

Principles of Antimicrobial Action and Resistance

Clinical Bacteriology · Answer Key · 15 Questions

1. Which agents inhibit bacterial growth without directly killing the organism?

- A) Bactericidal agents
- B) Bacteriostatic agents**
- C) Broad-spectrum antibiotics
- D) Synthetic agents

2. What are penicillin-binding proteins (PBPs) essential for?

- A) Protein synthesis
- B) DNA replication
- C) Cell wall synthesis**
- D) Cell membrane transport

3. Which antibiotic class features a four-member nitrogen-containing ring?

- A) Glycopeptides
- B) Beta-lactams**
- C) Aminoglycosides
- D) Tetracyclines

4. What is the primary target of Daptomycin?

- A) Ribosomes
- B) Cytoplasmic membrane**
- C) DNA gyrase
- D) Cell wall

5. Which ribosomal subunit is the primary target for Aminoglycosides?

- A) 30S**
- B) 50S
- C) 70S
- D) 40S

6. What is the main clinical limitation of Chloramphenicol?

- A) Low efficacy
- B) Severe toxicity like aplastic anemia**
- C) Rapid resistance
- D) Poor bioavailability

7. Fluoroquinolones primarily interfere with which bacterial enzymes?

- A) RNA polymerase
- B) DNA gyrase and topoisomerase IV**
- C) Peptidoglycan transferase
- D) Nitroreductase

8. Metronidazole is most potent against which type of organisms?

- A) Aerobic bacteria
- B) Anaerobic and microaerophilic organisms**
- C) Gram-positive cocci
- D) Fungi

9. What is the most important mechanism for the spread of resistance between bacteria?

- A) Mutation
- B) Lateral Gene Transfer**
- C) Vertical transmission
- D) Binary fission

10. Which mechanism describes the active transport of drugs out of a bacterial cell?

- A) Enzymatic destruction
- B) Altered target site
- C) Efflux pumps**
- D) Decreased uptake

11. What is the function of beta-lactamase inhibitors?

- A) Kill bacteria directly
- B) Prevent the degradation of beta-lactam antibiotics**
- C) Inhibit protein synthesis
- D) Decrease membrane permeability

12. Which gene is associated with MRSA resistance through altered PBP2a?

- A) vanA
- B) mecA**
- C) gyrA
- D) blaTEM

13. Fosfomycin is primarily used for the treatment of which condition?

- A) Pneumonia
- B) Meningitis
- C) Uncomplicated UTIs**
- D) Endocarditis

14. What describes the extent to which a drug reaches its intended biological destination?

A) Pharmacokinetics

B) Bioavailability

C) Metabolism

D) Excretion

15. Which enzyme is the target of Sulfonamides in the folic acid pathway?

A) Dihydrofolate reductase

B) Dihydropteroate synthase

C) DNA gyrase

D) Nitroreductase