

Signs & Symptoms of Childhood Illness & Bloodborne Pathogens — Class Notes

Introduction

The purpose of this course is to provide a thorough understanding and steps of recognizing many common childhood illnesses. Topics will include identifying signs and symptoms of communicable diseases, transmission processes and prevention, proper sanitation and decontamination techniques, overview of various respiratory diseases, bloodborne pathogens and universal safety precautions.

What are infectious diseases caused by?

- Bacteria. These one-cell organisms are responsible for illnesses, such as strep throat, urinary tract infections and tuberculosis.
- Viruses. Even smaller than bacteria, viruses cause a multitude of diseases — ranging from the common cold to AIDS.
- Fungi. Many skin diseases, such as ringworm and athlete's foot, are caused by fungi. Other types of fungi can infect your lungs or nervous system.
- Parasites. Malaria is caused by a tiny parasite that is transmitted by a mosquito bite. Other parasites may be transmitted to humans from animal feces.

How are illnesses and infections spread?

Direct Contact

- An easy way to catch most infectious diseases is by coming in contact with a person or animal who has the infection. Three ways infectious diseases can be spread through direct contact are:

Person to person

- A common way for infectious diseases to spread is through the direct transfer of bacteria, viruses or other germs from one person to another. This can occur when an individual with the bacterium or virus touches, coughs on or kisses someone who isn't infected.
- These germs can also spread through the exchange of body fluids from sexual contact or a blood transfusion. The person who passes the germ may have no symptoms of the disease, but may simply be a carrier.
- Animal to person. Being bitten or scratched by an infected animal — even a pet — can make you sick and, in extreme circumstances, can be fatal. Handling animal waste can be hazardous, too. For example, you can acquire a toxoplasmosis infection by scooping your cat's litter box.
- Mother to unborn child. A pregnant woman may pass germs that cause infectious diseases to her unborn baby. Some germs can pass through the placenta. Germs in the vagina can be transmitted to the baby during birth.

Indirect Contact

- Disease-causing organisms also can be passed by indirect contact. Many germs can linger on an inanimate object, such as a tabletop, doorknob or faucet handle.
- When you touch a doorknob handled by someone ill with the flu or a cold, for example, you can pick up the germs he or she left behind. If you then touch your eyes, mouth or nose before washing your hands, you may become infected.

Respiratory Contact

- Droplets in the air from sneezing or coughing can cause a person to get sick.
- Insect Bites
- Some germs rely on insect carriers — such as mosquitoes, fleas, lice or ticks — to move from host to host. These carriers are known as vectors.
- Mosquitoes can carry the malaria parasite or West Nile virus, and deer ticks may carry the bacterium that causes Lyme disease.

Fecal/Oral Transmission

- Fecal–oral transmission occurs when bacteria or viruses found in the stool of one child (or animal) are swallowed by another child. This is especially common in group-daycare settings, where fecal organisms are commonly found on surfaces and on the hands of providers. Usually, the contamination is invisible.
- Infections, such as salmonella, require a larger number of organisms to establish an infection. In the absence of visible stool contamination, these infections often travel through infected food or beverages.

- Swimming pools and water parks can also be locations of fecal–oral transmission. If the water is not visibly contaminated and is adequately chlorinated, just getting the water in the mouth is usually not enough to cause an infection; the risk is greatly increased by swallowing.
- Many common infections can spread by fecal–oral transmission in at least some cases, including:
 - Adenovirus, Campylobacter infection, Coxsackievirus (hand-foot-mouth disease), Enteroviruses, E. coli infection, Giardia infection, Hepatitis A virus, Pinworms, Polio, Rotavirus Salmonella, Shigella, Tapeworms, and Toxoplasmosis

How can fecal-oral transmission be prevented?

- Frequent hand cleansing, especially with instant hand sanitizers, is the most significant step to help prevent fecal–oral transmission. Hand cleansing is most important after toileting or diapering and before eating.
- Safe and careful food-handling practices are also vital.
- Teach children never to swallow water in pools or water-play areas.
- In daycare settings, the fewer children in diapers or under age 3, the smaller the risk for fecal–oral transmission of infections. Diaper-changing surfaces should never be close to food-preparation areas and should be sanitized between uses. Soiled diapers need to be properly disposed of.
- Using disposable towels and cups reduces the risk for infection. Cleaning or disinfecting commonly touched, infected surfaces (doorknobs, faucet handles, shared toys, sleep mats) can also help.

Some examples of routes of fecal-oral transmission include:

- water that has come in contact with feces (for example due to groundwater pollution) and is then not treated properly before drinking;
- food that has been prepared in the presence of fecal matter;
- disease vectors, like houseflies, spreading contamination from inadequate fecal disposal such as open defecation;
- poor or absent hand washing after using the toilet or handling feces (such as changing diapers)
- poor or absent cleaning of anything that has been in contact with feces;

Food Contamination

- Another way disease-causing germs can infect you is through contaminated food and water. This mechanism of transmission allows germs to be spread to many people through a single source.
- *E. coli*, for example, is a bacterium present in or on certain foods — such as undercooked hamburger or unpasteurized fruit juice.

Risk Factors

- While anyone can catch infectious diseases, a person may be more likely to get sick if his/her immune system isn't working properly. This may occur if:
 - They're taking steroids or other medications that suppress your immune system, such as anti-rejection drugs for a transplanted organ
 - They have HIV or AIDS
 - They have certain types of cancer or other disorders that affect your immune system
- In addition, certain other medical conditions may predispose them to infection, including implanted medical devices, malnutrition and extremes of age, among others.

Infection in Childcare Setting

- People working with groups of children assist children with using or disposing of tissues. When the tissue is contaminated with the nose and throat secretions of an infected child, the virus or bacteria is readily transmitted to the hands of the staff member when they touch the tissue.
- Symptoms present? Not always.
- It is not always easy to identify an infected or sick individual. Some kids will show no symptoms and may still be contaminated and transmit infections to other kids and childcare providers.

Common Types of Communicable Disease

Influenza (flu) — Respiratory

- The flu attacks the lungs, nose, and throat. Young children, older adults, pregnant women, and people with chronic disease or weak immune systems are at high risk.
 - Symptoms include fever, chills, muscle aches, cough, congestion, runny nose, headaches, and fatigue.
 - The flu is treated primarily with rest and fluid to let the body fight the infection on its own. Over-the-counter anti-inflammatory pain relievers may help with symptoms. An annual vaccine can help prevent the flu and limit its complications.
 - Prevention: Hand washing, covering mouth for coughs or sneezing, flu shots.

Common Cold (*rhinovirus*) — Respiratory

- In contrast to the flu, a common cold can be caused by many different types of viruses. The condition is usually harmless and symptoms usually resolve within two weeks.
- Symptoms include a runny nose, sneezing, and congestion. High fever or severe symptoms are reasons to see a doctor, especially in children.
- Most people recover on their own within two weeks. Over-the-counter products and home remedies can help control symptoms.
 - How it spreads:
 - By airborne respiratory droplets (coughs or sneezes).
 - By skin-to-skin contact (handshakes or hugs).
 - By saliva (kissing or shared drinks).
 - By touching a contaminated surface (blanket or doorknob).

Chickenpox (varicella virus)

- **Chickenpox**, also known as varicella, is a highly contagious disease caused by the initial infection with varicella zoster virus (VZV). The disease results in a characteristic skin rash that forms **small, itchy blisters**, which eventually scab over. It usually starts on the **chest, back, and face** then spreads to the **rest of the body**.
- Other symptoms may include **fever, feeling tired, and headaches**. Symptoms usually last five to ten days. Complications may occasionally include pneumonia, inflammation of the brain, or bacterial infections of the skin among others. The disease is often more severe in adults than children. Symptoms begin 10 to 21 days after exposure to the virus.

Fifth Disease (human parvovirus)

- **Fifth disease** is a **mild rash illness** caused by **parvovirus B19**. This disease, also called erythema infectiosum, got its name because it was **fifth** in a list of historical classifications of common skin rash illnesses in children. It is more common in children than adults. A person usually gets sick with fifth disease within **4 to 14 days** after getting infected with parvovirus B19.
 - The first symptoms of fifth disease are usually mild and may include fever, runny nose, and headache.
- Fifth disease is usually mild and will go away on its own. Children and adults who are otherwise healthy usually recover completely.
- Treatment usually involves relieving symptoms, such as fever, itching, and joint pain and swelling.
- People who have complications from fifth disease should see their healthcare provider for medical treatment.

TB (Tuberculosis)

- Tuberculosis, commonly known as TB, is a bacterial infection that can spread through the lymph nodes and bloodstream to any organ in your body. It is most often found in the lungs. Most people who are exposed to TB never develop symptoms because the bacteria can live in an inactive form in the body. But if the immune system weakens, such as in people with HIV or elderly adults, TB bacteria can become active. In their active state, TB bacteria cause death of tissue in the organs they infect. Active TB disease can be fatal if left untreated.

Pink Eye (Conjunctivitis) (Bacterial viral, allergic)

- **Bacterial conjunctivitis** is a common type of pink eye, caused by bacteria that infect the eye through various sources of contamination. The bacteria can be spread through contact with an infected individual, exposure to contaminated surfaces or through other means such as sinus or ear infections.

Strep Throat

- The infection is generally transmitted by direct contact with the **mucus** or **sores** of someone else with strep.
- Common symptoms include sore **throat**, **fever**, and **swollen lymph nodes** in the neck. Rarely, complications can involve the heart or kidneys.
- Treatment is important to reduce complications. Oral antibiotics like penicillin, amoxicillin, cephalexin, or azithromycin are commonly used. Other medicines such as acetaminophen or ibuprofen can help with pain and fever.
- **How it spreads:**
 - By airborne respiratory droplets (coughs or sneezes).
 - By skin-to-skin contact (handshakes or hugs).
 - By saliva (kissing or shared drinks).

Hand, foot, and mouth disease (aka Coxsackie Virus)

- The condition is spread by direct contact with saliva or mucus.
- Symptoms include fever, sore throat, feeling unwell, irritability, and loss of appetite.
- The virus usually clears up on its own within 10 days. Pain medications help relieve symptoms.
 - How it spreads:
 - By skin-to-skin contact (handshakes or hugs).
 - By airborne respiratory droplets (coughs or sneezes).
 - By saliva (kissing or shared drinks).

Norovirus

- People become infected with noroviruses when they eat food or drink liquids that have been contaminated; raw or undercooked oysters and raw fruits and vegetables have been implicated in some outbreaks. You can also get infected if you touch an object or surface that has been infected with the virus and then touch your nose, mouth, or eyes.

Hepatitis A

- Hepatitis A is preventable by vaccine.
- It spreads from contaminated food or water, or contact with someone who is infected.
- Symptoms include fatigue, nausea, abdominal pain, loss of appetite, and low-grade fever.
- The condition clears up on its own in one or two months. Rest and adequate hydration can help.
 - How it spreads:
 - Through contaminated food or water.

Hepatitis B

- This disease is most commonly spread by exposure to infected body fluids.
- Symptoms are variable and include yellowing of the eyes, abdominal pain, and dark urine. Some people, particularly children, don't experience any symptoms. In chronic cases, liver failure, cancer, or scarring can occur.
- The condition often clears up on its own. Chronic cases need medication and possibly a liver transplant.
 - How it spreads:
 - By blood products (unclean needles or unscreened blood).
 - By mother to baby by pregnancy, labor, or nursing.
 - By having unprotected vaginal, anal, or oral sex.

Always take preventative measures to help reduce the spread of infection! Wash your hands, keep toys and equipment clean, encourage children to be proactive and cover their coughs and sneezes and contribute to a safer environment!