

# USMLE stumpers help med students prep

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Some of our most popular stories are ones that test medical students' knowledge in preparation for the United States Medical Licensing Examination® (USMLE®) Step 1 and Step 2. These well-read articles feature frequently missed questions and an expert video explanation of the answer from Kaplan Medical.

## USMLE® Step 1 prep

**Drawing a conclusion from a drug study.** An investigator is evaluating the effects of new synthetic drugs on arteriolar resistance. Drug X maximally increases vascular resistance by 50 percent at a dose of 20 mg/mL. Drug Y maximally increases vascular resistance by 75 percent at a dose of 40 mg/mL. Which conclusions can be drawn from this study?

**Elevation of bone metabolites with osteoblastic lesions.** A 75-year-old man comes to the physician because of nocturia, urinary urgency and a feeling that he cannot completely empty his bladder. He voids six times per day and four times per night. He has a strong desire to void, and when he reaches the toilet can only void with a weakened stream with straining. Digital rectal examination shows a firm, enlarged prostate measuring approximately 30 grams. Post-void residual by ultrasound is 300 mL. Bone scan shows multiple osteoblastic lesions in the vertebral bodies. Elevation of which bone metabolites is most strongly associated with these lesions?

**Interpreting investigational study data.** An investigational oral contraceptive causes less weight gain than other oral contraceptives because it contains a unique progestin that blocks mineralocorticoid receptors. One hundred consecutive female participants are instructed to take 21 days of active pills, starting at Day 0, containing the progestin and ethinyl estradiol, followed by seven days of placebo. Based on the data shown, which parameter is most likely being measured?

## USMLE® Step 2 prep

**Diagnosis of a breast lump.** A 27-year-old immigrant from El Salvador has a 14 x 12 x 9-cm mass in her left breast. It has been present for seven years and has slowly grown to its present size. Her grandmother has breast cancer and her father has prostate cancer. Physical examination shows that the mass is firm, nontender, rubbery and completely movable, and it is not attached to the overlying skin or the chest wall. There are no palpable axillary nodes or skin ulceration. Which is the most likely diagnosis?

**What's next best step in management of chest pain.** A 59-year-old ranch hand presents to the outpatient department with chest pain. Over the past eight months, he has noticed a dull, central chest pain that radiates to his left arm and jaw while walking. The pain subsides after about two minutes of rest but quickly returns upon walking again. This is severely affecting his work, and he is concerned that he will lose his job because of poor productivity. His vital signs are temperature 37.0°C (98.6°F), pulse 74/min and blood pressure 135/82 mm Hg.

Stress test reveals ST-segment depression in leads I, aVL, V4, V5 and V6. Aspirin, nitrates and metoprolol are initiated. A 12-hour fasting serum LDL cholesterol concentration is 140 mg/dL. He is also started on atorvastatin and advised to implement a low-fat diet. Two months later the patient returns and is still experiencing chest pain during exercise. However, he states that his productivity at the farm has increased. His resting pulse is 58/min. Echocardiogram reveals an ejection fraction 55 percent. What is the next best step in management?