

Chapter 01: Scope of Microbiology and Infection Control

Miller: Infection Control and Management of Hazardous Materials for the Dental Team, 6th Edition

MULTIPLE CHOICE

1. Who is reported to have first observed microbes?
 - a. Pasteur
 - b. Oliver Wendell Holmes
 - c. Lister
 - d. Leeuwenhoek

ANS: D

Pasteur, Oliver Wendell Holmes, and Lister made other important contributions to microbiology. Leeuwenhoek first observed microbes and called them “animalcules.”

PTS: 1

DIF: Recall

REF: p. 2

OBJ: 2

TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

2. What year were microbes first observed?
 - a. 1667
 - b. 1880
 - c. 1956
 - d. 1975

ANS: A

Leeuwenhoek first observed microbes and called them “animalcules” in 1667, 1880, 1956, and 1975 are all too recent.

PTS: 1

DIF: Recall

REF: p. 2

OBJ: 2

TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

3. Choose the microbial killing method referred to as pasteurization.
 - a. 121°C for 20 minutes
 - b. 212°F for 5 minutes
 - c. 63°C for 30 minutes
 - d. 37°C for 10 minutes

ANS: C

121°C for 20 minutes achieves sterilization. 212°F for 5 minutes is the temperature of boiling water. 63°C for 30 minutes achieves pasteurization which kills harmful microbes in liquids such as milk. 37°C for 10 minutes is body temperature.

PTS: 1

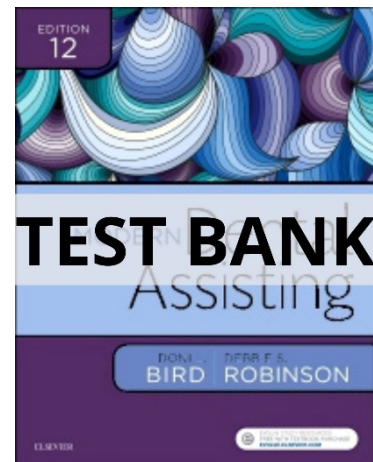
DIF: Application

REF: p. 2

OBJ: 2

TOP: CDA, Infection Control, II.D. Demonstrate an understanding of asepsis procedures

4. When was the “Golden Age of Microbiology”?
 - a. Mid to late 1600s



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- b. Mid to late 1700s
- c. Mid to late 1800s
- d. Mid to late 1900s

ANS: C

Mid to late 1600s and mid to late 1700s were too early. Mid to late 1800s was the time when many new discoveries in microbiology were made. Mid to late 1900s was too late.

PTS: 1 DIF: Recall REF: p. 2 OBJ: 2

TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

5. What microbes are used to make vinegar, vitamins, drain cleaners, enzymes, and other products?
- a. Fungi
 - b. Viruses
 - c. Protozoa
 - d. Bacteria

ANS: D

Fungi can make antibiotics but not these products. Viruses grow inside living cells and do not make such products. Protozoa are not very efficient in making such products. Bacteria make these and others products when they are grown in large vats.

PTS: 1 DIF: Recall REF: p. 3 OBJ: 3

TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

6. Which microbes are used to make pickles out of cucumbers?
- a. Bacteria or fungi
 - b. Fungi or viruses
 - c. Viruses or yeasts
 - d. Bacteria of viruses

ANS: A

Bacteria or fungi make certain extracellular products that change cucumbers into pickles. Viruses do not produce products that affect cucumbers.

PTS: 1 DIF: Recall REF: p. 3 OBJ: 3

TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

7. What microbe is used to make bread dough rise?
- a. Bacteria
 - b. Yeasts
 - c. Viruses
 - d. Protozoa

ANS: B

Bacteria do not produce enough carbon dioxide (CO₂) to make the dough rise. Yeasts metabolize carbohydrates to produce the gas bubbles of CO₂ which causes the dough to rise. Viruses only grow inside of living cells and do not have a regular metabolism. Protozoa do not produce enough carbon dioxide (CO₂) to make the dough rise.

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PTS: 1 DIF: Recall REF: p. 3 OBJ: 3
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

COMPLETION

1. Louie Pasteur and John Tyndall first recognized the use of _____ to destroy bacteria and resistant spores.

ANS: heat

PTS: 1 DIF: Recall REF: p. 2 OBJ: 2
TOP: CDA, Infection Control, II.D. Demonstrate an understanding of asepsis procedures

2. In 1915 it was discovered that bacteria can be infected with viruses called _____.

ANS: bacteriophage

PTS: 1 DIF: Recall REF: p. 3 OBJ: 1
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

TRUE/FALSE

1. The disease of smallpox was involved in the discovery of immunizations in the 1790s by Edward Jenner.

ANS: T

Edward Jenner is credited with recognizing the concept of immunization when he realized in the 1790s that milkmaids who caught cowpox, a mild disease, were protected from the more serious disease of smallpox.

PTS: 1 DIF: Recall REF: p. 3 OBJ: 2
TOP: CDA, Infection Control, I.C. Demonstrate an understanding of the need for immunization against infectious diseases (e.g., hepatitis B)

Chapter 02: Characteristics of Microorganisms

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MULTIPLE CHOICE

1. Under what conditions do regular bacteria, excluding *Richettsia* and *Chlamydia*, multiply:
 - a. in the absence of nutrients.
 - b. only when they are inside of living cells.
 - c. when they are outside of living cells.
 - d. only when the temperature is below 7°C.

ANS: C

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Nothing can grow in the absence of nutrients. *Rickettsia* and *Chlamydia* are the only bacteria that can grow inside living cells. Regular bacteria do not need to be inside living cells to grow. They can obtain their nutrients from the environment. Only the special bacteria called psychrophiles can grow at these low temperatures.

PTS: 1 DIF: Application REF: p. 12 OBJ: 1
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

2. Select an environment in which viruses can multiply.
- Only in the absence of nutrients
 - Only when they are inside of living cells
 - Only when they are outside of living cells
 - Only when the temperature is below 7°C

ANS: B

Nothing can grow in the absence of nutrients. Viruses need the nutrients and metabolic machinery of living cells to multiply. Viruses cannot obtain their nutrients from the environment. Only the special bacteria called psychrophiles can grow at these low temperatures.

PTS: 1 DIF: Application REF: p. 14 OBJ: 2
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

3. Which of the following microbes is a yeast?
- Streptococcus mutans*
 - Trichomonas vaginalis*
 - Candida albicans*
 - Staphylococcus aureus*

ANS: C

Streptococcus mutans is a bacterium. *Trichomonas vaginalis* is a protozoan. *Candida albicans* can exist as a yeast which is a special fungus. *Staphylococcus aureus* is a bacterium.

PTS: 1 DIF: Recall REF: p. 15 OBJ: 3
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

4. Which of the following microbes is a type of fungus?
- Influenzae
 - Candida albicans*
 - Trichomonas vaginalis*
 - Streptococcus mutans*

ANS: B

Influenzae is a virus. *Candida albicans* can exist as a yeast or filamentous fungus. *Trichomonas vaginalis* is a protozoan. *Streptococcus mutans* is a bacterium.

PTS: 1 DIF: Recall REF: p. 15 OBJ: 3
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

5. A yeast is what type of microorganism?
- Bacterium
 - Fungus
 - Virus
 - Protozoan

ANS: B

Bacteria cannot form yeast. A yeast is a special type of fungus. Viruses and protozoa cannot form yeasts.

PTS: 1 DIF: Recall REF: p. 15 OBJ: 3
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

6. Thrush is caused by:
- Candida albicans*.
 - Streptococcus mutans*.
 - Staphylococcus aureus*.
 - human herpesvirus 1.

ANS: A

Candida albicans causes thrush (e.g., oral candidiasis or denture stomatitis) and is a fungus that may exist as a yeast cell or as a filamentous fungus (mold). *Streptococcus mutans*, *Staphylococcus aureus*, and human herpesvirus 1 do not cause thrush.

PTS: 1 DIF: Recall REF: p. 15 OBJ: 3
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

7. Bacilli are shaped like:
- spheres.
 - cylinders or rods.
 - curved or spiral forms.
 - flat disks.

ANS: B

Spheres are not bacilli. Bacilli are bacterial cells shaped like a rod or cylinder. Spirilla are curved or spiral forms. There are no microbes shaped like a flat disk.

PTS: 1 DIF: Recall REF: p. 7 | Figure 2.2
OBJ: 1
TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

8. Cocci are shaped like _____.
- spheres
 - cylinders or rods
 - curved or spiral forms
 - flat disks

ANS: A

Spherical cells are called cocci. Rod-shaped cells are called bacilli. Curved or spiral cells are called spirilla. This is not a shape associated with bacteria.

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PTS: 1 DIF: Recall REF: p. 7 | Figure 2.2

OBJ: 1

TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

9. Choose the bacterial structure that controls the flow of nutrients and waste into and out of the cell?
- Cell wall
 - Flagellum
 - Cytoplasmic membrane
 - Capsule

ANS: C

The cell wall protects the cell from being crushed. The flagellum provides locomotion. The cytoplasmic membrane has a function to regulate the entrance and exit of nutrient materials and waste products. The capsule keeps the cell from drying out and is antiphagocytic.

PTS: 1 DIF: Recall REF: p. 8 OBJ: 1

TOP: CDA, Does not apply

10. Which of the following bacterial structures interferes with phagocytosis?
- Cell wall
 - Flagellum
 - Cytoplasmic membrane
 - Capsule

ANS: D

The cell wall protects the cell from being crushed. The flagellum provides locomotion. One of the functions of the cytoplasmic membrane is to regulate the entrance and exit of nutrient materials and waste products. The capsule's "slimy" nature interferes with phagocytosis.

PTS: 1 DIF: Recall REF: p. 9 OBJ: 1

TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

11. Which of the following bacterial structures helps the cell to attach to surfaces?
- Cell wall
 - Capsule
 - Cytoplasmic membrane
 - Fimbriae

ANS: D

The cell wall protects the cell from being crushed. The capsule keeps the cell from drying out and is antiphagocytic. One of the functions of the cytoplasmic membrane is to regulate the entrance and exit of nutrient materials and waste products. Fimbriae serve as mechanisms by which cells can attach to other cells or other environmental surfaces.

PTS: 1 DIF: Recall REF: p. 9 OBJ: 1

TOP: CDA, Infection Control, I.A. Demonstrate an understanding of infectious diseases and their relationship to patient safety and occupational risk

12. The main function of the bacterial cell wall is to:
- protect against drying.