

# **Surgery:**

## **PreTest® Self-Assessment and Review**

**Fourth Edition**

Edited by

Thomas C. King

Steven T. Ruby

Alison Estabrook

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## Notice

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required. The editors and the publisher of this work have checked with sources believed to be reliable in their efforts to provide drug dosage schedules that are complete and in accord with the standards accepted at the time of publication. However, readers are advised to check the product information sheet included in the package of each drug they plan to administer to be certain that the information contained in these schedules is accurate and that changes have not been made in the recommended doses or in the contraindications for administration. This recommendation is of particular importance in connection with new or infrequently used drugs.

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# Introduction

*Surgery: PreTest Self-Assessment and Review*, 4th Ed., has been designed to provide medical students, as well as physicians, with a comprehensive and convenient instrument for self-assessment and review within the field of surgery. The 500 questions provided have the same format and are of the same degree of difficulty as the questions contained in Part II of the National Board of Medical Examiners' examinations, the Federation Licensing Examination (FLEX), and the Foreign Medical Graduate Examination in the Medical Sciences (FMGEMS).

Each question in the book is accompanied by an answer, a paragraph explanation, and a specific page reference to either a current journal article, a textbook, or both. A bibliography, which lists all the sources used in the book, follows the last chapter.

Perhaps the most effective way to use this book is to allow yourself one minute to answer each question in a given chapter; as you proceed, indicate your answer beside each question. By following this suggestion, you will be approximating the time limits imposed by the board examinations previously mentioned.

When you have finished answering the questions in a chapter, you should then spend as much time as you need verifying your answers and carefully reading the explanations. Although you should pay special attention to the explanations for the questions you answered incorrectly, you should read every explanation. The authors of this book have designed the explanations to reinforce and supplement the information tested by the questions. If, after reading the explanations for a given chapter, you feel you need still more information about the material covered, you should consult and study the references indicated.

# Preface

Although the questions—and explanations—presented in this book are designed chiefly as a review in preparation for certifying examinations, the approach they embody has much to recommend it as a study format in a more general sense. The lives of physicians are made up of a series of real problems, the solutions of which require a series of logical steps: analyzing patient-related data; recalling relevant information, both general and specific; making choices among alternatives; reviewing the consequences of action taken; and making corrections in plans. The problem-solving model, as a stimulus to studying and learning, simulates to a small degree this learning model. It also takes advantage of many of the characteristics recognized by educational psychologists as conducive to efficient learning experiences. Information is gathered in response to a perceived need rather than in anticipation of that need. The learner is actively involved. There is immediate feedback, error correction, and reinforcement. The process can be carried out at the learner's own pace and in a natural setting. The material in this book is an approach to continuing education of student-physicians using methods designed to exploit these characteristics.

No longer can students assume that this kind of continuing education ends with the completion of formal training and the successful completion of licensing or certifying examinations. As of October 1979, all 22 member boards of the American Board of Medical Specialties had committed themselves to the principle of periodic recertification of their members. Despite the Board's recognition that the cognitive skills measured in the objective examination do not assure clinical competence, recertification efforts—insofar as they involve examinations—are based on the assumption that knowledge of current information upon which good clinical decisions should be made is worth cultivating; that, while such information does not guarantee competent practice, lack of it probably impedes competent practice; that this knowledge, unlike technical skills, is reasonably easy to assess, and that it can be acquired by well-motivated physicians. These assumptions all seem reasonable.

The questions presented in this book deal with issues of relative importance to medical students; other problem-oriented materials are becoming

available that are aimed at more sophisticated audiences—groups that, within a very few years, will include the present generation of students. Regular review of such material is a habit worth developing. We hope that this edition of *Surgery: PreTest Self-Assessment and Review* will justify your efforts in working through the problems by providing guidance for further study and helping to develop enduring learning habits.

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# Pre- and Postoperative Care

**DIRECTIONS:** Each question below contains five suggested responses. Select the one best response to each question.

1. The earliest clinical indication of hypermagnesemia is
  - (A) loss of deep tendon reflexes
  - (B) flaccid paralysis
  - (C) respiratory arrest
  - (D) hypotension
  - (E) stupor
2. Hyponatremia may result from all the following clinical problems EXCEPT
  - (A) diuretic abuse
  - (B) diabetes insipidus
  - (C) the nephrotic syndrome
  - (D) cirrhosis
  - (E) adrenal insufficiency
3. In the management of severe hypercalcemia, all the following agents are useful EXCEPT
  - (A) thiazide diuretics
  - (B) furosemide
  - (C) prednisone
  - (D) mithramycin
  - (E) infused phosphate
4. Spontaneous rupture of the spleen is most frequently associated with which clinical situation?
  - (A) Infectious mononucleosis
  - (B) Malaria
  - (C) Leukemia
  - (D) Polycythemia vera
  - (E) Sarcoidosis
5. Which of the following is characteristic of hypernatremia?
  - (A) Dry, sticky, oral mucous membranes
  - (B) Decreased body temperature
  - (C) Decreased deep tendon reflexes
  - (D) Stupor and coma
  - (E) None of the above
6. In a patient who has postoperative acute renal failure, all the following antibiotics must be administered in reduced dosages EXCEPT
  - (A) ampicillin
  - (B) chloramphenicol
  - (C) gentamicin
  - (D) cephalothin
  - (E) polymyxin B

## Questions 7-8

A previously healthy 55-year-old man undergoes elective cholecystectomy for asymptomatic cholelithiasis. His postoperative ileus is somewhat prolonged, and on the fifth postoperative day his nasogastric tube is still in place. Physical examination reveals diminished skin turgor, dry mucous membranes, and orthostatic hypotension. Pertinent laboratory values are as follow:

Arterial blood gases: pH 7.56;  $P_{O_2}$

85 torr;  $P_{CO_2}$  50 torr

Serum electrolytes (mEq/L):  $Na^+$

132,  $K^+$  3.1;  $Cl^-$  80;  $HCO_3^-$  42

Urine electrolytes (mEq/L):  $Na^+$  2;

$K^-$  5;  $Cl^-$  6

7. The values given above allow the descriptive diagnosis of

- (A) uncompensated metabolic alkalosis
- (B) respiratory acidosis with metabolic compensation
- (C) combined metabolic alkalosis
- (D) metabolic alkalosis with respiratory compensation
- (E) "paradoxical" metabolic respiratory alkalosis

8. The most appropriate therapy for the patient described would be

- (A) infusion of 0.9% NaCl with supplemental KCl until clinical signs of volume depletion are eliminated
- (B) infusion of isotonic (0.15 N) HCl via a central venous catheter
- (C) clamping the nasogastric tube to prevent further acid losses
- (D) administration of acetazolamide to promote renal excretion of bicarbonate
- (E) intubation and controlled hyperventilation on a volume-cycled ventilator to further increase the  $P_{CO_2}$

9. A 27-year-old woman is hospitalized in stage IV coma after an automobile accident. She is found to have cerebrospinal fluid otorrhea. A few hours later she begins to void large volumes of hypotonic urine (400 ml/hr, specific gravity 1.003 to 1.005). The most appropriate management for this patient is

- (A) replacement of urinary losses with 0.9% NaCl
- (B) replacement of urinary losses with 5% glucose in water
- (C) administration of subcutaneous aqueous vasopressin, 5 U
- (D) administration of intramuscular vasopressin tannate in oil, 5 U
- (E) observation

## Questions 10–11

A 23-year-old woman is brought to the emergency room from a halfway house, where she had apparently swallowed a handful of pills. The patient complains of shortness of breath and tinnitus, but refuses to identify the pills she ingested. Pertinent laboratory values are as follow:

Arterial blood gases: pH 7.45;  $P_{O_2}$

126 torr;  $P_{CO_2}$  12 torr

Serum electrolytes (mEq/L):  $Na^+$

138;  $K^+$  4.8;  $Cl^-$  102;  $HCO_3^-$  8

10. The patient's acid-base disturbance is best characterized by which of the following descriptions?

- (A) Acute respiratory alkalosis, compensated
- (B) Chronic respiratory alkalosis, compensated
- (C) Metabolic acidosis, compensated
- (D) Mixed metabolic acidosis and respiratory alkalosis
- (E) Mixed metabolic acidosis and respiratory acidosis

11. The most likely cause of the disturbance in this patient is an overdose of

- (A) phenformin
- (B) aspirin
- (C) barbiturates
- (D) methanol
- (E) diazepam (Valium)

12. A 37-year-old woman with severe Crohn's disease receives 1 month of TPN prior to undergoing a small bowel resection. Two weeks postoperatively she develops a facial rash and begins complaining that her hair is falling out. Her skin sutures are removed and the wound separates. A deficiency of which of the following should be suspected?

- (A) Essential fatty acids
- (B) Chromium
- (C) Magnesium
- (D) Zinc
- (E) None of the above

## Questions 13–14

A 68-year-old man is admitted to the coronary care unit with an acute myocardial infarction. His postinfarction course is marked by congestive heart failure and intermittent hypotension. On the fourth hospital day, he develops severe midabdominal pain. On physical examination, blood pressure is 90/60 mmHg, pulse 110/min and regular; the abdomen is soft with mild generalized tenderness and distention. Bowel sounds are hypoactive; stool hematest is positive.

13. The next step in this patient's management should be which of the following?

- (A) Barium enema
- (B) Upper gastrointestinal series
- (C) Angiography
- (D) Ultrasonography
- (E) Celiotomy



14. All the following statements concerning this patient are true EXCEPT that

- (A) surgery cannot be performed because of the prohibitive operative risk
- (B) intraarterial papaverine infusion may be helpful
- (C) laboratory findings are likely to include a high hematocrit and lactic acidosis
- (D) abdominal films would most probably show an ileus pattern
- (E) anticipated mortality is over 65 percent

15. Administration of mafenide (Sulfamylon) cream to patients with extensive burns may result in which of the following biochemical changes?

- (A) Anion-gap metabolic acidosis
- (B) Hyperchloremic metabolic acidosis
- (C) Respiratory acidosis
- (D) Metabolic alkalosis
- (E) Hyperglycemia

16. A 30-year-old woman in the last trimester of pregnancy suddenly develops massive left lower extremity swelling from the inguinal ligament to the ankle. The correct sequence of workup and treatment should be

- (A) venogram, bed rest, heparin
- (B) impedance plethysmography, bed rest, heparin
- (C) impedance plethysmography, bed rest, vena caval filter
- (D) impedance plethysmography, bed rest, heparin, warfarin (Coumadin)
- (E) clinical evaluation, bed rest, warfarin

17. The chief surgical risk to which patients with polycythemia vera are exposed is that due to

- (A) anemic disturbances
- (B) hemorrhage
- (C) infection
- (D) renal dysfunction
- (E) cardiopulmonary complications

18. Banked blood is deficient in which of the following coagulation factors?

- (A) II only
- (B) II and VII
- (C) V and VIII
- (D) IX and X
- (E) XI and XII

19. A 25-year-old woman underwent subtotal thyroidectomy for Graves' disease. Postoperatively she noticed that her voice fatigued easily and that she became hoarse when she talked for long periods. The most probable cause of her dysphonia is

- (A) injury to the vagus nerve
- (B) injury to the recurrent laryngeal nerve
- (C) injury to the superior laryngeal nerve
- (D) persistent perilaryngeal postoperative infection
- (E) an emotional reaction

**DIRECTIONS:** Each question below contains four suggested responses of which one or more is correct. Select

- |   |    |                |             |
|---|----|----------------|-------------|
| A | if | 1, 2, and 3    | are correct |
| B | if | 1 and 3        | are correct |
| C | if | 2 and 4        | are correct |
| D | if | 4              | is correct  |
| E | if | 1, 2, 3, and 4 | are correct |

20. Reduction of an elevated potassium level can be obtained by use of

- (1) sodium polystyrene sulfonate (Kayexalate)
- (2) sodium bicarbonate
- (3) glucose and insulin
- (4) calcium gluconate

21. A 23-year-old woman undergoes total thyroidectomy for carcinoma of the thyroid gland. On the second postoperative day she begins to complain of tingling sensation in her hands. She appears quite anxious and later complains of muscle cramps. Appropriate therapy over the next several days might include administration of

- (1) 10 ml of 10% calcium chloride intravenously
- (2) continuous infusion of calcium gluconate
- (3) oral calcium gluconate
- (4) oral vitamin D

22. True statements regarding the syndrome of magnesium deficiency include that

- (1) the signs and symptoms are similar to those of calcium deficiency
- (2) there is often a concomitant calcium deficiency
- (3) adequate cellular replacement may require 1 to 3 weeks of therapy
- (4) the serum magnesium level directly reflects the degree of the deficiency

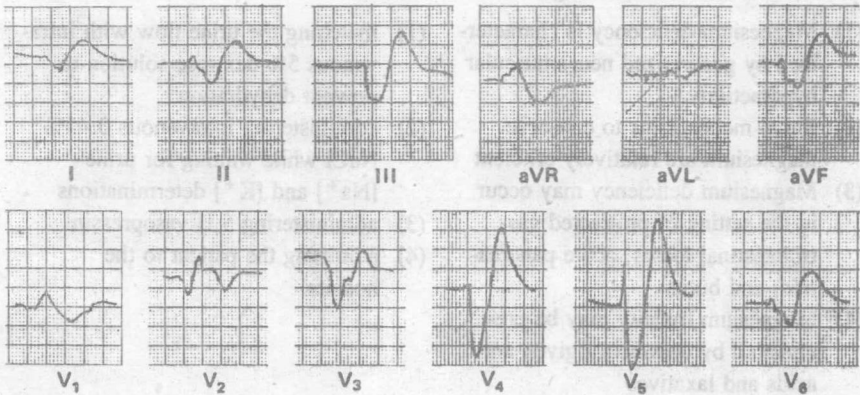
23. A 43-year-old woman develops acute renal failure following an emergency resection of a leaking abdominal aortic aneurysm. Three days after surgery, the following laboratory values are obtained:

Serum electrolytes (mEq/L):  $\text{Na}^+$  127;  $\text{K}^+$  5.9;  $\text{Cl}^-$  92;  $\text{HCO}_3^-$  15

Blood urea nitrogen: 82 mg/100 ml

Serum creatinine: 6.7 mg/100 ml

The patient has gained 4 kg since surgery and is mildly dyspneic at rest. Eight hours after the above data are reported, the electrocardiogram shown below is obtained. The initial treatment for this patient should include intravenous administration of



- (1) 10% calcium gluconate, 10 ml
- (2) digoxin, 0.25 mg every 3 hr for three doses
- (3) sodium bicarbonate, 44 mEq (50 ml)
- (4) lidocaine, 100 mg



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**SUMMARY OF DIRECTIONS**


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A	B	C	D	E
1,2,3 only	1,3 only	2,4 only	4 only	All are correct

---

24. Correct statements concerning the role of magnesium in body chemistry include which of the following?

- (1) Magnesium deficiency is characterized by generalized neuromuscular hyperactivity
- (2) Renal mechanisms to conserve magnesium are relatively efficient
- (3) Magnesium deficiency may occur in the setting of protracted gastrointestinal losses, acute pancreatitis, and burns
- (4) Magnesium toxicity may be precipitated by commonly given antacids and laxatives

25. A 68-year-old man comes to the emergency room complaining of inability to void. Physical examination reveals a distended bladder and an enlarged prostate. A Foley catheter is inserted into his bladder and 875 ml of urine are obtained. During the next hour an additional 600 ml are produced with the catheter still in place. Further management of the patient should involve

- (1) matching the urine flow with intravenous 5% dextrose solution to prevent dehydration
- (2) administering intravenous 0.45% NaCl while waiting for urine  $[Na^+]$  and  $[K^+]$  determinations
- (3) administering 5 U vasopressin
- (4) admitting the patient to the hospital