427. A common feature of bacterial and fungal cells is the presence of which of the following?
   a. nuclear membrane
      *Bacterial cells do not have a nuclear membrane; however, fungal cells do.*
   b. mitochondria
      *Bacteria do not have mitochondria, but rather has the oxidative phosphorylation apparatus on the inner surface of the plasma membrane.*
   c. sterols in the plasma membrane
      *Sterols are only present in the membrane of fungi and not bacteria.*
   d. **cell wall**
      *Both bacteria and fungi have cell walls, although the composition of the cell walls are different.*
   e. lipopolysaccharide
      *Lipopolysaccharide is present in gram negative bacteria and is not present in fungi.*
   
   Correct answer is: **d**
   
   Microorganisms; Bacteria
   Reference: page 214

426. Vascular graft infections that clinically present one or more years after the graft placement are the consequences of:
   a. bacterial translocation:
      *Translocation from the gut as a cause of temporally remote vascular graft infection is unproven and unlikely.*
   b. intercurrent bacteremic infection:
      *While bacteremia from intercurrent infections have been shown to be associated with vascular graft infections, it is an infrequent source of temporally remote vascular graft infections.*
   c. **contamination from graft placement**
      *Contamination of the graft at the time of placement is still the major cause of graft infection, even in those presenting months-to-years following the operative procedure.*
   d. Pseudomonas aeruginosa:
      *While Pseudomonas aeruginosa may be seen in temporally remote vascular graft infections, Staphylococcus sp. are far more common usually secondary to contamination from the original surgical procedure.*
   e. woven grafts:
      *All graft materials are associated with temporally remote graft infections, which for the most part are the consequences of contamination from the original operative placement.*
   
   Correct answer is: **c**
   
   Vascular Graft Infections
   Reference: page 245
411. All of the following statements about the role of fibrin in acute bacterial peritonitis are correct EXCEPT:
   a. are poorly penetrated by antibiotics
      *The dense fibrin matrix is poorly penetrated by antibiotics.*
   b. prevents bacterial dissemination
      *Bacteria which are entrapped in fibrin functionally cannot disseminate.*
   c. activates the complement cascade
      *Fibrin itself does not activate the complement cascade, although the microorganisms that may be responsible for activation of coagulation may activate the complement cascade as well.*
   d. impairs bacterial clearance
      *When bacteria are encased in the fibrin matrix, they are relatively protected against host phagocytic activity.*
   e. important for loculation
      *Fibrin is critical for the loculation process of abscess formation.*
   Correct answer is: c
   Reference: page 227

412. Suppurative thrombophlebitis is most commonly the consequence of:
   a. *Staphylococcus aureus*
      *This is the most common bacterial species of suppurative thrombophlebitis.*
   b. *Staphylococcus epidermidis*
      *While Staphylococcus epidermidis is common for intravascular device infection, it rarely results in suppurative thrombophlebitis which then necessitates excision of the infected vein.*
   c. *E. coli*
      *While E. coli may cause intravascular device infection, it is an infrequent cause of suppurative thrombophlebitis.*
   d. *Enterococcus faecalis*
      *While the enterococci may certain cause intravascular device infection, it rarely causes suppurative thrombophlebitis.*
   e. *Candida albicans*
      *While the Candida species will be responsible for intravascular device infection, they rarely cause suppurative thrombophlebitis.*
   Correct answer is: a
   Reference: page 217
409. Pneumococcal pneumonia in the postoperative surgical patient will be identified:

- **after ventilatory-dependence**
  
  Patient who are supported on the ventilator will usually be infected with environmental microbes such as *Pseudomonas* or *Serratia* and not endogenous microbes like the pneumococcus.

- **after antacid utilization**
  
  Antacid utilization is associated with gram negative nosocomial infection and *rarely* pneumococcal infection.

- **after short preoperative hospitalization**
  
  With short preoperative hospitalization and no antecedent antibiotic therapy, the pneumococcus will be a common organism in postoperative pneumonia.

- **among chronic lung disease patients**
  
  While chronic lung disease patients will have increased rates of postoperative pneumonia and will have pneumococcus as a pathogen, it is only true when the preoperative hospitalization has been short and no antecedent antibiotics have been used.

- **after beta-lactam drug therapy**
  
  Most beta-lactam antibiotics have activity against the pneumococcus and accordingly, pneumococcus will not appear as a pulmonary pathogen after treatment with this group of antibiotics.

Correct answer is: **c**

Nonventilator-Associated Pneumonia.

Reference: page 235

410. A trauma patient with a head injury has a vomiting episode and a severe aspiration event during the initial 24 hrs of management. Intubation is immediately required because of hypoxemia. Pneumonia which develops on the third day of ventilatory support (Pseudomonas aeruginosa) likely came from which bacterial source?

- **gastric microflora**
  
  While gastric colonization with *Pseudomonas* is within the realm of possibility, it is more likely that the pathogen has come from the ICU environment.

- **oropharyngeal colonization**
  
  While oropharyngeal colonization with *Pseudomonas* is within the realm of possibility, it is more likely that the pathogen has come from the ICU environment.

- **normal lung colonization**
  
  *Pseudomonas* is not a normal colonist of the airway, unless the airway become colonized from the environment of the ICU.

- **ICU environment**
  
  The ICU environment secondarily contaminates the airway after aspiration, and not contaminating events from the aspiration contents.

- **intubation process**
  
  While the introduction of contamination into the airway is possible with the intubation process, the environment of the ICU is the most likely source.

Correct answer is: **d**

Aspiration Associated Pneumonia.

Reference: page 237
334. Abdominal abscess is most commonly the consequence of:
   a. retained hematoma
   Retained hematoma can be an important variable in the pathogenesis of abscess, but the quantity of bacterial contamination is the most significant variable.
   b. dead tissue
   Dead tissue can be an important variable in the pathogenesis of intraabdominal abscess, but the quantity of bacterial contamination is the most significant variable.
   c. defective phagocytosis
   While defective phagocytic capability and defects in other elements of host defense may be important variables in the pathogenesis of intraabdominal abscess, the quantity of bacterial contamination is the most significant variable.
   d. excessive contamination
   The quantity of bacterial contamination is the most important variable in the pathogenesis of intraabdominal abscess.
   e. occluded lymphatic fenestrations
   While occlusion of the lymphatic fenestrations of the diaphragm by fibrin and inflammatory debris may have some significance in the development of intraabdominal abscess, the quantity of bacterial contamination is the most important variable.
   Correct answer is: d
   Intraabdominal abscess.
   Reference: page 231

446. A preferred fuel of colonocytes under physiological conditions of stress is:
   a. glucose
   Glucose is not a preferred substrate for colonocytes under stress conditions.
   b. arginine
   While arginine is identified as an important amino acid in stress conditions, it is not a preferred substrate for colonocytes.
   c. branched-chain amino acids
   Branched-chain amino acids are preferred substrates for skeletal muscle, not colonocytes.
   d. glutamine
   Glutamine is a preferred substrate of enterocytes, not colonocytes.
   e. short chain fatty acids
   Short chain fatty acids are the preferred substrate for the colonocyte during stress.
   Correct answer is: e
   Bacteremia-Septic Response without Infection
   Reference: page 246
1246. The strategy of probiotic therapy is designed to:
   a. Selectively eliminate pathogens from the gut
      *Selective gut decontamination is the strategy that attempts to suppress potential gut pathogens.*
   b. Maintain high therapeutic antibiotic concentrations
      *Probiotic therapy has nothing to do with antibiotic administration.*
   c. Provide positive enteral nutrition
      *Prebiotic therapy is the strategy to give nutrients which foster normalization of the gut microflora. Probiotic therapy is to actually give the microorganisms themselves.*
   d. **Administer microorganisms to the patient**
      *Probiotic therapy actually results in the administration of microorganisms to reestablish a normalized gut colonization.*
   e. Preserve gut anaerobes
      *Probiotic therapy actually attempts to restore gut anaerobes that have been eliminated from prior antibiotic therapy.*

Correct answer is: d

Reference: page 246

1250. The virulence factor that is unique to Group A Streptococci and principally functions by retarding phagocytosis is:
   a. Coagulase
      *Coagulase is most commonly identified with Streptococcus aureus although it can be seen in other bacterial species.*
   b. **M Protein**
      *Surface M-Protein on Group A Streptococci are important determinants of specific virulence of the isolated strain.*
   c. Hemolysin
      *This virulence factor can be seen in any of a number of different bacterial species.*
   d. Endotoxin
      *Endotoxin is only seen in gram negative enteric microbes. It is not seen in Streptococci.*
   e. Superoxide dismustase
      *Superoxide dismustase is not a characteristic feature of Streptococci.*

Correct answer is: b

Reference: page 217