American Association for Respiratory Care's

Diagnostics

April / May / June 2003 Bulletin

Notes from the Chair

by Catherine M. Foss, BS, RRT, RPFT

A top agenda item for the section and many practitioners has been the way state licensure bills address national diagnostic credentialing in sleep and pulmonary function. The concerns center around the impact these bills may be having on our jobs and ability to practice. Now a special committee of volunteers within the section has been formed to look into this complex issue and make recommendations. Due to the many variations in the wording and interpretations of the state licensure acts, each will need to be examined separately. We appreciate your feedback on this crucial issue. Let us know what is important to you, your department, and your career! My contact information appears on page two, or you can send your thoughts via the Diagnostic Section e-mail list.

On another note, I'd like to share with you several new publications which are available for your departmental library of standards and "official statements." Pull up copies via the following links and have a journal club discussion in your lab over lunch.

- ATS/ACCP Statement on Cardiopulmonary Exercise Testing. Am J Respir Crit Care Med; Vol. 167: pp 211-277. 2003. www.atsjournals.org.

Continued on page 2

Section Connection

GET IT ON THE WEB:
Help the AARC increase its efficiency by signing up to receive the Bulletin via the section homepage on the AARC web site (www.aarc.org). To change your option to the electronic Bulletin, send an email to: mendoza@aarc.org.

SPECIALTY PRACTITIONER OF THE YEAR:
Submit your 2003 nominations online at: http://www.aarc.org/sections/diagnostics_section/mpotya/poll_form.html.

JCAHO ACCREDITATION REPORT:
Please consider sharing information about your most recent site visit by filling out the form on the AARC web site found at the following link: http://www.aarc.org/members_area/resources/jcaho.asp.

SECTION E-MAIL LIST:
Start networking with your colleagues via the section e-mail list. Go to the section homepage on www.aarc.org and follow the directions to sign up.

Educational Resources for the RT Interested in Sleep Technology

by Tom Smalling, MS, RRT, RPFT, RPSGT

The increase in public awareness of sleep disorders spearheaded by the National Sleep Foundation over the past several years has led to an enormous increase in the demand for sleep testing by the general public. This phenomenon has led to an explosion of sleep disorders centers and laboratories in both the public and private sector.

However, educational resources focusing on the training of technicians, physicians, and sales personnel have lagged far behind this growth. The growing demand for qualified and competent respiratory therapists in the sleep lab, coupled with recently proposed changes to accreditation standards relating to polysomnography, have increased the necessity for educational resources that meet professional development requirements. This article offers a synopsis of some of the educational resources presently available to respiratory therapists interested in the field of polysomnographic technology. We begin by looking at some leading published resources. We follow with a review of some web-based and multi-media resources. We conclude with a description of the various types of formal training programs available. The information covered in this article is not meant to be all-encompassing; rather it is meant to provide a representative sample of the diverse resources available on the market. RTs interested in this area are strongly encouraged to further their professional development by attending educational symposia sponsored by the various professional societies. It is primarily through these venues that individuals interested in learning more about sleep technology can gain access to educational resources, chiefly by interacting with those who are knowledgeable in the field.

Textbooks

Numerous published texts relate to the field of sleep medicine and sleep disorders. However, there remains a dearth of textbooks specifically geared to the technical aspects of the field. *Principles and Practice of Sleep Medicine (2000)* is probably the most informative and comprehensive resource text covering the pathophysiology, diagnosis, and treatment of sleep disorders. It is referred to by many in the field as the "bible" of sleep. It is a "must have" in your sleep library. *Sleep Medicine (2002)* is another comprehensive text, containing 71 chapters and 15 sections on a wide range of subjects. The target audience for this text, as with the *Principles and Practice* text, is primarily the clinician, although many sections provide essential information for the technologist and trainee as well.

The text, *Sleep Medicine Pearls (1999)*, contains over 100 case studies covering sleep-staging rules, sleep architecture definitions, ECG patterns, eye movement patterns, and other aspects of sleep that are of interest to the technologist. *Sleep Disorders Medicine: Basic Science, Technical Considerations, and Clinical Aspects (1999)* is another useful, comprehensive text on sleep disorders medicine. For those wishing to learn more about the classification of sleep disorders, *The International Classification of Sleep Disorders - Diagnosis and Coding Manual (1997)* is the recommended source.

There are also a number of prominent texts written by well-known pediatric sleep specialists. Texts such as *Solve Your Child's Sleep Problems (1985)*, *Pediatric Sleep Medicine (1991)*, *Principles and Practice of Sleep Medicine in the Child (1995)*, and *Atlas of Sleep Medicine in Infants and Children (1999)* are essential resources for the technologist and clinician involved with this population. Together, these texts provide an informative and comprehensive coverage of pertinent topics, such as normal sleep development, sleep in adolescence, recording montages, recording artifacts, behavioral therapy, sleep scoring, and sleep disorders in children.

Continued on page 2

Continued from page 1
NOTES FROM THE CHAIR

- ATS/ERS Statement on Respiratory Muscle Testing. Am J Respir Crit Care Med; Vol. 166: pp 518-624. 2002. www.atsjournals.org
- The "final" CLIA regulations were published in the *Federal Register* on January 24, 2003. They can be accessed at the following web site: http://www.phppo.cdc.gov/clia/regs/toc.asp.
- Another excellent CLIA resource is James Westgard's web site, where he and other experts interpret the regulations. That can be found at: http://www.westgard.com/final-rule2.htm ◆

Want to receive this newsletter electronically?

E-mail: mendoza@aarc.org for more information.

Diagnostics Bulletin

published by the
American Association for Respiratory Care
11030 Ables Lane
Dallas, Texas 75229-4593
(972) 243-2272 • (972) 484-2720 fax
e-mail:info@aarc.org

Chair

Catherine M. Foss, BS, RRT, RPFT
Duke University Hospital
Durham, NC
(919) 844-8248 (home)
(919) 668-3599 (work)
foss0005@mc.duke.edu

Editor

Tom Smalling, MS, RRT, RPFT, RPSGT
PO Box 268
Northport, NY 11768
(631) 444-3241 ph
(631) 444-7621 fax
tsmalli@notes.cc.sunysb.edu

Continued from page 1
EDUCATIONAL RESOURCES FOR THE RT INTERESTED IN SLEEP TECHNOLOGY

The *Handbook for Sleep Medicine Technologists (2000)* is a relatively new technical manual. The text provides useful information in such technical areas as calculations, electronics, monitoring procedures, and scoring. *The Atlas of Clinical Polysomnography (1996)* is a two-volume text best known for its detailed illustrations of polysomnographic recordings. It is a "must have" for any sleep training program. *The Manual of Standardized Terminology, Techniques, and Scoring System for the Sleep Stages of Human Subjects (1968)* has been, and continues to be, the "rule-book" for adult sleep staging and sleep scoring. Primer of Polysomnogram Interpretation (2002) is another useful text that provides concise coverage of polysomnographic data analysis and interpretation. The text provides a detailed description of the methods of interpretation using sample algorithms, histograms, reports, and case studies.

Fundamentals of EEG Technology (1989) is an excellent technical and clinical resource for those interested in learning more about the neurophysiologic and electroencephalographic aspects of the field. This two-volume text covers clinical aspects such as neuroanatomy and neurophysiology, and seizure disorders, as well as technical aspects such as polysomnograph instrumentation, electrodes, amplifiers, filters, and calibrations.

Web-based and multimedia resources

Web-based and multimedia resources are also readily available to those interested in learning more about sleep technology. These resources come with both advantages and disadvantages. Access to some web-based resources is limited to members or customers only. In addition, it is uncertain whether the information on some of these web sites is peer-reviewed and up-to-date. However, the information is, for the most part, readily available and free. Multimedia-based resources provide informative coverage of various aspects of the field and capitalize on an ability to provide information using audio, visual, and interactive formats. However, this ability comes at a price - literally -- as many of the multimedia resources are cost-prohibitive for an individual. Despite these limitations, however, several of these web-based and multimedia resources are worth mentioning.

The experienced sleep technologist will have bookmarked such professional organization web sites as the American Association of Sleep Medicine, (www.aasmnet.org), the Association of Polysomnographic Technologists (www.aptweb.org), the American Society for Electroneurodiagnostic Technologists (www.aset.org), the Board of Registered Polysomnographic Technologists (www.brpt.org), the NIH-National Center on Sleep Disorders Research (www.nhlbi.nih.gov/about/ncsdr/index.htm), and the National Sleep Foundation (www.sleepfoundation.org).

A new resource of special interest to the readers of this publication is the e-mail list for sleep technologists started by the AARC. To join this list, go to the Community section of the AARC web site and scroll down to the Sleep Mailing List link, at the bottom of the page.

Proprietary software is also available. Somnosoft educational software for sleep medicine (www. sleepmate.com) offers a useful interactive CD on sleep scoring. Sleepmate also produces educational CDs covering sleep scoring and patient preparation. These CDs have extensive video demonstration, audio clips, and competency tests. Synapse Media's (www.synapsemedia.com) Sleep Medicine and Polysomnography Training Materials include training videos and software on various technical aspects of the field.

Sleepmultimedia (www.sleepmultimedia.com) offers a comprehensive computerized textbook of sleep medicine, with text, sound, graphics, and video. This resource includes chapters on polysomnography, the physiology of sleep, chronophysiology, neurophysiology, respiratory physiology, insomnia, obstructive sleep apnea syndrome, pediatrics, narcolepsy, parasomnias, women and sleep, restless legs syndrome, epilepsy and sleep, aging and sleep, and hypersomnias. In addition, it includes an encyclopedia, self-test questions, case histories, a sleep center procedure manual, and sleep-scoring manual.

These multimedia resources are costly, but the benefits can often outweigh the expense.

Formal training programs

Historically, most sleep technologists have received informal training in a laboratory via an "apprenticeship" method of instruction. This method of education was very similar to the on-the-job training method employed by the respiratory therapy profession in its

Continued on page 3

infancy. Only in the past decade or so have more formal training programs, with specific programmatic goals for training sleep technologists, appeared on the scene. However, these training programs exhibit broad variations in didactic, laboratory, and clinical practice components of their curricula. The length of training, for example, ranges from a three-day workshop, to more formal two-year programs, to distance education programs.

The California College for Health Sciences (www.cchs.edu) offers a 15-credit certificate program that takes approximately 6 to 12 months to complete. Proprietary training programs such as the Midwest Sleep and Neurodiagnostic Institute (www.mwsleep.com), the Atlanta School of Sleep Medicine (www.sleepschool.com), the School of Clinical Polysomnography (www.synapsemedia.com/school/index.htm), the California Institute of Sleep Medicine (www.sleepschool.org), and the School of Sleep Medicine, Inc. (www.sleepedu.net) offer two-day and five-day courses and workshops in such areas as basic and advanced technologist training, record scoring, pediatric training, operational practices, and credentialing exam review.

Academic institutions such as Cayuga Community College (www.tri-c.cc.oh.us/polysom/) and Stony Brook University (www.uhmc.sunysb.edu/shtm/sleep) offer more comprehensive training with college-level courses. Students receive didactic instruction at the institution, as well as clinical training at area sleep centers. The University College of the Cariboo, Kamloops, BC (www.cariboo.bc.ca/schs/DIST_ED/SLEEP/home.htm) is one of only a few academic institutions offering distance education programs in sleep technology.

Education is paramount

The availability of educational resources in sleep technology has been well-established. The development of standardized curricula will serve as a framework for future educational resources. Dissemination of, and access to, these educational resources is paramount for respiratory therapists wishing to maintain or upgrade their professional and educational abilities. ◆

REFERENCES

- American Sleep Disorders Association. The International Classification of Sleep Disorders-Diagnosis and Coding Manual. Chicago, 1997.
- Berry R. Sleep Medicine Pearls. Philadelphia: Hanley & Belfus, Inc, 1999.
- Butkov N. Atlas of Clinical Polysomnography, Vol. 1. Ashland, OR: Synapse Media, Inc., 1996.
- Butkov N. Sleep apnea and other sleep-related breathing disorders. In: Butkov N. Atlas of
- Clinical Polysomnography, Vol. 2. Ashland, OR: Synapse Media, Inc., 1996.
- Chokroverty S, ed. Sleep Disorders Medicine: Basic Science, Technical Considerations, and Clinical Aspects. Boston: Butterworth Heinemann, 1999.
- Ferber R. Solve Your Child's Sleep Problems. New York: Simon & Schuster, 1985.
- Ferber R, Kryger M, eds. Principles and Practice of Sleep Medicine in the Child. St. Louis: WB Saunders Company, 1995.
- Kryger M, Roth T, Dement W, eds. Principles and Practice of Sleep Medicine. 3rd ed. Philadelphia: W.B. Saunders Company, 2000.
- Lee-Chiong T, Sateia M, Carskadon M. Sleep Medicine. Philadelphia: Hanley & Belfus, 2002.
- Lenik S. Handbook for Sleep Medicine Technologists, 2000.
- Pressman M. Primer of Polysomnogram Interpretation. Boston: Butterworth Heinemann, 2002.
- Rechtschaffen A, Kales A. A Manual of Standardized Terminology, Techniques, and Scoring
- System for the Sleep Stages of Human Subjects. Los Angeles: UCLA BIS/BRI Publications, 1968.
- Sheldon S, Riter S, Detrojan M. Atlas of Sleep Medicine in Infants and Children. New York: Futura Publishing Co, Inc., 1999.
- Sheldon S, Spire J, Levy H. Pediatric Sleep Medicine. Philadelphia: WB Saunders, 1991.
- Tyner F, Knott J, Mayer W. Fundamentals of EEG Technology, Vol. 1: Basic Concepts and Methods. Philadelphia: Lippincott Williams & Wilkins, 1989.

How To Blow Your Defense

EDITOR'S NOTE: The following letter, from Tom Petty, MD, points out the legal benefits of providing spirometry testing for asthmatics and other lung disease patients. It is being reprinted with permission from Chest 2002; 122:1868-1869. Reproduction of the article is prohibited without written consent from the ACCP.

To the Editor:

I was recently consulted by a medical malpractice attorney who asked for assistance in the defense of his client, a board-certified pulmonologist who had been managing a patient with very difficult steroid-dependent asthma. The patient also smoked cigarettes. The man, age 41, had acquired aseptic necrosis in both femoral heads requiring total hip replacements.

The patient had suffered from asthma since the age of six months. He had had several hospitalizations for asthma and frequent trips to the emergency department for life-threatening attacks. He had been appropriately managed by this pulmonologist, with the use of inhaled short-acting as well as long-acting agonists, inhaled corticosteroids, leukotriene modifiers and, at times, bursts of systemic steroids to deal with exacerbations of asthma and/or associated acute and chronic sinusitis.

The major issue in the plaintiff's strategy was the fact that this pulmonologist had never done spirometry at any time during the management of this patient. Accordingly, the plaintiff argued that the patient never had asthma, which was one of the contentions of the medical expert hired by the plaintiff, also a board-certified pulmonologist. Fortunately, however, numerous measurements of peak flow during exacerbations, which demonstrated increases from low values up to the "personal best" level of approximately 450 to 500 L/min while in remission following corticosteroid treatment had been recorded. But why a simple spirogram was not done by the pulmonologist, as well as other pulmonary function tests, is beyond me. It certainly would have helped in this physician's defense. Later, an allergist did perform spirometry, which showed severe airflow obstruction and air trapping with a normal diffusion test result.

This is the fourth or fifth time I have been asked to defend a board-certified pulmonologist or internist in a similar malpractice action. The simple use of spirometry would have made the defense much easier.

John Hutchinson introduced spirometry in 1846.[1] Some time ago, noted physiologist Joseph Milic-Emili wrote on 150 years of blowing, citing the work of Hutchinson, who coined the term vital capacity, and Tiffeneau of Paris, who added the timed vital capacity (i.e., FEV1) to spirometry.[2]

Today, the National Lung Health Education Program recommends spirometry for all smokers 45- years-old and anyone with dyspnea on exertion, chronic cough, mucus hypersecretion, or wheeze.[3] Certainly the patient had all of these. The National Asthma Education Program has recommended spirometry in the evaluation of asthmatics for more than a decade.[4] Thus, spirometry has to become the standard of care.

Continued on page 4

American Association for Respiratory Care
11030 Ables Lane
Dallas, Texas 75229-4593

Continued from page 3

HOW TO BLOW YOUR DEFENSE

Physicians who treat asthma, COPD, and other pulmonary disorders for which steroids may be required will be well advised to "blow their defense" in the form of doing spirometry in conjunction with the initial patient assessment and for documentation of responses to therapy.

The issue of aseptic necrosis of the femoral head has been commented on for some time.[5-7] It is not clear, however, if aseptic necrosis in patients treated with corticosteroids represents a drug complication, a complication of the disease process, or both.[6,7] It is interesting that in 1995, a Massachusetts Supreme Court ruling (Precort vs. Frederic, 355 Mass 679) held that the risk of acquiring aseptic necrosis from long-term prednisone use was so negligible that the "informed consent" issue should not be used.

Simple spirometry is a requirement for the initial evaluation of patients with both obstructive and restrictive ventilatory disorders. It is key to monitoring responses to therapy. The use of spirometry will also help avoid trips to the courthouse. So always remember to blow your defense! ◆

Thomas L. Petty, MD, Master FCCP, Denver, CO
Correspondence to: Thomas L. Petty, MD, Master FCCP, 1850 High St, Denver, CO 80218; e-mail: TLPdoc@aol.com

REFERENCES

1. Hutchinson J. On the capacity of the lungs, and on the respiratory functions, with a view of establishing a precise and easy method of detecting disease by the spirometer. Medico-Chirurgical Transactions (London) 1846; 29:137-161
2. Milic-Emilie J, Marazzini L, D'Angelo E. 150 years of blowing: since John Hutchinson. Can Respir J 1997; 4:239-245
3. Ferguson GT, Enright PL, Buist AS, et al. Office spirometry for lung health assessment in adults: a consensus statement from the National Lung Health Education Program. Chest 2000; 117:1146-1161
4. National Asthma Education Program. Expert panel report: guidelines for the diagnosis and management of asthma. Bethesda, MD: National Institutes of Health, 1991; publication No. 91-3042
5. Richards JM, Santiago SM, Klaustermeyer WB. Aseptic necrosis of the femoral head in corticosteroids-treated pulmonary disease. Arch Intern Med 1980; 140:1473-1475
6. Freeman HJ, Kwan WC. Brief report: non-corticosteroid-associated osteonecrosis of the femoral heads in two patients with inflammatory bowel disease. N Engl J Med 1993; 329:1314-1316
7. Mirza R, Chang C, Greenspan A, et al. The pathogenesis of osteonecrosis and the relationships to corticosteroids. J Asthma 1999; 36:77-95