

United States Medical Licensing Examination (USMLE) Step 3 Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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SAMPLE

Questions

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- 1. What is a common side effect of the medication indinavir?**
 - A. Liver failure**
 - B. Acute pancreatitis**
 - C. Crystal-induced nephropathy**
 - D. Hypersensitivity syndrome**
- 2. What is a typical feature of a drug rash?**
 - A. It usually presents immediately after drug exposure**
 - B. It is always associated with systemic symptoms**
 - C. It can appear several days after drug exposure**
 - D. It results in extensive skin loss**
- 3. What is the initial treatment for Ramsay Hunt syndrome?**
 - A. Oral antivirals**
 - B. Intravenous acyclovir**
 - C. Corticosteroids**
 - D. Antibiotics**
- 4. Which of the following is a cause of microangiopathic hemolytic anemia (MAHA)?**
 - A. Iron deficiency anemia**
 - B. Disseminated intravascular coagulation (DIC)**
 - C. Vitamin K deficiency**
 - D. B12 deficiency**
- 5. What condition is associated with Strep bovis bacteremia?**
 - A. Heart failure**
 - B. Colonic pathology**
 - C. Diabetes mellitus**
 - D. HIV infection**
- 6. Which condition can MRI be used to assess directly, according to the information provided?**
 - A. Acute appendicitis**
 - B. Aseptic necrosis of the femoral head**
 - C. Peptic ulcers**
 - D. Urinary tract infections**

- 7. Which pathogens are known for their association with bioterrorism-related pneumonia?**
- A. Pneumocystis jirovecii and S. pneumoniae**
 - B. Bacillus anthracis and Yersinia pestis**
 - C. Histoplasma and Aspergillus**
 - D. Cryptococcus and P. aeruginosa**
- 8. What is the definitive treatment for lymphogranuloma venereum caused by Chlamydia trachomatis?**
- A. Acyclovir**
 - B. Doxycycline**
 - C. Ciprofloxacin**
 - D. Azithromycin**
- 9. Which of the following is a result of vitamin B6 deficiency?**
- A. Seborrheic dermatitis**
 - B. Glucose intolerance**
 - C. Neuropathy with myopathy**
 - D. Hemolytic anemia**
- 10. Which condition is commonly associated with Actinomyces infections?**
- A. Autoimmune disorders**
 - B. Normal immune system with facial or dental trauma**
 - C. Chronic lung disease**
 - D. Immunosuppression**

Answers

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1. C
2. C
3. B
4. B
5. B
6. B
7. B
8. B
9. A
10. B

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Explanations

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1. What is a common side effect of the medication indinavir?

- A. Liver failure**
- B. Acute pancreatitis**
- C. Crystal-induced nephropathy**
- D. Hypersensitivity syndrome**

Indinavir, a protease inhibitor used in the treatment of HIV, has a well-known side effect profile, and one of the most significant concerns is the potential for crystal-induced nephropathy. This occurs due to the precipitation of indinavir crystals in the renal tubules, which can lead to renal impairment or obstruction. Patients taking indinavir are at risk for nephrolithiasis (kidney stones), which can manifest as flank pain, hematuria, or urinary obstruction, potentially resulting in Acute Kidney Injury. The mechanism behind this side effect involves the drug's solubility profile; indinavir has low solubility in urine, especially when patients become dehydrated, which increases the concentration of the drug and facilitates crystal formation. Proper hydration is often recommended to mitigate this risk in patients taking indinavir. By understanding this side effect, healthcare providers can better counsel patients on the importance of maintaining adequate fluid intake while on indinavir therapy to minimize the risk of nephropathy.

2. What is a typical feature of a drug rash?

- A. It usually presents immediately after drug exposure**
- B. It is always associated with systemic symptoms**
- C. It can appear several days after drug exposure**
- D. It results in extensive skin loss**

A typical feature of a drug rash is that it can appear several days after drug exposure. This delayed onset is characteristic of many drug reactions, particularly those that involve immune-mediated mechanisms. In such cases, the body may take time to process the drug and mount an immune response, resulting in a rash that often emerges days or even weeks after the initial exposure. Drug rashes can manifest in various forms, including maculopapular eruptions, hives, or more severe forms of dermatitis, and their timing can vary considerably. Immediate reactions are often associated with anaphylaxis, which is different from the delayed rashes primarily caused by hypersensitivity reactions. Additionally, while some drug rashes can present with accompanying systemic symptoms, they do not always necessitate these symptoms, meaning that rashes can occur in isolation without systemic involvement. Serious skin reactions that result in extensive skin loss are more indicative of conditions such as Stevens-Johnson syndrome or toxic epidermal necrolysis, which are not typical presentations for most drug rashes.

3. What is the initial treatment for Ramsay Hunt syndrome?

- A. Oral antivirals
- B. Intravenous acyclovir**
- C. Corticosteroids
- D. Antibiotics

Ramsay Hunt syndrome, caused by the reactivation of the varicella-zoster virus in the facial nerve, typically results in facial paralysis and a rash in the ear or mouth. The initial treatment for Ramsay Hunt syndrome focuses on addressing the viral infection and the inflammatory response. The most effective approach in managing Ramsay Hunt syndrome includes the use of corticosteroids. Corticosteroids help reduce inflammation, promote recovery from facial nerve damage, and decrease the likelihood of complications such as persistent facial weakness. Although oral antivirals can be helpful in some cases, especially when initiated early, they are not the first-line treatment on their own. Intravenous acyclovir is generally recommended for severe cases or those with immunocompromised patients but is not typically the initial treatment. Antibiotics are not relevant in the treatment of a viral condition like Ramsay Hunt syndrome. Therefore, while intravenous acyclovir serves an important role in certain scenarios of Ramsay Hunt syndrome, the primary treatment for most patients focuses on corticosteroids to manage inflammation and support recovery.

4. Which of the following is a cause of microangiopathic hemolytic anemia (MAHA)?

- A. Iron deficiency anemia
- B. Disseminated intravascular coagulation (DIC)**
- C. Vitamin K deficiency
- D. B12 deficiency

Microangiopathic hemolytic anemia (MAHA) is characterized by the destruction of red blood cells as they pass through small blood vessels, often due to the presence of fibrin strands and the formation of microthrombi. This process leads to fragmentation of red blood cells and can result from various underlying conditions. Disseminated intravascular coagulation (DIC) is a complex disorder that can lead to widespread activation of the coagulation cascade, resulting in the formation of small clots throughout the circulation. In DIC, the excessive clot formation consumes clotting factors and platelets, leading to a state of both clotting and bleeding. As the red blood cells traverse these small clots, they can become fragmented, leading to the hemolytic anemia that is characteristic of MAHA. The other options presented do not primarily cause MAHA. Iron deficiency anemia is primarily a microcytic anemia due to a lack of iron and does not involve the mechanical destruction of red blood cells by microvascular damage. Vitamin K deficiency and vitamin B12 deficiency also lead to different forms of anemia, such as coagulopathies or macrocytic anemia, respectively, without the hemolytic component seen in MAHA. Thus, DIC is recognized

5. What condition is associated with Strep bovis bacteremia?

- A. Heart failure
- B. Colonic pathology**
- C. Diabetes mellitus
- D. HIV infection

Streptococcus bovis bacteremia is notably associated with colonic pathology, particularly the presence of colonic tumors, such as adenocarcinomas, as well as colonic polyps and inflammatory bowel disease. The organism is part of the normal flora of the gastrointestinal tract, and its presence in the bloodstream often serves as an indicator of underlying disease within the colon. When Strep bovis is isolated in a patient with bacteremia, further investigation into the gastrointestinal tract is warranted due to the significant risk of associated malignancies. This connection underscores the importance of screening for colorectal cancer in patients with Strep bovis bacteremia. While the other options presented may be relevant to various medical conditions, they do not have the same direct association with Strep bovis bacteremia. Heart failure, diabetes mellitus, and HIV infection do not exhibit a characteristic link to this specific type of bacteremia, making colonic pathology the most pertinent and relevant condition in this context.

6. Which condition can MRI be used to assess directly, according to the information provided?

- A. Acute appendicitis
- B. Aseptic necrosis of the femoral head**
- C. Peptic ulcers
- D. Urinary tract infections

Magnetic resonance imaging (MRI) is a highly sensitive imaging modality that is particularly effective for assessing soft tissues and certain bone conditions. Aseptic necrosis of the femoral head, also known as avascular necrosis, is a condition where there is bone death due to the loss of blood supply. MRI is excellent for visualizing the changes in bone marrow and can detect early changes in the femoral head before they become apparent on X-rays. In the specific case of aseptic necrosis, MRI can reveal the presence of edema within the bone, changes to the contour of the femoral head, and other marrow alterations that are characteristic of the condition. This capability allows for early diagnosis and management to prevent further joint degeneration. Other conditions mentioned, such as acute appendicitis, peptic ulcers, and urinary tract infections, are traditionally assessed using ultrasound or CT scans, rather than MRI. Embedded structures like the appendix or signs of inflammation associated with appendicitis are better visualized through CT. Similarly, peptic ulcers are commonly diagnosed with endoscopy or barium studies, while urinary tract infections are assessed via ultrasound or CT for any potential complications, such as abscesses or obstruction. MRI does not serve as the first-line or most effective

7. Which pathogens are known for their association with bioterrorism-related pneumonia?

- A. *Pneumocystis jirovecii* and *S. pneumoniae*
- B. *Bacillus anthracis* and *Yersinia pestis***
- C. *Histoplasma* and *Aspergillus*
- D. *Cryptococcus* and *P. aeruginosa*

Bacillus anthracis and *Yersinia pestis* are pathogens that have significant historical and clinical relevance in the context of bioterrorism-related pneumonia. *Bacillus anthracis*, the causative agent of anthrax, can be aerosolized and inhaled, leading to inhalational anthrax, which can present with pneumonia-like symptoms, including fever, cough, and respiratory distress. This form of anthrax has been a concern for bioterrorism due to its potential for causing severe illness and high mortality if not treated promptly. *Yersinia pestis*, the bacterium responsible for plague, can also be weaponized and is known to cause pneumonia in its pneumonic form, which can be transmitted person-to-person through respiratory droplets. The threat of pneumonic plague as a bioterrorism agent lies in its ability to spread quickly and cause outbreaks. While the other options listed include important pathogens, they are not primarily associated with bioterrorism. *Pneumocystis jirovecii* is more related to immunocompromised patients, such as those with HIV/AIDS. Common pneumonia pathogens like *Streptococcus pneumoniae* are ubiquitous in the community rather than associated with bioterrorism. Fungal pathogens like *Histoplasma* and *Aspergillus*

8. What is the definitive treatment for lymphogranuloma venereum caused by *Chlamydia trachomatis*?

- A. Acyclovir
- B. Doxycycline**
- C. Ciprofloxacin
- D. Azithromycin

The definitive treatment for lymphogranuloma venereum (LGV), caused by *Chlamydia trachomatis*, is doxycycline. This condition is a specific type of sexually transmitted infection resulting from certain serovars of *Chlamydia trachomatis* that leads to genital ulcers and lymphadenopathy, primarily affecting men who have sex with men. Doxycycline is a tetracycline antibiotic that has proven effective in treating LGV due to its ability to target the bacterial cell wall and inhibit protein synthesis. It is typically administered for a duration of 21 days, which is important for ensuring complete resolution of the infection and minimizing the risk of complications, such as chronic lymphadenitis. Other treatment options exist but are less commonly used as first-line therapies. Azithromycin, for example, is another option that can be effective; however, it is generally considered for those who cannot tolerate doxycycline or have other contraindications. Acyclovir is an antiviral medication used to treat infections caused by viruses (like herpes), and ciprofloxacin is a fluoroquinolone antibiotic that is not the preferred treatment for LGV. Hence, doxycycline stands out as the primary and most effective treatment for this specific condition.

9. Which of the following is a result of vitamin B6 deficiency?

- A. Seborrheic dermatitis**
- B. Glucose intolerance**
- C. Neuropathy with myopathy**
- D. Hemolytic anemia**

Vitamin B6, also known as pyridoxine, plays a crucial role in various physiological functions, including amino acid metabolism, neurotransmitter synthesis, and the production of hemoglobin. A deficiency in vitamin B6 can lead to a variety of clinical manifestations. One notable skin condition associated with this deficiency is seborrheic dermatitis, which is characterized by scaling, redness, and inflammation often found on areas rich in sebaceous glands. The connection between vitamin B6 deficiency and seborrheic dermatitis is well-documented; the skin lesions are thought to arise due to the role of B6 in maintaining skin health and barrier function. The deficiency affects the synthesis of key components necessary for skin repair and regeneration, thereby leading to dermatitis. Considering the other options, glucose intolerance is more commonly associated with deficiencies in other vitamins, such as B1 (thiamine) or B3 (niacin), rather than B6. Neuropathy with myopathy can be linked to multiple vitamin deficiencies or other medical conditions, but vitamin B6 deficiency usually presents with specific neuropathies rather than myopathy. Hemolytic anemia is primarily associated with deficiencies in vitamin B12 or folate, as these are essential for effective erythropoiesis. While

10. Which condition is commonly associated with Actinomyces infections?

- A. Autoimmune disorders**
- B. Normal immune system with facial or dental trauma**
- C. Chronic lung disease**
- D. Immunosuppression**

Actinomyces infections, particularly *Actinomyces israelii*, are often associated with facial or dental trauma in individuals with a normal immune system. These bacteria are part of the normal flora of the mouth and can become opportunistic pathogens when there is a breach in the mucosal barrier, such as from dental procedures, trauma, or abscess formation. In the absence of significant immunosuppression or underlying systemic disease, the typical mode of infection occurs when the bacteria invade tissues following trauma or as a complication of dental infections, leading to conditions such as cervicofacial actinomycosis. Hence, a patient with a healthy immune system who experiences facial or dental trauma is at a higher risk for developing an Actinomyces infection. Conditions such as autoimmune disorders, chronic lung disease, and immunosuppression do not specifically predispose individuals to Actinomyces infections in the same way as trauma does in patients with an intact immune system. These other conditions might increase susceptibility to various infections, but Actinomyces is particularly linked with trauma-related cases.