Asepsis

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Microorganisms

- Living animals or plants visible only with a microscope; also commonly called germs
  - The body's immune defense mechanisms eliminate them
  - They reside within the body without causing disease
  - They cause an infection or infectious disease

Categorization of Microorganisms

Nonpathogens: harmless, beneficial	Pathogens: cause illness
Resident nonpathogens constantly present on the skin	Transient pathogens picked up during contamination
Aerobic: require oxygen to live	Anaerobic: exist without oxygen

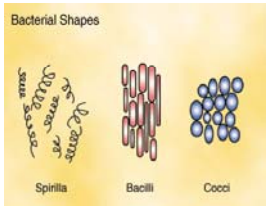
Transient Microorganisms

Types of Microorganisms

- Bacteria
- Protozoans
- Viruses
- Mycoplasmas
- Fungi
- Helminths
- Rickettsiae
- Prions

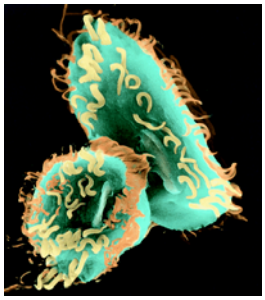
Bacteria

- Single-celled
- Aerobic
- Anaerobic



Protozoan

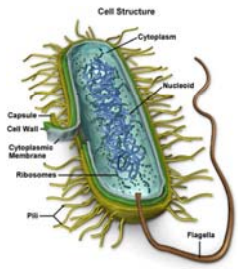
- Single celled
- Classified by mobility
- Infect surface lining of Respiratory, GU and GI systems.



Viruses

- Viruses
  - Smallest microorganisms that causes infections.

Mycoplasma



- Mycoplasma
  - Lacks a cell wall
  - Anaerobic
  - Common cause of UTI's, and pneumonia.

Fungi

- Three types
  - Superficial
  - Intermediate
  - Systemic

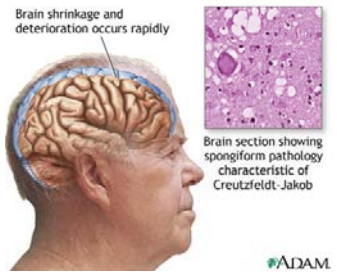
Helminth

- Infectious Worms
  - Round Worms
  - Tapeworms
  - Fluke

Rickettsiae

- Resemble bacteria
- Transmission
- Survival

Prions



Survival of Microorganisms

- Adaptation
  - Spore
  - Antibiotic-resistant bacteria

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Is the following statement true or False?
Transient pathogens are present constantly on the skin.

Answer

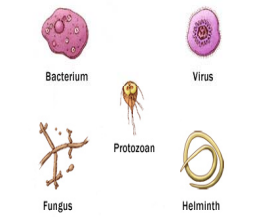
- False.
- Transient pathogens are picked up during contamination.

Chain of Infection

- An infectious agent
- A reservoir for growth and reproduction
- An exit route from the reservoir
- A mode of transmission
- A port of entry
- A susceptible host

Infectious Agents

- Microorganisms
  - Pathogen
  - Nonpathogen



Reservoirs

Exit Routes

Mode of Transmission

- Contact
- Droplet
- Airborne
- Vector
- Vehicle

Port of Entry

- Microorganisms find their way into host via port of entry.
- Common entry
  - Breaks in skin
  - Mucous membranes

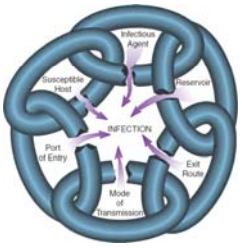
Susceptible Host

- Someone whose biologic defense mechanisms are weakened in some way.

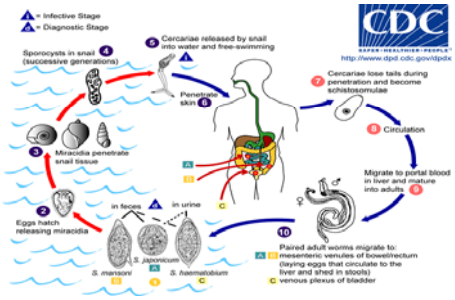
Nosocomial Infections

- Nosocomial infections are infections acquired while a person is receiving care in a health care agency

Chain of Infection (cont'd)



Chain of infection



Biologic Defense Mechanisms

Mechanical:

Chemical:

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- Is the following statement true or false?

  Mechanical defense mechanisms destroy or incapacitate microorganisms through natural biologic substances.

Answer

- False.
- Chemical defense mechanisms destroy or incapacitate microorganisms through natural biologic substances.

Asepsis

- Practices that decrease or eliminate infectious agents, their reservoirs, and vehicles for transmission
- A major method for controlling infection
- Health care professionals use medical and surgical asepsis to prevent spread of infections

Medical Asepsis

- Also known as the clean technique
- Involves measures that interfere with the chain of infection in various ways
- Examples:
- Confines or reduces the numbers of microorganisms
  - Performing hand hygiene
  - Wearing hospital garments

Surgical Asepsis

- Measures that render supplies and equipment totally free of microorganisms
- Practices that avoid contaminating microbe-free items
- Examples:
  - Physical sterilization
  - Chemical sterilization

Principles of Medical Asepsis

- Microorganisms exist everywhere except on sterilized equipment
- Frequent handwashing and maintaining intact skin reduces transmission of microorganisms
- Blood, body fluids, cells, and tissues are major reservoirs of microorganisms
- Personal protective equipments serve as barriers to microbial transmission

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- Is the following statement true or false?

  Surgical asepsis involves measures that interfere with the chain of infection in various ways.

Answer

False.

Medical asepsis involves measures that interfere with the chain of infection in various ways.

Antimicrobial Agents

- Antiseptics
- Disinfectants
- Anti-infective drugs

Question

- Which of the following is a method of surgical asepsis?
- a. Donning a sterile gown
- b. Using antimicrobial agents
- c. Performing hand antisepsis
- d. Performing handwashing

Answer

- a. Donning a sterile gown
- Donning a sterile gown is a method of surgical asepsis. Using antimicrobial agents, performing hand antisepsis, and handwashing are methods of medical asepsis.

Personal Protective Equipment

- Uniforms
- Scrub Suits & Gowns
- Masks
- Gloves
- Hair & Shoe Covers
- Protective Eyewear

Confining Soiled Articles

- Designated Dirty Utility Room
- Waste Receptacles

Clean Environment

- Concurrent Disinfection
- Terminal Disinfection

Surgical Asepsis

- Sterilzation
  - Physical Sterilization
  - Chemical Sterilization

Surgical Asepsis

- Consists of physical and chemical techniques that destroy all microorganisms including spores
  - Physical sterilization: radiation, boiling water, free-flowing steam, dry heat, steam under pressure
  - Chemical sterilization: peracetic acid, ethylene oxide gas

Principles of Surgical Asepsis

- Once equipment and areas are free of microorganisms, they remain in that state if contamination is prevented
- Sterility preserved: touching one sterile item with another that is sterile
- Once a sterile item touches something that is not sterile, it is considered contaminated
- Any partially unwrapped sterile package is considered contaminated

General Gerontologic Considerations

- Older clients more susceptible to infections
- Maintain intact skin, proper aseptic techniques, perineal hygiene, thorough handwashing; indwelling catheters should be avoided
- Bladder training, annual immunizations
- Ill health care workers should take sick leave rather than expose susceptible clients to infectious organisms

Infection Control

Chapter 22

Infection Control

- Infectious diseases
- Colonization

Question

- Is the following statement true or false?
- Colonization is a condition that results when microorganisms cause injury to a host.

Answer

False.

Colonization is a condition in which microorganisms are present, but the host does not manifest any signs or symptoms of infection.

The Course of Infectious Diseases

TABLE 22-1 COURSE OF INFECTIOUS DISEASES

STAGE	CHARACTERISTIC
Incubation period	Infectious agent reproduces, but there are no recognizable symptoms. The infectious agent may, however, exit the host at this time and infect others.
Prodromal stage	Initial symptoms appear, which may be vague and nonspecific. They may include mild fever, headache, and loss of usual energy.
Acute stage	Symptoms become severe and specific to the tissue or organ that is affected. For example, tuberculosis is manifested by respiratory symptoms.
Convalescent stage	The symptoms subside as the host overcomes the infectious agent.
Resolution	The pathogen is destroyed. Health improves or is restored.

Infection Control Precautions

- Transmission-based precautions
  - Airborne
  - Droplet
  - Contact

Question

- Precautions that are used to reduce pathogen transmission from close contact, usually 3 feet or less, belong to which category of precautions?
- a. Droplet
- b. Contact
- c. Airborne
- d. Isolation

Answer

- a. Droplet
- Droplet precautions are measures that block pathogens within moist droplets larger than 5 microns. They are used to reduce pathogen transmission from close contact (usually 3 feet or less) between an infected person or a person who is a carrier of a droplet-spread microorganism and others.

Question

- Is the following statement true or false?
- Transmission-based precautions are also called universal precautions.

Answer

- False.
- Transmission-based precautions are also called isolation precautions and are measures for controlling the spread of infectious agents from clients known to be or suspected of being infected with highly transmissible or epidemiologically important pathogens.

Question

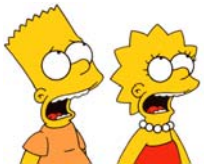
- Is the following statement true or false?
- Biodegradable trash can be flushed down the toilet in the client's room.

Answer

- True.
- Biodegradable trash is refuse that will decompose naturally into less complex compounds. It includes items such as unconsumed beverages, paper tissues, the contents of drainage collectors, urine, and stool. All these items can be flushed down the toilet in the client's room.

Psychological Implications

- Being attentive to client sensibilities
- Promoting social interaction
- Combating sensory deprivation



Nursing Implications

- Frequently identified nursing diagnoses when caring for clients with infectious diseases
  - The nursing diagnosis of risk for infection transmission
- Imparting of infection prevention teaching measures to client and family

Questions?????