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CONTINUING MEDICAL EDUCATION

CME

REVIEW QUESTIONS

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THE DEADLINE TO SUBMIT YOUR ANSWERS FOR GRADING THIS SET OF QUESTIONS WAS OCTOBER 15, 2005.

- 1. As part of efforts to contain health-care costs, various initiatives have been tried to reduce the length of the hospital stay following orthopaedic procedures. For patients who have been determined to be fit to undergo total hip arthroplasty, which of the following factors is most strongly associated with the likelihood of early discharge from the hospital:**
- gender
 - body mass index
 - American Society of Anesthesiologists grade
 - age**
 - use of a minimal-incision technique
- Ogonda L, Wilson R, Archbold P, Lawlor M, Humphreys P, O'Brien S, Beverland D. A minimal-incision technique in total hip arthroplasty does not improve early postoperative outcomes. A prospective, randomized, controlled trial. *J Bone Joint Surg Am.* 2005;87:701.
- 2. Intermittent exposure to parathyroid hormone produces which of the following effects:**
- bone resorption
 - bone formation**
 - hypercalcemia
 - hypercalciuria
 - heterotopic ossification
- Alkhiary YM, Gerstenfeld LC, Krall E, Westmore M, Sato M, Mitlak BH, Einhorn TA. Enhancement of experimental fracture-healing by systemic administration of recombinant human parathyroid hormone (PTH 1-34). *J Bone Joint Surg Am.* 2005;87:731.
- 3. Preoperative administration of tranexamic acid reduces postoperative blood loss following cementless total hip arthroplasty. The major effect with regard to reducing blood loss, compared with that in controls, was observed up to:**
- one hour postoperatively
 - four hours postoperatively**
 - six hours postoperatively
 - twelve hours postoperatively
 - twenty-four hours postoperatively
- Yamasaki S, Masuhara K, Fuji T. Tranexamic acid reduces postoperative blood loss in cementless total hip arthroplasty. *J Bone Joint Surg Am.* 2005;87:766.
- 4. It is now widely accepted that self-report outcomes instruments intended for use across cultures:**
- must reflect the cultural nuances of the culture in which the original instrument was constructed
 - must not only be translated well linguistically, but also must be adapted culturally to maintain their content validity**
 - must be translated verbatim into the language of the target culture
 - must have fewer items to be properly understood in the target culture
 - must be administered only to bilingual patients
- Taylor MK, Pietrobon R, Menezes A, Olson SA, Pan D, Bathia N, DeVellis RF, Kume P, Higgins LD. Cross-cultural adaptation and validation of the Brazilian Portuguese version of the short musculoskeletal function assessment questionnaire: the SMFA-BR. *J Bone Joint Surg.* 2005;87:788.
- 5. All of the following are associated with a significantly increased risk of deep infection in patients with an orthopaedic oncological condition except:**
- radiation therapy
 - pediatric extendable prostheses
 - chemotherapy**
 - pelvic prostheses
 - revision surgery
- Jeys LM, Grimer RJ, Carter SR, Tillman RM. Periprosthetic infection in patients treated for an orthopaedic oncological condition. *J Bone Joint Surg Am.* 2005;87:842.
- 6. A patient with recurrent posterior instability of the shoulder is likely to have a history of all of the following except:**
- posterior dislocation of the shoulder**
 - multidirectional instability of the shoulder
 - family history of joint hyperlaxity
 - generalized ligament laxity
 - instability of other joints
- Robinson CM, Aderinto J. Current concepts review. Recurrent posterior shoulder instability. *J Bone Joint Surg Am.* 2005;87:883.
- 7. Removable cast walkers overwrapped with a roll of fiberglass were used in place of conventional total contact casts for insensate diabetic foot ulcers. The investigators observed all of the following except:**
- the cast walkers were quicker to apply
 - the cast walkers resulted in more complications**
 - the cast walkers were as effective as the total contact casts
 - healing time was equal
 - the cast walkers were cost-effective
- Miller R, DeCoster TA, Mizel MS. Specialty update. What's new in foot and ankle surgery?. *J Bone Joint Surg Am.* 2005;87:909.
- 8. One month after total knee arthroplasty, patients had a profound loss of quadriceps strength. The main reason(s) for this weakness was found to be:**
- knee pain
 - failure of voluntary activation
 - atrophy
 - effusion
 - B and C**
- Mizner RJ, Petterson SC, Stevens JE, Vandeborne K, Snyder-Mackler L. Early quadriceps strength loss after total knee arthroplasty. The contributions of muscle atrophy and failure of voluntary muscle activation. *J Bone Joint Surg Am.* 2005;87:1047.
- 9. All of the following statements are true except:**

- A. generation of particulate wear debris is inevitable during the normal use of a prosthetic joint
- B. periprosthetic pseudomembranes usually contain macrophages, fibroblasts, foreign-body giant cells, and numerous wear debris particles
- C. debris-associated inflammation and bone resorption contribute to the loosening process of a prosthetic joint
- D. therapy targeted to periprosthetic pseudomembranes could be a potential approach to halting the loosening process
- E. gene therapy is readily available to treat patients with signs of aseptic loosening**
 Yang S-Y, Nasser S, Markel DC, Robbins PD, Wooley PH. Human periprosthetic tissues implanted in severe combined immunodeficient mice respond to gene transfer of a cytokine inhibitor. *J Bone Joint Surg Am.* 2005;87:1088.
- 10. For the diagnosis of meniscal tears of the knee, which clinical test was shown to have accuracy comparable with that of magnetic resonance imaging?**
- A. the Apley compression and distraction test
- B. the McMurray test
- C. the medial and lateral joint-line tenderness test
- D. the Thessaly test at 20° of knee flexion**
- E. the Thessaly test at 5° of knee flexion
 Karachalios T, Hantes M, Zibis A, Zachos V, Karantanas AH, Malizos KN. Diagnostic accuracy of a new clinical test (the Thessaly test) for early detection of meniscal tears. *J Bone Joint Surg Am.* 2005;87:955.
- 11. It is impractical to isolate the toes during forefoot surgery. Which of the following techniques results in the greatest reduction in positive cultures of specimens obtained from the hallux nail fold?**
- A. alcohol scrub and paint with use of bristles for the scrub**
- B. povidone-iodine scrub and paint with use of sponges for the scrub
- C. alcohol prewash with sponges along with povidone-iodine scrub and paint
- D. povidone-iodine scrub and paint with use of bristles for the scrub
- E. single-step povidone-iodine paint
 Keblish DJ, Zurakowski D, Wilson MG, Chiodo CP. Preoperative skin preparation of the foot and ankle: bristles and alcohol are better. *J Bone Joint Surg Am.* 2005;87:986.
- 12. A group of orthopaedic surgeons who invest in an orthopaedic surgery specialty hospital are likely to experience:**
- A. an increase in both patient volume and surgical volume
- B. a decrease in patient volume but an increase in surgical volume
- C. an increase in patient volume but a decrease in surgical volume
- D. no change in patient volume but an increase in surgical volume
- E. no change in either patient volume or surgical volume**
 Woods GW, O'Connor DP, Pierce P. Orthopaedic surgeons do not increase surgical volume after investing in a specialty hospital. *J Bone Joint Surg Am.* 2005;87:1185.
- 13. Among 125,000 Medicare recipients who underwent unilateral primary total knee arthroplasty in 2000, the prevalence of complications in the first ninety days was <1% for all of the following except:**
- A. pneumonia**
- B. pulmonary embolus
- C. myocardial infarction
- D. deep wound infection
- E. death
 Mahomed NN, Barrett J, Katz JN, Baron JA, Wright J, Losina E. Epidemiology of total knee replacement in the United States Medicare population. *J Bone Joint Surg Am.* 2005;87:1222.
- 14. Cost-utility analysis is:**
- A. an economic analysis that assesses the value of an intervention in terms of improving both quality and quantity of life**
- B. an economic analysis that requires placement of a monetary value on human life
- C. an economic analysis that does not take into account individuals' preferences for health
- D. an economic analysis that only examines the costs of interventions and does not address the health benefits
- E. not a useful tool in health technology evaluation
 Brauer CA, Rosen AB, Olchanski NV, Neumann PJ. Cost-utility analyses in orthopaedic surgery. *J Bone Joint Surg Am.* 2005;87:1253.
- 15. Extracorporeal shock wave therapy used to treat chronic lateral epicondylitis resulted in significant improvement in all of the following outcome end points except:**
- A. pain scores
- B. scores on an upper-extremity functional scale
- C. patient activity scores
- D. grip strength**
- E. overall impression of disease state
 Pettrone FA, McCall BR. Extracorporeal shock wave therapy without local anesthesia for chronic lateral epicondylitis. *J Bone Joint Surg Am.* 2005;87:1297.
- 16. Which of the following proteins is the most important in initiating Type-I (death-inducing signaling complex) pathway of Fas-mediated apoptosis in human lumbar disc cells?**
- A. caspase-8**
- B. caspase-9
- C. caspase-3
- D. cytochrome-c
- E. BID (BH3 interacting domain death agonist)
 Park J-B, Lee J-K, Park S-J, Kim K-W, Riew KD. Mitochondrial involvement in Fas-mediated apoptosis of human lumbar disc cells. *J Bone Joint Surg Am.* 2005;87:1338.

17. One late complication noted after treatment of a soft-tissue sarcoma with adjuvant external beam radiation is a postradiation fracture. Which of the following is associated with a higher risk for the development of this complication?

- A. male gender
- B. an age of more than forty years
- C. high-dose radiation (560 Gy)**
- D. malignant fibrous histiocytoma
- E. >30% periosteal stripping during the tumor resection

Weber KL. Specialty update. What's new in musculoskeletal oncology. J Bone Joint Surg Am. 2005;87:1400.

18. In the treatment of a pertrochanteric type-A1.1 or A2.1 fracture in an osteoporotic patient, which of the following procedures was shown to provide good fixation with minimal blood loss and no need for blood transfusion?

- A. intramedullary rod
- B. dynamic hip screw
- C. external fixation with titanium-coated pins
- D. external fixation with hydroxyapatite-coated pins**
- E. blade-plate

Moroni A, Faldini C, Pegreff F, Hoang-Kim A, Vannini F, Giannini S. Dynamic hip screw compared with external fixation for treatment of osteoporotic pertrochanteric fractures. A prospective randomized study. J Bone Joint Surg Am. 2005;87:753.

19. Posterior glenoid bone loss (glenoid retroversion) can be seen in patients with glenohumeral arthritis. The best method to address this problem is:

- A. performing a standard total shoulder arthroplasty and leaving the glenoid retroverted
- B. performing a hemiarthroplasty and leaving the glenoid retroverted
- C. performing a total shoulder arthroplasty or hemiarthroplasty and anteverting the humeral component
- D. performing a total shoulder arthroplasty and building up the posterior defect with polymethylmethacrylate
- E. performing a total shoulder arthroplasty and restoring a neutral glenoid surface by reaming the high anterior side, bone-grafting the posterior defect, or using a custom glenoid implant**

Spencer EE Jr, Valdevit A, Kambic H, Brems JJ, Iannotti JP. The effect of humeral component anteversion on shoulder stability with glenoid component retroversion. J Bone Joint Surg Am. 2005;87:808.

20. In a study of patients with osteosarcoma who underwent modular endoprosthetic reconstruction, which of the following factors had the greatest effect on knee proprioception?

- A. the range of motion of the knee
- B. the length of resection of the bone**
- C. the testing angles of the knee

- D. the prosthesis used
- E. the type of tumor

Li W-C, Yang R-S, Tsao J-Y. Knee proprioception in patients with osteosarcoma around the knee after modular endoprosthetic reconstruction. J Bone Joint Surg Am. 2005;87:850.

21. A review of 121 ankle fractures treated with open reduction and internal fixation revealed that 21% of the patients were symptomatic as a result of a surgical injury to which nerve?

- A. sural
- B. saphenous
- C. superficial peroneal**
- D. deep peroneal
- E. posterior tibial

Miller R, DeCoster TA, Mizel MS. Specialty update. What's new in foot and ankle surgery? J Bone Joint Surg Am. 2005;87:909.

22. In expert hands, fluoroscopically guided extraforaminal cervical nerve root blocks were found to be associated with a:

- A. 1% to 2% risk of transient minor complications**
- B. 1% to 2% risk of infection
- C. 1% to 2% risk of vertebral artery laceration or thrombosis
- D. 1% to 2% risk of quadriplegia
- E. 0.5% to 1% risk of death

Ma DJ, Gilula LA, Riew KD. Complications of fluoroscopically guided extraforaminal cervical nerve blocks. An analysis of 1036 injections. J Bone Joint Surg Am. 2005;87:1025.

23. Hip arthroscopy can be performed with the patient in either the supine or the lateral decubitus position. An advantage of the lateral position is that:

- A. fluoroscopy is seldom needed
- B. the femoral head requires no distraction
- C. most aspects of the joint can be visualized through the anterior and superior paratrochanteric portals**
- D. no special distraction equipment is needed
- E. muscle relaxation is not required

McCarthy JC, Lee J-A. Instructional course lecture. Hip arthroscopy: indications, outcomes, and complications. J Bone Joint Surg Am. 2005;87:1137.

24. A study of various surgical preparation solutions for foot and ankle surgery demonstrated that:

- A. the combination of chlorhexidine and alcohol was the most effective solution for eliminating bacteria from the foot**
- B. the combination of chlorhexidine and alcohol was the most effective solution for decreasing infection rates following foot and ankle surgery
- C. chloroxlenol was the most effective solution for decreasing infection rates following foot and ankle surgery
- D. Staphylococcus epidermidis is a common

- skin bacteria that never causes infection
- E. chloroxylenol was the most effective solution for eliminating bacteria from the foot
Ostrander RV, Botte MJ, Brage ME. Efficacy of surgical preparation solutions in foot and ankle surgery. *J Bone Joint Surg Am.* 2005;87:980.
- 25. Which of the following is correct with regard to the anatomy of the long thoracic nerve?**
- A. in the supraclavicular region, the long thoracic nerve runs perpendicular to the brachial plexus
- B. the upper division of the long thoracic nerve is formed by the union of branches stemming from the C5 and C6 roots. The upper division presents a trajectory parallel to the brachial plexus**
- C. the union of the upper and lower divisions of the long thoracic nerve occurs in the vicinity of the brachial plexus roots
- D. the long thoracic nerve is formed by branches stemming from the C3 and C4 roots
- E. the upper division of the long thoracic nerve is responsible for scapular retraction and stabilization
Bertelli JA, Ghizoni MF. Long thoracic nerve: anatomy and functional assessment. *J Bone Joint Surg Am.* 2005;87:993.
- 26. When patients undergoing anterior lumbar arthrodesis were treated with rhBMP-2 and structural cortical allograft, their radiographs demonstrated accelerated interbody healing that was:**
- A. not associated with an improved return-to-work status at twenty-four months
- B. associated with improvement in all clinical end points studied**
- C. associated with improvement in Oswestry Disability Index scores at twenty-four months only
- D. not associated with improved clinical outcomes
- E. similar to the radiographic findings in the control group of patients (treated with autograft)
Burkus JK, Sandhu HS, Gornet MF, Longley MC. Use of rh-BMP-2 in combination with structural cortical allografts: clinical and radiographic outcomes in anterior lumbar spinal surgery. *J Bone Joint Surg Am.* 2005;87:1205.
- 27. Biomechanical studies have shown that the tibial inlay technique of posterior cruciate ligament reconstruction is superior to the tibial tunnel technique with regard to:**
- A. ease of graft implantation
- B. avoidance of graft abrasion**
- C. faster postoperative rehabilitation
- D. fewer intraoperative complications
- E. superior functional results
Noyes FR, Barber-Westin S. Posterior cruciate ligament replacement with a two-strand quadriceps tendon-patellar bone autograft and a tibial inlay technique. *J Bone Joint Surg Am.* 2005;87:1241.
- 28. In a study of patients with articular cartilage degeneration associated with postcollapse**
- osteonecrosis in the femoral head, which of the following statements was found to be most correct?**
- A. the mechanical properties of articular cartilage are degraded in advanced radiographic stages of the disease
- B. cartilage in the late stages of osteonecrosis may maintain mechanical properties even after collapse of the articular surface**
- C. the gross appearance of the articular surface is a poor indicator of the mechanical properties of the cartilage
- D. the success of head-sparing procedures in patients with osteonecrosis is unrelated to the radiographic stage of the disease
- E. cartilage in the late stages of osteonecrosis rarely shows signs of degeneration
Magnussen RA, Guilak F, Vail TP. Articular cartilage degeneration in post-collapse osteonecrosis of the femoral head. Radiographic staging, macroscopic grading, and histologic changes. *J Bone Joint Surg Am.* 2005;87:1272.
- 29. A twenty-six-year-old carpenter being seen for a first-time evaluation reports a six-month history of chronic shoulder pain and weakness. Physical examination demonstrates grade-3 weakness isolated to resisted external rotation with mild atrophy of the infraspinatus muscle. He also has mild tenderness in the subacromial region and mild pain with impingement signs, but the results of the examination are otherwise normal. You perform an office-based ultrasound examination, which shows a small partial rotator cuff tear. Radiographs show a normal coracoacromial arch. The next diagnostic study that you would recommend is:**
- A. examination under anesthesia with diagnostic arthroscopy
- B. impingement test with 10 mL of lidocaine
- C. magnetic resonance imaging of the shoulder with intra-articular gadolinium**
- D. double-contrast arthrogram
- E. cervical magnetic resonance imaging
Iannotti JP, Ciccone J, Buss DD, Visotsky JL, Mascha E, Cotman K, Rawool NM. Accuracy of office-based ultrasonography of the shoulder for the diagnosis of rotator cuff tears. *J Bone Joint Surg Am.* 2005;87:1305.
- 30. A finger with an unstable ununited fracture and a permanent sensory loss distal to the fracture is best treated with:**
- A. open reduction and internal fixation
- B. open reduction and internal fixation with autogenous bone graft
- C. arthrodesis
- D. electrical stimulation
- E. amputation**
Ring D. Instructional course lecture. Malunion and nonunion of the metacarpals and phalanges. *J Bone Joint Surg Am.* 2005;87:1380.
- 31. Radiographic evidence of glenohumeral ar-**

- thrititis develops in approximately what percentage of patients following open repair of an isolated subscapularis tendon tear?**
- 0%
 - 10%
 - 30%**
 - 50%
 - 90%
- Edwards TB, Walch G, Sirveaux F, Molé D, Nové-Josserand L, Boulahia A, Neyton L, Szabo I, Lindgren B. Repair of tears of the subscapularis. *J Bone Joint Surg Am.* 2005;87:725.
- 32. In patients with metal-on-metal bearing hip prostheses:**
- serum cobalt and chromium ion levels are unaffected by patient activity**
 - the majority of cobalt and chromium is excreted in sweat
 - the majority of cobalt and chromium is excreted in stool
 - serum cobalt and chromium levels tend to rise over time
 - serum cobalt and chromium levels are independent of renal function
- Heisel C, Silva M, Skipor AK, Jacobs JJ, Schmalzried TP. The relationship between activity and ions in patients with metal-on-metal bearing hip prostheses. *J Bone Joint Surg Am.* 2005;87:781.
- 33. Following the diagnosis of deep periprosthetic infection in a patient who was treated for an orthopaedic oncological condition, which treatment yields the best functional outcome and probability of eradicating the infection?**
- one-stage revision
 - antibiotics alone
 - Girdlestone excision arthroplasty
 - two-stage revision**
 - surgical débridement and insertion of gentamicin beads
- Jeys LM, Grimer RJ, Carter SR, Tillman RM. Periprosthetic infection in patients treated for an orthopaedic oncological condition. *J Bone Joint Surg Am.* 2005;87:842.
- 34. You are the physician covering your high-school home opening football game in Atlanta, Georgia, over the Labor Day weekend. You notice that one of the young linemen is rubbing his leg and trying to stretch out his calf muscles and hamstrings as if he is experiencing cramping. He gets up slowly after the next play and appears a little confused. He did not receive any direct hits. You should:**
- have the player come off the field, evaluate him, take his temperature, remove his helmet, have him drink cold fluids, and have him sit in a cool place while loosening his clothing and applying ice to his skin**
 - ask the coach to have the player's friend enter the game so that his friend can assess the player's status on the field
 - not think too much about the incident as this
- is the first year that this youngster has played with the team and you would expect him to be confused
- have the player come off the field immediately and transport him to the nearest medical center for a measurement of his blood glucose level
 - have the player come off the field and breathe oxygen until his confusion resolves
- Griffin LY. Instructional course lecture. Emergency preparedness: things to consider before the game starts. *J Bone Joint Surg Am.* 2005;87:894. Griffin LY. Instructional course lecture. Emergency preparedness: things to consider before the game starts. *J Bone Joint Surg Am.* 2005;87:894.
- 35. A diagnosis of pigmented villonodular synovitis of the hip can be made with magnetic resonance imaging. Which of the following findings is least consistent with this diagnosis?**
- intra-articular effusion
 - low signal intensity on both T1 and T2-weighted images
 - synovial hyperplasia
 - bone erosions
 - a diminished width of the joint space**
- Vastel L, Lambert P, De Pinieux G, Charrois O, Kerboull M, Courpied J-P. Surgical treatment of pigmented villonodular synovitis of the hip. *J Bone Joint Surg Am.* 2005;87:1019.
- 36. Which of the following factors decreases the likelihood of success of bracing for an adolescent with idiopathic scoliosis?**
- higher Risser score
 - older age
 - overweight habitus**
 - increased number of hours of brace wear per day
 - increased percent curve correction in the brace
- O'Neill PJ, Karol LA, Shindle MK, Elerson EE, Brintzenhofe-Szoc KM, Katz DE, Farmer KW, Sponseller PD. Decreased orthotic effectiveness in overweight patients with adolescent idiopathic scoliosis. *J Bone Joint Surg Am.* 2005;87:1069.
- 37. Acetabular chondral injuries are graded according to severity, and they influence surgical outcome. These lesions most often:**
- occur in the posterior aspect of the acetabulum as a result of posterior dislocation
 - are symptomatic
 - occur only in patients with moderated dysplasia
 - occur in the anterior aspect of the joint in association with a labral tear**
 - are easily detected by magnetic resonance imaging
- McCarthy JC, Lee J-A. Instructional course lecture. Hip arthroscopy: indications, outcomes, and complications. *J Bone Joint Surg Am.* 2005;87:1137.
- 38. Nonoperative management of a displaced intra-articular calcaneal fracture may result in a symptomatic malunion. Which of the following factors has the most substantial bio-**

- mechanical impact on ankle joint function?**
- residual lateral wall expansion and subfibular impingement
 - residual subtalar joint incongruity
 - osseous overhang at the calcaneocuboid joint
 - loss of calcaneal height**
 - varus hindfoot malalignment
- Clare MP, Lee WE III, Sanders RW. Intermediate to long-term results of a treatment protocol for calcaneal fracture malunions. *J Bone Joint Surg Am.* 2005;87:963.
- 39. Eradication of bacteria is most difficult in which region of the foot?**
- heel pad
 - web spaces between the toes
 - nail folds**
 - anterior aspect of the ankle
 - dorsal aspect of the midfoot
- Keblish DJ, Zurakowski D, Wilson MG, Chiodo CP. Preoperative skin preparation of the foot and ankle: bristles and alcohol are better. *J Bone Joint Surg Am.* 2005;87:986.
- 40. At a minimum of ten years following unicompartmental knee arthroplasty, the most frequent cause of failure was found to be:**
- unexplained pain
 - degeneration of the opposite compartment
 - tibial loosening
 - polyethylene wear
 - patellofemoral degeneration**
- Berger RA, Meneghini RM, Jacobs JJ, Sheinkop MB, Della Valle CJ, Rosenberg AG, Galante JO. Results of unicompartmental knee arthroplasty at a minimum of ten years of follow-up. *J Bone Joint Surg Am.* 2005;87:999.
- 41. After treatment of a distal tibial metaphyseal fracture with an intramedullary nail, which of the following is most predictive of a poorer outcome as determined by the Musculoskeletal Function Assessment Outcomes Instrument?**
- time to fracture-healing
 - intra-articular extension of the fracture
 - age
 - presence of an open fracture**
 - gender
- Nork SE, Schwartz AK, Agel J, Holt SK, Schrick JL, Winquist RA. Intramedullary nailing of distal metaphyseal tibial fractures. *J Bone Joint Surg Am.* 2005;87:1213.
- 42. A retrieval study of failed patellar components following total knee arthroplasty showed that the magnitude of surface damage to the polyethylene was increased in the presence of all of the following except:**
- a component that had been in vivo for more than two years
 - a metal-backed component
 - a dome-shaped patellar component
 - an asymmetric femoral component**
 - valgus malalignment of the femoral component
- Conditt MA, Noble PC, Allen B, Shen M, Parsley BS, Mathis KB. Surface damage of patellar components used in total knee arthroplasty. *J Bone Joint Surg Am.* 2005;87:1265.
- 43. A review of the results of surgery to release severe elbow contractures of the elbow demonstrated that:**
- the results are so poor that patients should be cautioned against surgery
 - surgery is worthwhile only in patients with heterotopic ossification
 - surgery is effective with or without hinged external fixation**
 - surgery is effective only when used with hinged external fixation
 - surgery is effective only with postoperative radiation therapy
- Ring D, Hotchkiss RN, Guss D, Jupiter JB. Hinged elbow external fixation for severe elbow contracture. *J Bone Joint Surg Am.* 2005;87:1293.
- 44. In a cadaveric study of glenohumeral stability, joint translations in normal, unaltered shoulders were found to be:**
- similar to those following anterior capsular tightening
 - greater than those following anterior capsular tightening
 - similar to those following an anterior-inferior capsular shift
 - less than those following an anterior-inferior capsular shift
 - greater than those following an anterior-inferior capsular shift**
- Wang VM, Sugalski MT, Levine WN, Pawluk RJ, Mow VC, Bigliani LU. Comparison of glenohumeral mechanics following a capsular shift and anterior tightening. *J Bone Joint Surg Am.* 2005;87:1312.
- 45. Which of the following meniscal allograft-preservation techniques has been shown to be associated with the worst results in the medium and long term?**
- viable meniscal allograft preservation
 - cryopreservation
 - deep-freezing and irradiation of allografts**
 - fresh allografts
 - flash-freezing of allografts
- Verdonk PCM, Demurie A, Almqvist KF, Veys EM, Verbruggen G, Verdonk R. Transplantation of viable meniscal allograft. Survivorship analysis and clinical outcome of one hundred cases. *J Bone Joint Surg Am.* 2005;87:715.
- 46. Which of the following five locations in a modular acetabular liner that has been gamma-sterilized in air is the most susceptible to in vivo oxidation?**
- worn bearing surface
 - worn backside surface
 - unworn backside surface
 - rim**
 - locking mechanism
- Kurtz SM, Rinnac CM, Hozack WJ, Turner J, Marcolongo M, Goldberg VM, Kraay MJ, Edidin AA. In vivo degradation of polyethylene liners after gamma sterilization in air. *J Bone Joint Surg Am.* 2005;87:815.

47. The goal of a valgus, extension proximal femoral osteotomy in the Ilizarov hip reconstruction for treatment of the sequelae of infantile hip infection is to:

- A. lengthen the leg
- B. improve hip biomechanics**
- C. increase the range of motion of the hip
- D. decrease hip pain
- E. achieve a hip arthrodesis

Rozbruch SR, Paley D, Bhave A, Herzenberg JE. Ilizarov hip reconstruction for the late sequelae of infantile hip infection. *J Bone Joint Surg Am.* 2005;87:1007.

48. Skin grafts may be used at the time of amputation in children to achieve soft-tissue coverage of the residual limb. Such grafts perform best when they:

- A. cover >50% of the residual limb
- B. cover <25% of the residual limb**
- C. are applied to a residual limb that is end-bearing
- D. are applied directly over exposed bone
- E. are located on the distal aspect of the residual limb

Dedmond BT, Davids JR. Function of skin grafts in children following acquired amputation of the lower extremity. *J Bone Joint Surg Am.* 2005;87:1054.

49. After a distraction plate was used to treat fractures of the distal part of the radius associated with comminution extending into the diaphysis, which of the following was associated with loss of wrist motion at the time of final follow-up?

- A. duration of internal fixation across the wrist joint
- B. a more proximal extent of the comminution into the diaphysis
- C. open fracture
- D. increased DASH score
- E. both B and D**

Ruch DS, Ginn TA, Yang CC, Smith BP, Rushing J, Hanel DP. Use of a distraction plate for distal radial fractures with metaphyseal and diaphyseal comminution. *J Bone Joint Surg Am.* 2005;87:945.

50. Interscalene regional anesthesia for shoulder surgery was found to be associated with which of the following?

- A. prolonged operating room ("turnover") time
- B. a >5% rate of block failure
- C. a high rate of major cardiac or neurologic complications

- D. a higher failure rate with longer surgical procedures

E. transient neuropathy

Bishop JY, Sprague M, Gelber J, Krol M, Rosenblatt MA, Gladstone J, Flatow EL. Interscalene regional anesthesia for shoulder surgery. *J Bone Joint Surg Am.* 2005;87:974.

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 E |
| 2. A B C D E | 19. A B C D E | 36. A B C D E |
| 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 | 25. A B C D E | 43. A B C D E |
| 10. A B C D E | 26. A B C D E | 44. A B C D E |
| 11. A B C D E | 27. A B C D E | 45. A B C D E |
| 12. A B C D E | 28. A B C D E | 46. A B C D E |
| 13. A B C D E | 29. A B C D E | 47. A B C D E |
| 14. A B C D E | 31. A B C D E | 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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