modality that would have fit nicely in this category.

I was pleased to see the addition of the chapter on chest tubes. I have found that chest tubes is a subject in which new RTs and nurses are frequently underprepared. Assisting with chest tube placement, chest tube drainage systems, and monitoring and troubleshooting are covered and clearly presented.

The chapter on documentation and goals assessment is an overview of the patient medical record, the contents of a patient chart, and legal and financial ramifications of charting. The chapter describes various styles of charting used by RTs and presents clinical goals and outcomes for specific respiratory therapy modalities. The need for objective documentation is stressed. A very brief table of accepted medical abbreviations is included (there is a typographical error in the table). It has been my experience that new RT students struggle with charting, especially medical abbreviations. It would be helpful to have a more inclusive list of abbreviations.

The new chapter on noninvasive positive-pressure ventilation is especially timely, considering the increased frequency with which it is being performed. The chapter gives a good overview of the topic. The interface between the patient and the ventilator is described as being "critical" to the success of NPPV, and I couldn't agree more. However, only nasal masks and full-face masks are discussed. A more complete description of available masks, nasal apparatus, and headgear, plus additional tips on mask fitting would be helpful. I thought this chapter's information on the rapid shallow breathing index would have been more appropriately included in the section on weaning from mechanical ventilation, further on in the book.

The chapter on radiologic assessment has a good description of radiology techniques and positions. Most of the chest radiograph illustrations are clear and the pathologies easily identifiable, but epiglottitis, small pneumothorax, and acute respiratory distress syndrome are less clearly portrayed. The legend of Figure 4–26 describes an endotracheal tube "resting just above the carina," but in fact the tube appears just above the clavicles. Figure 4–29 is supposed to illustrate the appearance of a tracheostomy tube in a chest radiograph, but I could not identify any artificial airway in the picture.

My primary criticism of this text is of the photographs used for illustration. Many new photographs have been added to this edition. All are black-and-white. I found many of the pictures too dark, blurry, or grainy to clearly describe or illustrate the procedures or equipment components that they were meant to.

The chapter on mechanical ventilation is fairly basic. I was disappointed to find that this chapter has not been updated to include information on lung-protective ventilation or intrinsic positive end-expiratory pressure (auto-PEEP). Information for calculating tidal volumes based on ideal body weight and how to calculate ideal body weight would also be pertinent.

Overall, I appreciate the changes the author has made to this edition. I believe this text will be especially appreciated by RT directors of clinical education and anyone who supervises students in the clinical setting or assists with RT student lab activities. Students should appreciate the clarity with which procedures are described and that a single textbook can transition between lecture, laboratory, and clinic.

Lauri Stephens RRT RPFT NPS
Respiratory Care Department
Harborview Medical Center
Seattle, Washington

Interpretation of Pulmonary Function Tests: A Practical Guide, 2nd edition. Robert E Hyatt MD, Paul D Scanlon MD, and Masao Nakamura MD. Philadelphia: Lippincott Williams & Wilkins. 2003. Soft cover, illustrated, 240 pages, $39.95.

Pulmonary function testing (PFT) is increasingly being promoted to primary care providers both to evaluate patients with respiratory symptoms and to screen smokers for early evidence of airflow limitation, thus targeting special smoking cessation interventions. To use PFT results effectively, the clinician must have a sound understanding of the basic concepts of PFT interpretation. This understanding is especially important when testing and interpretation are performed in the clinician's office. However, even if the patient is referred to a PFT laboratory, that understanding helps to guide test selection and gauge the clinical relevance of the specialist's test interpretations. The main purpose of **Interpretation of Pulmonary Function Tests: A Practical Guide** is to give nonpulmonologists a practical working knowledge of PFT interpretation. As the authors state in the introduction, "The sole purpose of, and justification for, this text is to is to make [PFTs] user-friendly. Our goal is to target the basic clinical utility of the most common tests, which also happen to be the most important." I would say the authors have succeeded in that goal. This is a concise, well-illustrated introduction to PFT interpretation. The explanatory material in the early chapters is complemented by a series of brief case discussions that reinforce the basic concepts and, importantly, give novice readers an appreciation for the nuances that can help form an accurate interpretation when the raw data do not suggest a clear, simple answer.

For the most part the text presumes that the pulmonary function data are correct—that the testing was performed using properly calibrated equipment by a competent technician who was able to elicit the patient's maximal effort. Accordingly, this book is more relevant to physicians and other providers charged with PFT interpretation and less suited to pulmonary function technicians and other personnel responsible for maintaining the equipment and generating optimal test data.

The book begins with a useful list of abbreviations. Next is an introductory chapter that outlines the potential clinical utility of PFTs, briefly introduces the concept of normal values and variability, and presents the argument for more widespread use of office spirometry to detect early airflow limitation and prevent the development of disabling chronic obstructive pulmonary disease. This chapter also contains a cautionary statement that emphasizes the importance of considering all of the clinical data (in addition to pulmonary function results) before making a clinical diagnosis.

Subsequent chapters address spirometry, lung volumes, diffusing capacity, bronchodilator and bronchial challenge testing, arterial blood gases, airway resistance and lung compliance, distribution of ventilation, maximum respiratory pressures, preoperative testing, and simple exercise tests. These chapters are well executed and nicely illustrated. Several of the sections are beyond the scope of the book's main goal and intended audience. For instance, measurements of distribution of ventilation and resistance/compliance are not likely to be used by nonspecialist clinicians. However, the inclusion of that material helps to illustrate the underlying physiology, may be of con-

siderable interest to trainees, and does not detract from the main purpose of the book.

For the most part the authors promote fairly standard and well-accepted concepts of pulmonary physiology and PFT interpretation. They propose a novel term, the "gestalt approach," for the initial visual inspection of the flow-volume curve, which most interpreters consider an essential part of the interpretation process. They provide a valuable description of this approach and the qualitative insights that can be gained. I was uneasy with their method for determining the severity of impairment, which is based on visual estimation of the "lost" area under the normal curve. Any assignment of pulmonary function impairment is admittedly arbitrary, but there are more precise ways to sort patients into these arbitrary categories.

Lung volume interpretation was another topic that the authors handled somewhat unconventionally. Their lung volume interpretation schema is driven primarily by the total lung capacity (TLC) and residual volume (RV) values—the functional residual capacity (FRC) is dismissed as being "primarily of interest to the physiologist." This bias is reflected in the heading of the section (3c), which describes the various ways to measure FRC as "How the RV is measured." I prefer the "boundary conditions" approach to interpreting lung volume patterns, using TLC and RV *plus* FRC. This is particularly helpful with obese patients and may reveal effects on chest-wall recoil that are not yet evident as reduced TLC. Also, extending the "gestalt approach" to lung volume interpretation is a bit of a "stretch," primarily because there is no absolute scale on most flow-volume loops (everyone starts at TLC). Neither of these points substantially detracts from the authors' careful explanation of lung volume measurements and the rational approach to interpretation that they describe and then demonstrate in later chapters.

In general the discussions of underlying physiology are appropriately detailed for the intended purpose of the book. I thought that mechanisms of airflow limitation deserved more illustration, because understanding those is so important and basic. Similarly, more discussion of what constitutes "normal," what contributes to normal variability, and what can be confidently considered an "excessive" rate of airflow decline would have been appropriate, particularly since one of the major goals of the book is to encourage serial screening of asymptomatic smokers.

The last part of the book contains a brief chapter that discusses the expected PFT results in various common diseases. Another chapter provides a simple rationale for "when to test and what to order." These are helpful practical discussions of topics that are often covered only in the form of a summary table in many other textbooks. Another chapter takes the reader stepwise through the overall process of PFT interpretation. Finally, the book concludes with a series of 44 vignettes, each of which include a brief clinical history, flow-volume loops, and other pulmonary function data (presented on a single page). Questions that illustrate important concepts are posed at the bottom of each page, and the informative answers are conveniently revealed on the back of each page. This gives the reader a chance to test his or her new interpretation skills on a wide array of realistic cases. This section is also used, quite effectively, to demonstrate how the subtleties of PFT data can help clarify the interpretation when the initial interpretation seems equivocal or unclear.

This second edition of **Interpretation of Pulmonary Function Tests: A Practical Guide** is an attractive, soft-bound book, roughly 15×23 cm, with 240 pages. The cover is glossy and durable; the page stock is thick enough for easy flipping and handling, though not thick enough to completely obscure text and figures showing through from the opposite side. The font is easy to read, with effective use of section headers, numbered lists, italics for emphasis, and indented paragraphs with smaller font to identify key points or "pearls." I did not discover any typographical errors. The index is thorough. The text is not heavily cross-referenced, but it frequently refers readers to relevant materials in other sections.

The figures are exemplary for this type of book. Most are simple line drawings depicting testing apparatus or test results. The scale and weight of the lines are nearly perfect to my eye. As a PFT educator, I appreciate the authors' efforts in producing these original, creative, and clear illustrations. They could easily be assembled into a highly effective set of illustrations for teaching purposes. I suspect that many will do just that, and I hope that the authors receive due credit. The photographs are glaring exceptions to the otherwise excellent figures. For instance, the figure showing normal inspiratory and expiratory chest radiographs (Fig. 3-1) is reproduced poorly enough that even the difference in lung volumes between TLC and RV is difficult to see. Figures 5-1 (metered-dose inhaler with homemade spacer) and 9-3 (maximum pressure measurement apparatus) are better. However, to improve understanding of how the measurements are made, the pressure measurement apparatus would be more effectively illustrated as a line drawing similar to others in the text, such as Figure 8-1 (the single-breath nitrogen washout measurement apparatus).

References are notable for their absence. Very few of the concepts presented in this book are supported by references. The source of one borrowed figure is cited in 2 figure legends. Otherwise, a few pertinent reports are cited at the ends of some of the chapters. Although these are cited as support of specific statements, most could be labeled "additional reading." The lack of references detracts hardly at all from the main purpose of the book and may not be missed by the primary intended audience, but more experienced and sophisticated readers may wish for more links to the supporting evidence. This is particularly true of statements that are not easily researched in standard pulmonary physiology and pulmonary function textbooks. For instance, I just taught a group of medical students how to perform spirometry testing, and one healthy young woman repeatedly demonstrated a convex inflection on her expiratory flow-volume curve. I was relieved to read (Fig. 2-6h) that this "knee" is a "normal variant often seen in nonsmokers, especially young women." But I was disappointed that there was no reference to the original data (if any) that support this assertion. I was also left curious as to the physiologic explanation for that phenomenon.

In summary, this is a well-crafted introduction to the interpretation of PFTs, and it should be very helpful to primary care providers and other nonpulmonologists who order or perform PFTs. It would be useful reading for both primary care and pulmonary trainees as well. The intentional lack of attention to the performance of the tests limits the utility for pulmonary function technicians and respiratory therapists, but the book does offer them good insight into the basics of interpretation and the clinical utility of the PFTs they perform. The book's major strengths are the simple, straightforward explanations, the clearly drawn and annotated figures, and the extremely well-presented clinical vignettes. The book's limitations, which are mostly due to intentional

decisions about the book's focus, include the paucity of references, the lack of discussion about performing PFTs, and the superficial treatment of the concept of "normal" values and the sources of normal variability. I expect to refer to my copy of **Interpretation of Pulmonary Function Tests: A Practical Guide** both to reinforce my own understanding of the concepts and to help me present this material more clearly when teaching.

David R Park MD
Division of Pulmonary and
Critical Care Medicine
Harborview Medical Center
University of Washington
Seattle, Washington

Coronary Circulation and Myocardial Ischemia. Michael R Pinsky MD, Antonio Artigas MD PhD, Jean-Francois Dhainaut MD PhD, editors. (Update in Intensive Care Medicine series, Jean-Louis Vincent MD PhD, series editor.) New York: Springer-Verlag. 2002. Soft cover, illustrated, 193 pages. $49.95.

Coronary Circulation and Myocardial Ischemia is a succinct collection of reports that illustrate the basic physiology, applied physiology, functional assessment, and therapeutic and clinical applications involved in understanding the complexities of coronary circulation and the current rapidly evolving treatments for myocardial ischemia. Each of the 15 chapters were written by research contributors in the field and constitute terse summaries of basic science, physiology, and clinical applications pertaining to coronary circulation and myocardial ischemia. I will discuss the merits and limitations of the book's 4 sections.

Section I, entitled "Basic Physiology," discusses the local control of coronary blood flow and the basic cellular mechanisms involved in the development of atherosclerosis. The coronary vasculature is unique in that basal myocardial tissue oxygen extraction is very high (coronary *sinus* venous oxygen saturation is approximately 25%), so coronary blood flow must increase to meet that high myocardial metabolic demand. The authors support the hypothesis that adenosine is the locally released mediator that augments coronary blood flow, but they also present the limitations of the adenosine hypothesis, suggesting that other yet-to-be-identified mediators of coronary blood flow probably act in concert with adenosine to enhance coronary blood flow during increased myocardial metabolic demand. The authors focused their discussion of atherosclerosis on the currently "in vogue" hypothesis that inflammation and vessel infection play a key role in the development of atherosclerotic plaque. They nicely summarized the recent sero-epidemiology, animal models, and plaque detections studies that support the role of herpes cytomegalovirus, *Chlamydia pneumoniae*, and *Helicobacter pylori* in the formation of atherosclerotic plaque. However, their enthusiasm for *Chlamydia pneumonia* as a cause of atherosclerosis is based on small, positive, randomized macrolide-antibiotic trials with patients suffering coronary artery disease, and it should be tempered by the recent negative results from the larger ACADEMIC (Azithromycin in Coronary Artery Disease: Elimination of Myocardial Infection With Chlamydia[1]) and WIZARD (Weekly Intervention with Zithromax for Atherosclerosis and Related Disorders[2]) antibiotic trials, the results of which were published after the hardback version of **Coronary Circulation and Myocardial Ischemia** came out in 2000.

Section II, "Applied Physiology," discusses concepts such as ischemic preconditioning, coronary circulation in sepsis, and the importance of plaque thrombus generation and pharmacologic fibrinolysis of occluded vessels. Ischemic preconditioning, first described by Murray et al in 1986,[3] is the observation that myocardium exposed to antecedent brief sublethal ischemia and reperfusion has smaller subsequent infarct size than myocardium not exposed to ischemic preconditioning. The chapter author describes possible cellular mechanisms and clinical scenarios involved in ischemic preconditioning and alludes to the possible role of the adenosine-triphosphate-sensitive potassium channel (K_{ATP}) in ischemic preconditioning. Not mentioned, however, were recent clinical results from the large IONA study in Europe,[4] in which nicorandil (a K_{ATP} agonist) improved myocardial ischemia and unstable angina in patients with symptomatic coronary artery disease; these results support direct pharmacologic activation of ischemic preconditioning as a novel treatment for atherosclerotic heart disease. The next chapter in this section nicely illustrates the effect of sepsis on coronary circulation. Although early sepsis is often associated with high cardiac output the authors discuss, from their own research, the observation of sepsis-mediated increased coronary blood flow and, hence, impaired vasodilator reserve. The 2 final chapters in this section nicely summarize the role of inflammation, tissue factor, and altered shear stress in thrombosis generation and the utility of fibrin-selective and non-fibrin-selective fibrinolytic agents in clot dissolution.

Section III, "Functional Assessment of the Coronary Circulation," discusses assessment of coronary circulation via echocardiography, myocardial viability imaging with positron emission tomography, magnetic nuclear resonance imaging, and intracoronary ultrasound (although this final section chapter is misplaced, in section IV). This section of the book is fairly solid and the information provides an important and succinct update for both novices and seasoned practitioners on the new and evolving cutting-edge technologies for evaluating coronary circulation.

Section IV, "Therapeutic and Clinical Applications," deals with nonthrombotic pharmacologic therapy, fibrinolytic therapy, percutaneous coronary intervention, and adjunctive therapy in the treatment of myocardial ischemia. The main fault with this section is that although the authors provide a nice overview of ischemic heart disease therapies available in the year 2000, the field has rapidly advanced and there are many new and expanded standard therapies available for the treatment of atherosclerotic heart disease, including (1) angiotensin-converting enzyme inhibitors to prevent ischemic events (the Heart Outcomes Prevention Evaluation [the HOPE study]),[5] (2) 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CO-A) reductase inhibitors (statins) to reduce ischemic events in patients with atherosclerosis independent of low-density-lipoprotein cholesterol (the Heart Protection Study),[6] (3) clopidogrel in addition to aspirin to reduce ischemic cardiovascular events in patients with non-ST elevation myocardial infarction/unstable angina (the CURE [clopidogrel in unstable angina to prevent recurrent events] study)[7] or after percutaneous coronary intervention (the CREDO [clopidogrel for the reduction of events during observation] study),[8] and (4) rapamycin-coated intracoronary stents to reduce restenosis following percutaneous coronary intervention (the RAVEL [randomized study with the sirolimus-eluting bx velocity balloon-expandable stent] study and the SIRIUS study).[9,10]