
The Journal of Bone & Joint Surgery
Continuing Medical Education

CME

Review Questions

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- 1. Bulk autologous femoral head bone grafts used in association with uncemented sockets for reconstruction in patients with developmental hip dysplasia were associated with:**
- a high rate of infection at the site of the prosthetic hip
 - good acetabular component fixation and good clinical results in the majority of patients**
 - complete bone graft resorption in most cases
 - a high rate of dislocation of the prosthetic hip
 - difficulty in obtaining good acute fixation of the acetabular component but good outcomes in patients in whom good fixation was obtained
- Spangehl MJ, Berry DJ, Trousdale RT, Cabanela ME.** Uncemented acetabular components with bulk femoral head autograft for acetabular reconstruction in developmental dysplasia of the hip. Results at five to twelve years. *J Bone Joint Surg Am.* 2001;83:1484-9.
- 2. During percutaneous pinning of the proximal part of the humerus, which of the following is advised during insertion of the greater tuberosity pins to minimize the risk of iatrogenic injury to the axillary nerve and the posterior humeral circumflex artery?**
- internal rotation of the shoulder and pin penetration to a point along the medial aspect of the humeral shaft ≥ 20 mm from the inferior extent of the humeral head
 - internal rotation of the shoulder and pin penetration to a point along the medial aspect of the humeral shaft < 20 mm from the inferior extent of the humeral head
 - external rotation of the shoulder and pin penetration to a point along the medial aspect of the humeral shaft ≥ 20 mm from the inferior extent of the humeral head**
 - external rotation of the shoulder and pin penetration to a point along the medial aspect of the humeral shaft < 20 mm from the inferior extent of the humeral head
 - neutral rotation of the shoulder and avoidance of pin penetration of the medial aspect of the humeral shaft
- Rowles DJ, McGrory JE.** Percutaneous pinning of the proximal part of the humerus. An anatomic study. *J Bone Joint Surg Am.* 2001;83:1695-700.
- 3. Which of the following features is more suggestive of streptococcal necrotizing myositis than pyomyositis?**
- a high fever of 41°C
 - neutropenia
 - early and rapid development of severe pain and tenderness**
 - subcutaneous gas seen on plain radiographs
 - necrosis of overlying skin
- Tang WM, Wong JWK, Wong LLS, Leong JCY.** Streptococcal necrotizing myositis: the role of magnetic resonance imaging. A case report. *J Bone Joint Surg Am.* 2001;83:1723-6.
- 4. Kernicterus in newborn or premature infants treated with sulfonamides is due to:**
- enhanced synthesis of bilirubin
 - displacement of bonded bilirubin from albumin**
 - inhibition of bilirubin degradation
 - inhibition of urinary excretion of bilirubin
 - inflammation of the bile duct
- Mader JT, Wang J, Calhoun JH.** Instructional Course Lecture, the American Academy of Orthopaedic Surgeons. Antibiotics activities and toxicities and length of antibiotic therapy for musculoskeletal infections. *J Bone Joint Surg Am.* 2001;83:1878-90.
- 5. Which of the following statements most accurately describes the current status of the treatment of idiopathic stiffness following total knee arthroplasty?**
- a combined program of aggressive active and passive motion is superior to surgery
 - inflation of the knee joint with saline solution containing steroids and manipulation of the knee under anesthesia is superior to other methods
 - isolated tibial insert exchange and arthrolysis provides the only reliable results
 - complete revision of the prosthesis is necessary
 - there is no reliable nonoperative or surgical method currently available to treat this difficult problem**
- Babis GC, Trousdale RT, Pagnano MW, Morrey BF.** Poor outcomes of isolated tibial insert exchange and arthrolysis for the management of stiffness following total knee arthroplasty. *J Bone Joint Surg Am.* 2001;83:1534-7.
- 6. Which of these malignant tumors is associated with the best overall survival rate?**
- dedifferentiated chondrosarcoma
 - primary chondrosarcoma
 - Ewing sarcoma
 - classic osteosarcoma
 - parosteal osteosarcoma**
- Gibbs CP Jr, Weber K, Scarborough MT.** Instructional Course Lecture, the American Academy of Orthopaedic Surgeons. Malignant bone tumors. *J Bone Joint Surg Am.* 2001;83:1728-39.
- 7. A new helpful test for diagnosis of tarsal tunnel syndrome involving physical examination of the ankle and foot has been described. The symptoms of tarsal tunnel syndrome are intensified by:**
- plantar flexion-inversion of the foot and ankle combined with plantar flexion of the toes
 - dorsiflexion-eversion of the foot and ankle combined with dorsiflexion of the toes**
 - dorsiflexion-inversion of the foot and ankle combined with dorsiflexion of the toes
 - plantar flexion-eversion of the foot and ankle with neutral position of the toes
 - neutral position of the hindfoot with eversion of the forefoot and dorsiflexion of the toes
- Kinoshita M, Okuda R, Morikawa J, Jotoku T, Abe M.** The dorsiflexion-eversion test for diagnosis of tarsal tunnel syndrome. *J Bone Joint Surg Am.* 2001;83:1835-9.
- 8. The volume of total hip replacements per-**

formed annually by the hospital and by the surgeon may influence the outcome of total hip replacement surgery. Which of the following statements correctly describes the association between hospital and surgeon volume and dislocation within ninety days after elective primary total hip replacement in the Medicare population?

- A. hospitals and surgeons who perform a LOWER volume of total hip replacements each year have LOWER dislocation rates
- B. hospitals and surgeons who perform a HIGHER volume of total hip replacements each year have LOWER dislocation rates**
- C. hospitals that perform a HIGHER volume of total hip replacements each year have LOWER dislocation rates; surgeon volume does not influence dislocation following primary elective total hip replacement
- D. Surgeons who perform a HIGHER volume of total hip replacements each year have LOWER dislocation rates; hospital volume does not influence dislocation following primary elective total hip replacement
- E. whether the surgeon is fellowship-trained is the most important variable in determining the complication rate following total hip replacement

Katz JN, Losina E, Barrett J, Phillips CB, Mahomed NN, Lew RA, Guadagnoli E, Harris WH, Poss R, Baron JA. Association between hospital and surgeon procedure volume and outcomes of total hip replacement in the United States Medicare population. *J Bone Joint Surg Am.* 2001;83:1622-9.

9. Radiography of the wrist in a thirty-year-old man reveals an incidental osteolytic lesion within the capitate. Which of the following conditions is the least likely cause?

- A. avascular necrosis
- B. nonunion with a cyst
- C. malignant tumor**
- D. simple bone cyst
- E. another benign bone tumor

Reichert B, Hoch J, Plötz W, Mailänder P, Moubayed P. Metastatic clear-cell sarcoma of the capitate. A case report. *J Bone Joint Surg Am.* 2001;83:1713-7.

10. When a treatment outcome is poor, the response of the physician providing a second opinion to the patient should be:

- A. "I think this was malpractice"
- B. "The outcome does not look good, but I will look into the situation"**
- C. "Everything looks fine"
- D. "I can't believe this is how they treated you"
- E. "Your body has an allergy to the implant and has rejected it"

Capozzi J D, Rhodes R. Ethics in practice. Poor clinical results. *J Bone Joint Surg Am.* 2001;83:1595-7.

11. Ossification of the posterior longitudinal ligament can cause compressive myelopathy requiring treatment with *en bloc* cervical

laminoplasty. Postoperative progressive ossification is the most likely long-term outcome in which group of patients?

- A. young patients with mixed or continuous ossification**
- B. young patients with segmental ossification
- C. older patients with mixed or continuous ossification
- D. older patients with segmental ossification
- E. patients who already had end-stage upper neuron disease associated with continuous ossification

Kawaguchi Y, Masahiko K, Ishihara H, Nakamura H, Sugimori K, Tsuji H, Kimura T. Progression of ossification of the posterior longitudinal ligament following *en bloc* cervical laminoplasty. *J Bone Joint Surg Am.* 2001;83:1798-802.

12. Bone osteolysis about the prosthetic components is the primary process leading to premature failure of total hip arthroplasty. Second-generation cementless arthroplasty has minimized this problem by:

- A. redesign of the acetabular component to incorporate a collar that limits migration of small particles
- B. use of new high-density polyethylenes for the acetabular bearing
- C. use of circumferential ingrowth surfaces on the proximal portion of the femoral prosthesis**
- D. redesign of the distal part of the femoral stem
- E. use of more precise broaches to produce a precision fit of the components

Archibeck MJ, Berger RA, Jacobs JJ, Quigley LR, Gitelis S, Rosenberf AG, Galante JO. Second-generation cementless total hip arthroplasty. Eight to eleven-year results. *J Bone Joint Surg Am.* 2001;83:1666-73.

13. For clinical research involving measurements of the symptoms and disabilities of athletic patients with disorders of the knee, the Activities of Daily Living scale is:

- A. reliable, but not valid or responsive
- B. valid, but not reliable or responsive
- C. reliable and valid, but not responsive
- D. valid and responsive, but not reliable
- E. reliable, valid, and responsive**

Marx RG, Jones EC, Allen AA, Altchek DW, O'Brien SJ, Rodeo SA, Williams RJ, Warren RF, Wickiewicz TL. Reliability, validity, and responsiveness of four knee-outcome scales for athletic patients. *J Bone Joint Surg Am.* 2001;83:1459-69.

14. Which of the following penicillins is resistant to penicillinase:

- A. ampicillin
- B. methicillin**
- C. carbenicillin
- D. ticarcillin
- E. benzathine penicillin G

Mader JT, Wang J, Calhoun JH. Instructional Course Lecture, the American Academy of Orthopaedic Surgeons. Antibiotics activities and toxicities and length of antibiotic therapy for musculoskeletal infections. *J Bone Joint Surg Am.* 2001;83:1878-90.

15. Which statement best describes the comparison of the subjective outcome following arthrodesis with that following ligament reconstruction and tendon interposition for the treatment of thumb carpometacarpal osteoarthritis?

- A. results of ligament reconstruction and tendon interposition are superior to those of arthrodesis with regard to pain, function, and overall satisfaction
- B. results of arthrodesis are superior to those of ligament reconstruction and tendon interposition with regard to pain, function, and overall satisfaction
- C. **results of arthrodesis are similar to those of ligament reconstruction and tendon interposition with regard to pain, function, and overall satisfaction**
- D. while ligament reconstruction and tendon interposition is superior to arthrodesis with regard to pain relief, arthrodesis is superior with regard to functional improvement
- E. while ligament reconstruction and tendon interposition is superior to arthrodesis with regard to pain relief and functional improvement, the two procedures are equal with regard to overall patient satisfaction

Hartigan BJ, Stern PJ, Kiefhaber TR. Thumb carpometacarpal osteoarthritis: comparison of arthrodesis and ligament reconstruction and tendon interposition. *J Bone Joint Surg Am.* 2001;83:1470-8.

16. Aneurysmal bone cysts larger than 5 cm that exhibit large areas of destruction and threaten the integrity of the acetabulum or sacroiliac joint are best managed by:

- A. intralesional curettage
- B. selective arterial embolization
- C. **preoperative arterial embolization, excision-curettage, and bone-grafting**
- D. radiation therapy
- E. preoperative radiation followed by intralesional curettage

Papagelopoulos PJ, Choudhury SN, Frassica FJ, Bond JR, Unni KK, Sim FH. Treatment of aneurysmal bone cysts of the pelvis and sacrum. *J Bone Joint Surg Am.* 2001;83:1674-81.

17. Comparison of the long-term results of ceramic-on-polyethylene bearing surfaces with those of metal-on-polyethylene bearing surfaces in total hip arthroplasty has shown that ceramic-on-polyethylene has:

- A. increased loosening rates
- B. increased osteolysis rates
- C. increased revision rates
- D. **decreased wear rates**
- E. decreased survival rates

Urban JA, Garvin KL, Boese CK, Bryson L, Pedersen DR, Callaghan JJ, Miller RK. Ceramic-on-polyethylene bearing surfaces in total hip arthroplasty. Seventeen to twenty-one-year results. *J Bone Joint Surg Am.* 2001;83:1688-94.

18. Which of the following statements regarding the risk of postoperative dislocation of a type-3 Kudo unlinked total elbow prosthesis is most correct?

- A. complete transection of the ulnar collateral ligament substantially increases the risk
- B. complete transection of the radial collateral ligament substantially increases the risk
- C. excision of the radial head substantially increases the risk
- D. preservation of the coronoid process is essential to prevent dislocation
- E. **none of the above factors play a significant role in postoperative instability**

Tanaka N, Kudo H, Iwano K, Sakahashi H, Sato E, Ishii S. Kudo total elbow arthroplasty in patients with rheumatoid arthritis. A long-term follow-up study. *J Bone Joint Surg Am.* 2001;83:1506-13.

19. Type-II (beta) errors in the analysis of a randomized prospective clinical trial are best described by the following statement:

- A. **the probability of concluding that there is no difference between two study groups when a difference actually exists (i.e., a false-negative finding)**
- B. the probability of concluding that there is a difference between two study groups when no difference actually exists (i.e., a false-positive finding)
- C. the probability of concluding that there is a difference between two study groups when a difference actually exists
- D. the probability of concluding that there is no difference between two study groups when no difference actually exists
- E. the probability of detection bias being introduced into the study

Lochner HV, Bhandari M, Tornetta P 2nd. Type-II error rates (beta errors) of randomized trials in orthopaedic trauma. *J Bone Joint Surg Am.* 2001;83:1650-5.

20. Which of the following clinical and laboratory findings is not a manifestation of Noonan syndrome?

- A. **chromosomal abnormality**
- B. cubitus valgus
- C. webbing of the neck
- D. thoracic scoliosis and lordosis
- E. malignant hyperthermia

C-K Lee, Chang B-S, Hong Y-M, Yang SW, Lee C-S, Seo J-B. Spinal deformities in Noonan syndrome. A clinical review of sixty cases. *J Bone Joint Surg Am.* 2001;83:1503-5.

21. A six-year-old boy with sickle-cell anemia has a two-day history of pain over the middle of the right tibia with no history of trauma. The most useful study to help differentiate between bone infarction and acute osteomyelitis is:

- A. erythrocyte sedimentation rate
- B. plain radiography
- C. computerized tomography
- D. **sequential radionuclide bone-marrow and**

bone scans

E. magnetic resonance imaging

Skaggs DL, Kim SK, Green NW, Harris D, Miller JH. Differentiation between bone infarction and acute osteomyelitis in children with sickle-cell disease with use of a sequential radionuclide bone-marrow and bone scans. *J Bone Joint Surg Am.* 2001;83:1810-3.

22. Pathogens in musculoskeletal infection that are often resistant to multiple different antimicrobial agents include all of the following except:

- A. *Staphylococcus aureus*
- B. *Staphylococcus epidermidis*
- C. enterococci
- D. *Pseudomonas aeruginosa*
- E. **Group-A streptococci**

Osmon DR. Instructional Course Lecture, the American Academy of Orthopaedic Surgeons. Antimicrobial resistance: guidelines for the practicing orthopaedic surgeon. *J Bone Joint Surg Am.* 2001;83:1891-901.

23. Following revision total hip arthroplasty, which acetabular construct is the most durable after ten years of follow-up?

- A. cemented all-polyethylene component
- B. cemented metal-backed component
- C. acetabular cage reconstruction
- D. **cementless component**
- E. cemented constrained component

Templeton JE, Callaghan JJ, Goetz DD, Sullivan PM, Johnston RC. Revision of a cemented acetabular component to a cementless acetabular component. A ten to fourteen-year follow-up study. *J Bone Joint Surg Am.* 2001;83:1706-12.

24. In the selection of patients for treatment of chronic leg and/or foot pain with transtibial amputation, which of the following are important to optimize the outcome:

- A. **an anatomically discrete cause of pain**
- B. pain for less than five years
- C. **a patient who has exhausted all surgical means of treatment**
- D. **a patient who has exhausted all medical means of treatment**
- E. **a patient who has been adequately assessed both mentally and emotionally**

Honkamp N, Amendola A, Hurwitz S, Saltzman CL. Retrospective review of eighteen patients who underwent transtibial amputation for intractable pain. *J Bone Joint Surg Am.* 2001;83:1479-83.

25. Aneurysmal bone cysts adjacent to the acetabulum require early surgical intervention primarily to prevent:

- A. avascular necrosis of the femoral head
- B. early degenerative hip disease
- C. extension to the intrapelvic neurovascular structures
- D. **medial migration of the femoral head due to pathological fracture of the acetabulum**
- E. intraoperative bleeding

Papagelopoulos PJ, Choudhury SN, Frassica FJ, Bond JR, Unni KK, Sim FH. Treatment of aneurysmal bone cysts of the pelvis and sacrum. *J Bone Joint Surg Am.* 2001;83:1674-81.

26. In a prospective randomized trial comparing postoperative radiation with a six-week course of indomethacin to prevent heterotopic ossification following surgical treatment of acetabular fractures, indomethacin was found to be:

- A. equally effective but it had a much higher incidence of complications
- B. less effective
- C. more effective
- D. **equally effective with no complications**
- E. more effective and much less expensive

Burd TA, Lowry KJ, Anglen JO. Indomethacin compared with localized irradiation for the prevention of heterotopic ossification following surgical treatment of acetabular fractures. *J Bone Joint Surg Am.* 2001;83:1783-8.

27. Situations in which the use of vancomycin is believed to be appropriate or acceptable by the Centers for Disease Control include all of the following except:

- A. treatment of serious infection due to beta-lactam-resistant gram-positive organisms
- B. treatment of infection due to gram-positive microorganisms in patients who have a serious allergy to beta-lactam antimicrobials
- C. **treatment of infection due to methicillin-sensitive *Staphylococcus aureus* in patients with renal failure when the decision is based on dosing convenience**
- D. life-threatening *Clostridium difficile* colitis
- E. prophylaxis as recommended by the American Heart Association for endocarditis for certain procedures in patients at high risk for endocarditis

Osmon DR. Instructional Course Lecture, the American Academy of Orthopaedic Surgeons. Antimicrobial resistance: guidelines for the practicing orthopaedic surgeon. *J Bone Joint Surg Am.* 2001;83:1891-901.

28. In adults with a painful bunion, a chevron osteotomy, exostectomy, and adductor release:

- A. does not improve function as well as treatment with a functional foot orthosis
- B. can decrease pain but cannot improve function better than treatment by "watchful waiting"
- C. can improve function but cannot decrease pain better than treatment by "watchful waiting"
- D. **improves function and decreases pain better than does the use of functional foot orthoses**
- E. is less beneficial in terms of pain relief than is treatment with a functional foot orthosis

Evidence Based Orthopaedics. Surgery was more effective for hallux valgus at 12 months than an orthosis or watchful waiting. *J Bone Joint Surg Am.* 2001;83:1760.

29. Which of the following factors is associated with an increased risk of mortality within thirty days after elective total hip arthroplasty?

- A. osteoarthritis as the reason for the arthroplasty
- B. revision surgery

C. male gender

- D. female gender
E. cemented acetabular component

Parvizi J, Johnson BG, Rowland C, Ereth MH, Lewallen DG. Thirty-day mortality after elective total hip arthroplasty. *J Bone Joint Surg Am.* 2001;83:1524-8.

30. Compared with a control patient, a patient who has had a successful pregnancy after a total hip arthroplasty will likely have which of the following?

- A. greater risk of infection
B. greater risk of loosening
C. greater risk of dislocation
D. greater range of motion of the hip
E. greater risk of thromboembolism

McDowell CM, Lachiewicz PF. Pregnancy after total hip arthroplasty. *J Bone Joint Surg Am.* 2001;83:1490-4.

31. Compared with hand-packing techniques, contemporary cementing techniques for implantation of the femoral component in a total hip arthroplasty should provide:

- A. more predictable filling of the femoral canal with cement**
B. fewer air bubbles in cement
C. better centralization of the prosthesis
D. fewer femoral component fractures

Klapach AS, Callaghan JJ, Goetz DD, Olejniczak JP, Johnston RP. Charnley total hip arthroplasty with use of improved cementing techniques. A minimum twenty-year follow-up study. *J Bone Joint Surg Am.* 2001;83:1840-8.

32. Modular tibial trays are a standard part of most contemporary total knee implant systems and are widely used in both primary and revision total knee arthroplasty. Which of the following statements about modular tibial trays is true:

- A. modular tibial trays limit a surgeon's intra-operative flexibility in the choice of final polyethylene thickness
B. polyethylene wear debris from the nonarticular surface of modular tibial trays can be the cause of marked tibial osteolysis
C. well-fixed modular tibial trays must be removed at the time of revision total knee arthroplasty
D. modular tibial trays coupled with thin tibial polyethylene inserts have uniformly low rates of wear
E. modular tibial trays inserted with bone cement are immune from problems with osteolysis

Pagnano ME, Scuderi GR, Insall JN. Tibial osteolysis associated with the modular tibial tray of a cemented posterior stabilized total knee replacement. A case report. *J Bone Joint Surg Am.* 2001;83:1545-8.

33. Which of the following preoperative conditions is most likely to adversely influence the outcome of hemiarthroplasty for the treatment of glenohumeral arthritis associated with severe rotator cuff disease?

- A. previous anterior acromioplasty**
B. previous rotator cuff repair

- C. greater extent of rotator cuff tear
D. greater extent of humeral head collapse
E. greater extent of glenoid erosion

Sanchez-Sotelo J, Cofield RH, Rowland CM. Shoulder hemiarthroplasty for glenohumeral arthritis associated with severe rotator cuff deficiency. *J Bone Joint Surg Am.* 2001;83:1814-22.

34. Ossification of the posterior longitudinal ligament of the spine is a disease that may cause severe myelopathy due to progression of the ossification. Which of the following factors has been shown to have a significant association with the severity of ossification?

- A. rheumatoid arthritis
B. osteoporosis
C. serum calcium level
D. severity of glucose intolerance
E. insulin secretory response

Akun T, Ogata N, Seichi A, Ohnishi I, Nakamura K, Kawaguchi H. Insulin secretory response is positively associated with the extent of ossification of the posterior longitudinal ligament of the spine. *J Bone Joint Surg Am.* 2001;83:1537-44.

35. During a surgical approach to the lateral aspect of the elbow, what portion of the lateral collateral ligament can be sectioned without inducing posterolateral rotatory instability (provided the annular ligament is intact)?

- A. only the anterior half
B. only the posterior half
C. either the anterior or the posterior half
D. the entire ligament

Dunning CE, Zarzour ZDS, Patterson SD, Johnson JA, King GJW. Ligamentous stabilizers against posterolateral rotatory instability of the elbow. *J Bone Joint Surg Am.* 2001;83:1823-8.

36. Multiagent chemotherapy has greatly improved the survival associated with most malignant bone tumors. For which of the following tumors is this not true?

- A. classic osteosarcoma
B. Ewing sarcoma
C. primary chondrosarcoma
D. telangiectatic osteosarcoma

Gibbs CP Jr, Weber K, Scarborough MT. Instructional Course Lecture, the American Academy of Orthopaedic Surgeons. Malignant bone tumors. *J Bone Joint Surg Am.* 2001;83:1728-39.

37. Type-II (beta) errors in comparative clinical studies typically reflect which of the following?

- A. a narrow 95% confidence interval
B. an excessive sample size
C. an insufficient sample size
D. an erroneous false-positive study conclusion
E. inappropriate criteria for randomization

Lochner HV, Bhandari M, Tornetta P 2nd. Type-II error rates (beta errors) of randomized trials in orthopaedic trauma. *J Bone Joint Surg Am.* 2001;83:1650-5.

38. The most distinctive clinical feature of dominant endosteal hyperostosis is:

- A. multiple fractures

- B. deformity of long bones
 C. muscle weakness
 D. cranial nerve palsy
 E. **elongation of the mandible**
 Beals RK, McLoughlin SW, Teed RL, McDonald C. Dominant endosteal hyperostosis. Skeletal characteristics and review of the literature. *J Bone Joint Surg Am.* 2001;83:1643-9.
- 39. Recurrent dislocation following total hip arthroplasty can be difficult to manage. Some authors have advocated revision to a bipolar prosthesis to address this complication. The most frequent problem with this technique has been reported to be:**
 A. recurrent dislocation
 B. infection
 C. protrusio acetabuli
 D. **poor clinical hip rating and pain**
 E. excessive wear of the bipolar component
 Huo MH, Cook SM. Specialty update. What's new in hip arthroplasty. *J Bone Joint Surg Am.* 2001;83:1598-610.
- 40. What is the greatest limitation of the use of recombinant adenovirus-mediated gene therapy for the treatment of osteolysis?**
 A. wild-type adenovirus can be generated and causes infectious disease
 B. liver toxicity
 C. **a dominant host immune response to the vector exacerbates osteolysis and eliminates target gene expression in two weeks**
 D. a young healthy volunteer was killed by recombinant adenovirus in a clinical trial
 E. recombinant adenoviruses infect osteoblasts and inhibit osteogenesis
 Childs LM, Goater JJ, O'Keefe RJ, Scwarz EM. Effect of anti-tumor necrosis of factor- α gene therapy of wear-debris-induced osteolysis. *J Bone Joint Surg Am.* 2001;83:1789-97.
- 41. When compared with no treatment, one daily subcutaneous injection of reviparin after knee arthroscopy results in:**
 A. an increased incidence of leg thrombi
 B. an increased incidence of pulmonary emboli
 C. **no change in the incidence of deep venous thrombosis**
 D. fewer pulmonary emboli
 E. a marked increase in bleeding complications
 Evidence based orthopaedics. Reviparin did not lead to a statistically significant reduction of deep venous thrombosis in patients having knee arthroscopy. *J Bone Joint Surg Am.* 2001;83:1761.
- 42. An eighty-one-year-old man with Paget disease of the pelvis and precarious health undergoes total hip arthroplasty. During removal of the trial femoral head, it becomes dislodged and shifts into a retroperitoneal position that is inaccessible through the hip wound. There is no evidence of neurovascular, gastrointestinal, or genitourinary compromise. The most appropriate action is to:**
 A. call for a general surgeon to perform an immediate laparotomy to remove the trial head
 B. close the hip and postoperatively notify your liability insurance carrier
 C. **plan to leave the component in place but later discuss its removal with the patient**
 D. obtain a surgery consultation postoperatively in order to schedule a delayed endoscopic removal
 E. consult with the manufacturer to determine the material composition of the component and then test for allergies to its composite materials. Plan to remove it if the patient is allergic to it
 Batouk O, Gilbert M, Jain R. Intraoperative dislocation of the trial femoral head into the pelvis during total hip arthroplasty. A case report. *J Bone Joint Surg Am.* 2001;83:1549-51.
- 43. Frozen shoulders in three different groups of patients (idiopathic, following a fracture, or after surgery) were treated with arthroscopic capsular release. Compared with the other two groups, the patients in whom the frozen shoulder followed surgery had an equivalent outcome for:**
 A. pain relief
 B. patient satisfaction
 C. functional activity
 D. **range of motion**
 E. shoulder score
 Holloway GB, Schenk T, Williams GR, Ramsey ML, Iannotti JP. Arthroscopic capsular release for the treatment of refractory postoperative or post-fracture shoulder stiffness. *J Bone Joint Surg Am.* 2001;83:1682-7.
- 44. In the treatment of low-back pain, external spinal skeletal fixation:**
 A. provides permanent relief of pain
 B. has no significant complications
 C. may provide short-term pain relief while *in situ*
 D. allows effective selection of patient candidates for fusion surgery
 E. **has no role in patient management**
 Bednar DA. Failure of external spinal skeletal fixation to improve predictability of Lumbar arthrodesis. *J Bone Joint Surg Am.* 2001;83:1656-9.
- 45. Loosening of the acetabular component of a total hip replacement can be diagnosed on the basis of radiolucent lines. The minimal thickness for diagnosis is:**
 A. 2-mm postoperative gap
 B. 1-mm postoperative gap
 C. **1-mm progressive radiolucent line in any zone more than two years postoperatively**
 D. 1-mm radiolucent lines in two zones at one year postoperatively
 E. 2-mm radiolucent lines in three zones immediately postoperatively
 Udomkiat P, Wan Z, Dorr LD. Comparison of preoperative radiographs and intraoperative findings of fixation of hemispheric porous-coated sockets. *J Bone Joint Surg Am.* 2001;83:1865-70.
- 46. Intramedullary nailing of a fracture of the femur in a patient with multiple injuries:**
 A. is contraindicated in the presence of a documented pulmonary injury

- B. should be deferred for several days until the patient's condition has stabilized
- C. **can be performed antegrade, retrograde, with reaming, or without reaming, depending on the clinical situation**
- D. should be avoided if the fracture is open
- E. leads to an increased incidence of thromboembolic complications

Wiss DA. Specialty update. What's new in orthopaedic trauma. *J Bone Joint Surg Am.* 2001;83:1762-72.

47. In the treatment of carpal scaphoid fractures, when compared with cast treatment, surgical repair with a Herbert screw:

- A. is just as effective
- B. decreases long-term pain
- C. eventually leads to markedly increased grip strength
- D. in the long-term results in a better range of motion of the wrist

E. results in a shorter period of sick leave

Evidence based orthopaedics. Surgery with a Herbert screw shortened sick leave and was as a short-arm cast for carpal scaphoid fracture. *J Bone Joint Surg Am.* 2001;83:1759.

48. Multiple regression analysis is a statistical technique that measures:

- A. an association between many dependent variables and a single independent variable
- B. an association between many independent variables and a single independent variable
- C. an association between dependent variables only
- D. an association between independent variables only

E. an association between many independent variables and a single dependent variable

Bhandari M, Guyatt GH, Swionkowski MF. Current concepts review. User's guide to the literature: how to use an article about prognosis. *J Bone Joint Surg Am.* 2001;83:1555-64.

49. A bioplar radial head prosthesis:

- A. can completely restore valgus stability of the elbow after radial head resection
- B. significantly improves valgus stability in 80° of forearm pronation after radial head resection and release of the medial collateral ligament
- C. typically provides an arc of motion between the prosthetic head and stem in excess of 105°
- D. provides no significant advantage over a monoblock prosthesis with regard to elbow range of motion

E. Significantly improves valgus stability in 80° of forearm supination after radial head resection and release of the medial collateral ligament

Pomianowski S, Morrey BF, Neale PG, Park MJ, O'Driscoll SW, An KN. Contribution of monoblock and bipolar radial head prostheses to valgus stability of the elbow. *J Bone*

Joint Surg Am. 2001;83:1829-34.

50. Fibrin sealant has been shown to be a useful adjunct in many surgical procedures. The use of fibrin sealant in total knee arthroplasty results in:

- A. an increased incidence of pulmonary embolism
- B. more rapid mobility of the patient postoperatively
- C. **decreased bloody drainage**
- D. decreased postoperative pain
- E. an increased incidence of wound infection

Wang GJ, Hungerford DS, Savory CG, Rosenberg AG, Mont MA, Burks SG, Mayers SL, Spotnitz WD. Use of fibrin sealant to reduce bloody drainage and hemoglobin loss after total knee arthroplasty. A brief note on a randomized prospective trial. *J Bone Joint Surg Am.* 2001;83:1503-5.

ANSWER KEY

The correct answers are blacked out.

- | | | |
|---------------|---------------|---------------|
| 1. A B C D E | 18. A B C D E | 35. A B C D |
| 2. A B C D E | 19. A B C D E | 36. A B C D |
| 3. A B C D E | 20. A B C D E | 37. A B C D E |
| 4. A B C D E | 21. A B C D E | 38. A B C D E |
| 5. A B C D E | 22. A B C D E | 39. A B C D E |
| 6. A B C D E | 23. A B C D E | 40. A B C D E |
| 7. A B C D E | 24. A B C D E | 41. A B C D E |
| 8. A B C D E | 25. A B C D E | 42. A B C D E |
| 9. A B C D E | 26. A B C D E | 43. A B C D E |
| 10. A B C D E | 27. A B C D E | 44. A B C D E |
| 11. A B C D E | 28. A B C D E | 45. A B C D E |
| 12. A B C D E | 29. A B C D E | 46. A B C D E |
| 13. A B C D E | 30. A B C D E | 47. A B C D E |
| 14. A B C D E | 31. A B C D | 48. A B C D E |
| 15. A B C D E | 32. A B C D E | 49. A B C D E |
| 16. A B C D E | 33. A B C D E | 50. A B C D E |
| 17. A B C D E | 34. A B C D E | |

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QUESTIONS?

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