



Quiz

1) A 33-year old healthy female presents with 2-day history of dysuria (painful urination), urinary frequency and urgency. Urine culture indicated that she has an uncomplicated urinary tract infection caused by *E. coli*. Which of the following agents will be your FIRST CHOICE for the treatment of the lady?*

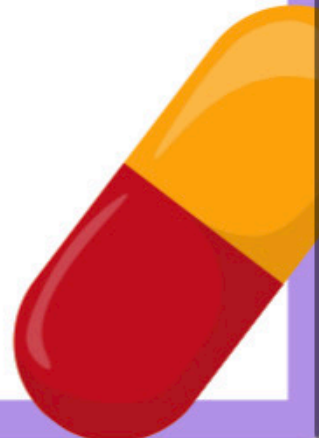
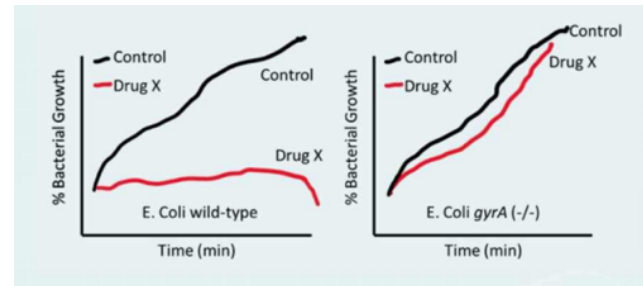
- * A) Moxifloxacin
- * B) Bacitracin
- * C) Sulfadiazine
- D) Clotrimoxazole
- * E) Nitrofurantoin

Ans: E

2) In an experiment, you were identifying the growth inhibitory effect of Drug X on two strains of *E. coli*: *E. coli* wild-type (regular) strain vs. *E. coli gyrA* knockouts (*gyrA* $-/-$ which means it is missing the gene *gyrA*) as shown in graph A and B, respectively. Based on the data shown in both figures, you highly suspect that Drug X is?*

- * A) Clarithromycin
- * B) Daptomycin
- * C) Levofloxacin.
- * D) Trimethoprim
- * E) Linezolid.

Ans: C

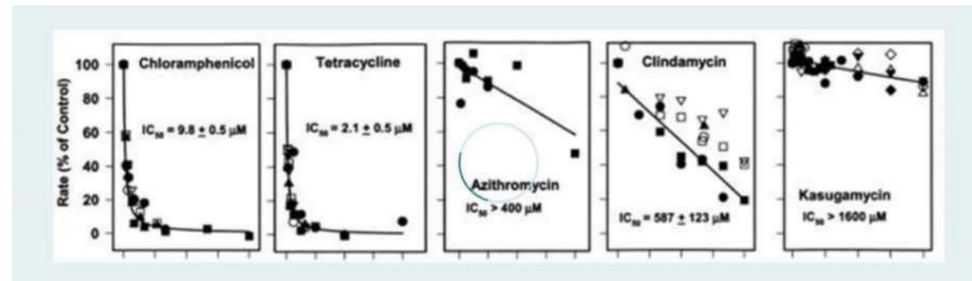




Quiz

3) The graphs in the diagram represent data collected from an experiment measuring protein synthesis of human heart mitochondria incubated with one of the indicated five antibiotics. The rate of mitochondrial protein synthesis is depicted on the y axis while drug concentration is depicted on the x axis. IC_{50} values were calculated as shown on each plot. Which of the following protein synthesis inhibitors do you expect to be associated with the most adverse reactions/toxicity?

- A. Azithromycin.
- B. Chloramphenicol.
- C. Tetracycline.
- D. Kasugamycin. .
- E. Clindamycin.



Ans:C

4) A 45-year-old man presented to the emergency room with localized papulopustular eruption on his upper back. The rash was associated with great discomfort and pruritis. Cotton swab samples of the pus were sent for gram-staining and culture, but you highly suspect that the cause of infection is methicillin-resistant *S. aureus* (MRSA).

Which of the following antibiotics will you choose to start treatment while waiting for the culture results?

Ceftazidime

- * A) Amoxicillin + clavulanic acid
- * B) Nafcillin
- * C) Ciprofloxacin
- D) Clindamycin
- * E) Ceftazidime

Ans:D





Quiz

1) A 55-year-old male patient has been hospitalized for the last 3 days after suffering from severe upper gastrointestinal bleeding. While in the hospital, and possibly due to aspiration, the patient started developing fever, dyspnea, and productive cough, with pleuritic chest pain. On examination, the patient had purulent sputum and auscultatory signs of pulmonary consolidation.

Radiography showed widespread pulmonary infiltrates suggestive of MRSA infection. Your initial evaluation highly favors the possibility of nosocomial aspiration pneumonia. Which of the following antibiotics must be included in your empiric therapy regimen?

- A) Nafcillin
- B) Ceftriaxone
- C) Linezolid
- D) Cefepime
- E) Daptomycin

Ans: C



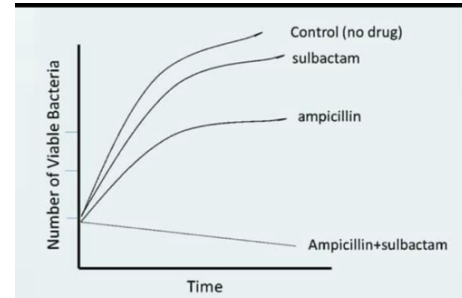


Quiz

2) The diagram represents viability results from an experiment testing the antibacterial effects of the indicated drugs against *E. coli* in vitro. The synergistic effect observed in the drug combination group is most likely due to? *

- A) Activation of gram-negative cell wall porins
- * B) Inhibition of cytosolic proteoglycan synthesis
- * C) Upregulation of penicillin-binding proteins
- D) Inhibition of bacterial beta-lactamase activity
- * E) Inhibition of proteoglycan membrane transport

Ans :D

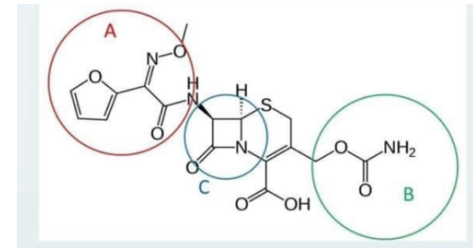


The following diagram depicts the chemical structure of cefuroxime.

Based on your understanding of the structure-effect relationship of cephalosporins, which of the following statements is correct?

- A) Group A is responsible for determining the antibacterial spectrum of cefuroxime.
- B) Group B is responsible for the activity of cefuroxime against MRSA.
- C) Group C is responsible for the extent of hepatic metabolism of cefuroxime.
- D) Group B is responsible for the susceptibility of cefuroxime to beta-lactamases.
- E) Group A is responsible for the pharmacokinetic properties of cefuroxime.

Ans:A



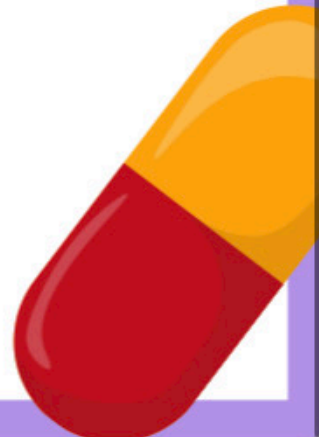
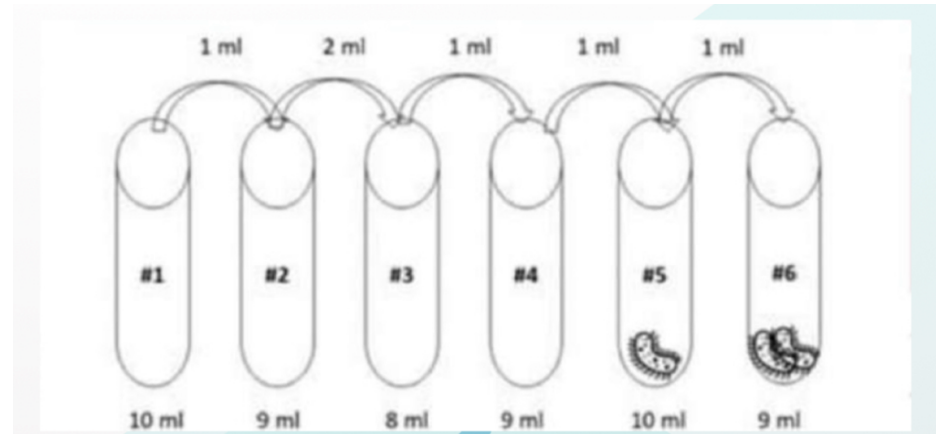


Quiz

The picture shows an MIC experiment testing the potency of the antibiotic penicillin V. Penicillin V was added to tube #1 at a concentration of 5 mM (final concentration in tube #1) and then serial dilutions were performed as shown by the arrows (each arrow represents the volume that was added to the next tube. Total volume of each tube before serial dilution is shown below). The tubes were injected with *E. coli* and incubated overnight. After incubation, visible bacterial growth was only observed in tubes #5 and #6. Which of the followings represents the MIC of penicillin V in this experiment?

- * A) 0.05 mM
- * B) 0.5 μ M
- * C) 0.01 mM
- D) 0.1 mM
- * E) 0.001 mM

Ans: C





Quiz

Which of the following adverse drug reactions precludes a patient from being rechallenged with that drug in the future? *

- * A) GI upset - clarithromycin
- * B) Skin rash - Penicillin
- c) Toxic epidermal necrolysis - sulfameth-oxazole/trimethoprim
- * D) Kidney injury - gentamicin
- * E) Pseudomembranous colitis - clindamycin

Ans: C

72-year-old man is admitted to the hospital from a nursing home with severe pneumonia. He was discharged from the hospital 1 week ago after open heart surgery. The patient has no known allergies. Which of the following regimens is most important is most appropriate for empiric coverage of *S. aureus* and *P. aeruginosa* in this patient? *

- * A) vancomycin + cefepime + ciprofloxacin
- * B) Telavancin + cefepime + ciprofloxacin
- * C) Daptomycin + cefepime + ciprofloxacin
- D) vancomycin + cefazolin + ciprofloxacin

Ans: A

