PTA 210
PTA Technique

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Why learn Aseptic Technique?

- To reduce infection & prevent disease transmission

- **Nosocomial Infection**: an infection acquired while hospitalized for treatment of other conditions
  - Example:
Modes of Transmission of Infection

- **Contact**: the most important and frequent mode of nosocomial infection transmission
  - Direct: direct body surface to body surface contact (i.e. touching a patient, transferring a patient, etc)
  - Indirect: a contaminated intermediate object transmits the infection (i.e. Unchanged whirlpool water, re-use of self adhesive electrodes on more than one patient, gloves not changed or hands not washed between patients)

- **Droplet**: when infected droplets are propelled a short distance through the air and land on someone else’s mouth, conjunctivae, or nasal mucosa

- **Airborne**: very very small droplets that are evaporated and remain suspended in the air for long periods of time
Three Levels of Cleanliness

- **Cleaning**: the physical removal of soil from objects usually done with water, with or without detergents. It is the least rigorous of the three levels and it removes microorganisms instead of killing them.

- **Disinfection**: intermediate level; usually using pasteurized or chemical germicides.

- **Sterilization**: the highest level of cleanliness. It is the destruction of all forms of microbial life by steam under pressure, liquid or gaseous chemicals, or dry heat.
"Universal precautions," as defined by CDC, are a set of precautions designed to prevent transmission of human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other bloodborne pathogens when providing first aid or health care.

Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other bloodborne pathogens.
Standard Precautions

1. Hand Hygiene
2. Personal Protective Equipment (PPE)
3. Respiratory Hygiene (Cough etiquette)
4. Care of equipment and Environment
Visibly soiled or dirty hands are washed with antimicrobial soap and water
When to Perform Hand Hygiene

1. before direct contact with patients
2. after contact with bodily fluids or wound dressings
3. after contact with intact skin (ex. taking a pulse)
4. when moving hands from a contaminated body site to a clean body site during patient care
5. after contact with inanimate objects in the immediate vicinity of the patient
6. after removing gloves
Steps to Proper Hand Washing

1. Hands should be washed with soap and warm running water
2. Hands should be rubbed vigorously during washing (with soap!) for at least 20 seconds
3. Hands should be rinsed well while leaving the water running
4. With the water running, hands should be dried with a single use towel
5. Turn off the water using a paper towel, covering washed hands to prevent recontamination
Fingernails should be kept **short** and **clean**.

Artificial nails should not be worn when having direct contact with patients at high risk for infection.

-jewelry
2. Personal Protective Equipment (PPE)

- Wear PPE when anticipating contact with bodily fluids or contaminated skin/surfaces
- Prevent contamination of clothing and skin while removing the PPE
- Before leaving the patient’s room, remove and discard PPE

Types:
- A. Gloves
- B. Gowns
- C. Mouth, nose, eye protection
A. **Gloves**

- Wear when anticipating contact with bodily fluids, non-intact skin, or potentially contaminated intact skin
- Where gloves that fit
- Remove them after contact with patient or equipment
- Do not treat more than 1 patient with the same pair of gloves on
- Do not wash gloves for reuse
- Change gloves if hands move from contaminated body site to clean body site
B. **Gowns**

- Wear a gown to prevent contamination of clothing
- When the patient has uncontained secretions or excretions
- Remove gown and perform hand hygiene before leaving the patient’s environment
- Do not reuse gowns, even for repeated contacts with the same patient
C. **Mouth, nose, eye protection**

- Used to protect the mucous membranes during activities that are likely to cause splashes or sprays of body fluids.
Think–Pair–Share

- 1 minute: Think about what you consider to be the most important concept covered so far

- 1 minute: Share this thought with your desk partner & see if you can “agree” on which is the MOST important

- Share with the class
3. Respiratory Hygiene (Cough Etiquette)

- Cover your mouth and nose when sneezing or coughing
- Use and dispose of tissues
- Perform hand hygiene after hands have been in contact with respiratory secretions
4. Care of Equipment and Environment

- Follow established policies & procedures for cleaning contaminated equipment (i.e. Whirlpools)
- Wear PPE when cleaning equipment
- Clean and disinfect surfaces likely to be contaminated (beds, rails, door knobs, exercise equipment, assistive devices, modalities)
- Handle used laundry with minimum agitation to avoid contamination of air, surfaces and people
- Follow established protocols for doing laundry (outpatient setting)
Transmission-based Precautions

- Transmission based precautions are additional precautions that should be implemented in addition to standard precautions.
- These are updated guidelines for the particular care of certain patients.
Transmission-based Precautions

- **Contact Precautions**: these precautions reduce the risk of transmission of infectious agents through direct or indirect contact.
  - Private room (may share with patient with same active microorganism)
  - Use of gloves when entering the room
  - Change of gloves after direct contact with infectious material
  - Doff gloves prior to leaving the room & perform proper hand washing technique
  - Wear a gown if you will have substantial close contact with patient & remove it before leaving the room
  - Limit patient’s transport outside room for essential purposes only
  - Dedicate non-critical patient care equipment to one patient, do not share between patients or disinfect properly prior to using it again
  - Examples: GI, respiratory, skin or wound infections
Transmission-based Precautions

- **Droplet Precautions**: these precautions reduce the risk of droplet transmission of infectious agents. Transmission of these agents require close contact, as they do not suspend in the air & travel only 3 feet or less.
  - Private room (may share with another patient with active infection of same microorganism)
  - Maintain at least 3 feet between the patient and staff/visitors, etc
  - Room door may remain open
  - Wear a mask when working within 3 feet of patient
  - Limit patient’s transport outside of the room for only essential purposes; patient should wear a mask during transport
  - Examples: meningitis, pneumonia, pertussis, influenza, mumps, rubella
Transmission–based Precautions

- **Airborne Precautions**: these precautions reduce the risk of airborne transmission of infectious agents
  - Private room with monitored air pressure
  - 6–12 air changes within the room per hour
  - Room door should remain closed with the patient remaining in the room
  - Respiratory protection worn when entering the room
  - Limit patient’s transport outside of the room for only essential purposes; patient should wear a mask during transport
  - Examples: measles, varicella, tuberculosis
Aseptic technique refers to the methods and procedures used to create and maintain a sterile field

Sterile Field: An area considered free from living microorganisms.
Creation of a Sterile Field

1. All items used within the boundaries of a sterile field must be sterile
   – use before the expiration date
   – single use items are preferred

2. Once a sterile package has been opened, the edges are not considered sterile
   – carefully open package avoiding having the edges touch the contents of the package or the gloved hands or sterile gown

3. Once donned properly, sterile gowns are considered sterile in the front from shoulder to tabletop level, including sleeves
   – so, hands must be held above tabletop level and in front of the body during and after scrubbing, gowning, & gloving

4. Only the top surface of the table is considered sterile
1. Only sterile items & personnel in sterile attire may enter the sterile field or touch items in the sterile area.
   ◦ However, it is okay for sterile packages to be opened by nonsterile personnel and released into the sterile field without actually being touched by nonsterile personnel
   ◦ Nonsterile personnel may not reach across or into a sterile field

2. Movement within the sterile area must be measured and careful.
   ◦ Once in sterile attire, so not sit or lean against unsterile surfaces

3. Penetration of a sterile covering or barrier is considered to cause contamination of a sterile field.
   ◦ Liquids are the most likely cause of penetration

4. Sterile fields should be prepared as close to the time of use as feasible.
   ◦ They should not be left unattended
   ◦ Do not prepare and then cover for later use
   ◦ When there is doubt as to the sterile quality of an area, it should be considered unsterile
Donning and Doffing Gloves

- Clean Gloves
- Sterile Gloves
  - [http://www.youtube.com/watch?v=pAKZ3mdFlj4](http://www.youtube.com/watch?v=pAKZ3mdFlj4)
Set up

- A clean environment
- A sterile environment
Medical Waste

- Proper disposal
Asepsis is the practice to reduce or eliminate contaminants (such as bacteria, viruses, fungi, and parasites) from entering the operative field in surgery or medicine to prevent infection.

Ideally, a field is "sterile" — free of contaminants — a situation that is difficult to attain.

However, the goal is elimination of infection, not sterility.
**Aseptic Technique**

- The modern concept of asepsis evolved in the 19th century.
  - Washing the hands with germicidal solution decreases the spread of infection!
  - Gloves are worn to remove dressings and measure wounds.
  - Sterile gloves are worn and sterile implements are used within the wound and on the wound
  - Hair is neatly secured, a sterile field is utilized and instruments are cleaned with alcohol or sterilized through autoclaving, or, if disposable, are used once.
  - Dressing material is sterile.
  - Dirty and biologically contaminated material is subject to regulated disposal.
Review of Today’s Lecture

- Why learn aseptic technique?
- 3 modes of infection transmission
- 3 levels of cleanliness
- Standard precautions (hand hygiene, PPE, respiratory hygiene, equipment/environment care)
- Sterile Field (creating, maintaining, gowing & gloving)
Looking Forward

- Wednesday’s Class:
  - Vital Signs
Questions???