Asepsis and Medical Asepsis

HOSPITALS AND DOCTORS' OFFICES are filled with ill people. As a result, these environments are constantly being bombarded with infections brought in by patients, staff, and visitors. Have you ever wondered what the world would be like if we did not have procedures in place to keep these environments clean? Special environments are needed for surgery and the casting room. You will learn the principles of asepsis—medical asepsis and surgical asepsis. Also, you will learn how to apply these theories to healthcare environments, allowing you to understand when, where, and how to use the appropriate procedures.

Objective:

Identify asepsis and medical asepsis, and analyze their requirements in relationship to use in the surgery and cast care environments.

Key Terms:

antiseptics
asepsis
autoclave
barrier devices
biohazard
disinfectants
disinfection
infection
medical asepsis
microorganisms
pathogens
sterility
surgical asepsis

Applying Asepsis and Medical Asepsis in the Healthcare Setting

Every healthcare worker faces the demanding job of keeping germs from spreading throughout the healthcare environment. With new germs mutating every day, constant vigilance is necessary to maintain asepsis and medical asepsis. Other environments, such as surgery and casting rooms, require adherence to special rules of their own. In these special environments, not following the proper form of asepsis can mean the difference between life and death.

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ASEPSIS AND MEDICAL ASEPSIS

Preventing the spread of germs or **infection** (the invasion and multiplication of organisms in the body) requires a healthcare worker to have a full understanding of concepts related to infection control. The basic concept of infection control is centered on the theory of asepsis. **Asepsis** is a general condition of being free of disease-causing microorganisms or their toxins. Disease-producing agents are called **pathogens**. The healthcare worker uses various methods to prevent the spread of **microorganisms** (forms of life too small to be viewed by unaided eyes).

Medical asepsis is the state of cleanliness or the clean technique. Included in the concept of medical asepsis are practices such as hand washing, general cleaning, and disinfection. **Disinfection** is the act of using chemicals to kill microorganisms—except viruses and spores—of contaminated surfaces and used equipment. The techniques used are aimed at decreasing the risk of infection spread to others. Objects must be medically aseptic if they are to be used in procedures.

FIGURE 1. The proper hand-washing technique is an example of medical asepsis.

Antiseptics are chemicals used to inhibit the growth of bacteria on the skin. In contrast, **disinfectants** are agents that destroy most bacteria and viruses. Disinfectants are caustic to the skin, so they can be used only on objects and surfaces. Boiling and chemical agents are examples of disinfectants. It is your job to pay careful attention to your choice of medical aseptic method as proper procedure is important in greatly reducing the spread of pathogens to others.

SURGICAL REQUIREMENTS RELATED TO ASEPSIS

Surgical asepsis is the state of sterility. **Sterility** is the removal of all microorganisms, including viruses and spores. In a surgical environment, sterility is essential. Some environments have an autoclave for sterility purposes. An **autoclave** is a vessel that uses steam under pressure, dry heat, or chemical vapor to kill all microorganisms. The sterile technique will be employed for the handling of sterile equipment, sterile surgical fields, dressing changes, and disposal of contaminated materials.

You will need to use sterile gloves as well as sterile gowns, goggles, and aprons for any procedure being performed. Instruments must be thoroughly washed and immediately disinfected after a procedure and prior to the sterilization process. If an instrument must be carried from

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FURTHER EXPLORATION...

ONLINE CONNECTION: The History of Sterilization

The first efforts at sterilization had nothing to do with surgery. The food service industry was the first industry to use sterilization. It used sterilization in a cold form before doctors used the heat version for surgical patients. The first surgeries were performed 600 years before asepsis principles were introduced. This explains why before the late 1800s most people requiring surgery died due to a lack of the necessary environmental controls.

Learn more about surgery and the first use of sterilization by visiting:

The use of an autoclave allows healthcare staff the opportunity to sterilize multiple items at one time. All items must be properly cleaned and wrapped before placement in the device.

http://www.ncbi.nlm.nih.gov/pubmed/10124472

one place to another, the instrument must be placed in a container labeled **biohazard** (a material that is dangerous to humans).

Clean Technique

The clean technique does not require a sterile environment. **Barrier devices** (equipment used to block access), such as gloves and other protective equipment, are used to avoid touching an infected area. Disinfectants are used in these situations to clean the equipment and environment. The clean technique is used more often in the home care setting.

CAST CARE AND ASEPSIS

Cast care provides a unique opportunity in the prevention of infection. Once the cast is applied, it becomes almost impossible to evaluate an infection without its removal. Prior to cast application, your hands must be washed. Also, the equipment must be assembled in a medically aseptic environment. Gloves are worn to provide a barrier within the clean environment. Prior to cast application, the area must be thoroughly cleaned, dried, and examined for any areas of infection. Once applied, the patient must receive instructions on the signs and symptoms of an infection (e.g., stains on the cast or a foul odor), which should be reported immediately. Cast removal also requires hand washing and environmental controls. The equipment must be cleaned with disinfectants. In addition, a removed cast must be properly disposed of in a separate waste bag to maintain the medical asepsis of the environment.

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Summary:

Asepsis is a general condition of being free of disease-causing microorganisms or their toxins. Medical asepsis is the state of cleanliness or the clean technique. Part of the process is disinfection, which is the act of using chemicals to kill microorganisms—except viruses and spores—of contaminated surfaces and used equipment. Antiseptics are chemicals used to inhibit the growth of bacteria on the skin. Disinfectants are for objects, not for human skin. Gloves, masks, aprons, and other items may be used for the purpose of asepsis.

Checking Your Knowledge:

1. Why is it necessary to prevent the spread of infection?
2. Define asepsis.
3. Define medical asepsis.
4. Explain the methods and implications for surgical asepsis.
5. Explain the implications and methods for maintaining asepsis in surgery and the casting room.

Expanding Your Knowledge:

Explore the Center for Disease Control (CDC) Web site. It offers statistics on current outbreaks of illness and disease in your local area. Locate the link called "Outbreaks" for more information on what to look for each month.

If you are interested in the concept of surgical asepsis and want to learn more about employment in a surgical environment, research the role of the surgical technician. You can find more information on this career as well as other surgical careers by accessing the Internet or visiting your library for resources. Report back to your class your important research findings.

Web Links:

Disinfection and Sterilization Guidelines
http://www.cdc.gov/hicpac/disinfection_sterilization/6_0disinfection.html

Antiseptic Use in a Resistant Environment
http://www.futuremedicine.com/doi/abs/10.2217/cpr.13.50

Preventing the Spread of the Flu Virus
http://www.cdc.gov/flu/protect/stopgerms.htm

Common Errors in Surgical Technique
http://www.journals.elsevierhealth.com/periodicals/aorn/article/S0001-2092%2809%2900940-5/abstract

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