and other diseases and can also have ill effects on others. As awareness of these ill effects reaches new heights, more and more Americans are joining forces to fight tobacco abuse every day.

In addition to smoking cigarettes, pipes, or cigars, people who use tobacco products can also do so orally in the forms of chewing tobacco (by placing a wad between the cheek and teeth and sucking on it) and snuff (by placing a pinch between the lower lip and teeth).

Three major components make up tobacco, each having their own ill effects. One such component, tar, causes a variety of cancers and contributes to emphysema and other respiratory problems. For this reason, people often choose to smoke low-tar cigarettes, but even low-tar cigarettes can be unsafe because smokers often smoke more while using these brands. Carbon monoxide, also found in tobacco, restricts the oxygen-carrying capacity of the blood, and can often cause insufficient heart operation. Nicotine, the substance in tobacco believed to cause dependency, is absorbed into the blood-stream, reaching the heart and brain within a few seconds of the onset of smoking.

#### Note

Nicotine in its pure state is a toxic poison and is used in insecticides.

Some of the diseases associated with long-term tobacco smoking include chronic bronchitis, emphysema, coronary heart disease, and lung cancer. Lung cancer is the leading cause of death among women today. Cigarette smoking is a major independent risk factor for heart attacks (sometimes fatal) in both men and women. Pipe and cigar smokers are more prone to dying from cancer of the mouth and throat than non-smokers. Smoking also reduces the effectiveness of prescription and over-the-counter medications.

#### Note

Infections, especially pneumonia and acute bronchitis, are twice as common in young children whose parents smoke than children with non-smoking parents.

Although chewing tobacco and snuff are not smoked, they increase the risk of disease and damage to the delicate lining of the mouth and throat. As a result, individuals who use these products are more likely than non-users to develop mouth cancer, throat cancer, and gum disease. Chewing tobacco and snuff can also contribute to heart disease and strokes. The harmful effects of one can of snuff are equal to that of about sixty cigarettes.

Despite the labels required by federal law warning individuals about the hazardous effects of using tobacco products, use continues.

Recent research has indicated that non-smokers who breathe in second-hand smoke (smoke that escapes from the burning end of a cigarette as well as the smoke exhaled by the smoker), can have an increased risk of lung cancer, heart disease, and respiratory disorders. Inhaling second-hand smoke makes the heart beat faster, the blood pressure go up, and the level of carbon monoxide in the blood increase. Smoke from an idling cigarette contains even more tar and nicotine than an inhaled one, in addition to more cadmium, a substance which has been related to hypertension, chronic bronchitis, and emphysema.

As the public becomes more aware of the dangers of inhaling second-hand smoke, the legislation protecting the rights of non-smokers continues to increase. Smoking is increasingly being banned in both public and private places.

#### The Chemicals in Tobacco Smoke

With each puff on a cigarette, cigar, or pipe, a smoker inhales over 4,000 different chemicals. Of these 4,000 chemicals, at least 1,000 are known to be dangerous. Table 3.1.1 lists some of the harmful chemicals found in cigarette smoke. Among all the dangerous substances, nicotine, tar, and carbon monoxide can be identified as the most deadly ones found in tobacco smoke.

#### Nicotine and Addiction

The drug in tobacco that may act as a stimulant and cause addiction is **nicotine**. A stimulant is a drug that speeds up the activities of the central nervous system,

#### Key Note Term

**nicotine** – the drug in tobacco that may act as a stimulant and cause addiction.

Table 3.1.1: Harmful Chemicals in Tobacco Smoke			
acetaldehyde	butylamine	methyl alcohol	
acetone	carbon monoxide	methylamine	
acetonitrile	dimethylamine	methylfuran	
acrolein	dimethyl-nitrosamine	methylnaphthalene	
acrylonitrile	ethylamine	nicotine	
ammonia	formaldehyde	nitric oxide	
aniline	hydrocyanic acid	nitrogen dioxide	
benzene	hydrogen cyanide	phenol	
benzopyrene	hydrogen sulfide	pyridine	
2,3 butadione	methacrolein	toluene	

the heart, and other organs. In its pure form, nicotine is one of the strongest poisons known. Taken in large amounts, nicotine can kill people by paralyzing their breathing muscles. Smokers usually take in small amounts of nicotine. However, over several years the effects on the body of much smaller amounts are numerous and severe.

When tobacco is smoked, nicotine enters the lungs, where it is immediately absorbed into the bloodstream. Seconds later, the nicotine reaches the brain. Chemical changes begin to take place. Nicotine causes the heart to beat faster, skin temperature to drop, and blood pressure to rise. Nicotine constricts blood vessels, which cuts down on the blood flow to hands and feet. Beginning smokers usually feel the effects of nicotine poisoning with their first inhalation. These effects include rapid pulse, clammy skin, nausea, dizziness, and tingling in the hands and feet.

The degree of reaction varies from person to person, depending on the person's tolerance to nicotine. The effects of nicotine poisoning stop as soon as tolerance to nicotine develops. Tolerance can develop in new smokers after the second or third cigarette. The smoker begins to experience a "lift," a physical reaction to the chemicals in nicotine. As tolerance builds, however, the user may need more and more tobacco to produce the same feeling. The Surgeon General, the country's highest medical authority, has called nicotine an addicting drug, just like heroin and cocaine.

In a short time, tobacco users develop an addiction to nicotine. A tobacco addict who goes without tobacco for a short time may experience nicotine withdrawal. Nicotine withdrawal is a reaction to the lack of nicotine in the body, which causes symptoms such as headache, irritability, restlessness, increased coughing, nausea, vomiting, a general feeling of illness, and intense cravings for tobacco. Withdrawal effects may begin as soon as two hours after the last cigarette. Physical craving for a cigarette reaches a peak in the first 24 hours.

Tobacco users also suffer psychological withdrawal symptoms when they stop smoking. They feel emotionally and mentally uncomfortable without tobacco. By using tobacco at certain times—when under stress, for example—tobacco users actually condition themselves to rely on tobacco whenever a stressful situation arises. When tobacco users go without tobacco, they may feel unable to handle stress. Many tobacco users begin to depend on tobacco at particular times of the day, such as when they awaken or after they finish a meal. Others begin to depend on tobacco in social or work situations, such as parties or meetings.

#### Tar

The dark, sticky mixture of chemicals that is formed when tobacco burns is known as tar. Smokers can see evidence of this substance on their fingers and teeth, which turn brown when tar sticks to them. The tar also sticks to the cells of the respiratory system, where it damages the delicate cells that line the respiratory tract. The cells have tiny hair-like structures, or cilia. The cilia beat back and forth and sweep dust and other foreign particles away from the lungs. If the cilia are damaged, foreign particles can enter the lungs, leading to disease.

The tar in tobacco smoke contains hundreds of chemical carcinogens, or cancer-causing agents. Cancer of the lungs, throat, and mouth are caused by the inhalation of tar in tobacco smoke.

#### Carbon Monoxide

A poisonous, colorless, odorless gas that is found in cigarette smoke is carbon monoxide. You may be familiar with the dangers of carbon monoxide. Deaths that result from leaving a car engine running in a closed area are caused by carbon monoxide poisoning.

Carbon monoxide has a greater attraction for the oxygen-carrying molecules (hemoglobin) in the red blood cells than oxygen does. When carbon monoxide is inhaled, it takes the place of, or displaces, large amounts of oxygen from hemoglobin. The more carbon monoxide present in the blood, the less oxygen in the blood. Carbon monoxide also makes it hard for the oxygen that is left in the blood to get to the muscles and organs. When a person smokes, the heart works harder but accomplishes less. Because their blood contains too little oxygen to function properly, smokers often experience shortness of breath when they are active.

#### Chemicals in Smokeless Tobacco

Most tobacco users smoke cigarettes, cigars, or pipes. And yet there has been an increase, especially among teenage boys, in the use of smokeless tobacco. Smokeless tobacco is tobacco that is chewed or sniffed through the nose. Some people who use smokeless tobacco think that the products are safe because no smoke is produced or inhaled. What they may not realize is that smokeless tobacco contains many of the same harmful chemicals found in tobacco smoke, including the highly addictive drug nicotine.

There are two different kinds of smokeless tobacco products. Chewing tobacco is poor-quality tobacco leaves mixed with molasses or honey and placed between the cheek and gums. Snuff is finely ground tobacco that may be held between the lower lip and teeth or sniffed through the nose. One can of snuff delivers as much nicotine as 60 cigarettes. The nicotine in chewing tobacco enters the bloodstream through the membranes of the mouth. The nicotine in snuff gets into the body through the membranes of either the mouth or the nose. After it has entered the body, nicotine from smokeless tobacco has the same effects as nicotine from cigarettes.

# **Conclusion**

When drugs are properly used, they can cure illnesses and save lives. When abused, however, drugs and alcohol can destroy lives and cause death. It is important to understand that although people often abuse drugs and alcohol to find happiness and fulfillment, these substances only create more problems and unhappiness. To keep from falling into the trap of drug and alcohol abuse stay

smart, strong, and active. Say "no." Recognize the different drugs that are abused in our society and what effect they have on people's health and lives. Understand the dangers of alcohol abuse, not only to the drinker but to family and friends. You can set an example as an informed, drug-free individual.

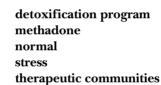
# Lesson Review

- 1. What are the differences between drug use, misuse, and abuse?
- 2. List three risks associated with the use of alcohol.
- 3. Is there any "safe" cigarette? Why or why not?
- 4. Define the term "gateway".

# Lesson 2

# Critical Decisions about Substances

# Key Terms



#### What You Will Learn to Do

• Respond to substance use and abuse situations

#### Linked Core Abilities

- Take responsibility for your actions and choices
- Do your share as a good citizen in your school, community, country, and the world

# Skills and Knowledge You Will Gain along the Way

- Weigh the external and internal factors that influence decisions about substance abuse
- Apply the F-I-N-D-S Decision Process
- Employ pre-deciding techniques as a substance abuse prevention strategy
- Identify two kinds of intervention Interpersonal and Enforcement
- Recognize signs of substance abuse

- Describe why people abuse substances and ways to remain drug, alcohol, and tobacco-free
- Identify ways to approach/help someone you suspect has a drug problem

#### Introduction

Obviously, all drug use is not bad. Drugs taken as prescribed by doctors or as indicated on over-the-counter drug packaging can help prevent and cure illnesses and relieve symptoms of illnesses. When taken under these circumstances and for these reasons, drugs are a useful tool in keeping people healthy. However, drugs should only be a small part of an individual's efforts to maintain wellness, since the best way to stay healthy is to maintain a healthy lifestyle. When people are healthy and feeling well both mentally and physically, they do not require drugs. So why do people misuse and abuse drugs when they do not need them?

Reasons for misusing and abusing drugs all have one thing in common—people depend on drugs to change the way they feel, instead of learning to change themselves or their behaviors to solve their problems or face new challenges. You do not need drugs to have a good time; there are many other longer lasting ways to feel good. You do not need drugs to relieve uncomfortable feelings; many other young people struggle with trouble and challenges much like your own. Even adults are often concerned with the same things you are. Many people, young and old, work to change the things they do not like in their lives and learn to live with those aspects of their lives that they cannot change—all free of drugs. In fact, people who abuse drugs to avoid their problems are not able to solve them.

It is important for you to learn about the effects of drug use, the reasons why drugs are harmful, and ways to resist pressures to try drugs. However, imbedded within the principles of good citizenship, JROTC cadets take this one step further. They also learn about the dangers posed by drugs to help other students avoid them, thus persuading those using drugs to seek help. Involvement in intervention programs can only help to dissolve the drug problem.

# How Use Develops

Students are usually first tempted to smoke cigarettes and marijuana and drink alcohol at parties and other social occasions because of peer pressure and curiosity. From there, drug abuse may then progress in stages. These stages are:

- 1. Experimental use
- 2. Occasional use
- 3. Regular use
- 4. Multiple drug use
- 5. Total dependency

This progression of stages is not inevitable; it can be stopped at any stage, although stopping becomes more difficult in later stages. The best way to prevent a problem with drugs is to simply not abuse them in the first place.

# Experimental Use

Those who experiment with drugs may be more curious about a drug's effects than the drug's dangers. In the case of certain drugs, however, the dangers of addiction, permanent psychological damage, or physical harm takes only one unlucky experiment. Drugs have different effects on different individuals who have no way of knowing what that effect may be. For some, trying a drug once can result in immediate addiction, serious injury to themselves or others, and even death. Remember, those who are now dependent started with experimentation, and they probably never thought that trying a drug once or twice would become an addiction. The many lives ruined by drugs prove that this can indeed happen.

#### Occasional Use

For occasional drug users, drugs become a way of having a good time with friends in social situations. At this point, using drugs while alone is still relatively uncommon. Drug use may become the major social activity of the group, so it is very easy for occasional use to turn into a regular habit.

# Regular Use

Regular users take drugs to maintain a drugged feeling. Though they may deny it, these users are psychologically dependent on drugs. Drug use has become a regular part of their lifestyle, and although they continue to carry out their daily activities at home, school, or work, they are usually barely making it.

# Multiple Drug Use

In many cases, after people try one drug and get comfortable taking it, they are more likely to feel comfortable trying other types of drugs. For example, after many young people give in to pressures to try marijuana, and if they continue to use it regularly, it is likely they will try other drugs as well. Unfortunately, each drug produces different effects, and although users of one drug may know what to expect when they take it, another drug may be much more dangerous and affect them in a very different way.

#### Note

The chances that a first-time user of cocaine will become addicted are 1 in 6; the chances that a first-time user of crack will become addicted are 1 in 3; and 1 out of 10 drinkers becomes an alcoholic.

#### **Total Dependency**

Dependent users rely on drugs physically as well as psychologically and will go to great lengths to get them. Without drugs, they experience severe physical and mental distress. Dependent users all started with experimental drug use. In many cases, as users grow more dependent on drugs, they crave new sensations and may try more than one drug at a time or different ways of taking a drug. Such habits multiply the risks of drug use. For example, people who start injecting drugs risk contracting diseases like AIDS through shared needles.

# Determining Who's at Risk

Anyone has the potential to become dependent on substances, but some people seem to be more susceptible than others. Certain times in life may make someone more likely to try drugs for the first time or to use drugs to escape problems. People who are under a great amount of **stress** are more likely to use drugs; adolescence is a time of great stress and drugs are often readily available to young people. Young people who have family problems are more likely to use drugs, and those with low self-esteem run the risk of continuing to use drugs after "just trying" them to deal with peer pressure or bad feelings.

#### **Managing Stress**

One way to avoid drugs is to manage the stress in your life. There are many methods that you can use to help manage stress, including:

- Run, swim, ride a bike, or engage in some other form of exercise
- Take a hot shower or bath to relax
- Consciously relax all the muscles in your body
- Do deep-breathing exercises
- Learn to manage your time effectively

The best prevention is simply not to use drugs except as directed for medical reasons and not to drink alcohol until you are of legal age and then only moderately. Children of alcoholics should consider not drinking at all, even when reaching legal age, because their risk of alcoholism is much greater than that of children of non-alcoholics.

Remember, no matter how rough things may get, there are always alternatives to drug abuse, whether it is changing an uncomfortable situation, participating in a healthy activity you enjoy, or seeking counseling for problems you feel you cannot handle alone. While it may seem that drug abuse is very prevalent in the United States, it does not mean that it is normal.

#### Key Note Term

**stress** – strain or pressure on the body or mind.

#### Key Note Term

**normal** – according to a rule or standard pattern; regular; usual.

#### What Is Normal, Anyway?

While you may wonder what the term "**normal**" has to do with drugs, deciding what kind of behavior is "normal" in your life has a lot to do with whether or not you abuse drugs. Many young people are very concerned with being normal, which can mean different things in different situations to different people. Behavior that is normal for one person may not be normal for another. What is normal in one group may be considered strange in another.

When you worry about how your clothes and hair look, if you are saying the right things, or if people will laugh at you for certain things, you are concerned with whether other people think you are normal. In fact, worrying about being normal is very normal. Young people, in particular, worry because they are experiencing so many changes in their lives. This acute awareness of "fitting in" usually decreases as you become an adult and gain a better sense of who you are. Your teenage years are a time for learning what is normal for you. It is not an easy process, so give some thought to the type of behavior you believe is normal.

Do not make the mistake of labeling your emotions as good or bad. You may not enjoy feeling angry, sad, or bored, but these are emotions that everyone has. They teach you about yourself. When you abuse drugs to escape these feelings, you are cheating yourself. Uncomfortable feelings are often messages that you need to change something in your life; look at them as feedback on how you think, act, and view your environment. They are for you to analyze and work with. They are normal.

What you consider normal is generally considered normal by your group of friends. You became friends because you have things in common. But what do you do if your friends want you to try drugs? Is it normal behavior to go along with the group? If what is standard for the group is not for you, then it is better for you not to be what the group considers normal.

If you could run faster than all the others in your group, you would not want to slow down just to be normal. The same goes for drugs. If you know that drugs hurt you, why use them to be considered normal? Why slow down with the crowd when you know you can win the race?

# Legal Risks of Illegal Drug Use

Before deciding to drink alcohol or abuse drugs, remember that abuse of legal drugs, taking illegal drugs, underage drinking, and driving while intoxicated are all against the law. By endangering their lives and the lives of others, users become a societal problem, often requiring legal punishment. Drug laws vary from state to state, but the general trend throughout the United States is toward stiffer penalties for those convicted of drug possession, drug selling, and alcohol-related car accidents. People convicted of these crimes must pay higher fines and must often spend time in jail. If you think trying drugs might be a fun way to spend some time, think about how much fun you would have spending time in a prison.

# Tell-tale Signs of Drug Abuse

As a cadet and leader in the JROTC program, you serve as a role model for other cadets. You send a positive message to your followers about how to successfully function without drugs. You can also help by recognizing signs of problems in other cadets. The following list of symptoms and signs of drug use will help you to determine if someone you know may be using drugs or has a serious drug problem.

- Changes in attendance, discipline, interests, neatness, and attention
- Loss of interest in sports, extracurricular activities, or hobbies
- Failing memory
- Unusual degree of activity, like excitement, boundless energy, excessive laughter, and excessive talkativeness
- Unusual inactivity, like moodiness, depression, drowsiness
- Poor physical coordination
- Slurred speech
- Deterioration of physical appearance and lack of concern for health habits and dress
- Loss of appetite and rapid weight loss
- Sudden increase in appetite
- Unpredictable outbreaks of temper and arguing
- Nervousness and irritability
- Reduced motivation, self-discipline, and self-esteem
- Wearing sunglasses at inappropriate times to conceal the eyes which may be red or have constricted or dilated pupils
- Constantly wearing long-sleeved shirts or blouses (to hide needle marks)
- Borrowing frequently from others or stealing money (required to purchase drugs)
- Chronic dishonesty; such as lying, stealing, or cheating
- Appearing frequently in out-of-the way areas; such as closets, storage areas, or rest rooms
- Guilty behavior and fear of discovery
- Association with known or possible drug sellers or abusers
- Not giving straight answers when questioned about activities
- Appearance of intoxication but no smell of alcohol, indicating possible use of barbiturates or marijuana
- Use of drug-related vocabulary
- Possession of pipes, rolling papers, small decongestant bottles, and lighters
- Possession of drugs or evidence of drugs, such as peculiar plants, butts, seeds or leaves in ashtrays, or clothing pockets
- Odor of drugs and the smell of incense or other "cover-up" scents

Remember these are just guidelines of which you should be aware. Many of these behaviors or signs can have causes other than drug use. However, if you notice some of these signs in someone, you can be fairly certain that there is some kind of problem; whether related to drugs or not, the person needs help. You can be a part of that help.

# Turning the Pressure Off

As a teenager, you have many new pressures in your life, as well as many new challenges and experiences. Along with these new opportunities come added responsibilities. While adjusting to these changes that are a part of becoming an adult, you are constantly making decisions. Sometimes you make good decisions and other times you may make mistakes. Making mistakes is normal in a good way because they are part of the learning process. Of course, nobody likes to make mistakes, so try to analyze each situation beforehand to minimize them.

When it comes to drugs; however, it is extremely important to make the right decision before you make a mistake; making just one wrong choice may be too late. Having to juggle pressures from your family, school, activities, job, and friends may overwhelm you at times. The many new situations and emotions you experience can sometimes seem unbearable with no end in sight. Unfortunately, drugs and people who use them and are willing to share them are readily available with what seems like a quick solution to all your problems.

Pressures from society, your family, friends, and yourself may sometimes make it difficult for you to say no to drugs. Our culture often encourages quick solutions to problems; many people would like to believe that taking a pill could cure all types of problems, but there is no magic pill to make it all better. Pills and other drugs only produce chemical reactions in your mind and body, which in turn create artificial feelings and unhealthy side effects.

Advertising, movies, and television shows often glamorize drug and alcohol abuse. It may appear that all the beautiful, fun people are drinking at a bar or taking a refreshing break with the "crisp, clean" smoke of a cigarette. These types of false messages reinforce the idea of drug abuse as a normal and desirable part of life. You may see your parents drink at parties, you may know students who use drugs, and you may be curious about drugs' effects or tempted to use them to relieve uncomfortable emotions. Though all these situations may make drug abuse attractive to you, the reality of drugs' effects is far from glamorous. The pleasure drugs give is short-lived and unreal. They never solve problems; only you can do that, and you cannot function if drugs are a problem in your life.

Deciding not to take drugs can be a difficult decision when you are faced with pressure to take them. There are ways to avoid drugs in your life. One way is to refuse when someone offers you drugs. To be effective, you can present your personal reasons for not wanting to take drugs. Be honest—do not supply phony reasons. For example, you could say, "No thanks... I want to keep a clear head," or "I don't want to become addicted," or simply "I don't use drugs." To

make it clear that you mean what you say, look the person in the eyes when presenting your thoughts about drug abuse.

If the person who is offering you drugs continues to try to persuade you, make a definite action that removes you from the situation. This action should make it clear that you cannot be persuaded to change your mind. For example, you can simply get up and leave or enjoy activities with another group of non-abusing friends.

What you need is a plan of action to cope with all the pressures to abuse drugs. After you decide that you do not want drugs to be a part of your life, you must develop strategies to resist these pressures as well as healthy alternatives to drugs. To handle internal pressures, you can:

- Accept and analyze your emotions. If you are feeling something unpleasant, take time to consider the cause of your emotions instead of trying to avoid feeling bad. If you do not address the cause, the uncomfortable feelings will return to bother you. Also, remember that certain amounts of anger, sadness, boredom, and frustration are normal human responses to life that must be accepted.
- Seek out help when you feel overwhelmed. Members of your family, teachers, counselors, and friends can help you. There are also many places that offer help for specific problems; such as divorced parents, shyness, alcoholism, or lack of reading skills. You can ask a counselor or instructor at school about them or look in the phone book. If you are willing to make the effort, there are people willing to help you. Seek them out.
- Find alternatives to drug use. If your routine is a big yawn, take a look
  around and see if there is an activity that looks interesting to you. Photography,
  auto mechanics, painting, chess, drama, singing, playing an instrument, and
  part-time employment are among the many activities you could do that would
  add new challenges to an unexciting routine.
  - Of even greater importance, these activities pay you back with a real sense of accomplishment and heightened self-esteem as you get better and better at them. Drugs cannot give you these benefits; they can only temporarily produce a false feeling of well-being. In the long run, drugs always take far more than they give and leave the user with nothing but problems.
- Release excess energy and learn how to relax. If you cannot sit still in your seat during class, maybe you are not exercising your body enough. Physical activities such as running, walking, biking, tennis, basketball, weight training, martial arts, skiing, and dance, among others, keep your body in shape while relaxing and focusing your mind during mental activities.
  - If you have problems relaxing, try the relaxation methods in the chapter on stress, such as meditation, deep breathing, and visualization techniques.
- Practice patience. If there is a situation that makes you feel bad, you cannot think of a way to change it, and nothing you do seems to work, what can you do? Wait! You may not like that answer because waiting is difficult, especially for young people. But there will be times in life when the situation is out of your control. This fact is understandably hard for young people to accept. However, change is certain and inevitable. If you wait and stay alert, new solutions and opportunities will become available to you in time. People on drugs never learn this lesson of waiting and miss opportunities to change their lives for the better.

You also need to develop a strategy for resisting external pressures. This strategy can include:

• Learn how to refuse drugs effectively. Standing up to peers when they want you to do something that you do not want to do can be very difficult. When you go against the crowd, you risk rejection—and that is scary. However, every time you make a decision to do what is best for you and those you care about, you become a stronger person. You also gain the respect of those people who are your true friends. Your strength and your decisions may even give others the courage to do what is best for them as well. In today's school environment, saying no may not be easy, but it is definitely worth the effort.

If you do not feel comfortable saying no in a situation, find a way to remove yourself from the scene. Suddenly remembering an appointment or some other excuse can get you away from the situation and give you time to think of another way of handling it next time. The important thing is not to do the drugs.

Analyze media and advertising. Is the image of drugs projected by advertising accurate? Who gains by making products appear glamorous and sophisticated? People who sell products want you to buy them and will use psychological techniques in advertising to create a demand for their goods. Companies that sell beer, cigarettes, and non-drug related products, such as cars, have one main goal—they want your money.

Your goal is to do what is best for you. Some products that advertising tries to sell you are opposed to that goal. Your defense against advertisements for products that are useless or harmful is the power to read between the lines of the psychological game. Think about the message an ad is giving and decide for yourself whether it is accurate.

If the person who is offering you drugs continues to try to persuade you, make a definite action that removes you from the situation. This action should make it clear that you cannot be persuaded to change your mind. For example, you can simply get up and leave, or enjoy activities with another group of nonabusing friends.

#### **Getting Help**

If you decide that the stresses and problems in your life are too much to manage, find someone to help you. Many people are willing to help, but first you must let them know that you need help. Parents, teachers, friends, brothers, sisters, school counselors, school nurses, and members of the clergy are usually available for guidance and support. A second option is to call one of the national hotlines that tell you where to call for drug information and treatment referral in your area. For these numbers, call 1-800-662-HELP.

# Alternatives to Drug Use

Turning to drugs to try to feel good or deal with problems is a risky choice. You can get involved in many healthy and constructive activities to lift your mood, feel better about yourself, and deal with the pressures in your life.

Engaging in physical activity is one way to help yourself feel better. Physical activity not only helps improve your mood, but it also relieves the negative effects of stress. Getting enough exercise and getting involved in sports can help you feel energetic, positive, and self-confident.

Helping other people can give you a good feeling about yourself, too. Many social service agencies need volunteers. You could volunteer to read to someone with a visual handicap, make a social visit to an elderly person in a nursing facility, or teach a hobby or sport to a youngster.

Participating in youth groups can help you feel a sense of belonging and connection to others. The members of these groups support one another as each person strives to find his or her place in the world. Youth groups also volunteer to help others in need.

Working at a part-time job not only provides you with spending money, but can also give you a sense of accomplishment and increased self-esteem. Not only can you learn a new skill, but you can meet new friends. Your family, friends, or school counselor may be able to help you find such a job.

Remember that abusing drugs cannot relieve the pressures and problems in life. It can only postpone decision-making and create more problems. Imagine how you would feel if you had to tell lies, hide your physical condition, worry about police, and deal with drug side effects. People who become dependent on drugs spend almost all of their time thinking about drugs, taking drugs, getting the money for drugs, and looking for drugs. Drugs end up controlling their lives. By deciding not to use drugs, you are acting to take control of your life.

# Helping Others Avoid Drug Use

It is important for you to learn about the effects of drug use, the reasons why drugs are harmful, and ways to resist pressures to try drugs; however, imbedded within the principles of good citizenship, JROTC cadets take this one step further. They also learn about the dangers posed by drugs to help other students avoid them, thus persuading those using drugs to seek help. Involvement in intervention programs can only help to dissolve the drug problem.

# Where to Find Help

If a friend you know is having problems and is considering abusing drugs to relieve the pain, you can be of help just by being there to listen and by affirming your personal decision that drugs are not a good way to deal with problems. In some cases, this may be all that is needed—a caring and strong presence can go a long way as can an informed discussion about what a particular drug can do to the mind and body. There may be other situations, though, which require specific and professional help that you are not prepared to give.

When you realize that someone you know may have a drug problem, there are some choices of action you need to make. Among your choices are:

- Convince the person to seek help. Be prepared with the names of people and agencies that can provide help.
- Tell a responsible adult, such as an instructor or counselor, that you are concerned about the person. You may be reluctant to do this because it feels like telling on someone; however, especially in cases where you know the person is using life-threatening drugs or participating in dangerous situations, you are really doing this person a favor. Your action may save a life.
- If you know of someone selling drugs, report the person to an appro**priate authority.** People who sell drugs have passed the point of having a personal problem. Drug dealers are hurting others.

Find out what types of help are available at your school and in your community for people with problems. Know the proper procedure for reporting drugrelated incidents, and above all, show the cadets whom you lead that you care about their well-being and are willing to help. Your example and your support can have a positive impact on those around you.

# Treating Drug Abuse and Addiction

Before drug abusers can be helped, they need to recognize their problem. Unfortunately, this may be difficult for them. Many abusers deny their behavior; others deny the problems that led them to drug abuse. Figure 3.2.1 shows some of the signs of drug abuse. This list may help you recognize a drug abuse problem in a friend or classmate and allow you to convince the abuser that he or she has a drug problem.

After drug abusers recognize their problem, many options are available to them. Options for drug abusers include programs in which people withdraw from the drug under medical care and treatment centers in which abusers learn to live drug-free lives. Programs to help abusers and their families are available. Understanding the underlying cause for the drug abuse and involving family members can restore and reinforce the family's stability.

Figure 3.2.1: Learning to recognize the signs of drug abuse can make a difference.

# Signs of Drug Abuse • Major changes in behavior

- Lying, cheating
- Sudden changes in mood
- Forgetfulness, withdrawn attitude
- New friends who are suspected of abusing drugs
- Loss of memory
- Poor school performance

- Poor coordination
- Changes in appearance
- Slurred speech
- Irresponsible decisionmaking
- Attention-getting behavior
- Aggressiveness
- Denial of any problems

Many organizations counsel people about drug problems. Community hospitals have clinics or programs that provide low-cost or no-cost/volunteer counseling for teenagers and adults. Local schools and governments also schedule parent meetings, peer group counseling, and drug-free programs.

#### **Exploring Careers: Drug Counselor**

A person trying to overcome a drug abuse problem may need assistance from someone outside of his or her circle of family and friends. A drug counselor can help. Drug counselors are trained to help abusers overcome the difficult problem of drug abuse. These counselors also often work with the abuser's family.

Drug counselors work in one-on-one situations, in group situations, in special drug abuse clinics, in hospitals, or for companies with employee drug programs. They also work for telephone hotlines or run private counseling services.

No certification or license is needed for this career, but a drug counselor must have compassion and an ability to gain a client's trust. A high school diploma and training are sufficient to become a drug counselor; however, college and master's degree programs are available.

# **Detoxification Programs**

One type of drug abuse treatment is a **detoxification program**. A detoxification program involves gradual but complete withdrawal from the abused drug. People who enter detoxification programs usually receive medical treatment and supervision in a hospital. Drug abusers may stop taking the drug all at once, or physicians may reduce the drug dosage slowly to avoid painful withdrawal symptoms. Detoxification programs always include counseling to help program participants deal with their abuse and to cope constructively with the problems that led to it and were caused by it.

# Therapeutic Communities

Another type of drug abuse treatment are **therapeutic communities**. A therapeutic community is a residential treatment center where drug abusers live and learn to adjust to drug-free lives. Members of therapeutic communities lend support and friendship to each other. Often drug abusers are required to undergo detoxification before becoming a part of the community. Therapeutic communities provide medical advice and counseling to help abusers develop a sense of personal and social worth. The staff of therapeutic communities usually consists of health-care professionals and former drug abusers.

# Methadone Maintenance Programs

A third type of drug abuse treatment, called methadone maintenance, helps heroin abusers. **Methadone** is a drug that produces many effects similar to heroin, but does not produce the same "high" that causes heroin addicts to crave the drug. This type of treatment involves substituting methadone for heroin. Small, regular doses of methadone prevent withdrawal symptoms. Methadone treatment is intended to eliminate the desire for heroin.

#### Key Note Term

**detoxification program** – a type of
program where drug
users or addicts can
get help withdrawing
from substances.

therapeutic communities – usually a residential treatment center for drug abusers and addicts.

methadone – controlled substance that is used in heroin withdrawal; produces some effects similar to heroin, but does not produce a "high."

Methadone can cause dependency. Therefore, a trained professional must carefully monitor treatment and slowly lower the dosage. Long-term methadone use causes side effects such as liver damage. Methadone is not a cure for heroin addiction, but it can be a first step.

# **Drug Abuse Prevention**

There are many ways in which you can become involved in drug abuse prevention. You might be able to volunteer at drug treatment and rehabilitation centers. Look in the phone book under "drug abuse" for information and prevention programs. You may be able to find several local sources for preventive information. There are also toll-free numbers that provide information on drug abuse and prevention.

Many major hospitals have chemical dependency hospitals affiliated with them. These hospitals may offer professional treatment for alcoholism and drug dependency. Some may offer services such as seminars on drug recovery, depression, or anxiety and other individualized programs.

Help or information is available from many private and public agencies, facilities, and people. Drug treatment centers and clinics specialize in treating people with drug problems. Hospitals treat on an in or out-patient basis. Mental health centers can treat people with drug problems by dealing with underlying problems. Public health agencies and social service agencies can give practical advice, make referrals, etc. Halfway houses provide residential treatment for those with drug problems.

If you need help with a cocaine problem, call the help line: 1-800-COCAINE, or volunteer to help others with their drug problems and help to promote prevention programs.

The Office for Substance Abuse Prevention (OSAP) promotes and distributes prevention materials throughout the country. OSAP also supports the National Clearinghouse for Alcohol and Drug Information (NCADI) and the Regional Alcohol and Drug Awareness Resource (RADAR) Network. To learn more about alcohol and other drugs, write or call: National Clearinghouse for Alcohol and Drug Information: Information Services; P.O. Box 2345; Rockville, MD 20847–2345; (301) 468-2600.

# Alcohol Abuse Prevention

Alcoholics Anonymous (AA) is a worldwide group of men and women who help each other maintain sobriety and who offer to share their recovery experiences freely with others who may have a drinking problem. The AA program consists basically of "Twelve Steps" designed for personal recovery from alcoholism. The organization functions through almost 73,000 local groups in 114 countries. Several hundred thousand alcoholics have achieved sobriety in AA, but members recognize that their program is not always effective and that some may require professional counseling or treatment.

Look for Alcoholics Anonymous in any telephone directory. In most urban areas, a central AA office can answer your questions or put you in touch with AA members. If AA is not in your local directory, write the General Service Office, P.O. Box 459, Grand Central Station; New York, NY 10163.

Al-Anon is a worldwide organization that offers help to families and friends of alcoholics. Members receive support through a mutual exchange of experiences about how an alcoholic has affected their lives. Alateen is a fellowship of young Al-Anon members, usually teenagers, with someone else's drinking problems affecting their lives. Young people come together to share experiences, strengths, and hopes with each other as they discuss their difficulties. They can also encourage one another to learn effective ways to cope with their problems.

To contact the nearest Al-Anon or Alateen Group, call the local Al-Anon Information Service (Intergroup) in metropolitan areas, or write to Al-Anon Family Group Headquarters; 1600 Corporate Landing Pkwy., Virginia Beach, VA 23454.

There are many other places that people can get help for problems caused by alcohol. They can talk with family, friends, a school counselor, or a doctor. Look in the yellow pages under "alcohol" or "alcoholism." Use referral services and get information provided by the local affiliate of the National Council on Alcoholism (1-800-NCA-CALL). Remember, it is important to seek help and support for people with drinking problems.

At least 22 states have established formal programs for citizen-reporting of drunk drivers. Oregon has a toll-free hotline and a governor who, at one time, displayed a red star on his car for every drunk driver he reported. During 1982 and 1983—the first two years of Oregon's reporting program—tragic fatalities were the lowest in 20 years. Most will agree that everybody has to work together. The government cannot do it alone. In Nebraska, fatalities dropped 26 percent in the first year of its drunk driver-reporting program.

#### Note

Drinking is the third leading cause of death in the United States—right behind heart disease and cancer.

Call your police department to see if such a program exists in your area. If not, push for one. There are many other organizations working to get drunks off the roads. For specific information on how you can help, send a stamped, self-addressed envelope to: Mothers Against Drunk Drivers (MADD) National Office; 511 E. John Carpenter Frwy., Suite 700; Irving, TX 75062–8187 or call 1-800-438-6233.

"Know When to Say When," which has been in effect since 1983, is a nationwide consumer education campaign developed by Anheuser-Busch that encourages consumers to be responsible when they drink. It aims at morally responsible, law-abiding citizens who only need reminders of their legal and moral obligations to themselves and others. The purpose of the campaign is to help create a climate that strongly discourages "situational abuse." The campaign involves a

series of television commercials, a movie, billboards, and newspaper advertisements which remind consumers not to overindulge.

"The Buddy System" is an education campaign aimed at college students and other young adults. It includes a short movie, brochures explaining the program, and posters. The program makes a strong point that friends should be responsible for each other and should help one another avoid drunk driving situations.

Other programs developed to avoid drunk driving situations include free or reduced-price taxi rides home to customers who are unable to drive safely, and designated driver programs. A group designates one person to refrain from drinking so that a safe ride home is available to the other members of the group.

Students Against Driving Drunk (SADD) is a student-run program that works to counteract peer pressure to drink and drive. The founder of SADD, Bob Anastas, suggests that teenagers call their parents if they or their driving friends have been drinking. Anastas has found that such an agreement between parents and teenagers works. Since the founding of SADD in 1981, more than three million students in 6500 high schools in all 50 states have become involved in SADD chapters. The efforts of groups such as SADD are beginning to have an impact.

In 1980, traffic accidents accounted for killing 12,214 Americans ages 16 to 21; in 1983, 9054. In 1980, 49 percent of drivers ages 16 to 21 killed in traffic accidents were legally intoxicated; in 1983, 47 percent. For information about the parent-teenager agreement, or about starting a SADD chapter at your school, send a stamped, self-addressed envelope to SADD; P.O. Box 800; Marlborough, MS 01752 or call 1-800-886-2972.

Each year in the United States, drinking and driving results in costs totaling more than a billion dollars for property damage, insurance, and medical expenses. Drinking and driving accounts for over 500,000 people being injured and more than one million people arrested.

# Tobacco Abuse Prevention and Treatment

The very best way to quit smoking is to never start. And although cigarette smokers can drive and function while using tobacco, the facts are that tobacco is still considered an addictive substance and a drug. Even Phillip Morris, one of the largest cigarette manufacturers in the world, has devoted part of their website to the health risks posed by tobacco use (http://www.pmusa.com/health issues/default.asp).

Quitting smoking is one of the best things that a smoker can do for themselves and the people around them. The benefits include the following.

- You will live longer and live better.
- Quitting will lower your chance of having a heart attack, stroke, or cancer.

- If you are pregnant, quitting smoking will improve your chances of having a healthy baby.
- The people you live with, especially young children, will be healthier.
- You will have extra money to spend on things other than cigarettes.

There are several methods for quitting smoking, ranging from nicotine patches and gum to just quitting "cold turkey." If you know someone who is serious about quitting, you might suggest that they talk with their family physician about which method seems to be most effective, and follow the doctor's recommendations. Remember: the earlier you quit, the easier it will be.

Contact the following organizations for further information on smoking and how to quit.

American Heart Association 7272 Greenville Avenue Dallas, TX 75231 (800) AHA-USA1 (242-8721)

American Cancer Society 1599 Clifton Road, NE Atlanta, GA 30329 (404) 320-3333

American Lung Association 1740 Broadway, 14th Floor New York, NY 10019 (212) 315-8700

National Cancer Institute Bethesda, MD 20892 (800) 4-CANCER (422-6237) Getting More Information

The following is a list of numbers to call if you need more information on what you can do to help.

**Hazeldon Educational Materials** 

1-800-328-9000

**Alcohol Hotline** 

1-800-ALCOHOL

Youth Power (formerly Just Say No)

1-800-258-2766

Dare America (CA)

1-800-223-3273

**Center for Substance Abuse Treatment National Hotline** 

1-800-662-HELP

### Conclusion

Now that you have finished this lesson, you have a better understanding of drugs, their effects, their dangers, and the correct role they should play in a person's life. You have also learned the importance of remaining drug-free and ways to avoid the pressures to abuse drugs. Use your knowledge to make your life and the lives of those around you better. You do have the power to control much of the way your life turns out. Set an example—your actions do make a difference in the world.

Become involved as an individual. Talk to your friends and neighbors about drugs. Ask them to join you in your community's attack on drugs. Reach out a helping hand to your community—join the fight against drugs and become a part of the solution. If you feel you need help to be sober and drug-free, try to be brave enough to call the telephone numbers provided in this chapter. If you know someone who needs help, be a true friend and pass these phone numbers along. Your assistance could save a life.

# Lesson Review

- 1. Explain the stages of how drug use develops.
- 2. What do you do to manage stress?
- 3. What choices do you have if you know someone who is abusing drugs and needs help? Which option would you choose?
- 4. What does the acronym "AA" stand for? What is it?