

Advancing Infection Control Capacity & Education (ACE): Coaching to Certification

Session 2: Identification of Infectious Disease Process Part 1

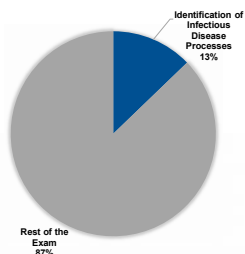
Gram-Negative and Gram-Positive Bacteria, Cell Structure, Laboratory Analysis, and Microbiology

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Objectives



- Interpret the relevance of diagnostic and laboratory reports
- Identify appropriate practices for specimen collection, transportation, handling, and storage
- Correlate clinical signs and symptoms with infectious disease process
- Differentiate between colonization infection and contamination
- Differentiate between prophylactic empiric and therapeutic uses of antimicrobials

*22 questions out of 150 questions on the CiC exam
Why is this topic relevant to competent IPC practice?



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Q1: A Gram-negative bacterium that is responsible for chronic antral gastritis and is a major factor in peptic ulcer disease is:

- a. *Streptococcus pyogenes*
- b. *Salmonella typhi*
- c. *Clostridium difficile*
- d. *Helicobacter pylori*



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Q2: Patients with cell-mediated immunity dysfunction are susceptible to infections attributed to pathogenic intracellular bacteria. Examples of these organisms include:

1. *Salmonella typhi*
2. *Bacteroides fragilis*
3. *Listeria monocytogenes*
4. *Staphylococcus aureus*

- a. 2, 3
- b. 1, 3
- c. 1, 2
- d. 3, 4

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Q3: When reviewing the Gram stain of a person with a wound infection, the IP sees Gram-positive organisms in clusters. Which organism would this most likely represent?

- a. Streptococcus
- b. Enterococcus
- c. Corynebacterium
- d. Staphylococcus

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Q4: Which of the following is NOT likely to contaminate total parenteral nutrition?

- a. *Mycobacterium fortuitum*
- b. *Candida albicans*
- c. *Pseudomonas aeruginosa*
- d. *Staphylococcus epidermidis*

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Q5: Which organism found in food poisoning causes the most rapid onset of symptoms?

- a. Salmonella enteritidis
- b. Shigella sonnei
- c. Staphylococcus aureus
- d. Escherichia coli

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Q6: The emergency department reports three cases of cramping, abdominal pain, and diarrhea within a 24- hour period. All persons are from the same community, and onset of symptoms was within 12 to 36 hours of a picnic they all attended. The IP suspects which of the following foodborne illnesses:

- a. Salmonella
- b. Hepatitis A
- c. Staphylococcus aureus
- d. Clostridium perfringens

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Q7: The bacterium most likely to be transmitted from mother to infant during labor and cause neonatal sepsis is:

- a. Escherichia coli
- b. Staphylococcus aureus
- c. Group B Streptococcus
- d. Group A Streptococcus

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Q8: For which of the following are human beings the reservoir?

- a. West Nile Virus
- b. *Salmonella*
- c. *Streptococcus pneumoniae*
- d. Rabies Virus

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Q9: A microbe that can grow in the absence of oxygen but is also able to utilize oxygen for growth is a/an:

- a. Aerobe
- b. Obligate anaerobe
- c. Facultative anaerobe
- d. Microaerophilic aerobe

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Q10: What is the **name for a substance** that prevents water-soluble elements such as antibiotics and disinfectants from reaching pathogens?

- a. Cell wall
- b. Biofilm
- c. Sludge
- d. Biocarbon

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Q11: Which one of the following statements is **true** regarding bacterial spores?

- a. They are resistant to antibiotics
- b. They allow the bacteria to multiply in adverse condition
- c. They are usually formed by Gram-negative bacteria
- d. They can be identified with Gram stain

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Q12: An example of an obligate intracellular parasitic bacterium would be an organism responsible for:

- 1. Hepatitis
- 2. Q fever
- 3. Malaria
- 4. Epidemic typhus

- a. 2,3
- b. 2,4
- c. 3,4
- d. 1,2

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Q13: Anaerobic cultures should be used for any of the following sites **except**:

- a. Blood
- b. Transtracheal aspirate
- c. Spinal fluid
- d. Sputum

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Q14: Gram stains classify an organism as Gram-positive or Gram-negative. The determinant factors for Gram stains are cell wall components of:

- a. Peptidoglycans
- b. Lipids
- c. Polysaccharides
- d. Mycolic acids

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Q15: In a Gram stain procedure, Gram-positive stain purple because:

- a. They have a lipopolysaccharide layer in the cell wall that is decolorized with alcohol
- b. Their cell walls contain long-chain fatty acids that take up crystal violet easily
- c. They have a thick peptidoglycan cell wall that retains the primary stain during alcohol decolorization
- d. Gram-staining is simple staining, so the only stain used is crystal violet

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Q16: All of the following organisms can penetrate the intact epithelium of the conjunctiva or cornea **except**:

- a. Staphylococcus aureus
- b. Streptococcus pneumoniae
- c. Neisseria meningitidis
- d. Neisseria gonorrhoeae

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Q17: Which of the following is NOT a mechanical barrier to infection?

- a. Intact skin
- b. Mucous membranes
- c. Secretions
- d. Cilia



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Recommended Reading & Homework

- Dive deeper into this material if the organisms are challenging
- If there are a lot of questions around what we studied in the session

APIC Text Subscription

☐ Chapter 24 Microbiology Basics	☐ Chapter 78 Enterococci
☐ Chapter 25 Laboratory Testing and Diagnostics	☐ Chapter 79 Environmental Gram-Negative Bacilli
☐ Chapter 77 Enterobacteriaceae	☐ Chapter 81 A: Diarrheal Diseases: Viral B: Diarrheal Diseases: Bacterial C: Diarrheal Diseases: Parasitic



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Next Steps

- **Got Questions?** Join us for Office Hours every Thursday at 1:00pm PT
- **Missed a session or want to review the material again?**
Access Padlet Resource Library



Padlet Link:
[OR ACE Program Padlet](#)





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Contact Us

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