

VII. INFECTION PREVENTION

Prevention of Hospital Acquired Infections



What is Infection Prevention?

Infection prevention is doing everything possible to prevent the spread of germs which lead to hospital acquired infection.

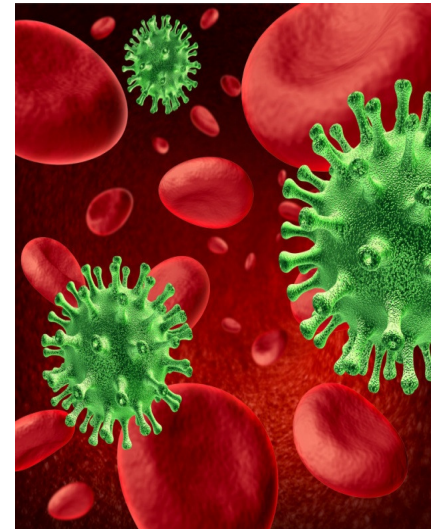


WHY THE NEED FOR THIS SAFETY STANDARD

- 100,000 Americans have died from AIDS and over 1 million are infected
- 65 cases of HIV infection due to occupational exposure occur each year
- 8,700 healthcare workers are infected with Hepatitis B each year and 200 die each year
- 1 ml of blood contains 100,000,000 doses of Hepatitis B virus
- 60-70% of individuals with Hepatitis C show no discernible symptoms
- According to the CDC Hepatitis C infection is the most chronic infection in the US

What is a bloodborne pathogen?

- Bloodborne pathogens are micro-organisms such as viruses or bacteria that are present in human blood that can cause disease in humans. These pathogens include but are not limited to:
 - Hepatitis B (HBV)
 - Hepatitis C (HCV)
 - Human immuno-deficiency virus (HIV)
 - Malaria, syphilis, West Nile virus, Ebola



OTHER POTENTIALLY INFECTIOUS MATERIAL (OPIM)

- In addition to human blood, bloodborne pathogens can be found in other potentially infectious material these include:
 - Blood products (plasma/serum)
 - Saliva
 - Semen
 - Vaginal secretions
 - Skin tissue/cell cultures
 - Any body fluid that is contaminated with blood
- Body fluids that **are not** usually infective for bloodborne pathogens are:
 - Vomit
 - Tears
 - Sweat
 - Urine
 - Feces
 - Sputum /nasal secretions



ALL BODY FLUIDS SHOULD BE REGARDED AS POTENTIALLY INFECTIOUS!!!

TRANSMISSION IN THE WORKPLACE

Bloodborne pathogens can be transmitted when blood or OPIM is introduced into the blood stream of a person

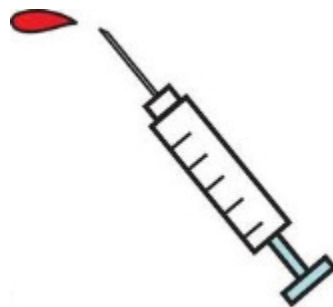
- This can happen through:
 - Non intact skin (acne, scratches, cuts, bites, blisters, wounds)
 - Contact with mucus membranes found in the eyes, nose and mouth
 - Contaminated instruments such as needles and sharps



METHODS TO PREVENT BLOODBORNE PATHOGEN EXPOSURE

A. Standard Precautions

- ALL body fluids should be considered as potentially infectious materials
- Use standard precautions EVERY TIME you anticipate contact with blood, body fluids, secretions/excretions, broken skin and mucous membranes
- Use appropriate personal protective equipment
- Decontaminate spills



METHODS TO PREVENT BLOODBORNE PATHOGEN EXPOSURE

B. Personal Protective Equipment

Include: gloves, gowns, laboratory coats, face shields or masks, eye protection, mouthpieces, resuscitation bags, pocket masks, or other ventilation devices.



METHODS TO PREVENT BLOODBORNE PATHOGEN EXPOSURE

C. Housekeeping and Environmental Services

- Environment maintained in clean and sanitary condition and cleaned with EPA -hospital approved disinfectants
- Use of appropriate cleaning agents such as bleach or antiseptic wipes that have a kill claim for HIV, HepB and Hep C when cleaning equipment between patients (i.e.glucometers)



METHODS TO PREVENT BLOODBORNE PATHOGEN EXPOSURE

- F. Communication of hazards to employees and training
- Labels and Signs



- Information and Education
 - At the time of initial employment
 - At least annually

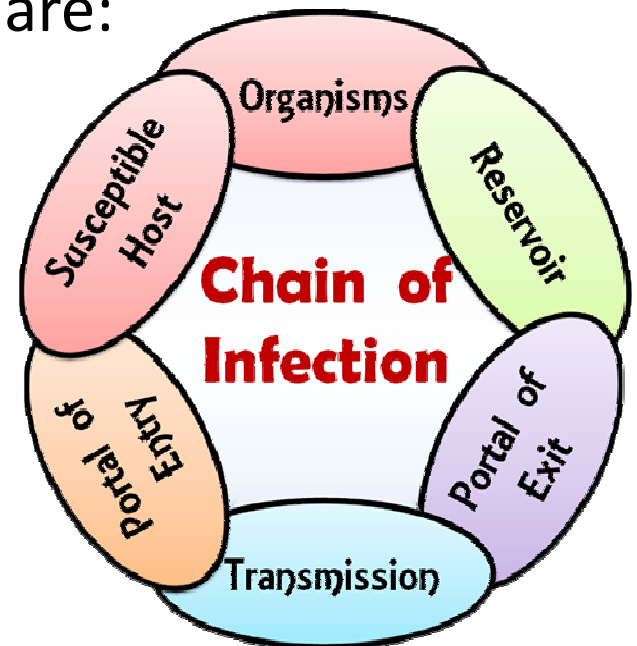
Hospital Acquired Infection

- Sometimes, patients come to the hospital with infections. These are **community-acquired** infections.
- More often patients do not have infections when they come to the hospital. Sometimes, these patients develop infections after being treated or admitted.
- An infection that develops in the hospital or after treatment is a **Hospital Acquired Infection (HAI)**.

Hospital Acquired Infection

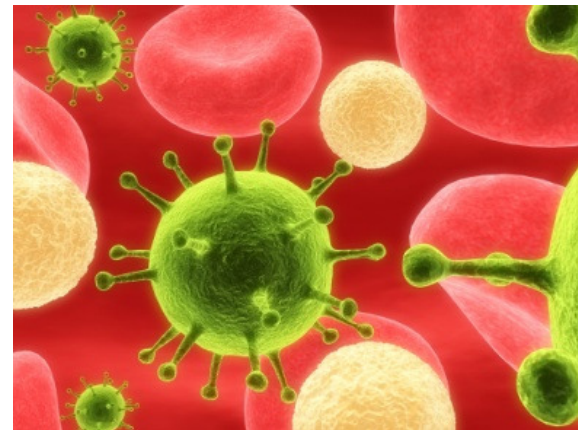
Chain of Infection

- How to prevent Hospital Acquired Infection involves breaking the Chain of Infection.
- Elements of the Chain of Infection are:
 - An infectious agent (organisms)
 - A source (reservoir)
 - A portal of exit
 - A mode of transmission
 - A portal of entry
 - A susceptible host



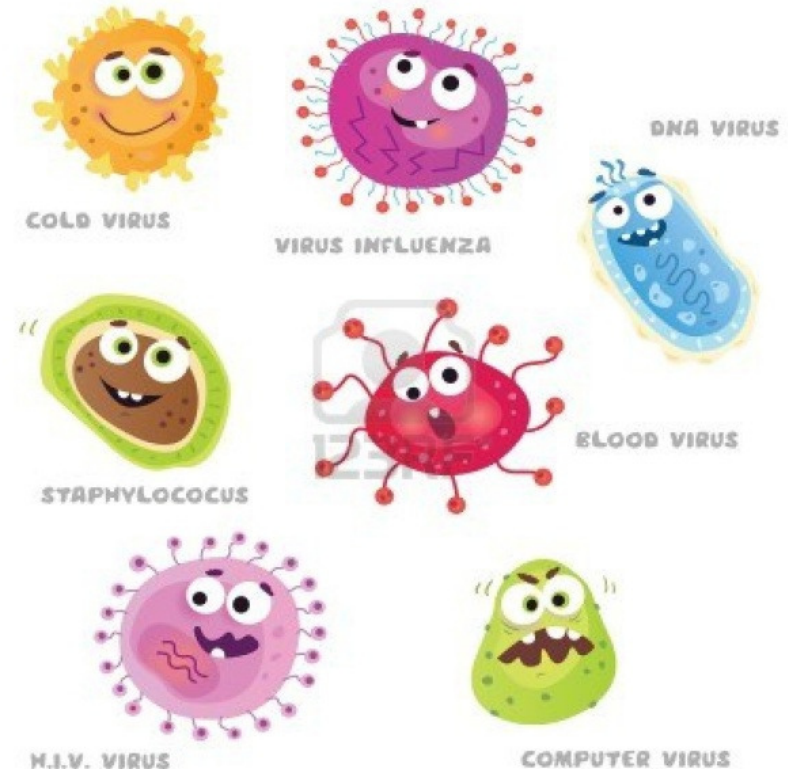
Chain of Infection: Infectious Agents

- Bacteria and viruses are the most common causes of HAI.
- Fungi also can cause HAI but this is less common.
- Examples of bacteria that cause infection are:
 - Staph aureus
 - E.coli
 - Enterococcus
 - Group A strep
 - Clostridium difficile (C. Diff)
 - Tuberculosis



Chain of Infection: Infectious Agents

- Examples of viruses are:
 - Influenza
 - Hepatitis B and C
 - HIV
 - Varicella (Chicken Pox)
 - RSV
 - Rotavirus
 - Norovirus



Chain of Infection: Sources

- Sources are where the germs live or come from:
 - Infected person
 - * the most common source*
 - Food
 - Water
 - Animals
 - Dirt/Dust



Chain of Infection: Portal of Exit



- The way the germ leaves its source.
 - The mouth through coughing or speaking.
 - The nose through sneezing.
 - Cuts, scratches, punctures that allow blood to leave the body.
 - Other openings in the body that allow body fluids to escape.

Chain of Infection: Mode of Transmission

- From person to person a germ can travel by:
 - Contact (direct contact or indirect contact)
 - Droplet
 - Airborne
 - Body fluids



Chain of Infection: Portal of Entry

- How the germ enters the susceptible person.
 - Broken skin
 - Mucous membranes
 - Catheter access sites
 - Surgical wounds



Chain of Infection: Susceptible Host



- The germ must find a susceptible person to cause infection. Hospital patients that are susceptible to infection include:
 - Surgical patients.
 - Patients with weakened immunity due to illness.
 - Patients with weakened immunity due to medications or treatments.

Breaking the Mode of Transmission: Hand Hygiene



Proper hand hygiene is the single best way to stop the spread of infection!!!

- **Always wash your hands:**
 - Before and after touching a patient or their environment. (Even if gloves are worn!).
 - After touching blood or body fluids.
 - Immediately after removing gloves.
 - Before eating, drinking, smoking, applying makeup, handling contact lenses, or using the restroom.
 - Before and after you eat or smoke, and after you cough or sneeze.
 - When working with *C. difficile* patients

Breaking the Mode of Transmission: Hand Hygiene, cont.

Proper Hand-washing technique:

- Turn on the water (warm water).
- Wet your hands.
- Dispense soap into your hands (no bar soap for healthcare workers).
- Work up lather and use friction to clean surface of hands (between fingers, back and front of hands and under nails).
- Rinse well, keeping hands directed down.
- Dry hands thoroughly starting with fingertips, progressing to wrists.
- Use paper towel to turn off faucet.
- No artificial nails, wraps, gels.
- Reduce jewelry to just a wedding band.



Breaking the Mode of Transmission: Hand Hygiene

Alcohol Based Hand Hygiene

- Alcohol based hand gels may be substituted for hand-washing with soap and water when hands are **not** visibly soiled or contaminated with blood or body fluids.



Breaking Transmission: Transmission Based Precautions

- A second level of precautions are used in addition to standard precautions to prevent the spread of other infectious or drug resistant organisms. These **Transmission Based Precautions** include:

- Contact Precautions
- Droplet Precautions
- Airborne Precautions



Breaking Transmission: Transmission Based Precautions

Contact Precautions:

For infections/colonization spread by contact both direct and indirect (MRSA, VRE, C. difficile, RSV):

- Patients should be placed in private rooms, if co-horting is necessary place two colonized patients or two actively infected patients with the same pathogen together.
- Wear clean gloves and gown when you enter the room.
- Patients should be transported only when necessary, and should be dressed appropriately with PPE for transport
- Use dedicated patient care equipment. If equipment needs to be shared clean and disinfect between patients.
- Consult the Infection Control policy IC-14 located on RHINO regarding questions about contact precautions.



Breaking Transmission: Transmission Based Precautions

Enteric Contact Precautions:

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Breaking Transmission: Transmission Based Precautions



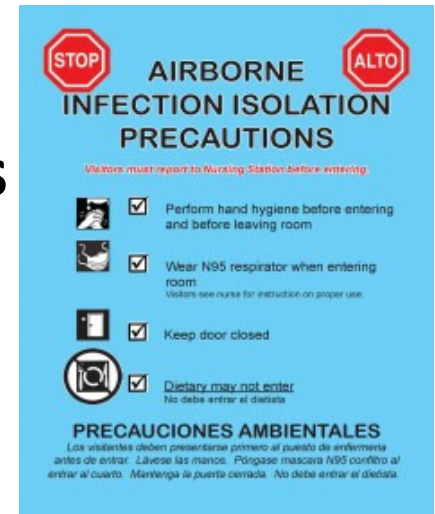
Droplet Precautions:

For infections spread by respiratory droplets containing infectious pathogens (Influenza, B. pertussis, N. meningitidis):

- Patients should be placed in private rooms if possible or co-horting like infections.
- Use respiratory hygiene/cough etiquette. A mask should be worn when working within 3-6 feet of the patient.
- Patients should be transported only when necessary. They should wear a mask when leaving their room.
- Consult the Infection Control policy IC-14 regarding any questions about droplet precautions.
- Healthcare workers should protect themselves by receiving appropriate vaccinations such as in the case of influenza.

Breaking Transmission: Transmission Based Precautions

Airborne Precautions:



Infections spread via tiny particles carried on air currents (TB, Measles, Varicella). For patients suspected to have symptoms for these infections use **respiratory/hygiene etiquette**:

- Triage patients to an Airborne Infection Isolation (All) room (negative pressure).
- Door to the anteroom and to the patient room should be kept closed.
- N95 respiratory masks worn when entering the room. Staff should be fit tested for the respiratory mask.
- Healthcare workers can protect themselves by having appropriate vaccinations and annual TB risk assessment.

Sepsis



- **What is severe sepsis and septic shock?**
- [?] Severe sepsis is a life-threatening condition that arises when the body's response to an infection injures its own tissues and organs. Sepsis is a "milder" version with abnormal vital signs and an infection, but no signs of organ damage.
- [?] Septic shock is a subset of severe sepsis in which blood pressure drops dangerously low and requires medications to stabilize. Ongoing hypotension (low blood pressure) results in inadequate oxygenation and perfusion, leading to multi-system organ and tissue damage, with mortality rates exceeding 40%.



Sepsis - Important to know

- Sepsis is receiving a lot of attention nationwide due to the dramatic rise in cases.
- Can occur in ALL age groups, and even in people that are otherwise very healthy. It can start with a simple infection that cascades into an inappropriate response by the body.
- We see about 400-500 cases **at Randolph Hospital**.
- Severe sepsis and septic shock have a high mortality rate. Early identification and treatment is extremely important, as much so as strokes and heart attacks.
- RH has two multidisciplinary committees that meet **regularly** to address care of these patients.
- Symptoms can quite be different based on the initial type of infection, and could initially be very vague, such as flu-like symptoms and respiratory distress.

