

characteristics differ between adults and newborns, so specific terms were developed to describe sleep states in newborns. Whereas the classification of sleep states in adults was developed solely on the basis of electroencephalograph patterns, polygraphic recording became the accepted standard for sleep-state classification and developmental physiology studies of neonates. Unfortunately, despite a considerable wealth of information, evaluation of existing data is complicated by the lack of standardization of infant sleep studies. As was the case with adult polysomnography, infant sleep studies have evolved and systems for data acquisition and analysis have differed, depending on the purposes and resources available to scientists and clinicians.

This atlas makes available the standardized infant polysomnography procedures used by the Collaborative Home Infant Monitoring Evaluation (CHIME) study group. This atlas is very valuable because it offers researchers and clinicians the benefit of the CHIME experience with nocturnal infant polysomnography and demonstrates that high-quality recordings of sleep and cardiorespiratory variables can be obtained, measured, and analyzed. If infant polysomnograms done at different sites are derived with comparable data acquisition and measurement techniques, then those data can be accumulated to address multiple issues related to ontogeny and normal development.

This atlas is a necessary resource for sleep researchers who work with infants from 35 weeks conceptional age to 6 months post-term. Because it addresses fundamentals of infant polysomnography, it is essential to all pediatric sleep laboratories and all sleep centers that study infants. Because this atlas is unique in terms of the age range addressed and the depth of the illustrations of infant polysomnography variables, sleep states, and the transition to sleep stages, as well as other physiological events that occur during sleep, it is essential reading for all professionals interested in infant sleep.

Following a brief introduction, the atlas is divided into 3 sections: Basics of Physiological Signal Acquisition and Processing for Infant Polysomnography; Infant Polysomnography Recording Procedures; and Infant Polysomnography Scoring Procedures. The first section presents the fundamentals of obtaining and processing infant polysomnogram signals. The section is well done and will be useful for polysomnographers and polysomnography technicians.

The next section focuses on methods and considerations of preparing for and conducting infant polysomnography. Again this is important reading for technicians and other personnel in the sleep center. It emphasizes that good preparation and well trained technicians are essential to achieving optimal recordings in infants.

The final section covers the identification and scoring of awake and sleep states for infants < 3 months of age post-term, sleep stages for infants > 3 months of age post-term, transient arousal, cardiorespiratory events, and final summary reports. Numerous high-quality figures are provided to illustrate the points made in the text. It is in this section (Chapter 4) that the reader gets the full value of the CHIME experience. The CHIME researchers are currently active in long-term sleep recordings and have contributed the latest available electronic and behavioral information.

This atlas is well organized, well written, and has high-quality illustrations and figures. It is reasonably priced, considering the wealth of information and the breadth of knowledge and experience it contains.

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**Prevention and Control of Nosocomial Infections**, 4th edition. Richard P Wenzel MD MSc, editor. Philadelphia: Lippincott Williams & Wilkins. 2003. Hard cover, illustrated, 642 pages, \$149.

In the late 1950s particularly aggressive *Staphylococcus aureus* nosocomial infections caused many deaths and also brought closures of hospital surgical and maternity centers, including nurseries. There was little information at that time about what factors might be increasing the infection risk, how the infectious agents might be transmitted, or what data about their occurrence might be useful in predicting or preventing infections.

From that gloomy period the field now called hospital epidemiology was formed. By the end of the 1960s some United States and British hospitals had formed infection control committees, generally headed by a pathologist or pediatrician, and had appointed someone on the staff, usually a nurse or laboratorian, to organize data about nosocomial infections and to direct prevention

strategies. The National Communicable Disease Center was formed, and it later became the Centers for Disease Control and Prevention. It provided training and impetus for excellence. The American Hospital Association supported publication of books on the subject and publications to guide isolation policies and procedures. The Joint Commission on Accreditation of Healthcare Organizations began to take a regulatory interest in infection prevention. At that time the few tiny paperback books (devoid of references) that were available about hospital infection control perpetuated the myth that isolation should be the main approach to reducing infection risk. The weaknesses in knowledge and in patient care practices became dreadfully apparent as the years brought nosocomial outbreaks due to improperly sterilized instruments, fluids, and supplies. Frequently, the outbreaks were associated with respiratory care and mechanical ventilation. Health care workers were also at risk for hospital-acquired infections, including occupational hepatitis B and, some years later, hepatitis C and human immunodeficiency virus.

By the time Richard Wenzel began his career, a considerable amount of science had come to the field of infection control. The tiny paperbacks became great big books: this new edition of Wenzel's **Prevention and Control of Nosocomial Infections** weighs about 5 pounds. There are 3 other major texts on infection control:

- *Hospital Infections*,<sup>1</sup> by Bennett and Brachman, 2 Centers for Disease Control and Prevention pioneers, is also in its 4th edition; it focuses on United States hospitals.
- *APIC Infection Control and Applied Epidemiology: Principles and Practices*,<sup>2</sup> by the Association for Professionals in Infection Control and Epidemiology (APIC), is available in paper and compact-disc versions. It is for infection-control personnel in health care facilities; it covers the science and provides many detailed infection-control procedures.
- *Hospital Epidemiology and Infection Control*,<sup>3</sup> by Glen Mayhall, is similar to **Prevention and Control of Nosocomial Infections**.

Wenzel covers nosocomial infections in United States hospitals and includes infor-

mation on public health issues (bioterrorism, long-term care, cost, and cost-benefit assessment) and infection control in facilities that have fewer resources. Many of the 57 authors are from countries other than the United States and Canada, so the perspective is broad. The intended readers are well-educated professionals in infection control who are quite fluent in technical English. The text covers important clinical issues adequately and shines when presenting technical subjects and management of infection control programs. Some chapters would be more interesting than others to readers of *RESPIRATORY CARE*, such as the chapters on nosocomial pneumonia, occupational exposure to blood-borne pathogens, prion diseases, and issues about reprocessing equipment and instruments.

The book has several strengths: it is meticulously referenced and indexed, many of the chapters are by several very experienced authors (rather than one), and the material is well organized. Readers who want to know what data support the authors' recommendations will be very pleased with the quality of research cited. That said, there are many unanswered research questions. In the 13-page chapter entitled "Nosocomial Pneumonia", 202 references are cited, and still nearly a page of text is filled with controversial issues that are, as yet insufficiently investigated. For example, how is the cost/benefit for invasive pulmonary diagnostic tests calculated? Should tap water or sterile water be used to rinse reusable, semicritical, disinfected respiratory devices? Should we rinse small nebulizers used on the same patient? What should be the change frequencies for various items, such as breathing circuits? Is it sufficient to put on clean gloves just before contact with mucous membranes of ventilated patients, or should sterile gloves be used? These questions reflect major research gaps, not faults in the chapter.

The book is divided into 5 parts:

- Part I offers perspectives on the history of infections associated with health care, global issues, cost, evidence-based medicine, the role of the infection-control nurse, long-term care, and bioterrorism.
- Part II presents information resources, including a wonderful compendium of valuable Internet sites, surveillance systems, epidemiologic methods and mathematical

modeling, telemedicine for hospital epidemiology, and managing antibiotics.

- Part III covers specific diseases and organisms, vancomycin and beta-lactamase resistance, hepatitis C, tuberculosis, prion diseases such as Creutzfeldt-Jakob disease, and the potential for gene therapy in infection control.
- Part IV covers infections at the major sites: catheter-associated infections of the urinary tract and bloodstream, nosocomial pneumonia, infections at surgical sites, infections associated with mechanical circulatory devices, opportunistic infections in transplant patients, and preventing infections in neonatal intensive care units.
- Part V describes new approaches to problems that infection control programs frequently face: immunization programs for personnel, managing occupational blood exposures, outbreak investigation, molecular epidemiology, hand hygiene, reprocessing items, medical waste management, and ambulatory care.

As is always true with books that have many contributors, the chapters differ in quality and organization, so the book is optimally useful for readers in a hurry. For example, even a relatively inexperienced infection control professional could extract enough information from Chapter 31, "Efficient Management of Outbreak Investigations," to conduct an investigation of an epidemiologic cluster of possibly related infections. However, that chapter doesn't address managing a similar circumstance on which infection control personnel spend considerably more time: investigating exposures among patients and personnel. Readers could use Chapter 27, "New Vaccines and Vaccination Programs for Hospital Staff Members," to evaluate or plan a hospital immunization program, but Chapter 25, "Modern Approaches to Preventing Surgical Site Infections," would not be as useful for evaluating a program to prevent surgical site infections. Chapter 25 is interesting and well written, but like several others, not as useful as it could be.

The final chapter is an inspiring section by Richard Wenzel, entitled "Leadership and Management for Healthcare Epidemiology." He advocates a consensus-driven strategy that integrates the financial health of the enterprise (whether it be a business, de-

partment, or program) with customer satisfaction, solid internal business procedures, and employee satisfaction. This results in a balanced environment and generates philosophical discussion. In a nutshell, this is the heart of Wenzel's scholarly, academic approach to infection prevention and to management of health care epidemiology programs in health care facilities.

Semicritical procedures (ie, that involve contact with intact mucous membrane) and critical procedures (ie, that enter normally sterile tissue) increase the risk of nosocomial infections among patients and personnel, and every health care department that conducts those procedures should have a good infection-prevention reference in their library.

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#### REFERENCES

1. Bennett JV, Brachman PS, editors. Hospital infections, 4th edition. Philadelphia: Lippincott-Raven; 1998.
2. Olmsted RN, editor. APIC infection control and applied epidemiology: principles and practice. St Louis: Mosby; 1996.
3. Mayhall CG, editor. Hospital epidemiology and infection control. Philadelphia: Lippincott-Raven; 1999.

**Hospital Infection: From Miasmas to MRSA.** Graham AJ Ayhiffe and Mary P English. Cambridge, United Kingdom: Cambridge University Press. 2003. Soft cover, illustrated, 274 pages, \$38.

For much of human history medical care for the seriously ill, if available at all, occurred in one's residence or possibly elsewhere, but not in a hospital. Even by the 1750s when Dr Thomas Bond and Benjamin Franklin solicited funds for a place to house and treat the sick and poor in Philadelphia, the only people receiving medical care outside the home were those residing in alms houses and prisons. Hospitals had a longer history in Europe, going back to ancient Greece and Rome, but for much of their existence they mostly served the poor, and many were primarily religious institutions that offered treatment of the soul rather than the body. Although conditions differed locally and historically, staying home for illnesses was probably safer, since infections