Infectious and Communicable Disease

- Infectious disease is illness caused by germ.
- Pathogen is an organism capable of causing disease.
- Bacteria - Single-celled organisms. Require a host.
- Antigens are proteins on the outside of bacteria's and virus'.
- Antibodies are produced to contradict antigens.
- Gram stain - bacteria turns purple is gram-positive. Turns red is gram negative. Gram negative can produce endotoxins which resist heat better than exotoxins. Can reproduce with a host.
- Virus - Cannot reproduce. Uses the host's cells to reproduce. 400 types of viruses are known.
- Fungi - plantlike microorganism. Yeast, molds, mushrooms. People who take lots of antibiotics are prone to fungal infections.
- Parasitic - ability to move. Live in soil and decaying organic matter.

Pitworm - 3-10mm live in distal colon.

Hookworm - attach to the intestinal wall.
• Communicable disease can be passed from one person to another.

• Sterilization destroys all forms of microbial life.

• Disinfection destroys most viruses, bacterial except bacterial spores.

• BSI - All bodily fluid is contaminated until proven otherwise.


• Notification to emergency responders if they have been exposed to infection disease.

• Also requires employers name a DESIGNATED OFFICER (DO) to communicate with the hospital.

• Notification must be made within 48 hours.

Rout of transmitting germs

1. Bloodborne (direct or indirect)
2. Airborne - primary concern is TB
3. Vector borne - animals

Infection to occur:

Must have all four to become infected:

1. An entry route.
2. A large quantity of the germ
3. A host
4. Correct environment
• Latent Period - host cannot transmit the infection.

• Communicable period - host may have signs of illness and may transmit disease.

• Window phase - Patient tests negative because antibody is still establishing.

• Disease period - Duration from onset of signs until disease death.

Precautions: (according to the CDC)

<table>
<thead>
<tr>
<th>Task</th>
<th>Gloves</th>
<th>Gown</th>
<th>Mask</th>
<th>Eyewear</th>
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</thead>
<tbody>
<tr>
<td>Active Bleeding, Child Birth,</td>
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<tr>
<td>Oral/nasal suctioning, Handling or cleaning contaminated equipment</td>
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<td>Minimal bleeding, Blood draw, IV,</td>
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<td>BP, Injection, Temperature, Cleaning back of ambulance.</td>
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<tr>
<td>ETT, Advance airway</td>
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MRSA

- Is spread through direct physical contact.
- Often referred to as staph. Top of this page has a link to specifically explain MRSA/staph. Take a look.

Respiratory Syncytial Virus (RSV)

- Major cause of Pneumonia or bronchiolitis in infants. May be fatal.
- Most common November to April.
- Runny nose, nasal congestion.
- Wheezing in children less than 1 years of age is considered RSV.

Pertussis

- Whooping cough
- Severe, violent coughing.
- Bacterial infection.
- Presents like common cold.

Chickenpox (Varicella zoster virus)

- Incubation period is 2 to 3 weeks. Communicable period occurs 1 to 2 days before onset of rash and until lesions have crusted
• More lethal in adult onset than child onset. 50% mortality in adults.

• Classic presentation: Winter months and spring with respiratory symptoms, malaise, low grade fever, rash starts on face and trunk, and moves to rest of body (including mouth). Contagious up to the point of ulcer scabs. Remember that transmission to others can start 1 to 2 days before rash.

HIV

• Normal cell does DNA to RNA. HIV virus does RNA to DNA.

• 1 to 10 years of exposure becomes active.

• HIV targets T-cells. CD4 marker counts T-cells.

• P. carinii pneumonia is opportunistic.

• New age drugs: Look out for 3 letter/number drugs - ie AZT or 3TC.

• HIV is transmitted via direct contact with infected blood or body fluids.

Hepatitis A

• Fecal-oral

• Does not present with jaundice. Are most commonly identified by liver function studies.

• Incubates 3 to 5 weeks. Most susceptible to transmit is within the first week of symptoms. 2 to 6 weeks of illness.

Hepatitis B (serum hepatitis)
• Acute hepatitis, cirrhosis, and liver cancer.

• 5 to 10% of healthcare workers are asymptomatic.

• Sexual transmission is most common.

• Virus is stable on dry surface for more than 7 days.

• Incubates 8 to 24 weeks. Joint pain and rash may be common but most are asymptomatic.

Hepatitis C

• Associated with receipt of contaminated blood with the virus.

• Also known as Non A Non B hepatitis.

• Antibodies are not effective. Long term liver damage.

• Lives with HBV. If immune for HBV you are protected against HDV.

• If HBV and HDV are present has high mortality rates.

Hepatitis E

• Just like Hepatitis A - oral fecal.

• Drinking contaminated water most common.


Tuberculosis
• Bacterial infection through airborne.

• Inhibits the lungs then can spread to organ systems.

• Multiple drug resistant TB (MDR-TB) do to this standard treatment is to throw all possibilities on the table to annihilate.

• TB patient care: Staff wears Hepa Mask (NIOSH or N95 respirators), patient wears surgical mask.

• Incubation 4 to 12 weeks. Disease occurs 6 to 12 months after infection.

Pneumonia

• Acute lung infection. Virus, bacterial or fungal.

• Absents of fever does not rule out pneumonia.

• In elderly patients signs may be AMS, without fever, and have a headache, diarrhea, and nonproductive cough.

• In children patients signs may be fever, tachycardia, retractions.

• Patient care: Staff or pt should wear surgical mask.

Severe Acute Respiratory Syndrome (SARS)

• Viral infection that is highly infectious.

• Can survive for several days in the environment. Spread though close person-to-person contact.

• Incubation 2-7 days. Quarantined at home for 10 days after the fever has abated.
• History of acute 2-3 word dyspnea, cyanosis, hypoxia, AMS, sore throat, runny nose, chills, myalgia, headache, diarrhea.

Meningitis

• Viral is self-limiting and a healthy person will have weakness but will recover.

• Bacterial is the true emergency that kills.

• Mid-winter months with low temperature and humidity most common.

• Incubation 2 to 4 days, can last up to 10 days. Bacterial develops must faster than viral. Fever, chills, headache, nuchal rigidity, vomiting, AMS, and seizures.

• Infant presentation: Brudzinski sign: flexion if neck causes flexion of the hips and knees. Kernig sign: inability to fully extend knees with the hips flexed.

• 2 month to 2 year old children is most susceptible to meningitis.

• Confirmed via spinal tap.

Childhood (mumps, measles, rubella)

• Measles are highly contagious viral disease. Reddish rash on fourth or fifth day of illness. Airborne.

Cough and high fever. A day or two before rash starts Kalpak's spots (bluish-white spots with red halo) develop on oral mucosa.
• Mumps are viral infection with painful enlargement of the salivary glands. Most common in 5 to 15 year olds.

• Rubella (German measles) viral infection with fine pink rash on face, trunk and extremities. Low grade fever.

Lice

• Parasite infestation of scalp of skin or pubic areas.

• Lice hard to see but you can comb the eggs out.

Scabies

• Mite Infestation

• Tunnel into skin lays eggs.

• Intense itching.

Rabies

• Viral infection of the CNS in animals. Animals can bite humans and is transmitted via virus-laden saliva.

• Signs of infection range from 9 days to 7 years.

• Skunks, raccoons, bats, foxes, dogs, wolves, jackals, mongooses, coyotes.

• Hawaii is the only rabies free state of the US.
Signs:

Phase 1: Headache, fever, chills, sore throat, anorexia, vomiting, and diarrhea. Signs last for 1 to 4 days.
Phase 2: Excessive motor activity followed by confusion, hallucinations. Old Yeller.

Chlamydia

- Sexually transmitted disease
- 25% of men are carriers.
- Is the leading cause of preventable blindness.
- Signs and symptoms are similar to gonorrhea.
- Presents like a UTI.

Gonorrhea

- Bacteria
- Signs will vary: Fever, pain, swelling, limited range of motion in joints, PID, etc...
- When gonorrhea is present over 50% of the time Chlamydia is present.

Syphilis

- Most common through open wounds or sexual contact.
- Can be transmitted by kissing also.
- Produces lesions on organs.
Phase 1: painless lesion on penis or anal canal, tongue, or lips 3 to 6 week exposure.

Phase 2: 5 to 6 weeks after phase 1 is skin rash. Small, red, flat lesions very infectious.

Phase 3: Symptoms improve or disappear. Relapse within 4 years.

Phase 4: Lesions develop on heart, brain etc.... Can develop over decades.

Tetanus

• Acute bacterial infection of central nervous system.

• Found in soils, street dust, feces. Even minor wounds can be an entry route.

• Incubation is days to months.

• Sign: Spasm of muscles in area of entry. Stiffness in Jaw Muscle.

• Every 10 years need an immunity booster.