LESSON ASSIGNMENT

LESSON 2
Medical Asepsis.

LESSON OBJECTIVES
After completing this lesson, you should be able to:

2-1. Identify the meaning of aseptic technique.

2-2. Identify the measures treatment personnel can use to carry out aseptic technique.

2-3. Distinguish between medical and surgical aseptic technique.

2-4. Distinguish between sterilization and disinfection.

2-5. Identify the various types of chemical disinfectants, antiseptics, and cleaning agents and their uses.

2-6. Identify the steps used in medical asepsis.

SUGGESTION
After completing the assignment, complete the exercises at the end of this lesson. These exercises will help you achieve the lesson objectives.
LESSON 2
MEDICAL ASEPSIS

2-1. GENERAL

Asepsis is the condition of being free from disease-producing microorganisms. Aseptic technique implies all those procedures that reduce or eliminate pathogens and their actions or minimize their areas of existence. Confusion sometimes results from erroneously thinking that medical asepsis and surgical asepsis are the same except one is used on a medical ward and the other is used in a surgical ward. This is not so. Some of the differences between medical aseptic technique and surgical aseptic technique are listed below.

a. Definitions.

(1) **Medical asepsis.** All of the procedures used to protect the patient and his environment from the spread of infectious organisms.

(2) **Surgical asepsis.** All of the procedures used to sterilize and to keep sterile any objects or articles that are to be introduced into a wound or body cavity or that is to penetrate the skin.

b. Emphasis.

(1) **Medical asepsis.** Cleanliness (freedom from most pathogenic organisms).

(2) **Surgical asepsis.** Sterility (freedom from all microorganisms).

c. Purpose.

(1) **Medical asepsis.** To reduce the transmission of pathogenic organisms from patient to another person.

(2) **Surgical asepsis.** To prevent introduction of any organism into an open wound on the patient or into a body cavity.

d. Isolation.

(1) **Medical asepsis.** Patients with a communicable disease are separated from the rest of the patients by room, ward, or unit.

(2) **Surgical asepsis.** Patients requiring surgery are taken to the operating room of the hospital.
e. **Zone.**

   (1) **Medical asepsis.** A zone about the isolation unit is established as contaminated. Everything within the zone of isolation is contaminated. Nothing goes out of the zone without being disinfected or wrapped in a clean cover to permit handling in a clean zone.

   (2) **Surgical asepsis.** A zone about the site of operation or wound is established as a sterile field. Once a sterile article touches an unsterile article, it is contaminated (unsterile). Only sterile articles are brought into the sterile field.

f. **Handwashing.**

   (1) **Medical asepsis.** Hands and forearms are washed for 1 to 2 minutes to remove surface contaminants and soil. Hands and arms are dried with paper towels.

   (2) **Surgical asepsis.** Hands and forearms are scrubbed for 10 minutes to reduce the bacterial count on the skin surface. Hands and arms are dried with a sterile towel.

g. **Gowns.**

   (1) **Medical asepsis.** Clean gowns are worn to protect the worker. Inside of gown is clean; outside of gown in contact with patient and his environment is contaminated.

   (2) **Surgical asepsis.** Sterile gowns are worn to protect the patient from the worker. Outside of gown that is in contact with the sterile field must be kept sterile.

h. **Status of Patient.**

   (1) **Medical asepsis.** Reservoir of infection.

   (2) **Surgical asepsis.** Potential host (other people and environment are reservoirs of infection).

i. **Goals.**

   (1) **Medical asepsis.** Confine disease organisms and prevent spread to others.

   (2) **Surgical asepsis.** Reduce number of organisms and prevent spread of infection to others.
2-2. ASEPTIC TECHNIQUE

a. Aseptic technique is a discipline that consists of a series of events to guard the patient against infection. This procedure is used to reduce the direct or indirect transfer of germs to any surface, article, or person.

(1) With traumatic wounds, which are assumed to be contaminated beforehand, aseptic technique refers to applying a dressing in a manner so that additional contamination is not induced.

(2) In administration of preparations by injection or infusion, it refers to measures designed to prevent or minimize introduction of pathogens beneath the skin.

(3) In surgery, it normally implies sterile conditions in and around the patient area.

b. Treatment personnel can carry out aseptic technique by:

(1) Keeping their hands clean and as free from contamination as possible.

(2) Ensuring that all sterile items are kept free from all organisms.
(Dressings that are to be applied to wounds, needles, and instruments to be inserted through the skin, and syringes to be filled for injection into the body must not touch anything unsterile before being used.)

(3) Keeping from breathing, coughing, or sneezing on wounds or sterile items.

2-3. STERILIZATION

Microorganisms (including bacteria, spores, and viruses) can be completely destroyed through the process of sterilization. Surgical instruments, dressings, and certain other items are sterile and remain so until individual packages or seals are penetrated and contaminants are admitted. Sterilization normally is accomplished by use of heat, preferably moist heat under pressure such as is used in an autoclave.

2-4. DISINFECTION

Disinfectants are used as a means for destroying harmful organisms with the exception of the spore forms of bacteria. In the emergency medical treatment situation, the spore-forming organisms of importance are those that cause tetanus and gas gangrene. Tetanus, in the absence of preventive antitetanus inoculation, and gas gangrene are serious infections which threaten wounded patients, especially those with deep, dirty wounds in which oxygen supply is very limited.
a. **Boiling.** Boiling is considered only when saturated steam under pressure (autoclave) is not available. Articles should be well cleaned before boiling and then must be totally immersed, with surfaces opened to the solution, for 30 minutes of vigorous boiling. Needles, metal cannulas, surgical instruments, glassware (including hypodermic syringes), and similar items may be boiled. Rubber goods may not be boiled.

b. **Chemical Disinfectants.** Various chemical preparations are effective as disinfectants. Chemical disinfectants in common use today include Cidex, Wescodyne, isopropyl alcohol 70 percent, and certain phenol preparations specifically designed as disinfecting solutions for inanimate objects. Materials not harmed by water will not be harmed by disinfectant solutions of these chemicals. Use of liquid chemical disinfectant should be severely limited to those occasions when saturated steam under pressure (autoclave) is not available or when steam sterilization would damage articles so processed.

   (1) Instruments and supplies not adversely affected by the chemicals may be disinfected by immersion in a solution of chemical disinfectants for the time specified by the label on the container, by established procedure such as that of a hospital or aid station, or by a person having knowledge of the disinfecting properties of the various chemical solutions.

   (2) When the articles have been disinfected, the treated articles must be flushed well with sterile normal saline and dried before being used on the patient. Except for alcohol (isopropyl 70 percent), chemicals of disinfecting strength are not applied to the patient since they could damage the patient's skin.

c. **Antiseptics.** Antiseptics interfere with the growth and development of pathogens without necessarily destroying these agents. Antiseptics are milder than chemical disinfectants, either by nature or by strength, and may be applied directly to patients. Antiseptics included in your aid kit are povidone-iodine topical solution and ointment, surgical detergent 7 1/2 percent povidone, and isopropyl alcohol 70 percent. If immediately available, an antiseptic solution may be applied around a superficial wound when hemorrhage is not severe and when surgery, if indicated, is expected to be delayed longer than six hours after wounding.

d. **Cleansing Agents.** Cleansing or skin degerming agents may include soap and water or surgical detergent preparation and water. Mixtures of soaps or skin detergents, with or without antiseptic properties, mechanically bind dirt, grime, and pathogens that are then floated away with rinse water.

**NOTE:** Only disinfectants, antiseptics, and detergents approved by the Infection Control Committee (or other similar group on the local level) should be used.
2-5. PROCEDURE FOR APPLYING MEDICAL ASEPSIS

Hospital-acquired (nosocomial) infections and cross infections (infections that are transmitted between individuals with different pathogens) show the need of applying basic principles of medical asepsis. The following steps outline the basic procedures used in applying medical asepsis.

a. **Perform Patient Care Handwash.** Follow previous instruction on patient care handwash. The patient care handwash is the most important step in preventing and controlling infection. There may be times when you do not have the materials or the time to do a thorough handwash; however, always wash your hands and clean your fingernails if time permits.

b. **Disinfect Materials as Required.** Disinfecting means cleaning objects to remove most organisms. Follow directions explicitly where chemical agents are used.

c. **Maintain Clean Patient Care Environment.**

   (1) **Concurrent cleaning.** Disinfect and dispose of infectious matter immediately during the course of a disease. This is a constant task.

   (2) **Terminal cleaning.** Disinfect contaminated materials after a patient dies, transfers, or is discharged.

   (a) Use freshly prepared germicidal detergent solution to wash furniture, mattress covers, grossly soiled areas of walls, and equipment not handled by central supply.

   (b) Wet-vacuum or mop floors.

   (c) If an isolation room, read isolation technique sign for special instruction.

d. **Use Clean and Dirty Utility Rooms.** Clean and dirty articles are not stored in the same place in order to prevent contamination. **Clean rooms** are used to store clean, unused equipment. **Dirty rooms** are rooms used to store contaminated items such as used linen, trash, contaminated equipment, dirty dietary trays, and basic laboratory tests.

e. **Store and Handle Linen Properly.**

   (1) **Clean linen.** Store clean linen in a clean room marked for clean linen only. Prevent the contamination of clean linen by:

   (a) Limiting access to authorized personnel only.
(b) Washing hands before handling clean linen.

(c) Keeping linen from touching floor or any other known dirty surface.

(d) Keeping linen from touching uniform.

(2) Dirty or soiled linen. Dirty linen is linen that has been used and maybe contaminated with blood, urine, feces, and so forth. Store dirty linen in the "dirty" utility room. Prevent the spread of contamination by following these rules.

(a) Do not shake or toss dirty linens.

(b) Do not allow uniforms to come into contact with dirty linens.

(c) Remove dirty linen from the area using procedures established by local standing operating procedures (SOP).

f. Store and Handle Equipment and Supplies Properly.

(1) Store clean and dirty equipment and supplies in separate areas.

(2) Cleanse dirty equipment thoroughly before placing with clean equipment for reuse by another patient.

(3) Use disposable equipment whenever possible.

(4) Use separate disposable items for each patient.

g. Dispose of Waste Materials.

(1) Uncontaminated trash. Uncontaminated trash results from normal living routine of patients. Uncontaminated trash requires no special handling. Remove all unconsumed food items from patient care areas as soon as possible after patients have finished eating.

(2) Contaminated trash. Contaminated trash results from contamination with bodily secretions and/or excretions of the patient. Contaminated trash requires special handling.

(a) Seal each bag according to local SOP before removing from patient's bedside.

(b) Place each bag in specific area or container designated and labeled "contaminated trash."

(c) Remove each bag from the ward or clinic frequently according to the local SOP.
(3) **Excretions.**

(a) Clean bedpans and urinals after each use.

(b) Flush away all contents promptly unless specimens are required.

(c) Cover the bedpan or urinal with paper cover when it is necessary to carry it from the patient's room to another area.

h. **Follow Specific Isolation Techniques for Patients with Communicable Diseases.** See Lesson 5 of this subcourse for instruction on isolation techniques. For a brief description of some selected communicable diseases along with pertinent points in health care, see FM 8-33, Control of Communicable Diseases in Man, an official report of the American Public Health Association.

i. **Other Considerations.**

(1) **Standing liquids (including medications).** Time, date, and label all standing liquids at time of change. Standing liquids should be changed every 24 hours unless otherwise directed.

(2) **Refrigerators.** Clean and check temperature of refrigerators according to the local SOP. Contents should be labeled and dated.
EXERCISES, LESSON 2

INSTRUCTIONS: Answer the following exercises by marking the lettered response that best answers the exercise, by completing the incomplete statement, or by writing the answer in the space provided at the end of the exercise. After you have completed all of these exercises, turn to "Solutions to Exercises" at the end of the lesson and check your answers. For each exercise answered incorrectly, reread the material referenced with the solution.

1. A person says that medical and surgical aseptic techniques refer to the same procedures used in two separate locations. Is this correct?
   a. Yes.
   b. No.

2. Which one of the following is true of surgical aseptic technique rather than medical aseptic technique?
   a. A patient with a communicable respiratory disease is put in a ward containing other patients having the same disease.
   b. Surgery is performed in a special room that is located away from nonsurgical patients.
   c. Hands and arms are dried with a clean paper towel after the handwash is performed.
   d. The inside of the worker's gown is clean while the outside is considered to be contaminated.

3. The procedures employed to reduce or eliminate disease-causing organisms or their action or to minimize the area where disease-causing organisms exist in order to protect against infection are called:
   a. Aseptic techniques.
   b. Isolation procedures.
   c. Sanitary techniques.
   d. Zone procedures.
4. A process that kills bacteria spores is:
   a. Boiling.
   b. Disinfection.
   c. Isolation.
   d. Sterilization.

5. An agent that removes disease-causing organisms by loosening and removing the dirt and grime to which the organisms are attached is called a/an:
   a. Antiseptic agent.
   b. Chemical disinfectant.
   c. Cleansing agent.
   d. Sterilizing agent.

6. Which one of the following is a proper procedure for maintaining medical asepsis?
   a. Perform terminal cleaning procedures in each patient's area at the end of each day.
   b. Clean bedpans and urinals once each day.
   c. Seal contaminated trash in a bag before removing the trash from the patient care area.
   d. Clean disposable equipment after it is used by one patient before using it again for another patient.

Check Your Answers on Next Page
SOLUTIONS TO EXERCISES, LESSON 2

1. b (para 2-1)
2. b (para 2-1d)
3. a (paras 2-1, 2-2)
4. d (paras 2-3, 2-4)
5. c (para 2-4d)
6. c (para 2-5g(2)(a))