1. Which of the following symptoms define cauda equina syndrome?
   1. Transient leg pain
   2. Permanent perineal loss of sensation and/or bladder and bowel dysfunction
   3. Permanent back pain
   4. Postural headache
2. Symptoms characteristic of transient neurologic syndrome include:
   1. Abnormal reflexes
   2. Perineal sensory loss
   3. Dizziness and blurred vision
   4. Temporary back pain; weakness and numbness in buttocks/legs
3. What common nondrug factor contributes to the occurrence of transient neurologic syndrome:
   1. Obesity
   2. Female of childbearing age
   3. Type of spinal needle used
   4. Lithotomy position during surgery
4. Select the true statement regarding transient neurologic syndrome:
   1. Microcatheters play a definite role
   2. Outpatients have a lower incidence compared to inpatients
   3. There is an increased incidence with small spinal needle size
   4. Clonidine and isobaric lidocaine are neurotoxic
5. The incidence of transient neurologic syndrome after lidocaine spinal anesthesia has been found experimentally to be as high as:
   1. 1%
   2. 1.6%
   3. 3%
   4. 40%
6. Which of the following local anesthetics is associated with the highest incidence of transient neurologic syndrome?
   1. Bupivacaine
   2. Mepivacaine
   3. Procaine
   4. Prilocaine
7. Intrathecal demerol (meperidine)
   1. Provides sensory and motor block
   2. Has a high incidence of hypotension
   3. Does not provide motor block
   4. Cannot be added to prilocaine
8. Adverse effects of intrathecal narcotics include all of the following except:
   1. Drowsiness
   2. Pruritis
   3. Nausea
   4. Hypertension
9. A short-acting local anesthetic that has been associated with less than 1% incidence of transient neurologic syndrome is:
   1. Bupivacaine
   2. Tetracaine
   3. Procaine
   4. Mepivacaine
10. When compared to lidocaine as a spinal anesthetic, prilocaine:
   1. Has a longer recovery time
   2. Is associated with a lower incidence of transient neurologic syndrome
   3. Provides less motor block
   4. Provides an inadequate block when a 2% solution is used
11. Medications may expire sooner than the expiration date when:
   1. Warmed to room temperature
   2. The rubber stopper is punctured
3. diluted
4. all of the above

12. The expiration date holds true:
1. when a medication is stored under condition
   specified by the manufacturer
2. as a medication comes from the manufacturer
   as well as after it is mixed, diluted, or with
   some medications, warmed
3. up to 6 months after the last day of the stated
   month
4. none of the above

13. The expiration date of a medication denotes the
    date after which the medication is considered to
    be unusable due to:
1. production of toxic byproducts
2. a decrease in potency below a predetermined
   point
3. changes in physical or chemical specifications
4. all of the above

14. The manufacturers of succinylcholine state that
    once a bottle is removed from the refrigerator and
    stays at room temperature it should be used within:
1. 1 day
2. 7 days
3. 14 days
4. 28 days

15. If not refrigerated, carboprost (Hemabate):
1. experiences a potency loss of 0.5% per day
2. experiences a potency gain of 0.5% per day
3. experiences a potency loss of 10% per day
4. experiences a potency gain of 10% per day

16. Guaranteeing that refrigerators that store medica-
    tion are attached to emergency power can be
    accomplished by:
1. asking medical maintenance to check refriger-
   ators during emergency power usage to be
   sure they are working
2. calling maintenance and asking
3. asking the chief of anesthesia
4. assuming the refrigerators are on emergency
   power

17. Medication that should be stored at room tem-
    perature, if refrigerated:
1. may precipitate due to a decrease in solubility
   at the lower temperature
2. may show decreased preservative efficacy
   because some preservatives are designed to
   work most efficiently at room temperature
3. 1 and 2
4. neither 1 nor 2

18. Which of the following powdered medications
    after mixing can have its (their) potency main-
    tained for a longer period of time if stored in the
    refrigerator as opposed to room temperature?
1. methohexital
2. thiopental
3. both 1 and 2
4. neither 1 nor 2

19. Storage conditions defined by the US Pharma-
    copelial Convention include:
1. freezer, between −13°F and 14°F
2. refrigeration, between 36°F and 46°F
3. room temperature; the prevailing workplace
   temperature
4. all of the above

20. Which of the following has the longest recom-
    mended expiration time when out of the refrigera-
    tor in the unopened state?
1. atracurium
2. cisatracurium
3. pancuronium
4. all of the above are the same, 14 days

21. Which of the following tests of coagulation effec-
    tively monitors low molecular weight heparin
    therapy?
1. activated partial thromboplastin time
2. the platelet count
3. activated clotting time
4. none of the above

22. In which of the following conditions is the
    response to low molecular weight heparin likely
    to be exaggerated?
1. renal disease
2. low serum albumin
3. anemia
4. hypovolemia

23. The anticoagulant effects of unfractionated hepa-
    rin are fully reversible by:
1. urokinase
2. protamine
3. platelets
4. calcium chloride

24. Which of the following factors is associated
    exclusively with the extrinsic clotting system?
1. factor VII
2. factor X
3. tissue factor
4. calcium
25. In which of the following is the risk of development of spinal/epidural hematoma increased?
   1. females
   2. patients with hypertension
   3. elderly males receiving anticoagulants
   4. patients who have undergone previous spinal surgery

26. Which of the following is cited as the most common presenting symptom(s) of spinal/epidural hematoma in patients who were receiving low molecular weight heparin therapy?
   1. motor weakness and sensory deficit
   2. blindness
   3. flushing of the arms and neck
   4. loss of bowel and/or bladder control

27. The differential diagnosis for spinal/epidural hematoma includes:
   1. cerebrovascular accident
   2. electrolyte abnormality
   3. herniated disk and epidural abscess
   4. viral infection

28. Which of the following is the most appropriate management approach for the patient with a diagnosis of acute spinal/epidural hematoma?
   1. emergent surgical evacuation of hematoma
   2. monitoring with serial computed tomography scans
   3. bed rest and monitoring for neurologic deficit
   4. administration of protamine and fresh frozen plasma

29. Regarding patients treated with low molecular weight heparin, which of the following statements is true?
   1. the use of low molecular weight heparin is of no consequence
   2. protamine will completely eliminate risks
   3. patients should be monitored for signs and symptoms of spinal/epidural hematoma only for about 1 hour
   4. regional anesthetic administration should be delayed for 12 hours after the last dose of low molecular weight heparin

30. Which of the following statements is correct when indwelling spinal/epidural catheters are used in patients who receive low molecular weight heparin?
   1. catheter removal should be delayed for 11 to 12 hours after the last dose of low molecular weight heparin
   2. catheter removal is not associated with risk
   3. catheter placement is contraindicated in every case
   4. polymer catheters have no risk

31. Hemoglobin was first discovered and isolated:
   1. by Leonardo
   2. in the early 1500s
   3. about a decade before the Civil War
   4. around the time of World War I

32. What percentage of cytoplasmic protein found in the red blood cell (RBC) is hemoglobin?
   1. less than 10%
   2. less than 55%
   3. greater than 95%
   4. 100%

33. Which of the following is NOT a requirement of hemoglobin based on those listed by Barcroft?
   1. the capacity to carry oxygen
   2. should have high solubility
   3. the ability to act as a buffer
   4. can assume the role of infectious disease fighter

34. In the first weeks of embryonic life, RBCs are produced in the ____; after about age 20 years, most RBCs are produced in the ____.
   1. long bones; liver
   2. spleen; long bones
   3. yolk sac; membranous bones
   4. yolk sac; liver

35. How much oxygen can be carried by 1 gram of hemoglobin?
   1. 100 mL
   2. 10 mL
   3. 1.39 mL
   4. 0.50 mL

36. A leftward shift of the oxygen/hemoglobin dissociation curve suggests that:
   1. there are very high levels of 2,3-diphosphoglycerate (2,3-DPG) in the blood
   2. the affinity of hemoglobin for oxygen is extremely low
   3. hypoxemia is profound and likely irreversible
   4. the P50 is lower than the normal 26 mm Hg

37. Regarding hemoglobin’s role in acid/base balance, select the true statement:
   1. it acts solely as a proton donor (ie, as an acid)
   2. it acts solely as a proton acceptor (ie, as a base)
   3. it is amphoteric
   4. it does not possess a buffering capacity

The ruddy globule: The erythrocyte—Its biology, chemistry, and functional variations

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38. By 1 year of age, and persisting into adulthood, approximately what percentage of hemoglobin is in the A form?
   1. 12%
   2. 22%
   3. 25%
   ➤ 4. 97%

39. A disorder of hemoglobin secondary to a toxic exposure is:
   ➤ 1. carboxyhemoglobin
   2. sickle cell anemia
   3. iron deficiency anemia
   4. hereditary spherocytosis

40. Hemoglobin electrophoresis is useful in:
   ➤ 1. determining red blood cell morphology
   2. detecting and quantifying abnormal variations of hemoglobin
   3. determining the hematocrit
   4. measuring red blood cell wall thickness

41. Water constitutes what percentage of a newborn's body weight?
   ➤ 1. 75%
   2. 25%
   3. 20%
   4. 10%

42. At what age is the renal system considered completely mature?
   1. 1 day
   2. 1 week
   3. 1 month
   ➤ 4. 1 year

43. What volume of clear liquids can be given preoperatively within 2 hours of the induction of anesthesia and maintain an acceptable reduction of risk for regurgitation and aspiration?
   ➤ 1. 3 mL/kg
   2. 10 mL/kg
   3. 50 mL/kg
   4. 100 mL/kg

44. Calculate the hourly maintenance fluid rate for an 8-kg patient.
   ➤ 1. 33 mL
   2. 50 mL
   3. 100 mL
   4. 700 mL

45. Regarding clinical signs of hydration status, you would expect to see significant hypotension and sunken eyes with:
   ➤ 1. a 1% fluid deficit
   2. a 2% fluid deficit
   3. a 5% fluid deficit
   ➤ 4. a 15% fluid deficit

46. The glucose requirement used in planning your fluid replacement strategy in infants is:
   ➤ 1. 0.01 g/kg
   2. 0.5 to 1 g/kg
   3. 2.5 g/kg
   4. 5.5 g/kg

47. Calculate the estimated blood volume of a normal 6-month-old infant that weighs 15 kg.
   ➤ 1. 200 to 300 mL
   2. 500 to 600 mL
   3. 700 to 800 mL
   ➤ 4. 1,000 to 1,200 mL

48. Calculate the allowable blood loss for a 3-year-old who weighs 15 kg with a current hematocrit of 39%. The lowest acceptable hematocrit will be 30%.
   ➤ 1. 145 mL
   2. 242 mL
   3. 350 mL
   4. 545 mL

49. When using packed red blood cells to replace blood loss that has exceeded the allowable amount, which of the following is the correct ratio of cells to loss?
   ➤ 1. 0.5:1
   2. 1:1
   3. 2:1
   4. 3:1

50. The acceptable urine output in the pediatric patient weighing more than 25 kg is:
   ➤ 1. 10 to 15 mL/h
   2. 20 to 25 mL/h
   3. 30 to 35 mL/h
   ➤ 4. 50 to 60 mL/h

51. The first full-body simulator built was the:
   1. intravenous insertion simulator
   2. spinal/epidural mannequin
   3. intubation head mannequin
   ➤ 4. “Sim One”
52. Common components of the three full-body patient simulators currently manufactured for use in the United States are:
   1. extremities that move in response to painful stimuli
   2. voice-activated computer system
   3. fully integrated sound system that includes gastrointestinal sounds
   4. palpable pulses

53. The interface cart of the full-body patient simulation system contains:
   1. the drug recognition system
   2. gas analyzer, sound cards, and pneumatics
   3. invasive monitoring equipment
   4. remote control computer system

54. In evaluating the authenticity of the simulator experience, concerns may be raised regarding:
   1. failure to accurately mirror the “culture” of the operating room
   2. care rendered may be substandard
   3. conversations may be viewed as muted or discordant
   4. all of the above

55. The advantage of full-body patient simulation training is:
   1. hands-on experience in identifying and managing specific anesthetic events
   2. the ability to manage an event in a controlled and safe environment
   3. a unique opportunity to identify and manage a rare, potentially catastrophic anesthetic event
   4. all of the above

56. Which of the following is often found as part of the control room in a simulation center?
   1. an operating room table
   2. an anesthesia machine
   3. a unidirectional window and the main computer system
   4. the full-body patient simulation mannequin

57. Simulation sessions can be offered:
   1. only in an individual session, one person at a time
   2. only in a team session, with several persons at a time
   3. only with a faculty demonstrator while the participant observes from a remote location
   4. either in a team format or as an individual session

58. The term “debriefing” in terms of a simulation exercise occurs:
   1. during the first introduction of the program
   2. just before the catastrophic event
   3. immediately following the event under the guidance of simulator faculty
   4. about 3 weeks after the simulation experience

59. The debriefing of participants ideally occurs in an atmosphere that is:
   1. nonintimidating, allowing participants to discover areas that they need to focus on
   2. highly judgmental in nature
   3. punitive in nature
   4. highly stressful and abusive so that the participant is psychologically “toughened”

60. Which of the following is not a disadvantage of the anesthesia simulator:
   1. high cost of the equipment
   2. high cost of the faculty and support personnel
   3. the ability to experience rare events in a controlled atmosphere
   4. some find the simulator technology intimidating or threatening