

Chapter 13: Communicable Diseases

Lesson 1: What Are Communicable Diseases

Words to Know

disease- any condition that interferes with the normal or proper functioning of the body or mind

communicable disease- a disease that can be spread to a person from another person, animal, or insect

germs- organisms that are so small they can only be seen through a microscope

pathogens- germs that cause disease

infection- a condition that happens when pathogens enter the body, multiply, and cause harm

virus- the smallest and simplest of pathogens




bacteria- simple one-celled organisms

fungi- organisms that are more complex than bacteria but cannot make their own food

protozoa- one-celled organisms that are more complex than bacteria

Pathogens the Cause of disease:

1. Bacteria: are the tiny one-celled organisms that live nearly everywhere.

Types: Bacilli (rods) 
Cocci (round, spheres) 
Spirilla (spiral) spirochete 
*they produce toxins (poisons)

<http://www.brainpop.com/science/diversityoflife/bacteria/>

2. Viruses- are the smallest and simplest life form
- can only be seen with an electron microscope
- most common pathogen
- causes most childhood diseases



3. Fungi – are primitive life forms that cannot make their own food

ex. Mushrooms, athlete's foot, ring worm

4. Protozoa- are one-celled, animal like organisms
5. Rickettsia- grows like a virus, but looks like a bacteria associated with lice, mites, ticks
ex. Rocky Mountain Spotted Fever



6. Parasitic worms- tapeworms, pinworms, hookworms
- Vectors: Animals that pass diseases from themselves to humans.
Ex. Flies, dogs, bats, rats, ticks
- Fomites: An inanimate object that is contaminated with disease causing microorganisms.

<http://www.brainpop.com/health/diseasesinjuriesandconditions/antibioticresistance/>

- <http://www.brainpop.com/health/diseasesinjuriesandconditions/viruses/>
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Methods of transmitting disease

1. Direct contact: contracting the disease by actually touching the infected person.
2. Indirect contact: Contracting the disease by handling contaminated articles or thru droplet infection (airborne): contracting the disease when an infected person coughs or sneezes.
3. Contact with someone else's blood
4. Contact with animals or insects (Vectors, Fomites)
5. Sexual contacts
6. Other contacts: such as food and water

Chain of Infection

1. The pathogen
2. The source of pathogen (person, animal, etc...)
3. A way of escape
4. A way of travel
5. A way of entering (cut, scratch, etc...)
6. A new host

Lesson 2: The Immune System

Words to Know

immune system- a combination of body defenses made up of the cells, tissues, and organs that fight pathogens in the body

inflammation- the body's response to injury or disease, resulting in a condition of swelling, pain, heat, and redness

lymphatic system- a secondary circulatory system that helps the body fight pathogens and maintains its fluid balance

lymphocytes- special white blood cells in the blood and lymphatic system

antigens- substances that send the immune system into action

antibodies- specific proteins that attach to antigens, keeping them from harming the body

immunity- the ability to resist the pathogens that cause a particular disease

vaccine- a preparation of dead or weakened pathogens that introduced into the body to cause an immune response

Defending against invaders:

1. First line of defense (physical barriers)
 - a. skin
 - b. mucous membranes
 - c. saliva
 - d. tears
 - e. stomach acid
 - f. Sebum (skin oil)
 - g. ear wax
2. The immune system's nonspecific response
 - a. Phagocytes (white blood cells) attack the invading pathogens
 - b. The cells release a chemical called interferon that stops viruses from reproducing
 - c. Rising body temperature—kills some pathogens
3. The immune system's specific response
The lymphatic system releases special white blood cells called lymphocytes.

Types of lymphocytes

- a. T-cells –They identify the pathogen and activate the immune system.
- b. B-cells– They release antibodies, which attack and destroy the pathogens.
- c. Some of the B & T- cells change into memory cells to protect against any future attacks.

4. Immunity: is the body's ability to resist the germs that cause a particular disease.

Types of immunity

A. Natural immunity: inborn resistance

B. Acquired immunity: not born with must develop over a lifetime

1. Active acquired immunity: having the disease

a. getting sick

b. vaccination

2. Passively acquired immunity: receive a ready-made supply of antibodies

<http://www.brainpop.com/health/diseasesinjuriesandconditions/vaccines/>

Lesson 3: Common Communicable Diseases

Words to Know

influenza (flu)- a communicable disease characterized by fever, fatigue, headache, muscle aches, and respiratory symptoms

contagious period- the length of time that a particular disease can be spread from person to person

mononucleosis- a viral disease characterized by a severe sore throat and swelling of the lymph glands in the neck and around the throat area

hepatitis- a viral disease characterized by an inflammation of the liver and yellowing of the skin and the whites of eyes

tuberculosis (TB)- a bacterial disease that usually affects the lungs

pneumonia- a serious inflammation of the lungs

strep throat- a sore throat caused by streptococcal bacteria

Lesson 4: Avoiding common communicable diseases

word to know

hygiene- cleanliness

Ways to protect yourself from communicable diseases

1. Wash your hands
2. Avoid contact with sick people
3. Avoid contact with contaminated articles
4. Get vaccinations
5. Do not share dishes, glasses, forks, razors, toothbrushes, etc...
6. Store food properly; cook and prepare food properly to avoid food poisoning.
7. Keep your fingers and hands away from your mouth, nose, & eyes
8. Keep counters clean, empty trash cans often
9. Keep pets clean and healthy

Ways to protect others from communicable diseases.

1. Seek medical treatment as needed
2. Cover your mouth when you sneeze/cough
3. If sick avoid people
4. Take appropriate prescription medication

Lesson 5: Sexually Transmitted Diseases

Words to Know

sexually transmitted diseases (STDs)- infections that are spread from person to person through sexual contact

chlamydia- a bacterial STD that may affect the reproductive organs, urethra, and anus

genital warts- growths or bumps in the genital area caused by certain types of Human Papillomavirus (HPV)

genital herpes- a viral STD that produces painful blisters on the genital area

trichomoniasis- an STD caused by the protozoan *Trichomonas vaginalis*

gonorrhea- a bacterial STD that affects the mucous membranes of the body, especially the genital area

syphilis- a bacterial STD that can affect many parts of the body

hepatitis B- a disease caused by the hepatitis B virus that affects the liver

- I. Source and transmission
 - A. Humans are the only natural source.
 - B. Transmission is through various kinds of sexual contact
- II. Gonorrhea (gonococcus)
 - A. Nature of the disease
 - 1. Infects the mucous membranes of the genitals, throat, anus, or eyes.
 - 2. Infects the linings of the heart and joints.
 - B. Gonorrhea in the male
 - 1. Inflammation of the urethra; burning upon urination.
 - 2. "Drip" of pus from the penis (white, yellow, or yellow/green in color)
 - 3. Burning stops after 2 to 3 weeks.
 - 4. Permanent damage; sterility due to a build up of scar tissue in the epididymis
 - C. Gonorrhea in the female
 - 1. May produce no painful symptoms.
 - 2. About 80% of infected females do not know that they are infected.
 - 3. If they have symptoms; irritation of the vagina accompanied by a discharge.
 - 4. Permanent damage is sterility caused by a buildup of scar tissue in the fallopian tubes.
 - D. Gonorrhea can be transmitted to newborns while passing through the birth canal. To prevent infection drops are placed in the eyes to kill the bacteria.
 - E. Complications
 - 1. Arthritis
 - 2. Inflammation of the heart and brain linings.
 - 3. Ectopic pregnancy; the fertilized egg begins to develop in the fallopian tube.
 - 4. Death
 - F. Diagnosis is a blood test and a swab of the urethra (male) vagina (female)
 - G. Treatment: antibiotics (there is no vaccine to prevent infection)

III. Syphilis (spirochete)

A. Stages of Syphilis

1. 1st stage; 1 to 12 weeks of incubation
 - a chancre appears (a painless sore)
2. 2nd stage; 1 to 6 months later
 - A rash that doesn't itch appears on the back, chest, arms, and legs.
 - Lymph nodes in the neck, underarms, and groin become swollen.
 - Fever, sore throat, and patches hair may fall out

**These symptoms will go away but the sores and rash may recur.

3. 3rd stage; 2 or more years later
 - Symptoms disappear but damage is occurring to the blood vessels, heart and nervous system.
4. 4th stage; 10 to 30 years later
 - Ulcers appear on skin, heart, and brain
 - Insanity and death will occur
5. Diagnosis: A blood test and a swab of the sore (Wassermann test)
6. Treatment: antibiotics

• Herpes Simplex Virus (HSV1 cold sores, HSV2 STD)

A. Transmitted through sexual contact

B. Symptoms; 2 to 20 days incubation

1. Painful fluid filled blisters appear and last 2 to 3 weeks.

C. Triggering factors

1. General stress, careless hygiene, lack of sleep, and poor diet

F. Complications

1. Recurring blisters last 1 to 2 weeks
2. Increased risk of cervical cancer in women
3. Brain damage or death
4. Miscarriage or premature births in women

G. Diagnosis: examination of blisters

H. Treatment: no cure but us medication with acyclovir to heal blisters.

V. Chlamydia/ Non-gonococcal urethritis (NGU)

A. Most common STD 1 in 10 Students are infected

B. Symptoms

1. Very mild, most have little or no symptoms
2. If symptoms are present they are painful urination, fever, chills and a vaginal discharge in women.

C. Complications; Sterility like gonorrhea, & Pelvic Inflammatory Disease(PID)

D. Treatment: Antibiotics

VI. Genital Warts

A. Incubation 1 to 3 months

B. Symptoms: Reddish or pink warts with cauliflower like tops that appear on the genitals.

C. Complications: increased risk of cervical cancer

D. Treatment: Laser removal or Liquid nitrogen removal

TEENS SHOW MOST CASES

Chlamydia rates among females in 2006 Age group Cases per 100,000

10-14	121.5
15-19	2,862.7
20-24	2,797
25-29	1,141.2
30-34	415.7
35-39	174.2

VII. Trichomoniasis and Vaginitis:

- A. Symptoms: burning, itching in the vagina (female) urethra (male) and painful urination (both)
- B. Cause bacterial, virus, or protozoan
- C. Treatment: Various medication depending on pathogen.

VIII. Pubic Lice (crabs) & Scabies (dust mites)

- A. Symptoms: Lice (itching), Scabies (red itchy swollen bumps 4 to 6 weeks later)
- B. Treatment: Lice (medicated shampoo) Scabies (hot baths and medicated creams)

IX. Chancroid

- A. Similar to stage 1 of syphilis, very swollen lymph nodes (can burst)
- B. Treatment: antibiotics

X. Hepatitis B: 6 month incubation period

- A. Prevention: Vaccine
- B. Treatment: Bed rest and a healthy diet.

XI. HIV/AIDS

- A. Human Immunodeficiency Virus (HIV): is the virus that causes AIDS
- B. Acquired Immune Deficiency Syndrome
- C. HIV is spread by:
 - 1. Blood
 - 2. Semen
 - 3. Vaginal fluids
 - 4. Breast milk
- D. Methods of Transmission:
 - 1. Transfusion
 - 2. Unprotected sex
 - 3. Sharing of needles
 - 4. Infected mother to fetus
- E. Symptoms:
 - 1. Extreme tiredness with dizziness and headaches
 - 2. Swollen glands
 - 3. Continued fever and night sweats
 - 4. Weight loss of more than 10 lbs. Not due to dieting or exercise
 - 5. Shortness of breath
 - 6. Continued bouts of diarrhea
 - 7. Dry cough
 - 8. Purple or discolored skin
 - 9. Thrush
 - 10. Bruising more easily than normal
 - 11. Disorientation, forgetfulness