

BOOK REVIEWS

Carol A. Hirshman, M.D., Editor

Department of Anesthesia
University of Pennsylvania School of Medicine
3400 Spruce Street
Philadelphia, Pennsylvania 19104

Pharmacology and Physiology in Anesthetic Practice. Second Edition. BY ROBERT K. STOELTING. Philadelphia, J. B. Lippincott, 1991. Pages: 872. Price: \$89.50.

The second edition of *Pharmacology and Physiology in Anesthetic Practice* achieves its goals to be a concise and up-to-date work on aspects of pharmacology and physiology relevant to the practice of anesthesiology. It achieves the first goal by covering in adequate detail what one might need in a quick reference while keeping it contained in one reasonable-sized volume. It meets the second goal in that much of the work cited has been published since the release of the previous edition, completed only four years ago. It does not attempt to be the authoritative compendium of knowledge on these topics: it is practical.

This edition follows the format of the first edition; it contains the same chapters and nearly the same number of pages. Section one, on pharmacology, contains chapters that fit into one of three categories. First is a chapter on pharmacologic principles. This chapter is conceptual and does not get bogged down in theory and mathematics. Another group of chapters deals with the pharmacology of the drugs that are specifically used by anesthesiologists, including inhalational agents, intravenous anesthetics, opioids, and muscle relaxants. The last group of chapters in this section deals with the pharmacology of other drugs pertinent to the perioperative period. The second section, on physiology, also contains chapters that fit into three categories. The section begins with a chapter on cell physiology. Other chapters deal with overall homeostasis, including body fluids, acid-base balance, and metabolism. Finally, there are chapters on specific organ systems.

This book can be a useful resource for anesthesiologists at any stage of their careers. For the resident just learning about the specialty, it offers the advantage of a consistent writing style and lack of redundancy that only a single-author book can offer. The concise and practical presentation makes it an excellent book from which to review for examinations. These same attributes make it a useful resource to the practicing and teaching anesthesiologist. The book can provide a quick reminder of the properties of an unfamiliar drug or a review of the physiology of a particular organ system affected by an unfamiliar disease. As a concise overview, this book largely escapes the obvious disadvantage of any single-authored text, the fact that no one author can be an expert in every subject.

Tables and figures are used generously to illustrate the material. The figures are well organized within the text so that most figures are printed on the same page on which they are cited. The tables and chemical structure figures are very clear and nicely presented. The many figures taken from the primary literature are inconsistent in the quality of reproduction. All of these are readable, but the lack of clarity on some of them is a minor distraction in a book of this quality.

The organization of the book seems backwards: it might be easier to read about physiology before one reads how various drugs interact with normal or pathologic conditions. If a reader wishes to read the book through, instead of using it for spot reference, he or she may elect to read the second half of the book first.

Overall, the book can serve as a useful reference or review book for anesthesiologists. The book is worth the price and has a place on the desk of the anesthesiologist, regardless of his or her specific interests.

JERRY M. GONZALES, M.D.
Assistant Professor of Anesthesia

JOSEPH S. SAVINO, M.D.
Assistant Professor of Anesthesia

A Short Course in Epidemiology. BY STAFFAM E. NORELL. New York, Raven Press, 1992. Pages: 204. Price: \$37.50.

This book is intended for medical students, physicians, and other health care professionals. The aim of the author is to convey to those engaged in research and also to those evaluating results of studies the basic research principals and the sources of errors in epidemiologic studies.

The book is divided into three sections. The first section discusses cohort ("prospective") studies, and the second section discusses case-control ("retrospective") studies. Both sections elucidate sources of error and strategies for improving validity and efficiency. The third section addresses the choice of study design and the interpretation of results. There is a chapter of exercises after each of the first two sections, with answers in the back. Tables that quantify requirements and the effects of nondifferential misclassification and a short glossary of terms are also provided.

The introductory chapter briefly and clearly explains the basics of epidemiology, associations, study base, and study design. The following chapters in the first section describe cohort studies and types of errors, both systematic and random. By the nature of the book, the brevity of discussion on these latter topics leads to statements that are factual but do not clarify, such as "The effect of a potential confounder may be studied by means of stratification in the data." Unfortunately, the concept of stratification is never discussed.

The second section is divided into three types of case-control studies. The former two are referred to many times as "case-cohort studies" and the latter a "case-control study." Also, although the author appropriately uses an example of relative risk for a cohort study, this is not true for his example of relative risk for a case-control study (a relative odds calculation is appropriate and, in the rare disease assumption, approximates relative risk). The author's choices of types A, B, and C case-control does not add to this brief description of epidemiology. The readers would be better served if the book focused primarily on classic case-control studies (the author's type C).

The final chapters on choice of "study design" and "interpretation of results" are like the rest of the book: brief, concise, and factual.

Although the book is intended for "medical students, physicians, and health professionals with an interest in basic epidemiology," the beneficiaries may be a more limited group. The health professional with no or minimal knowledge of epidemiology may be better served by such introductory books as Lilienfeld and Lilienfeld's *Foundations in Epidemiology* or Mausner and Kramer's *Epidemiology: An Introductory Text*. Both books devote more discussion to understanding basic epidemiology. The researcher who needs more extensive and analytical references may find Breslow and Day's *Statistical Methods in Cancer Research, Vol. I: The Analysis of Case-Control studies* and *Vol II: The Design and Analysis of Cohort Studies* more useful. Those who want only a glimpse of basic ideas of study design and the commonest pitfall of epidemiology research may find this book appropriate.

ROBERT H. BROWN, M.D.
Assistant Professor of Anesthesiology
and Critical Care Medicine
and Environmental Health Sciences

*The Johns Hopkins Medical Institutions
600 North Wolfe Street
Baltimore, Maryland 21205*

On Narcotism by the Inhalation of Vapours. BY JOHN SNOW. A facsimile edition with an introductory essay by Richard H. Ellis. London, Royal Society of Medicine Services Ltd., 1991. Pages: xxx (introduction) + 112. Price: £20. (Original edition: London, Wilson and Ogilvy, 1848.)

John Snow published a series of 18 articles in the London Medical Gazette between 1848 and 1851, each with the same title: "On Narcotism by the Inhalation of Vapours." He collected and republished them between 1848 and 1852 as three pamphlets, retaining the name of the original articles as the title of the pamphlets. The present book is a facsimile edition of these rare pamphlets and includes a thoughtful and scholarly introductory essay by Dr. Richard H. Ellis.

This remarkable publication demonstrates Snow's clear understanding, on a level not again attained until fairly modern times, of ideas and concepts that underlie the rational practice of anesthesia. The simple yet sound experimental techniques that he used are extensively described and cannot fail to arouse profound admiration in readers in our era. These pamphlets include topics for individuals with interests in a wide variety of areas of modern anesthesia, such as uptake and distribution of inhalation anesthetics, pulmonary function and cardiovascular function during anesthesia, metabolic effects of volatile anesthetics, and problems in clinical anesthesia. Of course, Snow was not always correct in his conclusions, as judged by modern standards, but he was right much more often than he was wrong and exhibited a keen intuitive ability to evaluate evidence. His skill and experience as a clinician, as revealed in his discussions of clinical case material, are still worthy of note today. Snow's carefully presented analysis of the early deaths from chloroform were a highly significant factor in convincing his medical contemporaries that anesthetic deaths were preventable and were due to improper anesthetic technique rather than to some mysterious ill-defined idiosyncrasy. The substantial early resistance to use of anesthetics must have been thus considerably minimized. Much of the material in these pamphlets also is dealt with in Snow's 1858 book "On Chloroform and Other Anaesthetics."

It would have been helpful if substances that are mentioned and discussed by Snow in the text and are likely to be unfamiliar to today's readers, such as "Dutch Liquid" and "Olefiant Gas," were identified in modern chemical terms in the introduction.

This attractive and nicely printed volume should join Snow's other books, "On the Inhalation of the Vapour of Ether in Surgical Operations" (1847) and "On Chloroform and Other Anaesthetics" (1858) (both of which are available in facsimile editions) on the bookshelves of individuals and anesthesia departments with an interest in and a concern for the origins of modern anesthesia.

NORMAN A. BERGMAN, M.D.
*Clinical Professor of Anesthesiology
Oregon Health Sciences University
3181 S.W. Sam Jackson Road
Portland, Oregon 97201*

Drug Infusions in Anesthesiology. EDITED BY ROBERT J. FRAGEN, M.D. Raven Press, New York, 1991. Pages: 226. Price: \$82.

In the preface, Fragen states: "This book should provide an understanding of how the delivery of drugs by intravenous infusion can optimize therapy, the methods of drug delivery by infusion, and the drugs amenable to administration by this route." In accordance with Fragen's clear statement of purpose, this book delivers the information he set out to convey in a relatively concise, easy-to-read, and very understandable fashion. The timeliness of the subject is linked to the

development of drugs with shorter durations of effect and more rapid clearances as well as the evolution of infusion pump technology, which has led to the increasing use of drug infusions in the perioperative period.

Drug Infusions in Anesthesiology provides the reader with an in-depth yet quite understandable discussion of the pharmacokinetic considerations and advantages of continuous drug infusions. More specifically, the pharmacokinetic and pharmacodynamic considerations of the agents commonly in use for "total intravenous anesthesia" (TIVA) are discussed in detail. This information is nicely integrated with a review of intravenous drug delivery systems. TIVA is clearly the major theme of this text. The reader will be left with a historical perspective of the evolution of TIVA, the rationale for its use, very specific recommendations and guidelines for administration, and an up-to-date review of the rapidly accumulating TIVA literature. The appendix provides a series of tables as a ready reference to drug doses, which I am sure will be extremely helpful to today's practicing anesthesiologists in the operating room, particularly those who were reared in the "inhalation anesthesia era."

The book is divided into eight chapters, two of which were written by Fragen and the others of which were written by colleagues at Northwestern University and at Duke University Medical Center. All authors convey a spirit of enthusiasm and interest in this rapidly evolving era of intravenous anesthesia. The first six chapters pertain specifically to TIVA.

The first chapter, "General Principles of Drug Infusions," discusses basic pharmacokinetic and pharmacodynamic principles necessary to understand the dose-response relationship of intravenous anesthetics, specifically those with high elimination clearance. The importance of the method of drug administration to optimize efficacy while minimizing toxicity is clearly presented, as is the rationale for TIVA. This is illustrated by an extreme example of the potentially disastrous consequences of large-bolus drug administration: the numerous anesthetic-related deaths of acutely hypovolemic Pearl Harbor casualties who received large bolus doses of "short-acting barbiturates," which were more a consequence of the method of drug administration rather than of inherent drug toxicity. This chapter develops from a basic discussion of the dose-response relationship into a rather complex discussion of combined pharmacokinetic-pharmacodynamic models of various drug infusion schemes and would probably be interesting for the accomplished pharmacologist as well as the practicing anesthesiologist.

The second chapter, "Intravenous Drug Delivery Systems," discusses drug delivery systems conventionally used to administer drugs intravenously by continuous infusion. Beginning with a historical perspective and discussion of manual infusion devices, the author goes on to describe the essential features for infusion devices and desirable features for infusion pumps, and then critically discusses several commercially available calculator pumps that are suitable for intravenous anesthetic drug infusions. This section will serve as an unbiased guide to the currently available calculator pumps for the anesthesiologist who is attempting to decide which of these highly sophisticated but expensive devices to purchase. Various drug infusion schemes are discussed, both in the context of currently available infusion pump delivery systems as well as that of more futuristic automatic feedback control systems. A somewhat extended discussion of transdermal drug delivery, focusing on the transdermal fentanyl patch, seems somewhat out of context at the end of this chapter.

Chapters 3, 4, 5, and 6 provide the real "meat and potatoes" to the practicing anesthesiologist looking for a practical guide to TIVA administration. Chapter 3, "Infusions of Intravenous Anesthetics," concentrates on the continuous intravenous administration of propofol, midazolam, etomidate, methohexital, thiopental, and ketamine. Chapter 4, "Opiate Infusions," updates the clinician on the role of opiate infusions, specifically the fentanyl analogs fentanyl, alfentanil, and sufentanil, in anesthetic techniques and discusses the principles behind