



LIFE·PAC®

# High School Health

Student Book

Unit 5



Alpha Omega Publications®

# HIGH SCHOOL HEALTH 5

## CONTENTS

<b>I. DISEASE AND PREVENTION</b> .....	<b>3</b>
Types of Infections .....	3
The Immune System .....	6
Infectious Diseases .....	11
Non-Infectious Diseases .....	14
Disease Prevention .....	18
<b>II. DRUG USE AND ABUSE</b> .....	<b>26</b>
Drugs .....	26
Alcohol .....	33
Tobacco .....	40
<b>III. HEALTH AND THE ENVIRONMENT</b> .....	<b>48</b>
Environmental Changes .....	48
Mankind and the Environment .....	49
Air Essentials .....	50
Water Essentials .....	55
Soil Essentials .....	58
A Balanced Approach .....	61

**Author:**

Krista White, B.S.

**Editor:**

Al Christopherson, M.S.

**Illustrations:**

Laura Miller/Alpha Omega Staff



Alpha Omega Publications®

804 N. 2nd Ave. E., Rock Rapids, IA 51246-1759

© MMI by Alpha Omega Publications, Inc. All rights reserved.

LIFEPAC is a registered trademark of Alpha Omega Publications, Inc.

All trademarks and/or service marks referenced in this material are the property of their respective owners. Alpha Omega Publications, Inc. makes no claim of ownership to any trademarks and/or service marks other than their own and their affiliates', and makes no claim of affiliation to any companies whose trademarks may be listed in this material, other than their own.

# OVERVIEW

The Garden of Eden was the picture of perfect health. There was no pain, death, or suffering of any kind. That changed, however, when Adam disobeyed God. As our divinely appointed representative, Adam's fall brought the curse of death upon mankind. In I Corinthians 15:22, Paul states, "in Adam all die." Sickness and disease are a direct result of the fall. They are reminders of God's condemning pronouncement, "for dust thou art, and unto dust shalt thou return" (Genesis 3:19).

Adam's sin corrupted not only mankind, it also corrupted the earth. "Cursed is the ground for your sake," God announced, indicating the "futility" that all physical matter would be subjected to until the whole creation was delivered from a state of imperfection and decay.

In this LIFE PAC<sup>®</sup> you will discover the relationship between the health of your body and your environment. You will study common diseases, attaining a general knowledge of their causes and their prevention. You will also study various types of drugs, gaining an understanding of their functions and factors that lead to their abuse. Finally, you will learn about the state of the environment, and its importance to your health.

## OBJECTIVES



When you have completed this LIFE PAC, you should be able to:

- Understand the origin of disease.
- Understand the role and the power of medicine in the fight against disease.
- Differentiate between drug use and drug abuse.
- Explain the biblical view of alcohol and tobacco use.
- Discern the role mankind has to play in regards to preserving the environment.
- Understand the relationship between the state of the environment and your health.

## VOCABULARY



**Acute** – brief and intense

**Antediluvian** – of the period before the Flood

**Biodegradable** – susceptible to decomposition by living organisms

**Chronic** – continuing for a long time

**Congenital** – existing from birth

**Corrosive** – capable of destroying by a chemical action

**Euphoria** – feeling of well-being not necessarily based in reality

**Malady** – disease

**Non-infectious** – non-communicable; cannot be spread through casual contact or any mechanism of transmission such as air, water, or blood

**Organic** – derived from plants or animals

**Particulate** – tiny particle that can be dispersed in a gas

**Pathogen** – disease-causing agent

**Phagocytes** – white blood cells that eliminate the chances of infection by attacking foreign substances in the body

**Putrefaction** – the decay of organic matter caused by microorganisms

**Refuse** – waste

**Subservient** – in a subordinate position

**Vector** – an animal or insect that is known to transmit a specific disease

**Viable** – capable of life

# I. DISEASE AND PREVENTION

In the Garden of Eden, Adam and Eve enjoyed perfect health under God's provisions in the covenant of works, the moral agreement established by God in which total obedience would result in life and disobedience would result in death. Adam and Eve lived in joyous harmony with God, each other, and the rest of Creation.

When Adam and Eve ate of the tree of the knowledge of good and evil, they violated the covenant of works, bringing the curse of death upon themselves. Before God drove Adam and Eve out of the Garden of Eden, He pronounced, "In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken; for dust thou art, and unto dust shalt thou return" (Genesis 3:19).

As our divinely appointed representative, Adam's fall was our fall. "Therefore, as by the offence of one judgment came upon all men to condemnation...For as by one man's disobedience many were made sinners..." (Romans 5:18a, 19a). Adam's disobedience made us all sinners. Conceived and born in sin (Psalm 51:5), we are all under the curse of death.



Because humans consist of both soul and body, the curse of death has both moral and physical ramifications. "Wherefore, as by one man sin entered into the world, and death by sin; and so death passed upon all men, for that all have sinned" (Romans 5:12). Paul describes the moral ramifications of the fall by stating that we are dead in our trespasses and sins—that we are prone to speak, do, and pursue all kinds of evil (Romans 3:10–18).

The physical ramifications of the fall are the pain of childbirth, the strain of work, and bodily deterioration. Disease and sickness are a direct result of the Fall. The physical pain and discomfort that illness inflicts are reminders that one day, "to dust [we] shall return."

However, as one commentator has noted, death is not only a judgment but a blessing. For the Christian, death brings about "eternal salvation that outlasts the grave." When Christ returns, He will remove the curse of sin from our bodies, transforming us into His likeness. Like the Garden of Eden, Heaven will be a place where disease and pain does not exist (Revelation 21:4). Believers will once again live in perfect communion with God, other people, and nature. In Heaven, we will enjoy the eternal blessings of Christ's total obedience.

## Types of Infections

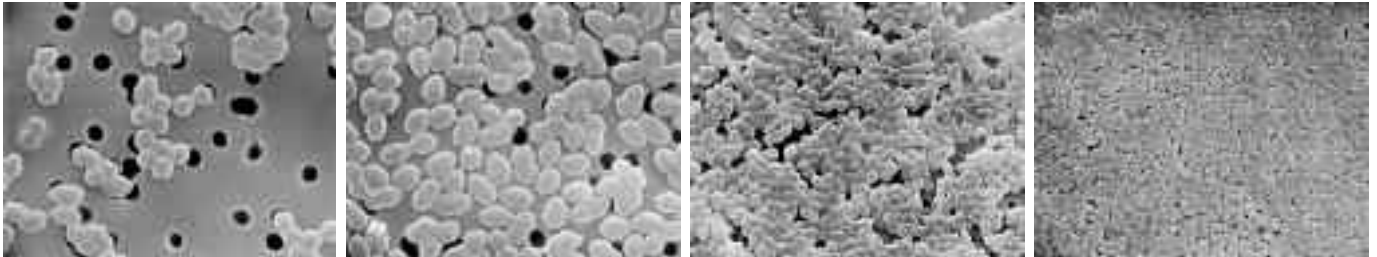
The dictionary defines disease as "the improper functioning of the body brought about by heredity, infection, diet, or the environment." Diseases that are caused by heredity, diet, or the environment are termed **non-infectious**. Non-infectious diseases are non-communicable; that is, they cannot be spread through casual contact or any mechanism of transmission such as air, water, or blood. An example of a non-infectious disease is cancer. Factors believed to contribute to the development of cancer include heredity, diet, and environment. You cannot get cancer by touching a person that is suffering from cancer.

**Viral Infections.** Infectious diseases are caused by the spread of harmful microorganisms, which can be categorized into six groups: viruses, bacteria, fungi, chlamydiae, rickettsiae, and protozoa. Viral infections are caused by the multiplication of a small infectious agent within the body known as a virus. Viruses cause disease by invading a host cell and then destroying it through replication. Depending upon the virus, an infection can be contracted through



airborne transmission, waterborne transmission, blood-borne transmission, sexual transmission, or even direct contact. Examples of viral infections include chickenpox, influenza, AIDS, rabies, and viral meningitis.

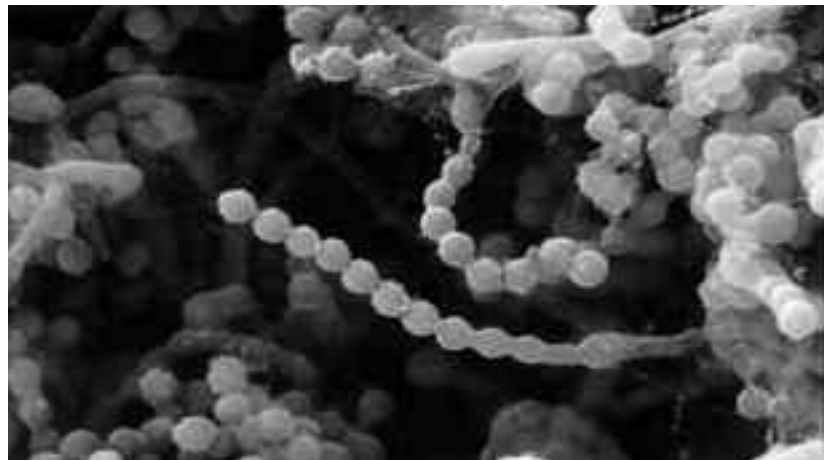
**Bacterial Infections.** Similar to viral infections, bacterial infections are caused by the reproduction of a small infectious agent within the body. Bacterial infections can be contracted by breathing in infectious droplets, eating contaminated food, or exposing open wounds or mucus membranes to surfaces covered with pathogenic bacteria. Once in the body, pathogenic bacteria cause disease by producing poisons that destroy cells. Examples of bacterial infections include pneumonia, food poisoning, typhoid fever, and tonsillitis.



**Reproduction of Bacteria**

*Images courtesy of CDC*

**Fungal Infections.** Fungal infections are caused by the multiplication of fungal organisms on or in the body. Fungal infections usually occur when the body's immune system is impaired and is unable to keep the amount of fungi on or in the body at a healthy level. Fungi can cause disease by destroying or invading body tissues. Examples of fungal infections include athlete's foot, hay fever, mushroom poisoning, and candidiasis.

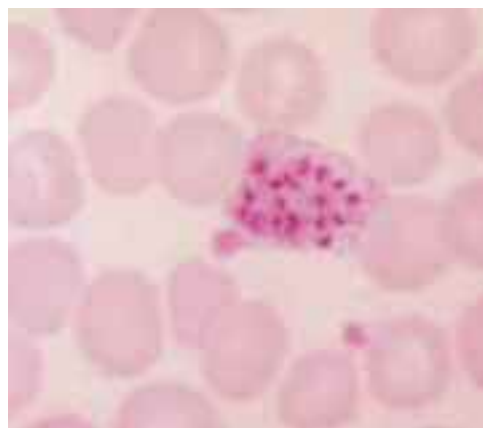


**Paecilomyces Fungi (causes pulmonary infections)**

*Image courtesy of CDC*

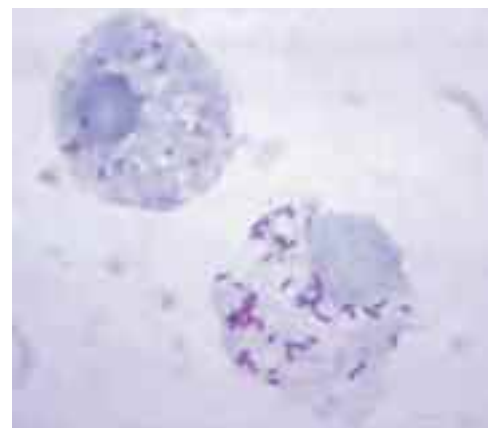
**Rickettsial Infections.** Unlike chlamydial infections, which are caused by the invasion of a microorganism, rickettsial and protozoan infections are caused by microscopic parasites. Rickettsial and protozoan infections can be contracted through an insect bite or by eating contaminated food. Examples of rickettsial and protozoan infections include malaria and Rocky Mountain spotted fever.

The illustration on the following page shows the infection cycle of Rocky Mountain Spotted Fever.



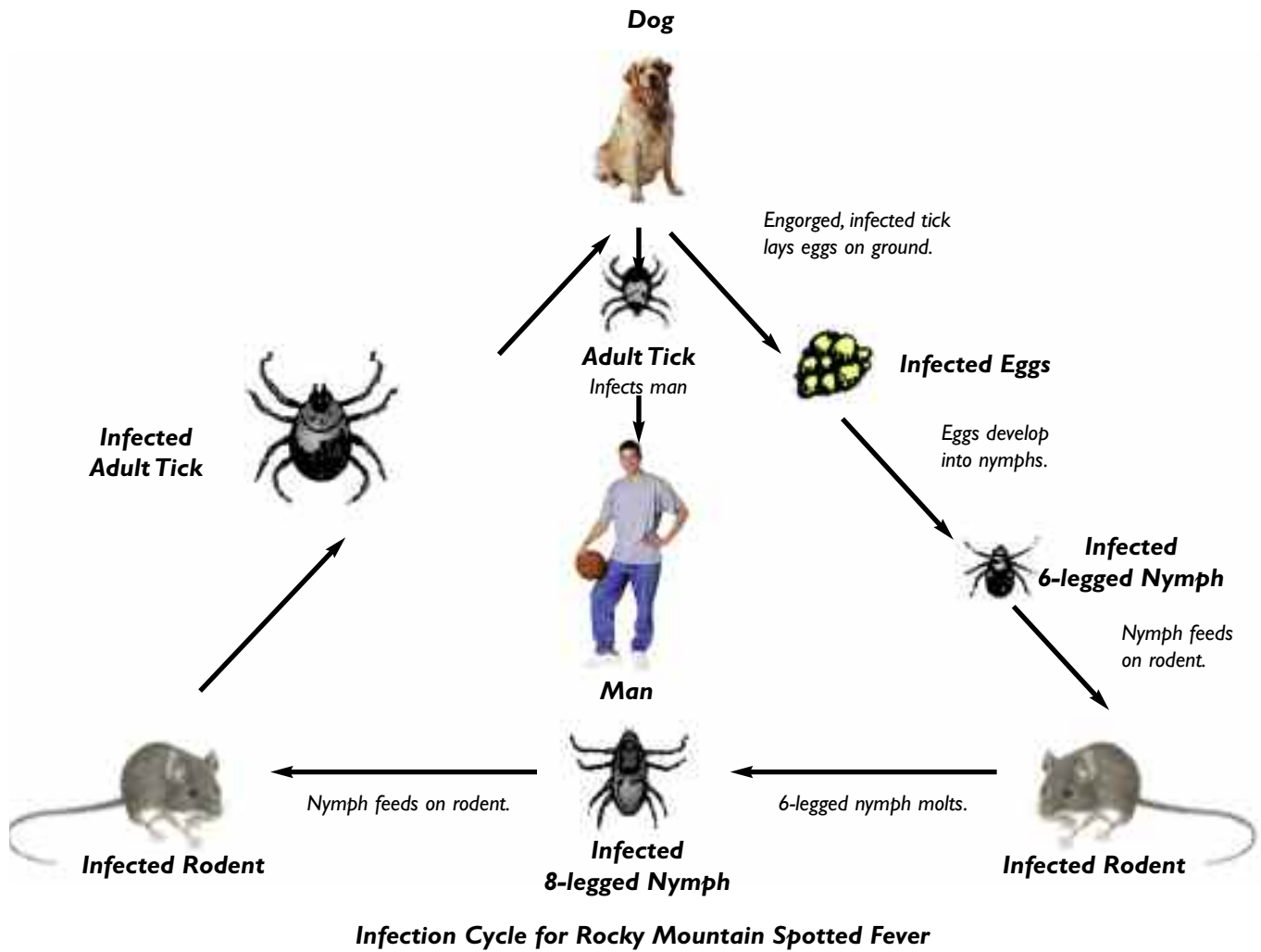
**Red Blood Cells Infected with Malaria**

*Image courtesy of CDC*



**Cells infected with Rocky Mountain Spotted Fever**

*Image courtesy of CDC*



**Short answer.**

1.1 When was the only time mankind has ever experienced perfect health? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

1.2 What are the four types of infections?  
 a. \_\_\_\_\_ b. \_\_\_\_\_  
 c. \_\_\_\_\_ d. \_\_\_\_\_

1.3 What are six categories of harmful microorganisms?  
 a. \_\_\_\_\_ b. \_\_\_\_\_  
 c. \_\_\_\_\_ d. \_\_\_\_\_  
 e. \_\_\_\_\_ f. \_\_\_\_\_



### Matching.

- |  |                           |
|--|---------------------------|
| 1.4 ____ the improper functioning of the body brought about by heredity, infection, diet, or the environment     | a. bacterial infection    |
| 1.5 ____ cannot be spread through contact or any mechanism of transmission                                       | b. disease                |
| 1.6 ____ caused by the spread of harmful microorganisms  | c. fungal infection       |
| 1.7 ____ caused by the multiplication of a small infectious agent which invades a host cell and then destroys it | d. infectious disease     |
| 1.8 ____ caused by the reproduction of a small infectious agent which produces poisons that destroy cells        | e. non-infectious disease |
| 1.9 ____ caused by the multiplication of fungal organisms on or in the body                                      | f. protozoan infection    |
| 1.10 ____ caused by microscopic parasites  | g. viral infection        |

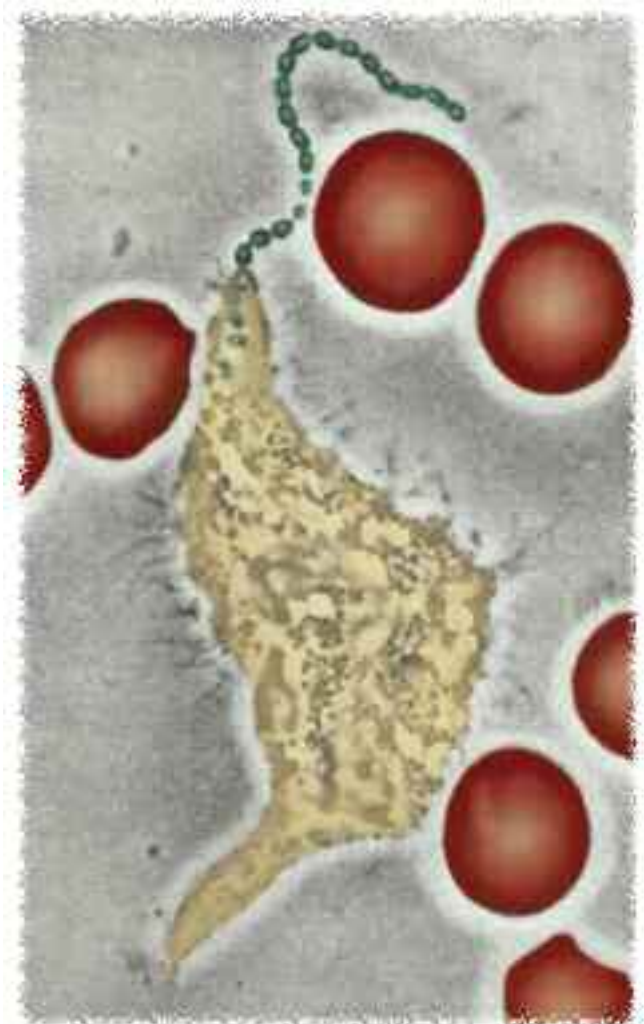


## The Immune System

The immune system protects the body from the threat of disease. Its effectiveness is directly related to your overall health. Eating right, getting enough rest, and managing stress properly will help your body fight against disease.

The immune system consists of two parts: innate immunity and adaptive immunity. Innate immunity is the system of defense that every human is born with. It consists of the skin, protective secretions, the inflammatory response, and **phagocytes**. If microorganisms are able to penetrate the physical barriers (the skin and protective secretions), the body responds in a nonspecific way by increasing the blood flow to the area. This allows phagocytes to take action. Phagocytes are white blood cells that eliminate the chances of infection by attacking foreign substances in the body.

If the innate immune system is unable to control the infection, the adaptive immune system responds by producing specific antibodies or the activation of killer cells to attack the invading microorganisms. The adaptive immune system consists of two parts: humoral immunity and cellular immunity. In humoral immunity, disease-specific antibodies are produced in order to attack and destroy harmful bacteria. For instance, if you contract pneumonia, your



*A White Blood Cell Attacking Bacteria*



body will produce special cells that are specifically equipped to attack and destroy the pneumonia-causing bacteria (shown at right).

Once created, some antibodies stay in your body for the rest of your life. If you contract chicken pox when you are young, you probably will not suffer from the disease as an adult. Your immune system will keep antibodies specific to chicken pox circulating throughout your body.

Cellular immunity generally works to combat cancer cells, some viruses, and parasites. Defensive agents involved include helper cells and killer cells. Helper cells identify abnormal cells and alert killer cells to attack. Killer cells attach to abnormal cells, eventually destroying them.

**Symptoms of Infection.** Certain symptoms indicate that the body is trying to combat invading microorganisms. Inflammation or fever is usually the first sign that your immune system is at work. Inflammation occurs when the innate immune system is attempting to flush a specific area with phagocytes. A fever occurs when the adaptive immune system is combating invading microorganisms. It is the body's attempt to kill the disease-causing agents by increasing the temperature of their environment above that which is conducive to their existence.

Depending upon the disease or illness, symptoms beyond a fever or inflammation can vary. In order to get the needed treatment in a timely manner, it is important to watch the development of symptoms carefully. Many life-threatening illnesses initially manifest symptoms similar to the common cold.

**Avoiding Infection.** The easiest way to avoid the contraction of infectious diseases is to practice good hygiene. As pointed out in the section titled "Personal Hygiene" in Health LIFEPAK 3, cleanliness aids in the preservation of your health. Disease-causing organisms can be spread through casual contact, such as shaking hands or breathing in small particles of mucus expelled by a sneeze. Washing your hands, keeping your nails clean, and covering your mouth and nose when you cough and sneeze will help prevent the spread of pathogens.

The practice of good hygiene can also help avoid the spread of infectious diseases caused by eating food that is contaminated by disease-causing organisms. Food should be prepared and served with clean hands and utensils. Some foods such as chicken, beef, and eggs are particularly susceptible to contamination and should be cooked thoroughly before eating.

Avoiding close contact with animals or insects known to carry pathogens is yet another way to protect yourself from disease.



**Streptococcus Pneumoniae Bacteria**

*Image courtesy of CDC*



An animal or insect that is known to transmit a specific disease is termed a **vector**. For example, mosquitoes are vectors of the parasite that causes malaria. Avoiding regions that are infested by infected mosquitoes will help prevent you from contracting malaria. The deer tick is a vector of the organism that causes Lyme disease. If you live in a heavily-wooded area, check yourself and your pets frequently for these dangerous pests.

If you cannot avoid being exposed to certain disease-causing organisms, immunization can help prevent infection. Immunization helps boost the immune system by injecting weak or dead pathogens into the body. The body then builds up antibodies to fight against the disease. If infection occurs, the immune system will be well prepared to defeat the disease-causing agent. Over the last century, increased measures to immunize citizens of developed countries against infectious diseases such as polio, tetanus, measles, and the mumps have dramatically increased the average life expectancy.



**Anopheles Mosquito (Malaria)**



**Deer Tick (Lyme Disease)**

Images courtesy of CDC



**Fill in the blanks.**

- I.11 The body is protected from the threat of disease by the \_\_\_\_\_ system.
- I.12 The \_\_\_\_\_ immune system consists of the skin, protective secretions, the inflammatory response, and phagocytes.
- I.13 \_\_\_\_\_ are white blood cells that eliminate the chances of infection.
- I.14 The \_\_\_\_\_ immune system is activated if the innate immune system is unable to control the infection.
- I.15 \_\_\_\_\_ immunity depends upon the production of disease specific antibodies to destroy harmful bacteria.
- I.16 \_\_\_\_\_ immunity uses helper cells and killer cells to identify and destroy abnormal cells.
- I.17 \_\_\_\_\_ of infection indicate that the body is trying to combat invading microorganisms.

- I.18 \_\_\_\_\_ occurs when the innate immune system is attempting to flush a specific area with phagocytes.
- I.19 A \_\_\_\_\_ occurs when the adaptive immune system is combating invading microorganisms.
- I.20 The contraction of infectious diseases can be avoided by practicing good \_\_\_\_\_, avoiding contact with \_\_\_\_\_, and boosting your immune system with \_\_\_\_\_.



**Recommended Childhood Immunization Schedule.** Vaccines are listed under routinely recommended ages. Any dose not given at the recommended age should be given as a “catch-up” immunization at any subsequent visit when indicated and feasible. Italics indicate vaccines to be given if previously recommended doses were missed or given earlier than the recommended minimum age.

Vaccine	Birth	1 mo.	2 mos.	4 mos.	6 mos.	12 mos.	15 mos.	18 mos.	24 mos.	4-6 yrs.	11-12 yrs.	14-16 yrs.
Hepatitis B	<b>Hep B</b>											
		<b>Hep B</b>			<b>Hep B</b>						<i>Hep B</i>	
Diphtheria, Tetanus, Pertussis			<b>DTaP</b>	<b>DTaP</b>	<b>DTaP</b>		<b>DTaP</b>			<b>DTaP</b>	<b>TaD</b>	
H. influenza Type b			<b>Hib</b>	<b>Hib</b>	<b>Hib</b>	<b>Hib</b>						
Polio			<b>IPV</b>	<b>IPV</b>	<b>IPV</b>					<b>IPV</b>		
Measles, Mumps, Rubella						<b>MMR</b>				<b>MMR</b>	<b>MMR</b>	
Varicella (Chicken-pox)						<b>Var</b>					<b>Var</b>	
Hepatitis A						<b>Hep A (in selected states or regions)</b>						

Sources: Center for Disease Control ([www.cdc.gov/nip](http://www.cdc.gov/nip)). Approved by the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP).

# ACTIVITY

## Have you gotten your shots?

Getting immunized is an important aspect to staying healthy. In the United States, routine childhood vaccinations have drastically reduced the spread of infectious diseases. Ask a parent or teacher to help you check your vaccination record. Use the table on the previous page as a guide. If you find that your vaccinations are not up to date, check with a family doctor or clinic to see if you need to have any “catch-up” immunizations.

To check your records, fill out the spaces below.

Vaccine:	Dates Vaccinated:
Hepatitis B	_____ _____ _____
Diphtheria, Tetanus, Pertussis	_____ _____ _____ _____ _____
Tetanus booster	_____
H. influenza Type b	_____
Polio	_____ _____ _____
Measles, Mumps, Rubella	_____ _____ _____
Varicella (Chickenpox)	_____ _____
Hepatitis A (where needed)	_____



**Adult Check**

\_\_\_\_\_  
**Initial**

\_\_\_\_\_  
**Date**

## Infectious Diseases

**Common Cold.** The common cold is an illness that everyone will suffer from at least once in their life. Colds are considered a viral infection. They are caused by a virus. There is no known cure for viral infections. Unlike bacteria, viruses are not susceptible to the attacks of antibiotics. The only means of recovery is rest and drinking a lot of fluids. Taking cold medications will only help relieve the symptoms.

Symptoms of the common cold may include runny nose, sneezing, congestion, coughing, sore throat, fever, and achy muscles. If symptoms last longer than two weeks or get increasingly worse, consult with a physician. You might be suffering from something more serious.

**Influenza.** Influenza, commonly known as “the flu,” is also caused by a virus. However, its symptoms are more severe than the common cold. In addition to respiratory difficulties (sneezing, coughing, sore throat), the victim will also suffer from fatigue. If not treated properly, influenza can develop into pneumonia. Pneumonia is a leading cause of death among the sick and the elderly.

Influenza is spread by sneezing or coughing infected droplets into the air. To help control outbreaks of the flu, many Public health care centers offer vaccinations for Types A and B of the virus. The vaccination that you get will boost your immune system for a time. However, the success rate is only 60 percent. The elderly and those that come in contact with a lot of people each day, should be vaccinated every year.

Except for severe or high-risk cases (sick and elderly), influenza only needs to be treated with bed rest and fluids. This will enable the body to fight the virus. Muscular pains and fever should be relieved with aspirin or other analgesics. If symptoms do not subside within 10–14 days, contact a physician.

**Pneumonia.** Pneumonia is a serious condition of the lungs that can lead to death. Pneumonia is usually caused by bacterial or viral infection in the lungs. Symptoms of pneumonia include fever, chest pain, respiratory difficulties, and coughing up yellow-green mucus.

If the case of pneumonia is caused by a bacterial infection, antibiotics may be prescribed to help eliminate the infection. However, if the infection is caused by a virus, rest and fluids might be the only treatment. Severe cases might require the aid of ventilation machines until symptoms subside.

**Streptococcal Infections.** Streptococci are bacteria that can cause diseases such as “strep throat,” tonsillitis, pneumonia, and scarlet fever. Streptococci infections are spread by airborne disease-infected droplets. Depending upon the disease, symptoms of streptococcal infections may include fever, enlarged lymph nodes in the neck, sore throat, and fatigue.



**Influenza Type C Virus**

*Image courtesy of CDC*



**Streptococcus Pneumoniae Bacteria**

*Image courtesy of CDC*



Streptococcal infections are usually treated with antibiotics. If not treated properly, streptococcal infections can cause damage to kidneys or develop into rheumatic fever. Rheumatic fever is a very serious condition that can cause damage to the heart.

**Hepatitis.** Hepatitis is the inflammation of the liver and other tissues. It can be caused by a viral infection. The onset of hepatitis can also be caused by drug abuse or overexposure to a chemical.

Hepatitis can either be acute or chronic. That means, it can either be a temporary illness or it can be a permanent condition. Acute hepatitis can be caused by drug abuse or a virus. Chronic hepatitis is usually the result of a viral infection or an autoimmune disorder.

Viral hepatitis is classified into two groups, Type A and Type B. These distinctions are drawn according to the known disease-causing agent. Viral hepatitis, Type A, is generally spread through the fecal contamination of food. This occurs when food is touched by unclean hands. Countries with low standards of hygiene tend to have a high occurrence of hepatitis Type A. Viral hepatitis, Type B, is generally spread through sexual contact and “dirty” needles used by drug abusers.

The symptoms of Type A and B are very similar, except Type B tends to be more severe, causing greater damage to the liver. If any illness is detectable, patients might feel like they have the flu. As the disease progresses, they may become jaundiced as the liver begins to struggle to perform properly.

The treatment for viral hepatitis, acute or chronic, is rest. This allows the body to fight the virus, which cannot be destroyed with medication. Hepatitis that is caused by substance abuse is treated with rest and complete abstinence from the damaging substance.

Viral hepatitis, Type A, can be avoided by washing your hands after you use the bathroom and only eating at places that conform to the highest standard of culinary hygiene. Before traveling to underdeveloped countries, it might be a good idea to get vaccinated. Viral hepatitis, Type B, can be avoided by abstaining from immoral behavior.

**Sexually Transmitted Diseases.** Sexually Transmitted Diseases (STDs), also known as venereal diseases, are spread through sexual contact. STDs include syphilis, gonorrhea, chlamydial infections, viral hepatitis, Type B, and genital herpes. The occurrence of STDs tends to be more prevalent in cultures that encourage and endorse immoral lifestyles.

Symptoms of STDs will vary with the disease. They range from mental illness (syphilis) to sterility (gonorrhea) to flu-like symptoms (viral hepatitis, Type B).

STDs that are caused by bacteria are treated with antibiotics. However, some STDs, such as genital herpes and HIV, are caused by a virus and are, therefore, incurable. Symptoms can be relieved but, never eliminated. Some STDs can be life-threatening, such as AIDS and hepatitis.

Vaccinations are now offered for many STDs. But, the best means to avoid the contraction of an STD is to obey God’s commands regarding sexual relations. The writer of Hebrews instructs us in this regard by saying, “Marriage is honourable in all, and the [marriage] bed undefiled; but whoremongers [fornicators] and adulterers God will judge” (Hebrews 13:4).



**Hepatitis B Virus**

*Image courtesy of CDC*



**Underline the correct answer.**

- I.21 The common cold is considered a (**fungal, viral, bacterial**) infection.
- I.22 (**Fungal, Viral, Bacterial**) infections cannot be treated with antibiotics.
- I.23 The only cure for the common cold and the flu is (**antibiotics, rest, cold medication**).
- I.24 Symptoms of the (**flu, common cold**) include sneezing, coughing, sore throat, and fatigue.
- I.25 The spread of influenza can be prevented by covering your mouth and nose when you sneeze or cough and by getting (**vaccinated, rest, the cold**).
- I.26 Pneumonia is usually caused by a bacterial or viral infection in the (**lungs, nose, throat**), which causes the patient to cough up yellow-green mucus.
- I.27 (**The common cold, Strep throat, Pneumonia**) is a leading cause of death among the sick and elderly.
- I.28 Streptococci are (**parasites, bacteria, viruses**) that can cause diseases such as strep throat, tonsillitis, pneumonia, and scarlet fever.
- I.29 Streptococci infections are spread by (**casual contact, airborne droplets, vectors**).
- I.30 If not treated with (**antibiotics, cold medication, a ventilation machine**) streptococcal infections can cause damage to kidneys or develop into rheumatic fever.



**Answer the following true or false.**

- I.31 \_\_\_\_\_ Hepatitis is the inflammation of the liver and other tissues that can be caused by a viral infection or drug abuse.
- I.32 \_\_\_\_\_ Chronic hepatitis is usually caused by drug abuse.
- I.33 \_\_\_\_\_ Hepatitis that is caused by drug use is classified into two groups, Type A and Type B.
- I.34 \_\_\_\_\_ Type A hepatitis is usually contracted by eating food that has been touched by dirty hands.
- I.35 \_\_\_\_\_ Type B hepatitis is usually spread through sexual contact and sharing “dirty” needles.
- I.36 \_\_\_\_\_ Hepatitis can cause severe liver damage, if not treated properly.
- I.37 \_\_\_\_\_ STDs are spread through casual contact.
- I.38 \_\_\_\_\_ Symptoms of STDs are usually never detectable or life-threatening.
- I.39 \_\_\_\_\_ The best means to avoid being infected by a STD is to abstain from fornication and adultery.



## Non-Infectious Diseases

As mentioned above, non-infectious diseases are caused by heredity, lifestyle, and the environment. They are usually not the result of exposure to a disease-causing microorganism. Some common non-infectious diseases include heart disease, cancer, and diabetes.

**Circulatory System Diseases.** Diseases affecting the circulatory system are the leading cause of death among American adults. Circulatory system diseases can either be **congenital** or the result of an unhealthy lifestyle.

**Congenital Heart Disease.** Congenital heart disease is a malformation of the heart present at birth. It can be caused by rubella in the mother. But, usually there is no known cause for its development. Symptoms of the disease include breathlessness, blue skin (caused by lack of oxygen in the blood), susceptibility to fatigue, and stunted physical development. Many congenital heart conditions can be corrected with surgery.

**Coronary Heart Disease.** Coronary heart disease is the most common circulatory system disease. Damage to the heart is caused by reduced blood flow to the heart resulting from blocked or narrowing coronary arteries. Narrowed or blocked arteries are caused by the build up of fatty deposits.

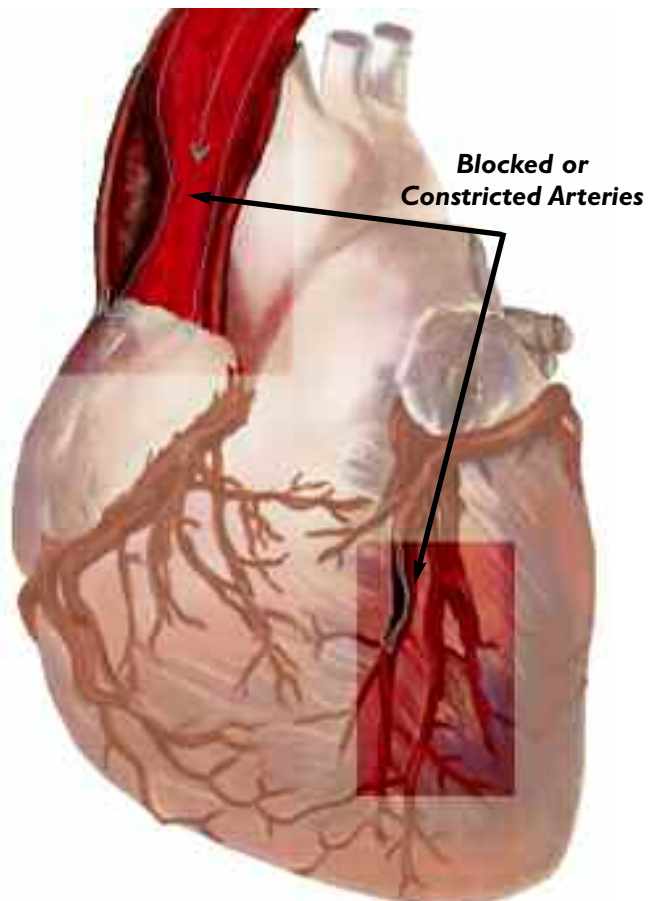
Coronary heart disease usually goes unnoticed until chest pain is felt or a heart attack occurs. Chest pain results when the blood flow to the heart is reduced. During exertion, the pain can spread to the arms and neck. The pain is generally dull and is relieved with rest. A heart attack occurs when the blood flow is completely cut off. Heart attacks are usually preceded by dull chest pain that becomes more intense as the muscle struggles to keep blood flowing. Heart attacks can also cause weakness, sweating, and nausea.

Coronary heart disease and its symptoms can be treated with drugs or surgery. Chest pain caused by narrowing of the arteries can be relieved by taking nitrates. Nitrates widen blood vessels, allowing blood to flow more efficiently. Surgical procedures such as coronary artery bypass surgery and angioplasty may also be used to improve blood flow.

The best means to prevent the development of coronary heart disease is to eat nutritious foods and exercise regularly. Eating foods that are high in vitamins and minerals will help prevent the unhealthy build up of fat in the walls of main arteries. Regular exercises will keep your heart strong and enable you to deal more effectively with stress, which could constrict blood flow.

**Cancer.** Cancer is a disease characterized by the unrestrained growth of abnormal cells on or in tissues of the body. The symptoms of cancer are the result of cancer cells draining normal cells of vital nutrients. There are several hundred diseases that can be classified as cancer. Three main categories exist: sarcomas, carcinomas and lymphomas. Sarcomas affect connective tissue, supportive tissue, and blood vessels. Carcinomas affect the skin and tissues that cover or line the organs. Lymphomas affect the tissues of the lymphatic system.

Cancer is caused by the transforming effect of carcinogens on normal cells. Carcinogens are cancer-causing agents. Carcinogens can be chemical (tobacco), physical (asbestos) or biological (virus or fungi). When a normal cell is transformed into a cancer cell, it can multiply rapidly, hampering the health of the surrounding cells.



Depending upon the tissues that are affected, symptoms will vary. However, there are some general warning signs to look out for, such as unexplained weight loss over a short period of time, frequent headaches, coughing up blood, persistent pain in the abdomen, a bleeding mole, blood in urine or feces, and lumps or changes in sex organs.

Treatment for cancer usually involves surgery and some form of radiation therapy or chemotherapy. Radiation therapy tries to destroy abnormal cells by directing radioactive rays through the patient's skin to the diseased tissue. Chemotherapy seeks to destroy abnormal cells by injecting anticancer drugs directly into the affected tissue. Because chemotherapy also destroys normal cells, it can cause painful side effects.



**Renal Cell Adenocarcinoma, Kidney**

*Image courtesy of CDC*

Like many non-infectious diseases, cancer and its causes are not fully understood. Therefore, taking certain measures to avoid its occurrence is not always a guarantee. However, avoiding known carcinogens will help keep your body from developing abnormal cells. For example, cigarette smoking is the leading cause of lung cancer. Choosing not to smoke will reduce the risk of developing lung cancer.



**Fill in the blanks.**

- I.40 Congenital heart disease is a malformation of the \_\_\_\_\_ present at birth.
- I.41 Symptoms of \_\_\_\_\_ heart disease include blue skin, breathlessness, susceptibility to fatigue, and stunted physical growth.
- I.42 Congenital heart disease can be corrected with \_\_\_\_\_ .
- I.43 \_\_\_\_\_ heart disease is the result of reduced blood flow to the heart caused by the build up of fatty deposits in the arteries.
- I.44 Coronary heart disease can lead to a \_\_\_\_\_ .
- I.45 Coronary heart disease and its symptoms can be treated with \_\_\_\_\_ or surgery.
- I.46 \_\_\_\_\_ and good \_\_\_\_\_ is the best means to prevent the development of coronary heart disease.



### Matching.

- |  |                 |
|--|-----------------|
| I.47 _____ a disease characterized by the unrestrained growth of abnormal cells on or in tissues of the body     | a. chemotherapy |
| I.48 _____ a cancer that affects the connective tissue, supportive tissue, and blood vessels                     | b. carcinogens  |
| I.49 _____ a cancer that affects the skin and tissues that cover or line the organs                              | c. carcinoma    |
| I.50 _____ a cancer that affects the tissues of the lymphatic system   | d. cancer       |
| I.51 _____ cancer-causing agents that transform normal cells into cancer cells                                   | e. lymphoma     |
| I.52 _____ a type of therapy used to destroy abnormal cells by directing radioactive rays at the diseased tissue | f. radiation    |
| I.53 _____ a type of therapy that destroys cells by injecting anticancer drugs directly into the affected tissue | g. sarcoma      |



**Diabetes.** Diabetes mellitus is the third most common non-infectious disease among American adults. It is a disease of the pancreas in which insulin is not produced in the correct amounts so that glucose (sugar) can be converted into energy or stored as fat. Diabetes mellitus is categorized into two types: insulin-dependent and non-insulin-dependent. Insulin-dependent is also known as Type I diabetes or childhood diabetes. Type I diabetes usually develops in people between the ages of 9 and 16. Type I diabetes is generally thought to be caused by an inherited predisposition to pancreas problems brought on by a viral infection.

Non-insulin-dependent diabetes is also known as Type II diabetes or adult-onset diabetes. It is also thought to be an inherited predisposition. It is usually brought about by obesity.

Symptoms of diabetes, either Type I or Type II, may include excessive thirst and urination. These symptoms are a result of the body's need to rid itself of excess amounts of glucose in the bloodstream. Excess amounts of glucose in the bloodstream will cause parts of the brain to shut down, which can eventually lead to death.

Type I diabetes is mainly treated with regular insulin injections. These injections may be received one to four times a day. The injection might be administered with an insulin pen or with a portable pump that has a catheter inserted into the skin. In order to help keep insulin levels near normal, Type I diabetics are expected to follow a time-regulated, low-carbohydrate diet and exercise regularly. Type II diabetics are treated with a similar routine of diet and exercise.

To avoid the development of Type II diabetes, you should maintain healthy eating habits and exercise regularly. This will help keep the level of glucose in your bloodstream at normal levels, enabling your pancreas to produce the sufficient amount of insulin needed without overexertion. It is also good to check your family history for diabetes. If there is a possibility that you could be predisposed to diabetes, you should be extra careful to maintain a normal weight through diet and exercise.

If you suspect that you might have diabetes, get tested by your doctor immediately. Untreated diabetes can cause irreversible damage to your eyes, nerve fibers, and kidneys. Blindness, caused by damage to the retina, is one of the complications that can result from untreated diabetes.





**Underline the correct answer.**

- 1.54 (**Cancer, Diabetes, Coronary heart disease**) is a disease of the pancreas in which insulin is not produced in the correct amounts so that glucose can be converted into energy or stored as fat.
- 1.55 (**Type I, Type II**) diabetes usually develops during adolescence and is thought to be caused by an inherited predisposition to pancreas problems.
- 1.56 (**Type I, Type II**) diabetes is mainly treated with insulin injections, which are received several times a day.
- 1.57 Both Type I and Type II diabetics can help keep their insulin levels near normal by following a strict diet that is low in (**protein, fat, carbohydrates**).
- 1.58 Untreated diabetes can cause (**reversible, irreversible**) damage to your eyes, nerve fibers, and kidneys.



**ACTIVITY**

**Major Diseases – Infectious and Non-Infectious**

Fill out the tables below, using information from the text.

<b>Infectious Diseases</b>			
<i>Disease</i>	<i>Transmission</i>	<i>Symptoms</i>	<i>Treatment</i>
Common Cold			
Hepatitis, Viral			
Influenza			

<b>Non-Infectious Diseases</b>			
<i>Disease</i>	<i>Possible Causes</i>	<i>Symptoms</i>	<i>Treatment</i>
Cancer			
Coronary Heart Disease			
Diabetes, Type I			
Diabetes, Type II			



**Adult Check**

\_\_\_\_\_ **Initial**

\_\_\_\_\_ **Date**



## **Disease Prevention**

**Medicine.** Medicine is man’s greatest weapon against disease. It is defined as the art and science of treating and preventing human disease. The science of medicine lies in the knowledge of the human body, medical procedures, and effective treatments. The practical application of this knowledge is the art of medicine.

Over the last two centuries, medicine has made incredible advances towards becoming more of a science than an art, making it much safer and more reputable. The invention of the microscope, for example, shed much light on the cause and spread of infectious diseases. This consequently led to the development of vaccines and other reliable preventative measures.

**Health Care.** Health care is the actual practice of medical knowledge. It fights disease by encouraging the use of preventative measures, educating people on the dangers of disease and injury, and providing reliable medical care. In industrialized countries, health care is offered and promoted by health care facilities and public health agencies.

**Health Care Facilities.** Health care facilities include doctor's offices, hospitals, health clinics, nursing homes and hospices.

When you visit a doctor's office, you get highly personalized health care for a fee. Your doctor examines you for specific symptoms and prescribes a treatment that, in his personal knowledge of you, would most likely bring about a cure.

Health clinics also offer health care for a fee, but without the level of personal care that patients receive from a doctor in private practice. Health clinics usually consist of a group of health care professionals that are employed by a corporation.

Hospitals offer round the clock care for people that are recovering from surgery or a life-threatening illness. They also provide emergency services, special treatments, and testing services for those that are on an out-patient status. In the United States, hospitals are either run by the government, business corporations, religious institutions, or communities.



Nursing homes provide health care for the aging, the disabled, and the chronically ill. Depending upon the type of nursing home, different levels of care are provided for residents. Some nursing homes allow residents to be very independent. Other nursing homes offer extended intensive care.

Hospices provide specialized care for the dying. It is the goal of the hospice staff to make the last days of a patient as peaceful as possible. A hospice may be located in a hospital or in a separate building. To increase the level of comfort, hospice nurses will also administer care in the patient's home.

**Health Care Professionals.** Health care facilities are staffed by physicians, physician assistants, nurses, dentists, and dental hygienists.

Physicians are responsible for the diagnosis and treatment of disease and injury. Treatment may come in the form of prescription drugs, a change in lifestyle, or surgery. Physicians that diagnose and treat common illnesses and injuries are known as primary care physicians. For example, your family doctor is a primary care physician. He or she is qualified to treat common maladies. However, if you contract a disease that requires advanced knowledge, your primary care physician will refer you to a specialist. A specialist is trained in a specific area of medicine. For example, an oncologist is a doctor that specializes in the diagnosis and treatment of cancer.

Physician assistants (PAs) are a relatively new profession in the field of medicine. PAs help alleviate the workload of primary care physicians. However, the role of PAs is distinct from that of nurses. PAs are licensed to examine patients and prescribe treatments.



Registered nurses (RNs) are licensed to treat patients and record their symptoms. Like physicians, nurses can specialize in a specific area of medicine. For example, surgery nurses have special training in assisting surgeons. Nurse practitioners, similar to PAs, are licensed to examine patients and render basic care. Licensed practical nurses (LPNs) administer care under the supervision of physicians and RNs.



Dentists are responsible for the diagnosis and treatment of diseases affecting teeth or gums. Like physicians, dentists can specialize in a specific area of medicine. For example, orthodontists specialize in the prevention and correction of abnormally spaced teeth.

Dental hygienists assist dentists in the promotion of healthy teeth and gums. Some of their duties include cleaning teeth, educating patients on proper dental hygiene, and assisting the dentist during oral surgery.

**Public Health.** It is only within the last century that the branch of medicine known as public health has been officially recognized. However, the concern for the health of entire populations has existed for thousands of years. In addition to the writings of the ancient Greeks and Romans, the Old Testament draws a connection between unsanitary living conditions and the spread of disease. The laws regarding personal and community conduct not only set the Israelites apart as holy, they also kept them healthy.

Whether ancient or modern, public health systems seek to promote the health of an entire community by controlling the spread of disease. In most developed countries today, this is accomplished by providing reliable and sanitary systems of waste disposal and ensuring adequate supplies of clean water. Secondly, public health systems seek to provide immunization programs and educate people on the means of disease prevention.

In the United States, public health is a concern for both state and federal officials. State, county, and city governments work together to provide clean water and dispose of waste properly. Some local governments also provide educational and immunization programs to help promote public health.

Federal agencies, such as the Department of Health and Human Services (HHS) regulate and manage government services that promote public health and welfare. Within the HHS, there are eight divisions devoted to public health: Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH), Food and Drug Administration (FDA), the Substance Abuse and Mental Health Services Administration, the Health Resources and Services Administration, the Indian Health Administration, the Agency for Toxic Substances and Disease Registry, and the Agency for Health Care Policy.



**CDC in Atlanta, Georgia**

*Image courtesy of CDC*

The Center for Disease Control and Prevention is the main agency concerned with tracking outbreaks and developing methods to combat the spread of disease. Two

of the CDC's most effective means of disease control are education and immunization. The CDC often works with local officials to provide certain socio-economic groups with free immunization programs. Its education programs for health workers help to improve public knowledge about disease control and prevention.

The National Institutes of Health (NIH) is the main agency responsible for the discovery and spread of medical information that is pertinent to the control and prevention of disease. NIH consists of 13 institutes of health and the National Library of Medicine. The institutes are staffed by medical professionals and scientists that are working towards finding cures for diseases such as cancer, AIDS, and the common cold.

The Food and Drug Administration is another important division of HHS. It is the responsibility of the FDA to ensure the purity and safety of food products, cosmetics, and pharmaceuticals. The FDA also monitors food labeling to ensure its truthfulness.



**Short answer.**

I.59 Define medicine. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

I.60 What type of health care facility offers the most personalized medical care? \_\_\_\_\_

\_\_\_\_\_

I.61 What is the difference between a hospice and a nursing home? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

I.62 What is the role of a physician? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

I.63 What can a PA do that a RN cannot? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

I.64 What is the role of a dentist? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



**Answer the following true or false.**

I.65 \_\_\_\_\_ Public health systems seek to promote the health of an entire community by controlling the spread of disease.

I.66 \_\_\_\_\_ Proper waste disposal and clean water are the primary means of promoting public health.

I.67 \_\_\_\_\_ In the United States, the Center for Disease Control and Prevention (CDC) is the main federal agency for the promotion of public health and welfare.

I.68 \_\_\_\_\_ National Institutes of Health (NIH) is the government agency concerned with tracking outbreaks and developing methods to combat the spread of disease.

I.69 \_\_\_\_\_ The FDA promotes public health by providing free immunization programs and educating health workers.



# ACTIVITY

## Mission of Mercy: Visiting the Sick

Doctors and nurses are not the only people that can help the sick. You can help someone that is sick or infirm by visiting them. Visiting the sick shows that you care.



Make a list of three people that you know are sick. Categorize them according to place of recovery/rest. For instance, make a category of people who are recovering in a hospital. Make another category for people you know in a nursing home. Maybe you know someone who is recovering at home or is receiving hospice care. Because nursing home patients tend to need the most encouragement, make them a priority. People that are staying in a hospital, but have received few visitors, should also take top priority.

Before visiting, call the person or a family member to make sure that it is okay for you to visit. Ask if there are any particular needs that you can help with. If not, try to bring a small gift that the sick person will enjoy. It can be a basket of flowers, a book, or a favorite meal. The most important gift that you can bring is a caring disposition. Be sensitive to the needs of the sick person. Listen to them if they want to talk. Talk or read to them if they need to be comforted. Or just sit and hold their hand if that will help them feel better.

“Then shall the King say unto them on his right hand, Come, ye blessed of my Father, inherit the kingdom prepared for you from the foundation of the world: For I was an hungered, and ye gave me meat: I was thirsty, and ye gave me drink: I was a stranger, and ye took me in: Naked, and ye clothed me: I was sick, and ye visited me: I was in prison, and ye came unto me.... Verily I say unto you, Inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me” (Matthew 25:34–36, 40).

Fill in the information below regarding your three separate visits:

1. Name: \_\_\_\_\_  
Illness/condition: \_\_\_\_\_  
Gift offered: \_\_\_\_\_  
Particular needs to pray for: \_\_\_\_\_  
\_\_\_\_\_
2. Name: \_\_\_\_\_  
Illness/condition: \_\_\_\_\_  
Gift offered: \_\_\_\_\_  
Particular need to pray for: \_\_\_\_\_  
\_\_\_\_\_
3. Name: \_\_\_\_\_  
Illness/condition: \_\_\_\_\_  
Gift offered: \_\_\_\_\_  
Particular need to pray for: \_\_\_\_\_  
\_\_\_\_\_



Review the material in this section in preparation for the Self Test. The Self Test will check your mastery of this particular section. The items missed on this Self Test will indicate specific areas where restudy is needed for mastery.

# SELF TEST I

Answer the following questions with short answers (each answer, 2 points).

I.01 When was the only time mankind has ever experienced perfect health? \_\_\_\_\_

\_\_\_\_\_

I.02 What were the moral and physical ramifications of the Fall of man? \_\_\_\_\_

\_\_\_\_\_

I.03 What are six categories of harmful microorganisms?

a. \_\_\_\_\_ b. \_\_\_\_\_

c. \_\_\_\_\_ d. \_\_\_\_\_

e. \_\_\_\_\_ f. \_\_\_\_\_

Match the following items (each answer, 2 points).

I.04 \_\_\_\_\_ the improper functioning of the body brought about by heredity, infection, diet, or the environment

I.05 \_\_\_\_\_ cannot be spread through contact or any mechanism of transmission

I.06 \_\_\_\_\_ caused by the spread of harmful microorganisms

I.07 \_\_\_\_\_ caused by the multiplication of a small infectious agent which invades a host cell and then destroys it

I.08 \_\_\_\_\_ caused by the reproduction of a small infectious agent which produces poisons that destroy cells

I.09 \_\_\_\_\_ caused by the multiplication of fungal organisms on or in the body

I.010 \_\_\_\_\_ caused by microscopic parasites

I.011 \_\_\_\_\_ a disease characterized by the unrestrained growth of abnormal cells on or in tissues of the body

I.012 \_\_\_\_\_ a cancer that affects the connective tissue, supportive tissue, and blood vessels

I.013 \_\_\_\_\_ a cancer that affects the skin and tissues that covers or lines the organs

I.014 \_\_\_\_\_ a cancer that affects the tissues of the lymphatic system

I.015 \_\_\_\_\_ cancer-causing agents that transform normal cells into cancer cells

I.016 \_\_\_\_\_ a type of therapy that destroys cells by injecting anticancer drugs directly into the affected tissue

a. bacterial infection

b. carcinogens

c. carcinoma

d. cancer

e. chemotherapy

f. disease

g. fungal infection

h. infectious disease

i. non-infectious disease

j. lymphoma

k. protozoan infection

l. sarcoma

m. viral infection

*adaptive  
cellular*

*congenital  
coronary  
exercise*

*heart attack  
humoral  
hygiene*

*immunizations  
innate  
nutrition*

*phagocytes  
vectors*

**Complete the following sentences using the words above.** (each answer, 2 points).

- I.017 The \_\_\_\_\_ immune system consists of the skin, protective secretions, the inflammatory response, and phagocytes.
- I.018 \_\_\_\_\_ are white blood cells that eliminate the chances of infection.
- I.019 The \_\_\_\_\_ immune system is activated if the innate immune system is unable to control the infection.
- I.020 \_\_\_\_\_ immunity depends upon the production of disease specific antibodies to destroy harmful bacteria.
- I.021 \_\_\_\_\_ immunity uses helper cells and killer cells to identify and destroy abnormal cells.
- I.022 The contraction of infectious diseases can be avoided by practicing good \_\_\_\_\_ , avoiding contact with \_\_\_\_\_ , and boosting your immune system with \_\_\_\_\_ .
- I.023 \_\_\_\_\_ heart disease is a malformation of the heart present at birth.
- I.024 \_\_\_\_\_ heart disease is the result of reduced blood flow to the heart caused by the build up of fatty deposits in the arteries.
- I.025 Coronary heart disease can lead to a \_\_\_\_\_ .
- I.026 \_\_\_\_\_ and good \_\_\_\_\_ is the best means to prevent the development of coronary heart disease.

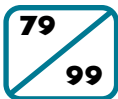
**Underline the correct answer** (each answer, 2 points).

- I.027 (**Fungal, Viral, Bacterial**) infections cannot be cured with antibiotics.
- I.028 The only cure for the common cold and the flu is (**antibiotics, rest, cold medication**).
- I.029 Symptoms of the (**flu, common cold**) include sneezing, coughing, sore throat, and fatigue.
- I.030 Pneumonia is usually caused by a bacterial or viral infection in the (**lungs, nose, throat**), which causes the patient to cough up yellow-green mucus.
- I.031 Streptococci are (**parasites, bacteria, viruses**) that can cause diseases such as strep throat, tonsillitis, pneumonia, and scarlet fever.
- I.032 Streptococci infections are spread by (**casual contact, airborne droplets, vectors**).
- I.033 (**Cancer, Diabetes, Coronary heart disease**) is a disease of the pancreas in which insulin is not produced in the correct amounts so that glucose can be converted into energy or stored as fat.
- I.034 (**Type I, Type II**) diabetes usually develops during adolescence and is thought to be caused by an inherited predisposition to pancreas problems.
- I.035 (**Type I, Type II**) diabetes is mainly treated with insulin injections received several times a day.

- I.036 Both Type I and Type II diabetics can help keep their insulin levels near normal by following a strict diet that is low in (**protein, fat, carbohydrates**).
- I.037 Untreated diabetes can cause (**reversible, irreversible**) damage to your eyes, nerve fibers, and kidneys.

**Answer the following questions with true or false** (each answer, 1 point).

- I.038 \_\_\_\_\_ Hepatitis is the inflammation of the liver and other tissues that can be caused by a viral infection or drug abuse.
- I.039 \_\_\_\_\_ Viral hepatitis, Type A is usually contracted by eating food that has been touched by dirty hands.
- I.040 \_\_\_\_\_ Hepatitis can cause severe liver damage if it is not treated properly.
- I.041 \_\_\_\_\_ Symptoms of STDs are usually never detectable or life-threatening.
- I.042 \_\_\_\_\_ The best means to avoid being infected by an STD is to abstain from fornication and adultery.
- I.043 \_\_\_\_\_ Public health systems seek to promote the health of an entire community by controlling the spread of disease.
- I.044 \_\_\_\_\_ Proper waste disposal and clean water are the primary means of promoting public health.
- I.045 \_\_\_\_\_ In the United States, the Center for Disease Control and Prevention (CDC) is the main federal agency for the promotion of public health and welfare.
- I.046 \_\_\_\_\_ The FDA promotes public health by providing free immunization programs and educating health workers.



Score \_\_\_\_\_

Adult Check \_\_\_\_\_

Initial \_\_\_\_\_

Date \_\_\_\_\_