

**problems in**  
**anesthesia**  
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**a case study approach**

**Mark B. Ravin, M.D.**

**With 17 Contributing Authors**

# *Problems in Anesthesia:* *A Case Study Approach*

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ALP

*Problems in Anesthesia: A Case Study Approach*

To my wife Sondra,  
and my daughters Gail and Linda, without  
whose love and support this project could  
not have been accomplished

## *Foreword*

Introductory texts in anesthesiology have generally presented information in classic organization by subject. While this format has the potential advantage of permitting factual completeness for beginning students, it has the disadvantage of not indicating in any useful way how to apply the information or how to determine the direct clinical relevance of the theoretical matters presented. In this book, discussion based on actual clinical care problems orients theoretical presentations to directly relevant subjects and indicates in a concrete way some of the analytic processes that an experienced clinician uses to determine the proper diagnostic or therapeutic course of action. Learning anxieties are reduced by approaching the subject in this way.

No didactic method can replace direct personal experience, of course, but the transition between classroom and clinic can be smoothed significantly by the approach to teaching Dr. Ravin and his colleagues attempt in this text. Dr. Ravin, recognized as an excellent clinician and teacher, uses his many years of teaching experience well in presenting this gem of an introductory textbook.

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## *Preface*

The practice of Anesthesia is the practice of the Art of Medicine. Anesthesia, however, is also a technical specialty involving the instant application of the basic sciences of pharmacology, physiology, and anatomy to the clinical situation. Indeed, the practicing anesthesiologist is in reality a clinical pharmacophysiologist guiding his patient with balanced polypharmacy toward predetermined physiologic goals.

To employ anesthetic drugs and techniques in a rational fashion, the student of anesthesia must be intimately conversant with the advantages, disadvantages, indications, and contraindications of his pharmacopeia. He must also understand the clinical condition of his patient. The anesthetic neophyte intuitively recognizes that the severely cachectic patient, the wheezing asthmatic, or the patient with coronary artery disease will respond to a given anesthetic in a manner far different from that of the healthy olympian. But it requires a much higher degree of medical sophistication to appreciate how the patient with early congestive heart failure or chronic obstructive pulmonary disease requires modification of anesthetic technique to ensure a successful outcome.

The practice of anesthesia is the practice of medicine, for it encompasses the totality of medical science. A good anesthesiologist is more than an applied basic scientist, however, and more than an individual with perfected appropriate motor skills. He is also a compassionate physician. Compassion and empathy cannot be taught by printed material or lecture format. The formation of the compassionate individual is begun in the home when the child is quite small. The final polishing of the mature physician is achieved by attention to the activities of a skilled complete physician.

This book cannot teach these very important aspects of patient care. But they are emphasized because of the author's belief that the extreme stress, anxiety, and fear of the perioperative period can be attenuated by a continuous physician awareness that the patient suffers not only from pathophysiologic derangements, but from intense concern of diagnosis, prognosis, pain, mutilation, ego preservation, financial cost, job security, family relationships, family responsibilities, and fear of the unknown.

There are two main objectives of this book. The first is to teach the student about the "thought processes" of the anesthesiologist. The

second objective is to demonstrate how the practice of anesthesia is the practice of medicine.

We tend to interpret data on the basis of our experience and interest. If we were to ask a pathologist, an internist, and an anesthesiologist to give a brief description of emphysema, the answers would probably vary. The pathologist might characterize emphysema as a disease process resulting in loss of elastic tissue from the airway, rupture of alveolar septa, and the confluence of respiratory bronchioles. The internist might describe a patient who is dyspneic, cyanotic, breathing with the aid of his accessory muscles of respiration with his lips pursed to form an expiratory retard. The anesthesiologist, speaking with the voice of a clinical physiologist, might describe emphysema as a condition characterized by a residual volume to total lung capacity ratio that exceeds 35 percent. Obviously we see situations from our own point of view.

The first purpose of this book, therefore, is to give the student insight into how an anesthesiologist approaches certain common anesthetic diagnostic problems. In chapters 1 to 5, we have chosen to consider the intellectual challenge to the anesthesiologist posed by patients suffering from apnea, hypocarbia, hypercarbia, and dysrhythmias. We have used case reports as a point of departure for discussion.

There are diverse ways of orchestrating clinical teaching. One method is to use Venn diagrams and Boolean algebra to try to reduce the nebulousness of clinical signs to scientific precision. Or one can use a set of algorithms or "decision trees" to guide diagnostic thinking. We have preferred to remain with the more traditional method of listing the most common causes of a particular problem and discussing their etiology, diagnosis, and management on a level that is comprehensible by the average junior medical school student.

The second major objective is to present typical anesthesia problems that reveal the necessity for the practicing anesthesiologist to be a skilled general clinician as well as a specialist. There are sections that demonstrate the anesthesiologist's need for more than average knowledge in neurology (myasthenia, reflex sympathetic dystrophy), cardiology, nephrology, pediatrics, and pulmonary medicine (asthma, aspiration pneumonitis). Other sections introduce the student to the general areas of cardiopulmonary resuscitation and the diverse etiology and final common pathway of shock.

This book is not intended to replace the traditional anesthetic texts with their emphasis on a sequential approach to the patient who is to undergo anesthesia. Rather, this book presents the specialty of anesthesia as combining the dynamic cognitive skills of the diagnostician,



the manual requirements of the technician, and the attitudinal approach of the humanitarian.

M. B. R.

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## *Notice*

The indications and dosages of all drugs in this book have been recommended in the medical literature and conform to the practices of the general medical community. The medications described do not necessarily have specific approval by the Food and Drug Administration for use in the diseases and dosages for which they are recommended. The package insert for each drug should be consulted for use and dosage as approved by the FDA. Because standards for usage change, it is advisable to keep abreast of revised recommendations, particularly those concerning new drugs.

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