

Pediatric Allergy: Principles and Practice. Donald YM Leung MD PhD, Hugh A Sampson MD, Raif S Geha MD, Stanley J Szefer MD. St Louis: Mosby. 2003. Hard cover, illustrated, 688 pages, \$89.95.

Atopic diseases such as asthma, allergy, and anaphylaxis are important and growing problems in the pediatric population. Discoveries of the mechanisms of development of atopic and primary immunodeficiency diseases are some of the success stories in the field of pediatric allergy/immunology. In addition, therapies for atopic and primary immunodeficiency diseases have recently undergone exciting new changes. Given the groundbreaking nature of these scientific and therapeutic breakthroughs, it is strange that until now there has not been a reference book dedicated solely to the field of pediatric allergy. The goal of the editors of this textbook was to document and summarize the numerous recent changes in the field of pediatric allergy/immunology. Leung et al have fulfilled their aims and admirably filled a void in the allergy literature.

This textbook includes 60 well defined chapters. Topics include basic immunologic mechanisms of disease, primary immunodeficiencies and their therapies, diagnosis and treatment of allergic diseases, upper airway disease, asthma, food allergy, skin and eye disorders, and drug allergy/anaphylaxis. The breadth of coverage is impressive and complete. The book's organization assists in its readability. Each heading is subdivided into several chapters, allowing for full discussions of the topics.

Rare diseases such as eosinophilic gastroenteritis and autoimmune lymphoproliferative disease receive complete discussions. The section on food allergies includes chapters on "Prevention and Natural History of Food Allergy" and "Approach to Feeding Problems in the Infant and Young Child," which are often missed in adult allergy reference books. In addition, the authors and editors placed new emphasis on some topics, making the discussions particularly appropriate to pediatrics. One such chapter is "Asthma and the Athlete," in which the emphasis is on controlling baseline asthma rather than on episodic use of quick-relief medications. This approach allows for the

spontaneity of childhood play, because asthma can be difficult to pre-treat with β agonists.

The book's target audience is physicians practicing in allergy/immunology, but the practicing pediatrician will find this an excellent reference as well. Nurses and allied health practitioners will appreciate the patient education references and Web site links for specific topics. The strengths of this book include conclusion tables (at the end of each chapter) entitled "Key Concepts," which are excellent for quick reference. In addition, the text is replete with outstanding treatment algorithms. Tables of the differential diagnoses of specific disease processes are found in most chapters dedicated to diagnosis and treatment. These tables will be useful to both the pediatric and internal-medicine-trained allergist who cares for children. Another strength of **Pediatric Allergy: Principles and Practice** is how readable and clear it truly is.

My favorite chapter was Chapter 57, "Drug Allergy." Extensive algorithms, skin-testing procedures, and desensitization protocols make this chapter a treasure trove of information for the practicing allergist. The surprising up-to-date Web site references throughout the text are also greatly appreciated. In addition, the food allergy appendix is particularly helpful as an education tool for patients.

The editors found superb authors for most chapters. In particular the chapters on complement deficiencies and epidemiology of allergic diseases were highly readable and maintained a clinical rather than basic science emphasis. The editors also included provocative chapters on gene therapy and stem cell therapeutics, which are currently only treatment possibilities of the future, but because of their high degree of promise and the ethical considerations involved in their use I found myself appreciating their inclusion in the book. The only chapter that failed to fulfill its promise is the one on Epstein-Barr virus; justification for its inclusion in the textbook was not clearly delineated.

Each chapter's author strove to reference the best pediatric studies. In fact, whenever possible, the authors did an admirable job of avoiding referencing adult studies. The pediatrics adage that "children are not just

little adults" was heeded throughout the book. References are well balanced between classic, landmark reports, and new studies. In addition, the index allows for quick referencing, as it is very complete. Rare syndromes are included in the index, and major subjects such as rhinitis are sub-indexed for easy finding of specific topics.

However, I did find myself repeatedly wishing for a table (at the end of each chapter or in the appendixes) of the dosages of the medications mentioned by chapter authors. That bit of additional organization would have made the book much more handy for the practicing clinician. In addition, the chapters on the basic science underlying various topics were quite dense, and summary tables at the end of each subsection would have strengthened the readability of these chapters.

This textbook is surprisingly inexpensive, considering its depth and breadth. It is certainly a competitive price compared to such adult allergy reference tomes as *Middleton's Allergy: Principles & Practice* or *Patterson's Allergic Diseases*.

In summary, **Pediatric Allergy: Principles and Practice** is an outstanding reference book that deserves to be in the library of every practicing pediatric allergist/immunologist and primary care pediatrician. Allied health professionals will find the patient education materials quite helpful. While delineating basic pathophysiologic mechanisms of disease, the authors retained a high degree of clinical utility. I look forward to future editions of the textbook as the field of pediatric allergy continues to evolve.

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Childhood Asthma and Other Wheezing Disorders, 2nd edition. Michael Silverman, editor. London: Arnold. 2002. Hard cover, illustrated, 484 pages, \$125.

Asthma and associated respiratory illnesses in which wheezing is a primary symp-

tom are extremely common in childhood. One third of all children are known to wheeze in the first 3 years of life, almost half doing so by the age of 6 years. Because of the prevalence of these illnesses much attention has been paid in the literature of various clinical disciplines (medicine, respiratory care, and nursing) to defining specific syndromes and their pathophysiologic origins, prognoses, and therapies. Despite the fact that developed societies have a wide array of diagnostic tools and drugs for treating asthma, the morbidity and mortality from childhood asthma and wheezing disorders continue to rise. In developing countries the importance of these illnesses may be just as great, although perceptions of their relative societal burden may be diminished by the concurrent impact of childhood infectious diseases.

To reduce the immense morbidity of childhood asthma and wheezing disorders, clinicians require an understanding not only of current epidemiologic and diagnostic trends, but also of prevention and treatment strategies. The primary target audience for this text is pediatricians, pediatric pulmonologists, and allergists, but pediatric respiratory care personnel, nurses, and asthma educators will also benefit greatly from the sections focused on their specific areas of practice.

The editor, Michael Silverman, intended to provide a comprehensive text specifically addressing childhood asthma. Despite an explosion of information regarding asthma genotype-phenotype correlations over the past few years, we still await definitive techniques to provide structural and cellular bases to differentiate asthma phenotypes. Nowhere is this more critical than in childhood asthma, in which the initial pathogenetic phases may provide information that is not only prognostic for the future disease state but may also enable more targeted therapies. Pediatric asthma practitioners therefore need this comprehensive text specific to childhood asthma. Primary care pediatric texts typically have provided overviews of asthma care, with superficial discussions of phenotype-specific pathogenesis and therapy. Medical subspecialty and respiratory therapy textbooks have often provided more in-depth descriptions of adult asthma phenotypes. Like both the United States and international asthma guidelines those texts have too often made only limited attempts to bridge the substantial knowledge gap linking genotype at birth to early childhood

asthma phenotype and the manifestation of disease in adult patients.

Silverman and the authors of the individual chapters are leaders in their clinical fields. Their collaborative efforts have resulted in a text that contributes greatly to pediatric asthma care. Overall, the individual chapters are written with a clear and concise style. The graphics are simple but provide additional clarity when needed and are themselves well referenced. The chapters are well organized and flow logically from discussions of the epidemiology and natural history of asthma, through asthma pathophysiology and therapies, to specific issues such as psychological factors, growth and puberty, and aspects of international health care specific to certain cultures. Each chapter is sufficiently focused and concise to be read individually. The chapters are logically subdivided and the sections are headed according to age group, pharmacotherapeutic effect, or diagnostic or treatment algorithm.

One aim of this text is to provide discussions of current best clinical practice. Support for outlined clinical approaches is provided with the best available data from human studies, and the text is thoroughly referenced with journal sources. Readers seeking references linking clinical practice recommendations to novel laboratory data from animal studies or *in vitro* human cellular or molecular bench research will be disappointed, as that was clearly not the book's aim. Rather, this text focuses on results from clinical trials applicable to current clinical practice.

Some of the chapters warrant individual comment. The chapter on lung function, by Peter D Sly and Felicity S Slack, provides an excellent overview of physiology and standard pulmonary function techniques. The section on physiologic measurement in clinical situations was insightful. There has been much recent attention in the pulmonary physiology literature directed at pulmonary function testing of infants and preschool children. Since a primary focus of this text is asthma in infants and young children, I was puzzled that the discussions of rapid thoracic compression, raised-volume thoracoabdominal compression, forced oscillation, impulse oscillometry, and high-speed interrupter techniques were limited to little more than a paragraph each.

Fernando S Martinez's chapter on the natural history of childhood asthma, which is new to the second edition, is a welcome

addition. Recent epidemiologic research, to which Martinez is a major contributor, has contributed substantially to our understanding of the evolution of childhood wheezing illnesses. He provides a framework in which various forms of asthma can be differentiated: transient wheezing of infancy, persistent wheezing after respiratory syncytial virus infection, and atopy-associated asthma. Patrick G Holt provides an excellent discussion that supports maturational deficiencies in adaptive immunity as etiologic in the development of asthma. Peter N le Souëf outlines data from selected candidate gene studies and points out the many current limitations in knowledge.

Jill A Warner and John O Warner's chapter on asthma prevention provides an excellent discussion of maternal factors that influence primary allergic sensitization and subsequent development of asthma. However, there has been a recent explosion of epidemiologic and basic science literature that supports the hygiene hypothesis. The Warners have, in fact, contributed substantially to that literature, and I was rather disappointed that it was given a relatively brief review in this chapter.

Søren Pedersen and Hans Bisgaard's chapter is a masterful discussion of asthma pharmacology and clinical therapeutics. It ties cellular and preclinical information with pharmacokinetic and pharmacodynamic data specific to children. It is a concise yet thorough review of asthma pharmacotherapy and alone could be used by many as a reference. Another chapter co-authored by Søren Pedersen discusses inhalation therapies and aerosols. In an unbiased manner, it briefly describes various inhalers and aerosol devices. This chapter too could be used alone as a reference. Together, these 2 chapters are among the most thorough yet concise statements on current asthma management. Both are well referenced and provide an abundant source of background material.

Silverman's chapter on wheezing disorders in infants and young children provides an elegant discussion of the epidemiology, differential diagnosis, and therapeutic strategy options for virally induced wheezing in young children. Robert Dinwiddie's brief chapter discusses unusual syndromes and asthma complicating other disorders. Together those 2 chapters provide a comprehensive look at other wheezing disorders that may confound the diagnosis and therapy of otherwise uncomplicated asthma.

I was initially excited by the inclusion of several chapters that I thought would describe international differences in asthma epidemiology and clinical practice. I found those chapters lacking in depth, however. Some of the international authors did little more than restate basic asthma facts and did little to explain asthma management practices in their countries and regions. It was laudable that the editor attempted to provide an understanding of how various cultures view, are affected by, and respond to asthma, but to truly be of benefit those chapters need to provide substantially more information.

Overall, Silverman et al have offered pediatric clinicians a comprehensive, readable text. I believe that the work updates and substantially adds to the body of literature examining the pathophysiology of childhood asthma and provides clinicians with a framework that can help guide clinical practice.

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Respiratory Control and Disorders in the Newborn. Oommen P Mathew, editor. (Lung Biology in Health and Disease, Volume 173, Claude Lenfant, executive editor.) New York: Marcel Dekker. 2003. Hard cover, illustrated, 604 pages, \$195.

Respiratory Control and Disorders in the Newborn is a collection of works by an impressive group of authors representing most of those responsible for our current knowledge about normal and abnormal developmental respiratory control. There are 4 potential target populations for this collection of review articles and discussions. These are, in order of appropriateness: neonatal physicians/clinicians, researchers with a special interest in developmental respiratory control, and neonatal intensive care unit respiratory therapists and nurses.

The book's content is broad. There are basic reviews that address the morphology of the development of the airway innervation and the neurophysiologic brain stem basis for the gasping/autoreuscitation reflex. There are also clinical discussions of sudden infant death syndrome, bronchopulmonary dysplasia, central hypoventilation

syndrome, congenital disorders, and anatomical malformations of the airway. Additionally, several chapters provide important context and background information without which it would be difficult to understand the major topic of most of the chapters, apnea. Those chapters include "Chemical Control of Breathing from Fetal Through Newborn Life," "Developmental Trend of Sleep Characteristics in Premature and Full-Term Newborns," "Respiratory Control During Oral Feeding," and "Metabolic and Ventilatory Interaction in the Newborn."

The majority of the remaining chapters are in one way or another devoted to the etiology, pathophysiology, diagnosis, and treatment of apnea in the newborn infant, with particular emphasis on apnea of prematurity. Following are short reviews of several of my favorite chapters.

Chapter 5, "Upper-Airway Muscle Control During Development: Application to Clinical Disorders That Occur in Premature Infants," is a well written, interesting discussion on the possible etiology/pathophysiology of apnea of prematurity, with a mechanistic focus on abnormal upper-airway function during development.

Chapter 11, "Apnea, Bradycardia, and Desaturation: Clinical Issues," is a concise, straightforward review of the clinical aspects of apnea of prematurity. It is a reasonably well written, complete overview of the problem and a good place to start for the relatively uninformed.

Chapter 12, "Pathophysiology of Apnea of Prematurity: Implications from Observational Studies," reviews the etiology and pathophysiology of apnea of prematurity. Brief segments focus on the potential role of lung volume changes, feeding and/or reflux, chest wall distortion, hypoxic ventilatory depression, and anemia.

Chapter 15, "Maturation of Respiratory Control," provides a perspective that emphasizes the potential importance of sleep state and other respiratory system reflexes on the resolution of apneic episodes in the premature infant.

For the most part the chapters are well organized, written, and referenced. There is considerable redundancy among the chapters on apnea of prematurity, but I found this to be somewhat enlightening since it gives the accurate perception that there is not a particularly clear understanding of this common clinical problem.

In short, I found this to be an excellent, relatively up-to-date collection of articles that address both normal and abnormal developmental respiratory control. There is heavy emphasis on the most common issue, apnea of prematurity. The book should be part of the library of any neonatology or pediatric pulmonary group.

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Shelter from the Storm: Caring for a Child with a Life-Threatening Condition.

Joanne M Hilden MD and Daniel R Tobin MD with Karen Lindsey. Cambridge, Massachusetts: Perseus. 2003. Soft cover, 220 pages, \$15.95.

Nothing can prepare parents for the death of a child. It is, as Barbara Rosof said, the worst loss.¹ For mothers and fathers, facing the experience of their child's severe life-threatening illness is like entering a confusing, unfair, nasty storm. No book, by itself, can part the clouds and let the sun back in. This book does not promise to make the circuitous path through the storm straight and easy, and it does not make the howling wind abate, but it does what it promises to do. It provides shelter from the storm.

Joanne M Hilden and Daniel R Tobin, who are both nationally recognized for their careers in pediatric oncology and end-of-life advocacy, have pooled their considerable talent, clinical expertise, and insight to produce this book. Their unique contribution—and the heart of this work—is their understanding that parents' suffering and grief begin at diagnosis, not at death. About 75,000 children die in the United States each year, but many times that number are diagnosed with severe life-limiting illnesses. All of those families, regardless of the outcome of their child's diseases, enter the storm. There are many volumes devoted to dealing with the grief and bereavement of losing a child, but this is the first that is designed to support families while they are in the storm. The book provides practical information and support in a friendly, approachable manner.

The authors acknowledge that there is a risk in preparing parents for the worst possible outcome when, in fact, it may not occur. But the risk is worth taking. Hilden explains that, "the only thing more horrible

for parents than the loss of a child is the *unexpected* loss of a child. So much is left undone; the child has undergone suffering that he might have been spared; parents anguish at not having been prepared." And "If the information turns out to be unnecessary, I rejoice with the parents at its uselessness." Hilden and Tobin approach the task with no medical hubris, which is both refreshing and necessary. Some of the greatest insights come not from the authors but from their accounts of parents' and patients' experiences, often written from the patient's perspective—such as Zach, an 8-year-old who knew better than anyone else that he was dying but needed help finding a way to bring his mother up to speed about his condition, or the 16-year-old boy whom they expected to die at any minute but who lived for several weeks, until his college acceptance letter and scholarship arrived; he died the next day.

The book is organized into 8 digestible chapters, beginning with "Facing Your Child's Life-Threatening Condition" and ending with "Finding Peace." The construct of the book builds on Tobin's previous book, *Peaceful Dying: The Step by Step Guide to Preserving Your Dignity, Your Choice, and Your Inner Peace at the End of Life*, with its straightforward list of practical instructions organized in A–Z fashion. This format provides just enough information to be helpful. The pithy suggestions are about as much as any parent can absorb amid the stress of the storm. But the greatest comfort of this volume is Hilden's voice. She speaks to the reader as a practical, compassionate physician, one who is competent and full of technical knowledge, but also approachable and tuned in to the child and his family. She is a physician who is still able to learn from her little patients. I do not doubt that many parents, after reading the book, will wish that this very human physician could have treated their child.

Every child and family approach life-threatening illness in their own way. No book can be expected to prepare a family for every possible eventuality, nor can a book take the place of competent, compassionate care and excellent communication. No book can substitute for the support of other human beings. **Shelter From the Storm** adds value to those essential elements of care by providing families with useful information in a format they can use.

I have offered the book to families during palliative care consultation, and many

families have found it helpful. Some have read it from beginning to end and said, "Thank you." Others could get only so far and had to take a break; they pick it up later, when they can, and use its advice. This is the kind of book that *someone* in the family should have, whether it is in mother's briefcase, or in that bag that is always ready for an unexpected trip to the hospital, or on the bedside table for sleepless parents to peruse at 3:00 AM. For those families in which the stress level is just too high to allow the parents to concentrate on a book, **Shelter from the Storm** would be an excellent choice to give to the father's best friend, or to that trusted aunt who knows when to advise and when to be quiet, so that when the moment is right those loved ones can transmit the book's help and advice in a personal way. Truthful, compassionate information presented in a practical way is always helpful. **Shelter from the Storm** does exactly that.

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REFERENCE

1. Rosof BD. The worst loss: how families heal from the death of a child. New York: Henry Holt; 1995.

Sillwee Wobbert and Wheezing Will in the Big Game. G Robert. (Sillwee Wobbert Picture Book Series on Children's Health). Silver Spring, Maryland: Dream Publishing. 2003. Soft cover, illustrated, 28 pages, \$9.95.

This picture book, targeted towards young children, features a kindly child, Sillwee Wobbert, who has a heart-shaped head. Sillwee Wobbert helps his friend Wheezing Will participate in a soccer game despite Will's mid-game asthma attack. The book is part of a series of picture books designed to boost self-image of chronically ill children and to empower them to participate in normal childhood activities. The book also illustrates to healthy children that their peers with chronic illnesses can contribute to team activities.

The book is appealing to children, colorfully illustrated, and with likeable charac-

ters. The heart-shaped head of Sillwee Wobbert is particularly endearing. Unfortunately, Wheezing Will appears to not have his asthma under control, and the book does not address the possibility that he has any choice other than to have asthma attacks in the middle of soccer games. Thus, though the book may teach children better acceptance of children who have health problems, the book does not empower the asthmatic child with the knowledge that it is possible to participate in sports without the interference of an asthma attack.

The illustrations, though appealing, contain some inaccuracies. Will says, "I need my spacer so just sit tight." The book goes on to say, "Will breathed it in with deep breaths," and the illustration depicts Will using something resembling a Terbutaline inhaler placed in his mouth *without a spacer*. On the next page, Wheezing Will is depicted sitting down with an inhaler and his peak flow meter, and the text reads, "My spacer and inhaler are from my doctor, who knows best."

The major strength of this book is the likeable characters and illustrations. It teaches children tolerance of other children who have health conditions. Unfortunately, the medical inaccuracies regarding asthma weaken the value of the book.

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Pediatric Respiratory Examination (CD-ROM). Chris O'Callaghan DM PhD and Wendy Stannard MB ChB MRCPCH. Produced by Nic Blackwell PhD, OCB Media. London: BMJ Books. 2003. \$27. Requires: 200-megahertz central processing unit, 32 megabytes of random-access memory, CD-ROM drive, 800×600 pixel 16-bit color display, Sound-Blaster-compatible sound card, and Microsoft Windows 95 or higher.

This CD-ROM is a wonderful resource by which to learn or review how to take a pediatric patient's pulmonary history and to learn or review physical examination findings of pediatric patients with common pulmonary disorders. It was designed for medical students, physicians-in-training, nurses, physiotherapists, respiratory therapists, and general practitioners. The video clips of airway pathology and audio clips of auscultation

tion would provide a valuable teaching aid for patients and students.

The program provides a broad, basic overview of history-taking and clinical examination skills. These basic lessons are reinforced with 50 minutes of video and 100 minutes of audio of children with abnormal respiratory examinations. Over 30 clinical cases are reviewed. The user will hear the high-pitched wheeze of a child with acute asthma, look down a bronchoscope to view a peanut lodged in the bronchus of a young child, see radiographic images of pneumonia, watch a tracheotomy being performed, and hear the biphasic stridor of an infant with a subglottic hemangioma. The images are crisp, large, and of excellent quality. The audio clips are well narrated, brief, and informative. Animated graphics help to demonstrate flow-volume curves and airway anatomy while the narrator describes the underlying pathology.

The program is divided into 8 categories: asthma, tracheotomy, pneumonia, bronchiolitis, stridor, bronchiectasis, examination, and neonatal. The first topic, asthma, has the largest and most complete section. It provides a comprehensive review of the best techniques to obtain a thorough history, perform the clinical examination, and formulate a differential diagnosis. With the new trainee in mind this section presents questions to ask when obtaining an asthma history. The audio section cautions the trainee to remember the value of an appropriately focused history and examination of a child in respiratory distress. The presentation, clinical examination, and management of 5 asthmatic patients are presented under the clinical cases subsection. The next subsection describes the use and interpretation of investigations to assess the severity of asthma, such as peak flow, spirometry, and tests of bronchial responsiveness. The final subsection lists conditions that can mimic asthma and tells whether those conditions are rare, common, or frequent in clinical practice. Examples from that list, including gastroesophageal reflux, foreign-body aspiration, and vocal-cord dysfunction, are linked to audio discussions, bronchoscopic images, and/or video of patient cases.

The section on tracheotomy reviews the indications, procedure, case examples, and the possible early and late complications of tracheotomy. The discussion follows a single patient from pre-surgical evaluation to post-surgical tracheostomy care. The program includes several video clips, including

one of a pre-operative patient with stridulous breathing, another showing the tracheotomy surgery, another on post-operative examination, and another on how to change the tracheostomy tube.

The section on pneumonia contains 3 subsections that (1) explore the pathology and clinical features of pneumonia, (2) identify the bacterial and viral pathogens that cause pediatric pneumonia, and (3) detail 4 cases, each accompanied by chest radiographs. This section includes videos of patients showing classic clinical examination findings such as grunting, flaring, and the various types of costal retractions (recession). In addition there are audio clips of fremitus, whispered pectoriloquy, and dullness to percussion during the clinical examination of a young patient with lobar pneumonia.

The section on bronchiolitis is very brief and contains only text slides that give the definition, common causes, and natural history of bronchiolitis. Ten clinical cases are linked to video and audio clips that demonstrate the disease's features. The natural history section introduces the possibility of genetic predisposition to bronchiolitis and the residual acute and chronic respiratory pathology that can remain after even a single episode of bronchiolitis. The information in this section is dated; it states that there is currently no available vaccine for respiratory syncytial virus, but there have been 2 recent vaccines: respiratory syncytial virus immune globulin (RespiGam, which has been available in the United States since 1996) and palivizumab (Synagis).

The section on stridor contains this CD-ROM's most well organized information and its best review of physiology. It presents a list of illnesses organized under subheadings of acute (croup, foreign body) and chronic (laryngomalacia, Pierre Robin syndrome) stridor. Each example is linked to a video and audio illustration. The user can review basic spirometry by viewing flow-volume loops from subjects with normal anatomy, fixed obstruction, and variable intrathoracic and extrathoracic obstruction.

The section on bronchiectasis is essentially a description of the presentation and examination of children with cystic fibrosis, but it also briefly discusses other rarer etiologies, such as primary ciliary dyskinesia. Unfortunately, this section presents only one clinical case. The general presentation, diagnosis, examination, and management of patients with cystic fibrosis are provided through links to text screens.

The section on examination illustrates the basic techniques to obtain a comprehensive history and clinical examination. The user learns the general approach to history-taking from text-based slides. The slides pose questions for each aspect of the pulmonary history: to assess the patients' respiratory symptoms and previous medication history, environmental and social risk factors, and developmental and feeding history. There are even questions especially pertinent to the respiratory examination of patients with genetic syndromes, cystic fibrosis, or chronic lung disease of prematurity. This section offers a very nice overview for the trainee. It emphasizes the features of a good pulmonary examination, including examination of the patient's general appearance, head, face, chest, extremities, and abdomen. Video clips demonstrate the proper way to perform percussion, palpation, and auscultation of the chest and abdomen. There is also an audio clip in which the narrator presents the history and clinical examination of a patient as if on rounds.

The eighth section introduces the inspection and clinical examination of neonates. Four cases demonstrate neonatal auscultation findings. Much of the information in this section is provided by links to inspection and examination skills reviewed in other categories on the CD-ROM. Therefore the information is not specific for neonates.

Together these categories provide a very basic overview of how to obtain a thorough history and perform the clinical examination. Although ideal for those trainees who have had little clinical experience, the information presented may be too basic to be of interest for the more experienced members of the target audience. It should also be noted that this CD-ROM is focused on the pediatric respiratory examination and does not provide much beyond a brief introduction to the pathophysiology of pediatric respiratory disorders.

The program is extremely fast and user-friendly. The audio and video links load very quickly, despite their high resolution. The program begins with a full-sized window, framed at the top and bottom with color-coded menu bars. The top menu bar lists the program's 8 categories, and clicking on a category opens a drop-down menu of 2-5 subcategories. These subcategories allow the user to explore the etiology, patient history, clinical examination of an illness, or to view clinical cases. All of this information is easily accessed via links to

video and audio clips and graphical displays of basic spirometry.

Links for the audio and video clips are located directly after the associated text. Text words representing common clinical signs or examination findings are highlighted (in blue, indicating a clickable link) to allow the user to pursue topics in more depth. The links lead to screens with glossary definitions, specific examples of questions to elicit pertinent history, clinical examination skills, or physiology review.

The user can easily maneuver among the categories, subcategories, links, and glossary, yet still return easily to a prior location. At the bottom of the screen is a navigation bar that retains a history of the current topic and subtopic or highlighted text selected. Clicking on any term listed in the navigation bar returns the screen to that field. A return key also appears on the navigation bar after reviewing a glossary term. Unfortunately, the program's technical ease can be a detriment. Since most of the information for each topic is presented over a series of many screens, retrieved by clicking through multiple links, the process of following links was often more apparent than the concepts presented on the screen. In addition, information is often presented in lists, and clicking an item in one list often generates a new list, and a new set of links. Since the program does not keep track of the links the user has already explored (ie, those terms remain highlighted in blue), it is easy to get lost in the maze of information being presented.

One of the biggest improvements this tutorial program could make would be to include a self-test at the end of each topic section. For the intended audience a self-test would provide a great motivational tool to process and retain key concepts.

Two technical design issues become apparent when operating this CD-ROM program. The first problem arises anytime the audio icon is selected; the CD-ROM drive runs for the entire duration of the audio clip, and the noise generated from the CD-ROM drive can compete with the narrator's voice and with faint audio segments, such as heartbeats. This problem can be overcome by raising the volume on the speakers attached to a desktop computer, but it would remain problematic for laptop computers. Unfortunately, because the program will not operate without the CD-ROM in the drive you cannot avoid this problem by installing the program to your hard drive.

The second technical issue is that some audio and video links are not able to play simultaneously. This problem is especially noticeable when viewing clinical cases. For example, when viewing the cases in the bronchiolitis and neonatal sections, it is not possible to watch the video while listening to the narrator describe the important features of the examination. In fact, when the audio clip is selected, the video screen shows a still image of an entirely different case.

Overall, the **Pediatric Respiratory Examination** CD-ROM program is a fun, easy-to-use, informative tutorial to explore physical examination sights and sounds. This program would make a useful adjunct to a physical diagnosis text and a guide to the art of good history-taking and clinical examination skills. The videos and narrated audios of patient examinations are a good way to reinforce the essential clinical skills of obtaining a good pediatric respiratory examination. It is like having teaching rounds in your own home. The program is also affordable, listed at \$27. I would recommend it as a good resource to prepare the trainee for clinical rotations.

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Pediatric Respiratory Emergencies. An on-line education module at the Pediatric Education for Prehospital Professionals Web site, <http://www.PEPPsite.com>. Developed by the American Academy of Pediatrics. Published by Jones and Bartlett, Sudbury, Massachusetts. 2003. \$14.95.

This module is part of an on-line education program designed to improve the pre-hospital care of critically ill children. Oriented toward first-responders (emergency medical technicians, paramedics, and others), the course was developed under the sponsorship of the American Academy of Pediatrics, with input from emergency physicians, nurses, and paramedics. Respiratory care and nursing professionals who work in emergency care should also find the module useful. It is designed to prepare participants for a hands-on workshop in which respiratory care techniques are demonstrated and practiced in a laboratory setting. Participants who successfully complete this and related modules in pediatric care are eligible for a certificate from the American Acad-

emy of Pediatrics. Although designed for continuing education of experienced professionals, it also seems appropriate for students in emergency medical technician or paramedic programs

The module covers respiratory physiology and pathophysiology, assessment, and basic and advanced life support techniques appropriate for the pre-hospital care of sick children. The module consists of a series of highly visual presentations of various topics, followed by interactive self-assessment tools. A series of case studies integrate the content of the sections, and then there is a self-assessment test.

The program ran smoothly with a high-speed cable Internet connection and a Compaq Presario computer with Windows XP and 265 megabytes of random access memory. The publisher warns that those who access the Internet via AOL or MSN Explorer will not be able to use the module's full-screen format. The publisher recommends accessing the Web site via Netscape or Internet Explorer. I was unable to access the module when my pop-up-window blocker (Pop-up Stopper, Panicware, Seattle, Washington) was activated. Once the module is up and running, however, the pop-up blocker can be reactivated without any problem.

The format closely resembles a slide show with sound. The user navigates through the presentation by clicking a "forward" button on the screen. The educational content includes mostly well designed graphics and tables. Animations, illustrations, and photographs accompany the written material. The sound portion of the module consists mostly of a narrator reading, verbatim, the text that appears with the graphics, but there are also samples of abnormal breath sounds. The user can view the module with or without sound. Also readily available are links to a thorough glossary of medical terms used in the presentation. Additional links to a help section and a frequently-asked-questions section took me to an unrelated safety training program also produced by the American Academy of Pediatrics.

Each section is followed by a group of "interactivities" that consist of multiple-choice questions, matching exercises, and similar assessment tools that highlight the essentials of the material covered. Each assessment portion is linked to a review slide.

The first section reviews basic respiratory physiology and compares pediatric and adult respiratory structure and function.

Given the diverse educational backgrounds of medical emergency first-responders, that is no easy task. Overall this portion of the module does a good job of distinguishing concepts such as tachypnea versus hyperventilation. The authors correctly emphasize that a rapid respiratory rate does not always result in true hyperventilation, and tachypnea may be present when minute ventilation is lower than normal. However, while emphasizing that point, they imply that high respiratory rates always lead to lower minute ventilation, regardless of any change in tidal volume. Furthermore, the material suggests that tachypnea is always a cause of, rather than a reflection of, poor oxygenation. The module also confuses mechanical and physiologic dead space, and it suggests that the pressure required to mechanically inflate the lungs is closely proportionate to patient size. This part of the program also contains a graphic comparing tidal volume (measured in cubic centimeters) to tablespoons. For example, it indicates that a newborn needs 2 tablespoons of air to make the chest rise. This approach does not seem helpful and is a departure from the relatively sophisticated educational level of the program as a whole.

Also included are sound clips of abnormal breath sounds such as stridor, wheeze, and crackles. These sound clips seem inferior to other readily available auscultation sound clips on the World Wide Web, such as The Rale Repository (<http://www.rale.ca/>). The program also strictly adheres to the use of the terms “crackle” and “wheeze.” Though those terms are preferred by many authorities, participants should nevertheless be introduced to alternative terminology (ie, rales and ronchi) to facilitate communication with other health professionals.

The next section of the module covers assessment of the child with respiratory problems. Highlights of this section include the presentation of the “pediatric assessment triangle,” which guides the responder through a rapid visual assessment of circulation, respiratory status, and activity level. This section does a good job of highlighting essential elements of the pediatric assessment that are often overlooked by adult-oriented providers: chiefly, the importance of the infant’s or child’s level or attentiveness, consolability, and ability to focus, in estimating the impact of any particular re-

spiratory problem on the child’s overall functioning. The program also does a good job of distinguishing between conditions that require rapid and intensive support (life-threatening respiratory failure) and those that need more conservative intervention (respiratory distress). Though these terms are not used with the precision they should be in the in-patient arena (where assessment of P_{aCO_2} is more practical), they serve to prepare the responder to rapidly apply the appropriate level of intervention.

This section also has a brief discussion of pulse oximetry. The authors state that arterial oxygen saturation can be misinterpreted in the chronically hypoxemic patient or when carbon monoxide poisoning is present, but they do not explain in what way it is misinterpreted or offer suggestions for a more precise estimation of oxygenation in those settings. The next section reviews treatment procedures, focusing on airway management, intubation, and oxygen administration. An important take-home message from this section is the importance of allowing the child to remain in his or her “position of comfort” (usually in the mother’s arms) as much as possible during evaluation and treatment.

Upper-airway problems are discussed in the next section. For disorders of an infectious nature the main distinction the authors make is between viral and bacterial infections. A more useful dichotomy in the pre-hospital setting might be “severe” versus “moderate,” since that would guide the responder more closely to the treatment techniques required. The authors also use the terms “croup” and “viral infection” interchangeably and do not define the anatomic location of the obstruction. Also discussed are soft tissue obstructions, foreign bodies, and anaphylaxis.

I noted one inconsistency in the didactic material and the self-assessment tools. The discussion of the clinical presentation of foreign bodies in the upper airway correctly points out that cough and stridor may be present, but the self-assessment tool at the end of this section lists “no cough” as the correct response on a question about the symptoms of foreign body aspiration, and likewise requires an answer of “no wheezing” to obtain a correct response.

Next the authors focus on lower-airway problems, principally asthma and bronchi-

olitis. The animated graphics in this section are among the best in the module, nicely illustrating, in a matter of seconds, the key components of the pathophysiology of asthma and bronchiolitis. Assessment and management are in separate sections. An excellent discussion on the role of asthma history in assessing the patient’s risk for respiratory failure is misplaced in the treatment portion rather than in the assessment portion of the unit. Discussion of management options (including metered-dose inhalers versus nebulizers) is discussed, but practical details on their use are lacking.

Pneumonia, pneumothorax, and other alveolar disorders are discussed in the final section, which is entitled “Lung Disorders” but would perhaps be better named “alveolar” or “parenchymal” disorders. There are a few weak points in this section. The discussion of the pathophysiology of pneumonia is rather simplistic (eg, pneumonia results in “pus in the lungs”) compared to, for example, the discussions of asthma and anaphylaxis. Later the authors state that pulmonary edema is not associated with cough. Meconium aspiration is discussed as well, with proper mention of the role of both foreign material and inflammation in the pathophysiology. However, in the self-assessment section that follows, meconium aspiration is defined simply as an inflammatory disorder. No other common neonatal disorders are discussed. The section on near-drowning neglects any discussion of managing commonly associated injuries such as cervical spine injury or head trauma.

A series of case studies with multiple-choice questions follows, which serves as both a self-assessment tool and a brief review of the module’s essential points.

Despite some unevenness in the sophistication of the material presented, and a few conceptual and factual flaws, the module seems successful in driving home the actions required by the first responder, based on disease severity. Thus this module would seem to be a valuable teaching tool for its intended audience. Especially useful are its visual attractiveness and interactive features, which help maintain user interest.

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