

AANA Journal Course No. 29

Examination Information Update for Nurse Anesthetists

You are required to complete ALL the information on the AANA Journal Course Examination and Evaluation forms in order for your examination to be processed and for you to receive continuing education credits. The information is required to meet the criteria of the American Nurses Credentialing Center Commission on Accreditation.

With this issue, the *AANA Journal's* 29th course has been completed. The course consisted of a 6-part series, beginning with the April 2009 issue and concluding in the February 2010 issue. The series was published as follows:

Part 1 (April 2009) – The Cerebral Oximeter: What Is the Efficacy?

Part 2 (June 2009) – Semmelweis Revisited: Hand Hygiene and Nosocomial Disease Transmission in the Anesthesia Workstation

Part 3 (August 2009) – New Drug, Fospropofol Disodium: A Propofol Prodrug

Part 4 (October 2009) – Myocardial Infarction and Subsequent Death in a Patient Undergoing Robotic Prostatectomy

Part 5 (December 2009) – Evaluation of Older Adults

Part 6 (February 2010) – Lipid Infusion as a Treatment for Local Anesthetic Toxicity: A Literature Review

Each article included objectives for the reader and sources for reference and study.

The examination printed in this issue incorporates material from all 6 articles. The examination consists of 60 multiple choice questions, 10 questions from each article. The examination is clearly marked as to which questions refer to which article. Remember, as you are taking the examination, you are free to refer to the original articles. Note also that there is but 1 correct answer to be marked for each question.

About your continuing education credit

To ensure that a certain level of knowledge has been attained, a minimum of 80% correct answers (48 out of 60) must be achieved. A total of 6 hours of continuing education (CE) credit will be awarded for the successful completion of the examination; partial CE credit will not be awarded.

AANA members will automatically have their 6 CE credits recorded for them. Individuals with record-keeping contracts through the AANA also will have the credits recorded for them.

The correct answers to the examination will appear in the August 2010 issue of the *AANA Journal*. By keeping a copy of your answers, you will automatically be able to see how you scored.

Answer sheet and evaluation form

It is recommended that you first mark your answers on the examination itself (so that you have your own record). Then, transfer your answers to the answer sheet, which appears on the adjacent page. Be sure to include your name, address, and AANA identification number. You are required to fill out an evaluation of the course, which includes the time required for reading and comprehension of each part. The evaluation is printed on the reverse side of the answer sheet. (Non-AANA members should include a \$30 processing fee—payable to the *AANA Journal* Course—along with the examination answer sheet and evaluation form.)

Important deadline

The examination answers must be postmarked by July 31, 2010. Adequate time must be allowed for the examination to be processed to ensure that all CE credits are recorded before the end of the CE year. Mail your answer sheet to:

AANA Continuing Education Department
222 S. Prospect Ave.
Park Ridge, IL 60068-4001
Attn: AANA Journal Course

Much success

We hope that you have found this 29th *AANA Journal* course to be of value. We wish you well in its successful completion.

AANA Journal Course No. 29 Examination Update for Nurse Anesthetists

(Issued April 2010. Examination and Evaluation No. 29 can be completed online.)

Please **PRINT**.

Name: _____
(last) (first) (middle)

Address: _____
(street)

(city) (state) (zip code)

AANA Membership ID Number:

To ensure that your examination will be processed, you must complete every section of the evaluation and mail it with this examination answer sheet to: AANA Continuing Education Department, 222 S. Prospect Ave., Park Ridge, IL 60068-4001. Attn: AANA Journal Course

If you are not an AANA member, check here. Be sure to enclose your \$30 processing fee payable to AANA.

Please circle one response for each question. For example, 36. 1 2 **3** 4 would indicate that the third alternative was chosen in response to question 36. Please erase completely any changed responses.

	Circle one response (1-4) for each question				Chapter objective reference		Circle one response (1-4) for each question				Chapter objective reference
1.	1	2	3	4	1.1	31.	1	2	3	4	4.4
2.	1	2	3	4	1.1	32.	1	2	3	4	4.4
3.	1	2	3	4	1.2	33.	1	2	3	4	4.3
4.	1	2	3	4	1.2	34.	1	2	3	4	4.5
5.	1	2	3	4	1.3	35.	1	2	3	4	4.5
6.	1	2	3	4	1.3	36.	1	2	3	4	4.1
7.	1	2	3	4	1.4	37.	1	2	3	4	4.2
8.	1	2	3	4	1.4	38.	1	2	3	4	4.3
9.	1	2	3	4	1.5	39.	1	2	3	4	4.4
10.	1	2	3	4	1.5	40.	1	2	3	4	4.1
11.	1	2	3	4	2.1	41.	1	2	3	4	5.1
12.	1	2	3	4	2.1	42.	1	2	3	4	5.5
13.	1	2	3	4	2.3	43.	1	2	3	4	5.1
14.	1	2	3	4	2.3	44.	1	2	3	4	5.5
15.	1	2	3	4	2.3	45.	1	2	3	4	5.2
16.	1	2	3	4	2.2	46.	1	2	3	4	5.1
17.	1	2	3	4	2.4	47.	1	2	3	4	5.2
18.	1	2	3	4	2.5	48.	1	2	3	4	5.4
19.	1	2	3	4	2.3	49.	1	2	3	4	5.4
20.	1	2	3	4	2.2	50.	1	2	3	4	5.5
21.	1	2	3	4	3.1	51.	1	2	3	4	6.1
22.	1	2	3	4	3.2	52.	1	2	3	4	6.1
23.	1	2	3	4	3.1	53.	1	2	3	4	6.2
24.	1	2	3	4	3.2	54.	1	2	3	4	6.2
25.	1	2	3	4	3.3	55.	1	2	3	4	6.4
26.	1	2	3	4	3.4	56.	1	2	3	4	6.3
27.	1	2	3	4	3.4	57.	1	2	3	4	6.4
28.	1	2	3	4	3.4	58.	1	2	3	4	6.4
29.	1	2	3	4	3.5	59.	1	2	3	4	6.4
30.	1	2	3	4	3.5	60.	1	2	3	4	6.5

AANA Code No.: 31507; Expiration date: July 31, 2010

Time required to complete this answer sheet - check ONE box below.

0-60 minutes 61-90 minutes 91-120 minutes 121-150 minutes 151-180 minutes

For your examination to be processed, you must complete every section in this evaluation including time required for reading and comprehension and mail it with the examination to the AANA.

AANA Journal Course No. 29-2010

Evaluation Form

Please evaluate the *AANA Journal* Course in each of the categories listed below. Circle the number that corresponds with the rating scale for the overall course evaluation, as well as for each part.

1 = Poor 2 = Fair 3 = Average 4 = Very Good 5 = Excellent

Part 1: *The Cerebral Oximeter: What Is the Efficacy?*

Amanda Rouse Bruns, CRNA, MSN

Barbara R. Norwood, RN, EdD

Gerry Ann Bosworth, RN, PhD

Linda Hill, CRNA, DNP, DNSc, APN

- 1. Content related to objectives.....1 2 3 4 5
- 2. Content organized and easy to follow.....1 2 3 4 5
- 3. Content relevant and current.....1 2 3 4 5

Objectives	<u>Objectives</u>				
	<u>Not met</u>		<u>Met</u>		
1.1 Summarize the physiology of cerebral oxygenation and perfusion.....1	2	3	4	5	
1.2 Compare and contrast the methods currently used to monitor cerebral perfusion.....1	2	3	4	5	
1.3 Describe how near-infrared spectroscopy monitors measure cerebral oxygen saturation.....1	2	3	4	5	
1.4 Identify advantages and disadvantages of the cerebral oximeter.....1	2	3	4	5	
1.5 Explain clinical evidence that supports the efficacy of the cerebral oximeter.....1	2	3	4	5	

Time required for reading and comprehension of Part 1 of Journal course text: _____ minutes

Part 2: *Semmelweis Revisited: Hand Hygiene and Nosocomial Disease Transmission in the Anesthesia Workstation*

Chuck Biddle CRNA, PhD

- 1. Content related to objectives.....1 2 3 4 5
- 2. Content organized and easy to follow.....1 2 3 4 5
- 3. Content relevant and current.....1 2 3 4 5

Objectives	<u>Objectives</u>				
	<u>Not met</u>		<u>Met</u>		
2.1 Describe the important role of Semmelweis in coming to understand the epidemiology of nosocomial infections in hospitalized patients and its application to contemporary practice.....1	2	3	4	5	
2.2 Characterize the normal flora of the hands, and understand their role as an important vector for transmitting pathogenic organisms.....1	2	3	4	5	
2.3 Cite recent research describing infection hazards in the anesthesia work area.....1	2	3	4	5	
2.4 List the major recommendations described by the American Association of Nurse Anesthetists, the American Society of Anesthesiologists, and the Centers for Disease Control and Prevention related to hand-hygiene practice.....1	2	3	4	5	
2.5 Appreciate the role of biofilms in producing infection.....1	2	3	4	5	

Time required for reading and comprehension of Part 2 of Journal course text: _____ minutes

continued next page

Part 3: *New Drug, Fospropofol Disodium: A Propofol Prodrug*

Mark Welliver, CRNA, DNP

Susan M. Rugari, RN, PhD, CNS

- 1. Content related to objectives1 2 3 4 5
- 2. Content organized and easy to follow.....1 2 3 4 5
- 3. Content relevant and current.....1 2 3 4 5

Objectives	Objectives				
	Not met				Met
3.1 List the undesirable properties associated with lipid-based propofol formulations1	2	3	4	5	
3.2 Explain prodrug technology applied to propofol formulation1	2	3	4	5	
3.3 Describe the enzymatic alteration of fospropofol to the active agent diisopropyl phenol.....1	2	3	4	5	
3.4 Compare the pharmacokinetics and pharmacodynamics of current propofol formulations and fospropofol1	2	3	4	5	
3.5 Identify the potential application of fospropofol to clinical needs1	2	3	4	5	

Time required for reading and comprehension of Part 3 of Journal course text: _____ minutes 

Part 4: *Myocardial Infarction and Subsequent Death in a Patient Undergoing Robotic Prostatectomy*

Judy Thompson, CRNA, MS, APRN

- 1. Content related to objectives1 2 3 4 5
- 2. Content organized and easy to follow.....1 2 3 4 5
- 3. Content relevant and current.....1 2 3 4 5

Objectives	Objectives				
	Not met				Met
4.1 Identify some of the complications related to extreme head-down tilt associated with robotic procedures in the abdominal area1	2	3	4	5	
4.2 Assess some of the stressors associated with the use of pneumoperitoneum alone and in combination with the Trendelenburg position.....1	2	3	4	5	
4.3 Identify the various stressors associated with surgery on the body systems.....1	2	3	4	5	
4.4 Discuss the relevant but controversial literature associated with the perioperative management of the patient with drug-eluting and bare metal cardiac stents1	2	3	4	5	
4.5 Discuss the challenges facing the anesthesia and surgical teams in the care of a patient with cardiac stents1	2	3	4	5	

Time required for reading and comprehension of Part 4 of Journal course text: _____ minutes 

Part 5: *Evaluation of Older Adults*

Henry C. Talley, CRNA, PhD, MSN, MS

Costellia H. Talley, RN-BC, PhD, ACNS-BC

- 1. Content related to objectives1 2 3 4 5
- 2. Content organized and easy to follow.....1 2 3 4 5
- 3. Content relevant and current.....1 2 3 4 5

Objectives	Objectives				
	Not met				Met
5.1 Identify age-related physiologic changes in organ systems that occur in older adults1	2	3	4	5	
5.2 Recognize the normal physiologic changes that predispose patients to perioperative risk during the process of aging.....1	2	3	4	5	

5.3 List and discuss comorbid conditions associated with increased risk of perioperative complications in older adults	1	2	3	4	5
5.4 Describe the influence of age on functional capacity in older adults	1	2	3	4	5
5.5 Articulate an understanding of how a thorough preanesthesia evaluation can be important in minimizing perioperative complications in older adults	1	2	3	4	5

Time required for reading and comprehension of Part 5 of Journal course text: _____ minutes ←

Part 6: *Lipid Infusion as a Treatment for Local Anesthetic Toxicity: A Literature Review*
Mihaela V. Manavi, CRNA, MSNA, BSN, CCRN

1. Content related to objectives	1	2	3	4	5
2. Content organized and easy to follow	1	2	3	4	5
3. Content relevant and current	1	2	3	4	5

Objectives	Objectives				
	Not met				Met
6.1 Recognize the seriousness of local anesthetic toxicity and the potential benefit of lipid infusion as a treatment.....	1	2	3	4	5
6.2 Discuss a possible mechanism of action for lipid infusion as a treatment for local anesthetic toxicity.....	1	2	3	4	5
6.3 Recognize the evidence gathered from published animal studies regarding the efficacy of lipid infusion as a treatment for local anesthetic toxicity	1	2	3	4	5
6.4 Discuss published case studies regarding lipid infusion treatment, including common symptoms of local anesthetic toxicity, standard treatment protocol, and potential complications of a lipid infusion treatment.....	1	2	3	4	5
6.5 Discuss evidence that contradicts the efficacy of lipid infusion as a treatment for local anesthetic toxicity.....	1	2	3	4	5

Time required for reading and comprehension of Part 6 of Journal course text: _____ minutes ←

Overall Course Evaluation

A. Content (Parts 1-6)

1. Relates to objectives and overall purpose/goals	1	2	3	4	5
2. Based on current professional information	1	2	3	4	5
3. Level appropriate for identified intended audience	1	2	3	4	5
4. Corresponds with learner objectives identified at beginning of each part.....	1	2	3	4	5

B. Teaching Methods (Parts 1-6)

1. Self-test questions facilitated the learning process	1	2	3	4	5
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C. Relevancy to Practice (Parts 1-6)

1. Information presented can be applied to my practice	1	2	3	4	5
2. Information provided is helpful in achieving my professional goals	1	2	3	4	5

AANA Journal Course No. 29 Examination

Update for Nurse Anesthetists

Please circle 1 response for each question.

After you have marked your answers on this examination, transfer them to the answer sheet provided. Examination and Evaluation No. 29 also is available online.

Mail your answer sheet and evaluation form to:

AANA Continuing Education Department
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The examination and evaluation must be postmarked by July 31, 2010.

The Cerebral Oximeter: What Is the Efficacy?

1. Select the true statement about oxygen consumption and perfusion to the brain.

1. the brain consumes approximately 50% of the body's total oxygen
2. cerebral blood flow averages 50 mL/100 g per minute in the brain
3. autoregulation alters cerebral perfusion as systemic blood pressure changes
4. the average adult cerebral metabolic rate is 100 mL/min

2. Irreversible cell injury can occur in the brain if cerebral perfusion is not reestablished within:

1. 10 seconds
2. 1 to 2 minutes
3. 3 to 8 minutes
4. 10 to 12 minutes

3. The primary disadvantage associated with the transcranial Doppler, electroencephalogram, and jugular venous bulb oximetry monitors is that these monitoring modalities:

1. are invasive monitoring methods
2. can only provide delayed-time measures of cerebral perfusion
3. measure blood velocity rather than actual blood flow
4. provide global measures of cerebral perfusion

4. Continuous measures of velocity of blood flow within the circle of Willis are obtained by:

1. jugular venous bulb oximetry
2. nonquantitative cerebral oximetry
3. transcranial Doppler sonography
4. bispectral index monitor

5. The function of the quantitative concentration measurements monitor is to:

1. evaluate the mixed venous oxygen saturation of blood leaving the brain
2. express the measured ratio of oxyhemoglobin to total

hemoglobin as a number

3. uses sound waves reflected off blood cells traveling through intracranial vessels
4. use 2 wavelengths of light to measure oxyhemoglobin

6. The cerebral oximeter provides which of the following?

1. an absolute measure of brain oxygen saturation
2. an indirect method to assess oxygen levels in the brain
3. a measure of changes in regional cerebral oxygen saturation (rSO₂)
4. a measure of blood flow circulating through the circle of Willis

7. An advantage associated with the cerebral oximeter is:

1. it provides real-time information about brain oxygen supply and demand
2. it reflects the amount of intracellular oxygen that is available
3. the sensors are placed on the forehead
4. its resistance to outside electrical interference

8. A limitation of the cerebral oximeter in clinical practice is:

1. it is an invasive monitor
2. the expense of the equipment
3. all areas of the brain are not monitored
4. it requires the presence of an experienced ultrasonographer

9. Evidence suggests that the cerebral oximeter:

1. allows early intervention to restore rSO₂ to desired levels
2. is the gold standard for monitoring cerebral oxygenation
3. is not an appropriate monitor in the pediatric patient
4. is only effective for patients undergoing general anesthesia

10. There is research evidence that suggests the use of the cerebral oximeter:

1. provides information about the exact cause of the ischemia
2. may decrease postoperative recovery time
3. is not at all beneficial in preventing postoperative neurologic deficits
4. is only useful in patients undergoing carotid endarterectomies

Semmelweis Revisited: Hand Hygiene and Nosocomial Disease Transmission in the Anesthesia Workstation

11. Semmelweis was a physician who pioneered hand washing strategies that dramatically decreased the morbidity and mortality associated with what condition?

1. typhoid fever
2. syphilis
3. gas gangrene
4. childbirth fever

12. Nosocomial infections are believed to afflict approximately how many patients in US hospitals?

1. 1 in 10
2. 1 in 100
3. 1 in 1,000
4. 1 in 10,000

13. In Maslyk's study of anesthesia machine micro-organism contamination, what was found?

1. no microorganisms were cultured
2. only nonpathogenic organisms were cultured; no patient threat was cited
3. only *Staphylococcus aureus* was cultured; minimal patient threat was cited
4. a wide variety of pathogenic and nonpathogenic organisms were cultured; a significant threat to patient and staff alike was cited

14. Regarding the cited study of anesthetic workstation contamination involving 61 random first cases of the day at an academic center, select the true statement:

1. 32% of intravenous stopcock lumens became contaminated with pathogenic bacteria
2. only ASA physical status III patients were associated with contaminated equipment
3. it was noted that consistent, aseptic practice occurred in all 61 cases
4. it concluded there was no risk to patients due to nosocomial infection

15. In the observational study of 3,143 patient care activities in a postanesthesia care unit, average compliance with hand cleansing when a new patient was received was _____ and declined to _____ with subsequent hand cleansing during the subsequent care of the patient.

1. 97.2%; 89.1%
2. 74.3%; 68.9%
3. approximately 50%; approximately 45%
4. 19.6%; 12.5%

16. The Agency for Healthcare Research Quality identifies what intervention as a top research agenda item for patient safety?

1. increasing the use of heparin in the hospital setting
2. hand washing
3. decreasing the rate of overnight admission following appendectomy
4. increasing family presence in the postanesthesia care unit

17. The American Association of Nurse Anesthetists mandates that:

1. hands be washed before and after all patient or specimen contact
2. hands be thoroughly washed before and after handling body substances or articles possibly contaminated with body substances
3. hands should be thoroughly washed after removing gloves at the completion of a task or procedure
4. all of the above

18. A very common biofilm disease is:

1. Parkinson disease
2. diabetes
3. dental plaque
4. multiple sclerosis

19. Research describing why healthcare workers fail to wash their hands reveals:

1. patient care is distracting to hand washing
2. belief that because hands do not look dirty means washing is unnecessary
3. providers are too busy
4. all of the above

20. A recent study from the University of Colorado examining gender-based hand bacterial contamination revealed:

1. men had greater concentrations; 507 bacterial species were identified in all
2. women had greater concentrations; 4,742 bacterial species were identified in all
3. men had greater concentrations; 4,742 bacterial species were identified in all
4. women had greater concentrations; 507 bacterial species were identified in all

New Drug, Fospropofol Disodium: A Propofol Prodrug

21. Which of the following is NOT a concern with lipid-based propofol formulations?

1. bacterial supportive environment
2. elevates serum cholesterol and triglycerides

3. hyperkalemia
4. allergic reactions

22. When is the prodrug fospropofol activated?

1. upon swallowing
2. following digestion by gastric acid
3. after moving through the heart into the lungs
4. after structural alteration by enzymes

23. Fospropofol is prepared as which of the following formulations for administration?

1. aqueous (water soluble) solution
2. emulsion
3. colloid
4. inorganic volatile liquid

24. How does fospropofol differ in chemical structure from propofol?

1. fospropofol has a methyl phosphate group substituted at the first carbon hydroxyl on the base benzene structure
2. fospropofol has 2 phosphate groups substituted for each isopropyl group
3. fospropofol has a phosphate group substituted for the phenyl group
4. fospropofol and propofol are structurally identical; the formulation diluent is all that differs

25. The slowed onset and lessened sedative effects of fospropofol are directly related to which of the following?

1. lower administered dose of fospropofol
2. different active drug agent causing central gamma-aminobutyric acid (GABA) modulation
3. need for hepatic microsomal enzyme phosphorylation
4. formulation as an inactive prodrug requiring enzymatic conversion to the active drug agent

26. Diisopropyl phenol molecules liberated from fospropofol compared to diisopropyl phenol molecules of lipid-based formulations appear to be which of the following?

1. less potent
2. equipotent
3. more potent
4. nonpotent

27. The frequent intravenous re-bolusing of a prodrug that undergoes a metabolic or enzymatic conversion in the body over a given amount of time may promote which of the following?

1. underdosing
2. overdosing
3. perfect dose
4. microdosing

28. Which of the following is a unique side effect associated with fospropofol in clinical trials?

1. muscle rigidity

2. opisthotonos
3. perineal itching
4. hiccups

29. The pharmacokinetic and pharmacodynamic properties of fospropofol make it a likely candidate drug for which of the following?

1. sedation
2. induction agent
3. general anesthetic
4. dissociative amnestic

30. Which scale is useful to determine sedation effectiveness with fospropofol?

1. State Trait Anxiety Inventory (STAI)
2. Modified Observer's Assessment of Alertness/Sedation Scale (MOAA/S)
3. Snow Personal Control Inventory (SPCI)
4. Multifactorial Observer's Assessment of Alertness/Sedation Scale (MOAA/S)

Myocardial Infarction and Subsequent Death in a Patient Undergoing Robotic Prostatectomy

31. Drug eluting stents have gained in popularity because they are associated with:

1. less thrombus formation
2. less of a need to use antiplatelet medications
3. the ability to inhibit cellular proliferation on the stent wall
4. more rapid endothelialization than bare metal stents

32. Select the true statement regarding sirolimus and paclitaxel stents:

1. sirolimus is a powerful antithrombotic and replaces dual antiplatelet drugs
2. paclitaxel is a powerful antithrombotic and can replace aspirin therapy
3. sirolimus and paclitaxel are cytostatic and cytotoxic drugs, respectively
4. sirolimus and paclitaxel deactivate platelets by an anti-ATP mechanism

33. Which physiological response is seen with surgical stress?

1. a decrease in coagulability
2. inhibition of neuroendocrine hormone release
3. inhibition of the inflammatory response
4. a reduced fibrinolytic activity

34. The strongest predictor of stent thrombosis is:

1. premature discontinuation of antiplatelet therapy
2. major surgery in a closed space
3. multivessel stent placement
4. length of the stents

35. Thrombosis of a cardiac vessel acutely manifests as:

1. sudden bradycardia
2. sudden dysrhythmias
4. immediate asystole
4. unexplained pulmonary embolism

36. Initial derangements associated with the Trendelenburg position include:

1. elevated hydrostatic pressure at the baroreceptors
2. increase in central organ perfusion
3. initial and generalized vasoconstriction
4. decrease in myocardial oxygen consumption

37. Physiological derangements associated with pneumoperitoneum include:

1. expansion of the lung bases with insufflation
2. increases in renal blood flow
3. increases in gastrointestinal and mesenteric blood flow
4. decreased aortic diameter

38. One of the primary neurohormones released during surgical stress includes:

1. serotonin
2. dopamine
3. norepinephrine
4. histamine

39. The case report of the patient undergoing robotic prostatectomy was complicated by which of the following issues?

1. coronary artery disease
2. uncontrolled diabetes mellitus
3. multiple sclerosis
4. myasthenia gravis

40. Venous congestion associated with the extreme head-down position is related to which of the following?

1. carbon dioxide embolus
2. decrease in gastric pH
3. compacting of the lung bases
4. conjunctival edema

Evaluation of Older Adults

41. There is growing evidence that _____ alone is not a reliable marker of morbidity or of mortality.

1. biological age
2. functional status
3. chronological age
4. mental status

42. What percentage of noncardiac surgical patients age 70 and older will have one or more postoperative adverse outcomes?

1. 10%
2. 21%
3. 30%

4. 41%

43. The most common cardiac complication and the leading cause of death in the postoperative period is:

1. myocardial infarction
2. renal failure
3. pulmonary dysfunction
4. severe hypothermia

44. In addition to achieving specific assessment objectives, the preanesthesia evaluation should also complement the:

1. surgeon's plan
2. family's requests
3. personal interview
4. hospital booking schedule

45. Hypertension has been shown to be a risk factor for perioperative complications with this risk doubling for every _____ increase in blood pressure measurement.

1. 5 mm Hg systolic/10 mm Hg diastolic
2. 10 mm Hg systolic/5 mm Hg diastolic
3. 10 mm Hg systolic/20 mm Hg diastolic
4. 20 mm Hg systolic/10 mm Hg diastolic

46. Aging is associated with:

1. a decreased vital capacity and forced expiratory volume in 1 second
2. a decrease in residual volume
3. an increase in arterial oxygen tension
4. an increase in lung volume

47. The incidence of postoperative respiratory complications is increased _____ in persons who smoke.

1. 1- to 2-fold
2. 3- to 6-fold
3. 6- to 8-fold
4. minimal

48. Changes that occur in the central nervous system of the older patient cause:

1. a decreased sensitivity to anesthetic agents
2. a moderate risk of delirium during the immediate postoperative period
3. an increased risk for cognitive dysfunction
4. no marked changes in the healthy older patient

49. Which of the following further increases the risk for adverse reactions in patients with cardiovascular disease and increases the risk of perioperative complications?

1. inadequate insulin control
2. surgery longer than 2 hours
3. omitting preoperative beta blockers
4. increase in nerve conduction velocity

50. The preanesthesia evaluation allows for the:

1. appraisal of processes unrelated to aging
2. repair of anatomic limitations that go unreported
3. detection of abnormalities related to concomitant illnesses
4. elimination of the personal interview to assess the patient

Lipid Infusion as a Treatment for Local Anesthetic Toxicity: A Literature Review

51. Rates of local anesthetic toxicity have declined in the past 25 years mostly due to:

1. improved general anesthesia techniques
2. availability of less toxic local anesthetics
3. improved screening of patients to identify those at higher risk
4. declining popularity of regional anesthesia in the healthcare community

52. Any incident of local anesthetic toxicity should be considered a relevant event because:

1. of the potentially catastrophic nature of a toxic local anesthetic response
2. the hospital/facility must be notified of all nonstandard outcomes
3. of the potential for liability on the part of the anesthesia provider
4. all cases of local anesthetic toxicity must be reported to the website www.lipidrescue.org

53. The "lipid sink" theory postulates that infusion of a lipid emulsion:

1. creates a fatty barrier that keeps local anesthetic from entering the bloodstream
2. gives additional energy to the myocardial tissue, thereby allowing it to process toxic levels of local anesthetics at a higher metabolic rate
3. creates a separate lipid compartment within the plasma into which local anesthetics are drawn
4. causes local anesthetics to become inert

54. According to the "lipid sink" theory, which of the following overdoses may NOT be treatable with an infusion of lipid emulsion?

1. bupropion
2. lamotrigine
3. ropivacaine
4. clomipramine

55. Several brands of lipid formulations are on the market. Intralipid contains what combination of fats and oils?

1. oil as soybean oil; triglycerides, 200 g/L; phospholipids, 12 g/L; glycerol, 22 g/L
2. oil as safflower oil; triglycerides, 100 g/L; phospholipids, 10 g/L; glycerol, 22 g/L
3. oil as olive oil; triglycerides, 100 g/L; phospholipids, 10 g/L; glycerol, 10 g/L
4. oil as soybean oil; triglycerides, 150 g/L; phospholipids, 50 g/L; glycerol, 10 g/L

56. Dogs that received lipid infusion treatment for a toxic dose of bupivacaine:

1. were unable to achieve return of spontaneous circulation
2. reestablished a normal sinus rhythm within 5 minutes of receiving the treatment
3. experienced a decrease in the pH of the myocardial tissue
4. experienced a decrease in the partial pressure of myocardial oxygen

57. Symptoms of local anesthetic toxicity include all of the following EXCEPT:

1. tonic-clonic seizure
2. widening QRS morphology
3. asystole
4. bradycardia

58. Symptoms of local anesthetic toxicity usually occur how long after introduction of a toxic dose into the circulation?

1. seconds to minutes
2. about 1 hour
3. in 1 to 2 hours
4. 10 to 12 hours

59. Long-term treatment with lipid emulsion is contraindicated for patients:

1. with a compromised immune system
2. with a body mass index greater than 40
3. over the age of 65
4. with a compromised ability to metabolize fat

60. Possible reasons for contradictory study findings regarding the effectiveness of lipid infusion in the treatment of local anesthetic toxicity include all of the following EXCEPT:

1. interspecies differences between sample groups
2. differences in the types of measuring equipment being used
3. differences in the types of cardiopulmonary resuscitation being used
4. differences in the dosages of vasopressors used in concurrence with lipid infusion