


10 – Antibacterial Drugs II: Key Points & Questions That Could Be On The Exam

Speaker: Helen Boucher, MD



INFECTIOUS DISEASE
BOARD REVIEW
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Antibacterial Drugs II: Key Points and Questions That Could Be On The Exam

Helen Boucher, MD, FACP, FIDSA
Professor of Medicine
Tufts University School of Medicine

Disclosures of Financial Relationships with Relevant Commercial Interests

- Editor
 - ID Clinics of North America
 - Antimicrobial Agents and Chemotherapy
 - Sanford Guide
- Treasurer, Infectious Diseases Society of America
- Member, ID Board, American Board of Internal Medicine
- Voting Member, Presidential Advisory Council on Combating Antibiotic Resistant Bacteria (PACCARB)

Question 1

In *Staphylococcus aureus*, the protein encoded by the *mecA* gene is which of the following:

- A Leukocidin
- B PBP 2a
- C Oxacillinase
- D IL28 TT
- E ESBL

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Question 2

Which of the following would be the best choice, among the drugs listed, to treat MSSA bacteremia

- A) Doripenem
- B) Imipenem
- C) Ceftriaxone
- D) Cefazolin
- E) Aztreonam

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β -lactam Spectrum

- Penicillins
- Semi-synthetic penicillins
- 1st gen cephalosporins
- 2nd gen cephalosporins
- 3rd gen cephalosporins
- 4th gen cephalosporins
- Carbapenems
- Monobactams



Gram-positive

Gram-negative

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Question 3

Which of the following has microbiologic and clinical activity against *Enterococci faecalis*

- A) Cefazolin
- B) Ceftriaxone
- C) Imipenem
- D) Aztreonam
- E) Piperacillin-tazobactam

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Important Resistant Gram+ Organisms

- Enterococcus
 - Resistant: All cephalosporins and monobactams
- MSSA
 - Resistant: All penicillin and monobactams
 - Ceftriaxone does NOT work well
- MRSA
 - Resistant: All beta-lactams except ceftaroline

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IV and Oral MRSA Drugs

IV	Oral
<ul style="list-style-type: none">• Vancomycin• Daptomycin• Linezolid/Tedizolid• Ceftaroline• Telavancin• Minocycline• Clindamycin• Dalbavancin/Oritavancin• Delafloxacin	<ul style="list-style-type: none">• Linezolid/Tedizolid• TMP-SMX• Doxy/minocycline• Clindamycin• Delafloxacin
	Combination Therapy <ul style="list-style-type: none">– See Chambers lecture

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Drug Regimens Active Against VRE (*faecium*)* Resistant to Vanco and Ampicillin

- Linezolid (FDA approved)
- Daptomycin plus probably one of following
 - Ampicillin or ceftaroline or ceftriaxone
- Ampicillin if amp MIC ≤ 32 mcg/ml
- Ampicillin-sulbactam
 - if resistance due to beta lactamase production
- Not Quinupristin/dalfopristin-FDA approval withdrawn for VRE
- For cystitis (not pyelonephritis)
 - Nitrofurantoin
 - Fosfamyacin

**E faecalis* resistant to vanco are often susceptible to ampicillin

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Question 4

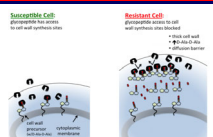
What is the mechanism of action for vancomycin resistance for *Staphylococcus aureus*

A) Mec A
B) Efflux pump
C) Change in vancomycin binding site on peptidoglycan
D) Porin

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Vancomycin Resistance

- VISA
 - Thick walls, generous binding sites...
- Vancomycin resistance
 - Not in Streptococcus
 - RARE in Staphylococcus
 - Common in Enterococcus
 - Rare in *E. faecalis* (4% in 2014)
 - Common in *E. faecium* (71% in 2014)
 - Mechanism
 - Change in vancomycin binding site on peptidoglycan



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Question 5

Eosinophilic pneumonia is a complication of which of the following:

A) Ceftaroline
B) Delafloxacin
C) Doripenem
D) Daptomycin
E) Linezolid

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Question 6

Drug interference with clotting tests are most often a complication of which of the following

- A) Vancomycin
- B) Linezolid
- C) Dalbavancin
- D) Oritavancin
- E) Tedizolid

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Question 7

- How common is vancomycin resistant *S. aureus* (VRSA) in the United States
- A) 20% isolates
- B) 10% isolates
- C) <5% isolates
- D) < 50 total isolates
- E) Zero

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Question 8

- Which of the following glycopeptides has the best activity against *C. difficile*
- A) Dalbavancin
- B) Oritavancin
- C) Telavancin
- D) Vancomycin
- E) Teicoplanin

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Question 9

Which of the following would be a bad choice to treat a urinary tract infection empirically

- A) Ciprofloxacin
- B) Levofloxacin
- C) Moxifloxacin
- D) Delafloxacin

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Question 10

A 55 year old man undergoes emergency surgery for a ruptured appendix with severe bacterial peritonitis and septic shock.

He has no antibiotic allergy or intolerances.

Which one of the following antibiotics requires concomitant metronidazole IV?

- A) Piperacillin-tazobactam
- B) Ampicillin-sulbactam
- C) Cefepime
- D) Imipenem-cilastatin-relebactam
- E) Eravacycline

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Question 11

Which of the following drugs can cause hyperkalemia

- A) Linezolid
- B) Delafloxacin
- C) Trimethoprim
- D) Daptomycin
- E) Eravacycline

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TMP-SMX Adverse Effects

- Anaphylaxis
- Skin rashes
- Bone marrow toxicity
- Hemolysis (G6PD def)
- Hepatitis
- Gastrointestinal effects
- “Nephrotoxicity”
- Fever
- Drug-drug interactions
- Hyperkalemia

TMP COMPETES FOR TUBULAR SECRETION

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Good Luck!!

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Questions, Comments?

- @hboucher3
- hboucher@tuftsmedicalcenter.org
- Helen.boucher@tufts.edu



Dr. Helen Boucher
Chief, Division of Geographic Medicine and Infectious Diseases;
Chair, Physician of Tufts Medical Center
Tufts Medical Center

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