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AARC Strategic Plan

AARC Vision/Mission Statement: The American Association for Respiratory Care (AARC) will continue to be the leading national and international professional association for respiratory care. The AARC will encourage and promote professional excellence, advance the science and practice of respiratory care, and serve as an advocate for patients, their families, the public, the profession, and the respiratory therapist.

AARC Strategic Objectives

• Validate the science of respiratory care and the value of the respiratory therapist (RT) in providing respiratory care by supporting, conducting, and publishing research information.

• Promote respiratory therapists as the best providers of respiratory care by assuring that the science that clarifies the value and role of the RT is provided to those stakeholders whose decisions and actions need to be guided by that information.

• Promote respiratory therapists and the American Association for Respiratory Care by developing and implementing promotion and marketing campaigns targeted to unique audiences.

• Assure the Association has the resources to meet the needs of its members and that the AARC has the needed financial, volunteer, and staff resources needed to accomplish the implementation of the strategic plan of the Association.

The complete version of the Association's Strategic Plan is available to AARC members online at www.aarc.org/members_area/resources/strategic.asp.

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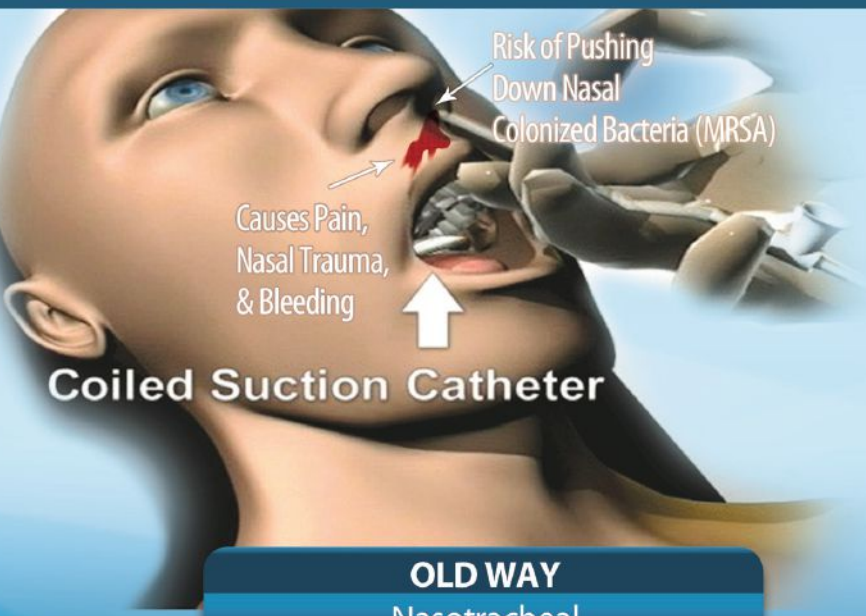

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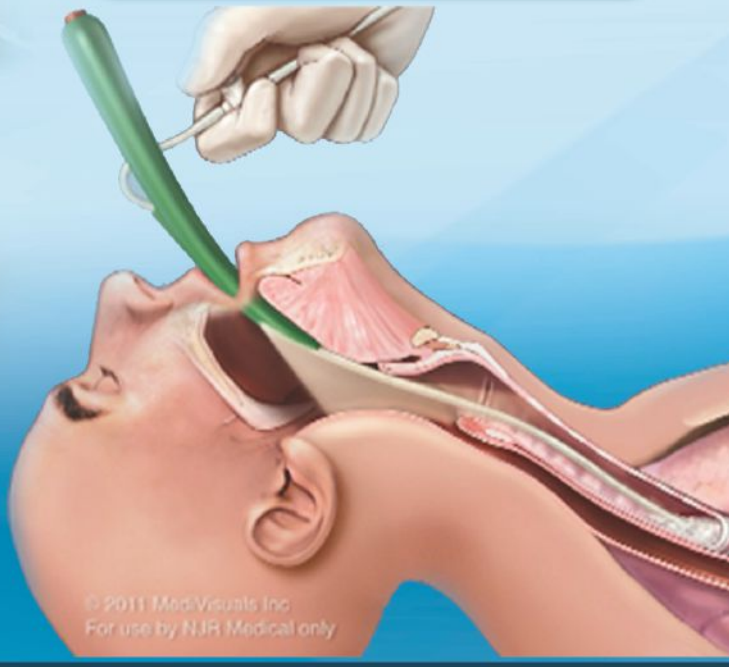

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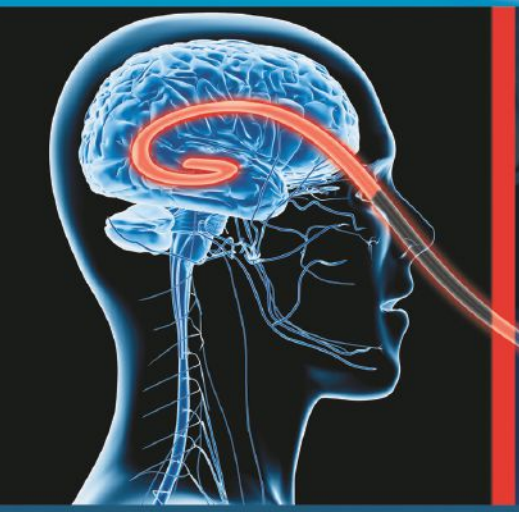

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The Importance of Empathy for the Elderly

by Donna D. Gardner, MSHP, RRT-NPS, FAARC

To empathize is "To see with the eyes of another, to hear with the ears of another, and to feel with the heart of another."
– Alfred Adler (1870–1937)

Imagine yourself as a patient in the hospital. Now imagine that you are a retired educator, 78 years old, and macular degeneration has destroyed your vision. Add to this the diagnosis of pulmonary fibrosis and the need to be on oxygen 24/7. How do you want your caregivers to treat you?

Because of the "graying of America," over the next 25 years the number of adults over age 65 will make up about one-fifth of the total population. The majority of Americans age 50 and older suffer from at least one chronic condition. Combining age, chronic disease, and other comorbidities will change the demographics of patients in the ICU, ER, and outpatient clinics. The relationship between patient and caregiver in these arenas is defined by the patient's experience as a recipient of care and contributes to patient outcome and compliance.[1,2] Patients are more satisfied with their care when they perceive the caregiver is interested in their wellbeing and when they feel their concerns are being heard. Unfortunately, for a variety of reasons, effective communication does not always happen. Effective communication with patients provides us with necessary information about their condition and helps when making decisions about their care.

One of the most significant communication skills that impacts a patient's perception of care is empathy. If we are able to communicate an understanding of the patient's feelings, we can begin to develop a caring and trusting relationship with the patient. Empathy, in the aging population, is a powerful tool.

about the author...

Donna D. Gardner, MSHP, RRT-NPS, FAARC, is chair of the department of respiratory care at the University of Texas Health Science Center at San Antonio.

Defining empathy

Many believe empathy and sympathy are interchangeable. Both sympathy and empathy are relationships based on shared emotions yet differ in the meaning. Sympathy is simply feeling compassion for another's circumstances and really not understanding what the person is feeling.[3] It is recognition or acknowledgement of another's suffering.

Empathy is a deep emotional experience and understanding of what someone else is feeling because you may have experienced this yourself. This often involves "putting yourself in their shoes" or "walking beside the person" recognizing the experience and being sensitive and willing to understand the patient's feelings and struggles from their point of view.[4] Empathy is an active process of trying to understand another's experience and convey this understanding through words of comfort, actions, and nonverbal feedback.[3] Empathy involves being moved by another's experiences. This does not necessarily mean we have to have lived or experienced the same things our patients have done; however, it is important to understand what our patient sees and feels. If we fail to empathize with our patients, we are less likely to help our patients cope with their illness.[5,6]

The biopsychological model of integrative patient-centered care describes the idea of empathy from a biological, psychological, and social perspective. This model involves cognitive, behavioral, and emotional components that are centered on the patient.[7] Empathy increases feelings of connection, decreases the patient's feelings of alienation from others, and can be expressed through both verbal and nonverbal methods.[8]

Verbal communication of empathy may involve words of support, expressions of understanding, or an invitation to the patient to tell his or her story related to the illness or chronic condition.[3] Nonverbal communication associated with empathy may involve eye contact and leaning toward the patients when interviewing them.[9] Tone of voice can demonstrate feeling empathy. An empathetic voice tone is also associated with better patient outcomes.[10] Caring for patients more meaningfully by enhancing communication and building trust will, in turn, increase compliance with therapy and improve outcomes.[11] Empathy should be at the heart of all our patient encounters.

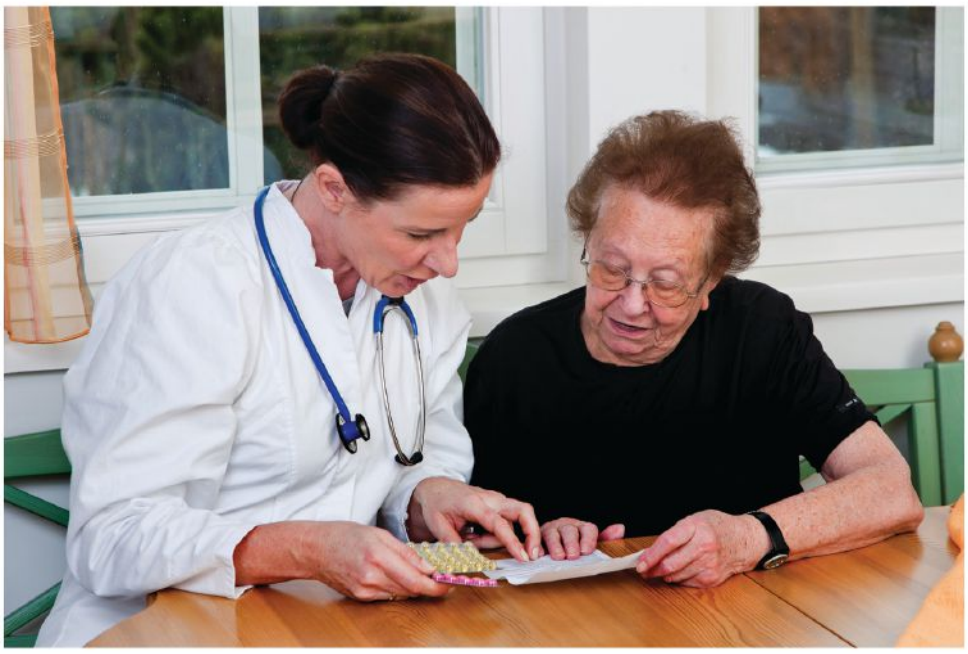
Barriers to empathy

Older adults experience communication difficulties for a variety of reasons, such as hearing and visual deficits, dementia, aphasia, impaired motor processes, and possible side effects of their medications. Unfortunately, meaningful communication has become more difficult as our health care system becomes more fixed on productivity, processes, and efficiency.[12] Caregivers are also more dependent on technology than ever before with electronic medical records, patient ID scanners, smartphones, and electronic readers. All these play havoc with our personal patient communication skills, especially empathy. Time management and productivity create barriers to listening to our patients and may ultimately lead to caregiver anxiety.[12]

The mood of the therapist may in itself be a barrier to empathy. A respiratory therapist who is disgruntled about something may transfer that feeling to the patient. If we are angry, bored, tired, disinterested, or even rushed, this will negatively influence the relationship with our patients. Patients' perception of the health care they receive and the competence of their provider will ultimately impact their care.

How to better communicate empathy

Communicating with older patients may take extra time because of the psychological and social changes of normal aging. When possible, reduce the background noises that are distracting, such as television or other electronic devices. If necessary, close the door or move to a quieter place. Also avoid crucial messages at the beginning of the conversation. Begin a conversation about lighter topics. It is recommended to discuss one topic at a time and avoid jumping around to different subjects. Keep sentences and questions short but open. Give patients a moment to reminisce, as memories are important. Allow extra time for the patient to respond instead of answering the question for them. Be an active listener. Keep in mind, it takes less than 90 seconds to speak to a patient without interruption at the beginning of a treatment. This simple pleasantry sets the tone for trust. It is important for health care institutions to support this communication and support the emotional needs of the caregivers.[12]



Caring for patients more meaningfully by enhancing communication and building trust will, in turn, increase compliance with therapy and improve outcomes.

Cleveland Clinic created the "Respond with H.E.A.R.T.™" program, an innovative communication program that teaches employees a consistent, empathetic approach to handling patient concerns.[13] Since the initiation of this program in 2003, over 20,000 people have been trained, 1,000 coaches keep the principles moving, and they have received a $200,000 grant from the Arthur Vining Davis Foundations to grow the Respond with H.E.A.R.T. program:

- **Hear** the story (Listen attentively.)
- **Empathize** (I can see you are upset.)
- **Apologize** (I am sorry you were disappointed.)
- **Respond** to the problem (Here is what I can do, or what can I do to help you?)
- **Thank** them (Thank you for taking time to talk to me about this. Is there anything else I can do for you?)[13]

Educational programs must incorporate not only effective communication and interpersonal skills but also methods to evaluate the ability to demonstrate empathy. The clinical teaching environment must be one where students are able to witness, experience, and develop empathetic communication and behaviors. Educators should endeavor to select preceptors who are willing and ready to be role models and minimize the exposure of students being placed with individuals who do not practice empathetic communication. Ensuring successful clinical performance includes demonstrating appropriate empathetic behaviors. Rewarding this behavior will help integrate empathy into practice. Duke University developed an aging simulation experience, the Aging Game, which allows students to experience many of the losses that accompany aging with the purpose of developing a sense of empathy for elderly patients.[14] St. Louis College of Pharmacy has implemented the Geriatric Medication Game©, a board game designed for roleplaying and increasing awareness of the physical and financial challenges elderly patients experience when trying to maneuver the health care system. Incorporating these types of games and experiences can better prepare the workforce.[15]

Empathetic skills impact patient compliance

As stated by motivational speaker Brian Tracy (1944–present): "In life you can never be too kind or too fair; everyone you meet is carrying a heavy load. When you go through your day expressing kindness and courtesy to all you meet, you leave behind a feeling of warmth and good cheer, and you help alleviate the burdens everyone is struggling with."

To the patient in bed, nothing is more important than what they are dealing with. Their load, even if it may seem minor to us, is major to them. Empathetic understanding is one of the most important relationship skills we use that can impact the patient. Though not often mentioned in respiratory therapy literature, empathetic skills are well documented across the many health professions. Patients are dependent on the caregiver, and they want to be met by someone who displays empathy. Empathetic communication gives patients hope and more self-confidence to trust the caregiver, which in turn, impacts patient compliance with therapy.[16] ■

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Ombudsmen or Patient Advocates

by Cheryl West, MHA

As consumers, all of us have experienced situations where a product we bought was defective or a service that was promised was not delivered. Most of us know what to do when a new toaster doesn't work or the "cable guy" doesn't show up. We go back to the store for a return or go to the company and complain.

But what do you do when the problem is with health care services, drugs, supplies, personnel, and/or products? Health care in the United States is a vast and complex arena with many people involved in any service you receive — whether it is surgery or a routine visit to the doctor's office. And many of these people who are involved in deciding what services, equipment, or drugs you will receive, you will never hear from nor, let alone, see. Thus, in the world of health care, what do you do and where do you go if what has been promised is not provided or "something" is not right?

First and foremost, document, document, document…. Use the mantra of journalists: who, what, when, where, and why. Whether you can resolve the issue in a five-minute phone call or you have to take the issue up the ladder to higher and higher authorities, you have to provide evidence that your problems are not being resolved at the local level. And that means copies of emails, letters, faxes, notations on whom you spoke to by phone, what day, what time, etc. Of course, with any problem it's always best to try to resolve it locally at the source. Go back to the doctor's office, the pharmacy, the medical supply provider, or the hospital.

The point of this column is to provide you and your patients with suggestions on where to go when a satisfactory resolution of the problem isn't being handled locally. (Let's set aside situations that fall into the malpractice arena. Those are legal issues that require an entirely different course of action.) This article will touch on just a few paths you can take. Given the complexity of the health care system, there are certainly other options, but here are a few for your consideration.

about the author…

Cheryl West, MHA, serves as director of government affairs for the AARC.

Government agencies and departments: how can they help?

The agency that oversees the Medicare and Medicaid Programs (Centers for Medicare and Medicaid Services) has two Web pages, one for providers, practitioners, and those in the health care industry (www.cms.gov) and one aimed specifically at beneficiaries, consumers, and caregivers (www.medicare.gov).

The www.medicare.gov site presents a very clear explanation of the complex Medicare program, coverage, and options (no easy task), plus very useful information. For example, there is Medicare Compare, a website that has quality ratings of facilities, hospitals, home health agencies, nursing homes, hospices, and physicians (www.medicare.gov/help-and-resources/find-doctors-hospitals-and-facilities/quality-care-finder.html). If you or your patients are unsatisfied with the service you have been receiving from your current provider, you should refer them to this site, which shows ratings assigned to other providers in most communities. And that may be something to consider in the future.

What about addressing a complaint about a Medicare provider? The Medicare site has a specific link that gives the procedures of how to file a grievance against a Medicare provider (www.medicare.gov/claims-and-appeals/index.html). And, as you will note, at the Medicare Web page there is a separate link that specifically addresses fraud and abuse concerns (www.stopmedicarefraud.gov).

What if the issue you or your patient is having doesn't involve Medicare or state Medicaid services? Where do you go then? Again, the Medicare.Gov site provides a springboard to other sites. This link (www.medicare.gov/contacts/staticpages/sids.aspx) takes you to a page that lists a variety of external organizations, including state-by-state links to insurance departments and agencies. These government oversight programs can provide information on how to contact a state-based ombudsman or patient advocate, and these state-based agencies aren't devoted solely to Medicare patients but are there to address the heath issues and concerns for everyone.

One more point about state assistance can be found at the National Long-Term Care Ombudsman Resource Center (www.ltcombudsman.org/ombudsman), which is funded by the federal Administration on Aging (AOA) and is another good resource to review at www.aoa.gov. While the National Long-Term Care Ombudsman Resource Center focus is on long-term care issues, the easily navigated U.S. map on the home page provides links and contact information to state-based AOAs, state Medicaid offices, and (for some states) dedicated Medicaid Fraud Unit Control offices (www.ltcombudsman.org/ombudsman).

Getting back to the ever-informative and resource-rich Medicare.Gov site, another useful Web page (www.medicare.gov/Contacts/staticpages/senior-websites.aspx) provides links to other senior-based government websites (as well as the link to the AARP). And within this link (www.usa.gov/Topics/Seniors.shtml) there are resource links for seniors ranging from housing information to transportation to money and taxes.

There are increasing numbers of unreliable or even fly-by-night entities that purport to be legitimate senior advocacy organizations that are listed by simply using the Internet to locate senior advocates. By starting your search for legitimate outside organizations from the Medicare site, there is a level of assurance that Medicare has vetted these organizations and that any consumer assistance each may offer should be legitimate.

One other government agency you might not be aware of is based out of the U.S. Food and Drug Administration (FDA), the Office of Special Health Issues (www.fda.gov/ForConsumers/byAudience/ForPatientAdvocates/default.htm). Patients can access resources on the FDA website related to the medical products they use, including safety updates and new approvals.

There is even help on "The Hill"

Finally, be aware that if lodging a complaint or concern is met with indifference, inaction, or no response, you should know that your own member of Congress is another avenue to approach when all other efforts have been futile, especially if the issue is one involving a state or a federally sponsored health program.

Your House of Representatives member (who is much easier to approach then your senator, who must tend to the needs of the citizens from the entire state) has staff specifically dedicated to assisting constituents in their district who are having "difficulties" with federal or state government programs.

The key here is to have detailed documentation (mentioned at the start of this article) of the efforts you or your patient have made trying to resolve the issue prior to contacting the representative's office. The more documented ammunition you can provide to the member's office that a state or federal program is "failing" their constituent, the more committed the office will be to resolving the problem.

The easiest way to locate your member of the House of Representatives is to start from www.house.gov (and you can find your senator at www.senate.gov).

This is one of the longer *AARC Times* government affairs columns, and yet it barely touches on all the available resources. But know that with persistence, patience, courtesy, and documentation, there are those "out there" who will be ready to assist you; and you might just find some resolution to your concerns. ■

Certified Asthma Educator Examination: A Decade of Progress

by Susan Blonshine, RRT, FAARC, AE-C; Karen Meyerson, MSN, RN, FNP-C, AE-C; Traci Arney, MN, FNP-C, AE-C; and Antoinette Gardner, MEd, RN, AE-C

AE-C certification is the official designation of a certified asthma educator who has the necessary knowledge and skills to counsel patients in asthma management. An asthma educator is an expert in counseling individuals with asthma and their families about how to manage their asthma and minimize its impact on their quality of life. The AE-C examination was developed by the National Asthma Educator Certification Board (NAECB) and is designed to evaluate the candidate's ability to educate asthma patients and help them manage it. We will discuss the progress of this examination and the AE-C credential over the past decade, since its inception in 2002.

Role of respiratory therapists

Respiratory therapists are core members of the team caring for individuals with asthma in multiple settings. Although inherent in their training are multiple skills related to patient care, there are additional skills that are required to successfully work as an effective asthma educator. Expanding the understanding of asthma for an RT is a natural professional growth opportunity. Even if the intent is not to practice as an asthma educator, it broadens the base of knowledge that can improve care for asthma within the health care team. The credential verifies that the therapist has achieved a level of competence and knowledge to practice as an asthma educator and provide comprehensive care. As a profession that works with individuals with asthma on a daily basis, we have an obligation to be instrumental in improving care for this population.

about the authors...

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History

The foundations of the AE-C examination began in January 1999 when representatives from more than 50 stakeholder groups met to discuss the need for an asthma educator certification process. The NAECB is comprised of 17 individuals representing the multiple disciplines involved in asthma education, including allergy/immunology, behavioral science, emergency medicine, nursing, patient advocacy, environmental health, health education, medicine, pediatrics, pharmacy, public health, pulmonary, and respiratory therapy. The Board also includes a public member. *The first asthma educator certification examination was administered on Sept. 19, 2002.*

The AE-C examination has continued to grow in popularity over the past decade. As asthma educator positions were created in community settings, schools, hospitals, private physician practices, and nonprofit organizations, the NAECB recognized that the role of the AE-C was changing and evolving. Certificants were surveyed through a formal job analysis about their roles and responsibilities, and those data were used to inform decisions about exam content. A group of Board members evaluated the job analysis and invited


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Table 1. NAECB – Asthma Educator Exam Pass–Fail Rate for First-Time Examinees Through May 31, 2012

Discipline	Pass	Fail	Total
Physicians	45	11	56
Physician Assistants	60	8	68
Nurses	1316	431	1747
Respiratory Therapists/C-PFT	1555	861	2416
Pharmacists	218	63	281
Social Workers	8	3	11
Health Educators	13	31	44
1000 Hours Experience	270	206	476
Total	**3485**		**5099**

community stakeholders to redesign the exam's Detailed Content Outline, which is the matrix used in exam development and item selection.

The exam is the only nationally recognized certification process available in the United States for asthma. The AE-C credential is recognized by many arenas of health care and, in some instances, is a requirement for asthma educator reimbursement by third-party payers. The future of the exam is a positive one, and the credential is expected to play a pivotal role in discussions between health care providers and third-party payers. The cost-effectiveness of asthma education by health professionals, including RTs, nurses, pharmacists, nurse practitioners, physician assistants, and physicians, has been well documented in the literature.[1] The AE-C credential further supports the competence of health care providers.

Challenges

The examination is composed of four sections: the asthma condition (pathophysiology, factors contributing to chronic and acute asthma); assessment of an individual with asthma and family (history, physical signs, objective measures, individual needs); asthma management (medication and delivery devices, behavioral and environmental modifications, asthma management and education plan); and organizational issues (needs assessment, program development, program implementation, program evaluation, referral and professional networking). Respiratory therapists are trained in a portion of these content areas, particularly section one and portions of two and three. These skills and didactic content are included in respiratory care programs and credentialing examinations.

The challenge is attaining the knowledge and competence in areas that may not be a part of RT program curricula or a respiratory therapist's general scope of work (also experienced by some of the other disciplines). A few respiratory care programs have started to include additional training related to patient education, such as assessing patient and program needs, readiness to learn, and implementation of educational programs. Section four of the examination poses a significant challenge to many professionals because program development, implementation, and evaluation are not standard subjects covered in most RT education programs.

Exam preparation

In order to prepare for the examination, candidates are encouraged to utilize the Detailed Content Outline, which can be found online in the Candidate's Handbook at www.naecb.org, and to access the reference materials listed within, including the "Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma."[2] There are additional resources listed on the NAECB website, and therapists can also reach out to the AARC, local program directors, and other health care professionals for more information. The AARC does support a roundtable specifically for the asthma educator, which serves as another excellent resource (from http://connect.aarc.org/AARC/home, select "Directory" and "All Communities").

As a certifying body, NAECB Board members are prohibited from being involved in any kind of course related to the examination, either through promotion, development, or execution of the course. However, many review courses are available; and at www.naecb.org, the NAECB suggests a checklist of items to ask about and look for in any course to ensure that a course you are taking will actually prepare you for the examination. RTs should not underestimate the need to properly prepare for the examination.

In 2007, the NAECB Board developed a practice exam to provide additional resources for test preparation at a cost of $65. This practice exam, known as the Self-Assessment Exam or SAE, is comprised of 75 questions modeled on the type and style of questions a candidate would see on the actual examination. It was developed to assist in identifying those areas of strength or weakness for each individual. This allows preparation for the examination to be focused in the areas that require more knowledge and study to successfully achieve the credential. The NAECB Board has received positive feedback

Table 2. NAECB – Asthma Educator Exam Pass Rate Percentages Through May 31, 2012

Discipline	Initial Testers	All Testers
Physicians	80.4%	79.4%
Physician Assistants	88.2%	84.4%
Nurses	75.3%	75%
Respiratory Therapists/C-PFT	64.4%	62.3%
Pharmacists	77.6%	75.5%
Social Workers	72.7%	56.3%
Health Educators	29.5%	25.8%
1000 Hours Experience	56.7%	53.5%

from candidates on the efficacy of the SAE in preparation for sitting for the AE-C examination.

Reimbursement

Cognizant of the complex nature of asthma education, coordination, and counseling, the NAECB, along with national organizations such as the U.S. Environmental Protection Agency (EPA), is exploring regional pockets of reimbursement and actively working toward national coverage of certified asthma educator services by third-party payers. Reimbursement for educational sessions conducted by certified asthma educators is taking place within and outside of the clinical setting in some communities, though it is not universally covered by health insurers. In the recent policy and practice report, "Asthma: A Business Case for Employers and Health Care Purchasers," Hoppin et al recommend that employers should ensure that health insurance covers all four best-practice elements recommended by the national asthma guidelines, including paying for asthma education by asthma educators with appropriate asthma training.[3]

For candidates interested in learning more about reimbursement for asthma education, please visit www.asthmacommunitynetwork.org. This website is dedicated to networking among asthma programs throughout the country, many of which are familiar with program development and reimbursement issues. The network is supported by the EPA, the Robert Wood Johnson Foundation, and the Merck Childhood Asthma Network, Inc.

Examination statistics

Overall, 6,281 people of various disciplines have taken the NAECB exam through May 31, 2012, including first-time examinees, those retaking, and those re-certifying.

The pass rate for those taking the exam for the first time is 68.3%, and pass rate overall including all takers is 66.4%.

A total of 3,129 respiratory therapists and certified pulmonary function technicians have taken the exam through May 31, 2012. Of this number, there have been 2,416 first-time examinees, 570 retake attempts, and 143 for re-certification, which only takes place every seven years. The pass rate for initial takers is 64.4% and overall is 62.3%. (See Tables 1 and 2.)

RTs should not underestimate the difficulty of the examination and appreciate that the skills required for an asthma educator reach beyond the normal respiratory therapy curricula. Incorporating patient education and program evaluation skills in the respiratory therapy programs should begin to prepare the RTs of the future for this advanced practice exam. Improvements in this area will likely improve pass rates for the profession. It is important to note that the statistics represent several years of evaluation.

Recertification

Reflecting on the first decade of the AE-C examination and credential, we note many successes, including the fact that more and more certificants are re-certifying as their seven-year time frame for certification expires. During the past year, the NAECB completed a comprehensive process of evaluating and investigating re-certification options for our certificants. We surveyed our constituents and considered their important feedback, we researched methods utilized for recertification by other certifying boards, and we evaluated the workload capacity of our Board and staff. After careful consideration of recertification options, the NAECB has determined (at this time) that examination will be the sole method by which to re-certify as a certified asthma educator. ■

ACKNOWLEDGMENTS

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Spoliation

by Anthony L. DeWitt, JD, RRT, FAARC

There is a quotation, sometimes attributed to former President Richard Nixon, to the effect that "you can't be convicted of perjury if you don't remember something." Sadly, lawyers of all stripes have seen that quotation as the perfect advice to clients who might be in trouble. Rather than counseling them to lie directly, they sometimes counsel them to lie indirectly by saying, "I don't remember."

Not long ago, I had a case dealing with a nursing home where the nursing home personnel just could not remember what happened on a particular night. It was like a giant case of corporate Alzheimer's disease. They didn't have the schedules, didn't remember who was working, didn't remember what was said, and didn't remember much of anything. The defense worked, too, right up to the point we found a former employee — one who had been fired for calling the state hotline — who was more than willing to tell the tale. And the case settled for an amount greatly in excess of what it would have otherwise because the facts would have made jurors very angry, and the defense recognized this.

As a lawyer who sometimes defends clients in civil lawsuits, and often defends therapists and nurses before their professional boards, I have an obligation to the court system never to give my clients advice that effectively gives them a license to lie. I never tell clients to shade the truth. I tell clients, "I can explain the truth; you can never explain a lie." It is absolutely true that the truth will set you free. And if a lie is made under oath, it can do the exact opposite.

about the author...

Anthony L. DeWitt, JD, RRT, FAARC, is an attorney and a partner in the firm Bartimus, Frickleton, Robertson & Gorny, PC, and resides in Jefferson City, MO. He has also authored two books and numerous legal journal articles. This article is not a substitute for legal advice.

Defining spoliation

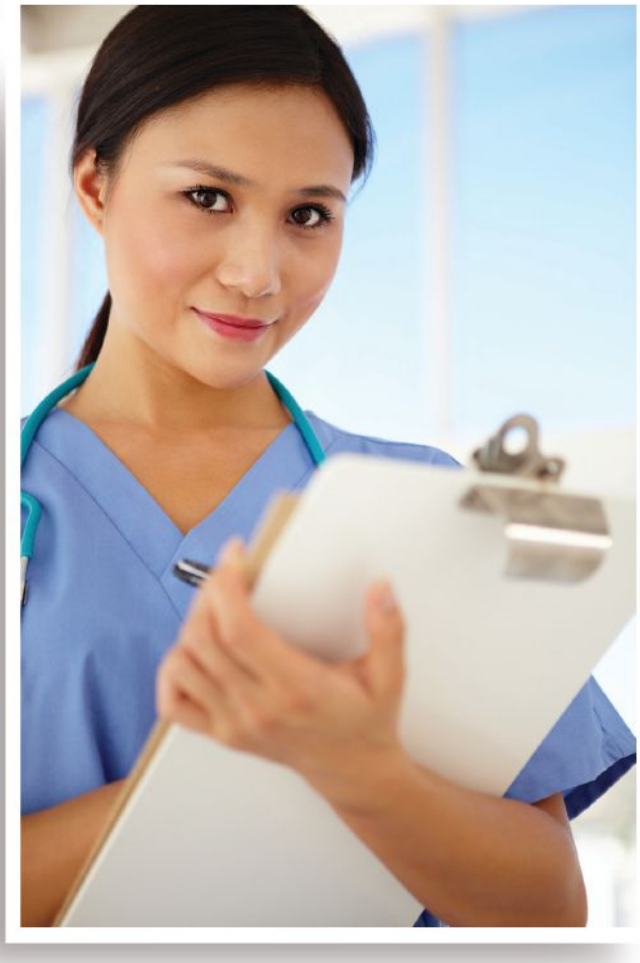
Sadly, I do not always get involved early in a case, and sometimes mistakes have already been made before I take over. When that happens, it makes the job of representing people much more difficult. One of the rules I frequently have to explain is the rule against spoliation. Spoliation refers to the destruction or material alteration of evidence. Adding documentation to the medical record is spoliation. Deleting pages from the medical record is spoliation. The failure to preserve property for another's use as evidence is also spoliation. An example would be when a mechanical ventilator malfunctions, causes a patient's death, and the instrument is immediately sent off for repair. If litigation over an adverse event is likely, lawyers should be consulted before anything is done to the equipment.

Sometimes people think that if there is nothing in the medical record, then nothing can be used to hang negligence on the party at fault. But nothing could be further from the truth. The absence of record information is sometimes worse than the presence of information.

The lack of information on a medical record is something almost any reasonably bright expert will note and consider in forming his opinion. For example, in one recent case, the nursing notes were practically an admission of neglect. The patient had been emergently reintubated after neck surgery. Swelling in the upper airway caused stridor, and the anesthesia personnel immediately put a tube back in. Anesthesia wrote a note that the tube should be left in for 48 hours. About eight hours later, the attending physi-

cian extubated the patient without the benefit of a respiratory therapist and without getting any kind of diagnostics.

The nurse's notes showed the patient developed increasing agitation after extubation. While the pulse oximeter dropped slowly and steadily from the mid 90s through the mid 80s over the ensuing evening, no one called respiratory care, and no one called the doctor. Instead, the nurses simply pumped benzodiazepines into the patient to calm his "obvious agitation." Not surprisingly, at about 12 hours post extubation the patient quit breathing and a full code was called. He developed acute anoxic encephalopathy, and a lawsuit resulted. Interestingly, the medical record was lost for nearly six months in the case. That did not change the outcome. The expert testified that the absence of arterial blood gases and the absence of evaluation by therapists was critical in forming an opinion that the nurses at issue were negligent.



Lots of times a therapist will remember to do things just out of habit (like an Allen's test, or minimal leak technique on an endotracheal tube) but will neglect to record it. The problem with not recording this information is that if you have to record it late — after a bad event has occurred — it is like waving a giant red flag at the plaintiff's attorney that says, "I screwed up." While a late entry is always explainable, a late entry that conflicts with other data in the chart starts looking a lot like a lie. And juries tend to punish liars.

No matter how great the incentive to remove or rewrite a record may be, resist it. It is always easier for a lawyer to explain the truth than to account for a lie later on. Medical records are interlinked; and lots of times when supervisors or others order records rewritten, there are clues to the revisions in other portions of the medical record. If all of the events that occurred throughout the day are all recorded in the same handwriting, with the same pen and the same color ink, it's easy to get suspicious. Ink can be dated. Handwriting can be analyzed. For everything you think you catch when you try to be clever, there is always one big mistake you make. And that's especially true when others know about your falsehood. As the saying goes, two people can keep a secret only if one of them is dead. People change jobs, get fired, and sometimes get a conscience. Lots of times a dozen or more witnesses will "toe the company line," but one witness will come in and tell the truth. When that happens, the whole house of cards tumbles.

What are a therapist's options?

What do you do if you are asked to rewrite a record and change the course of events in a record? Go to your corporate compliance officer and complain. But if you make false entries into the medical record, you could well be called in front of your professional board, a grand jury, or possibly even face federal or state charges of wire or mail fraud if those documents are of certain types. When asked to falsify data, the best answer, in fact, the only answer, should be "NO!" ■

While a late entry is always explainable, a late entry that conflicts with other data in the chart looks a lot like a lie.

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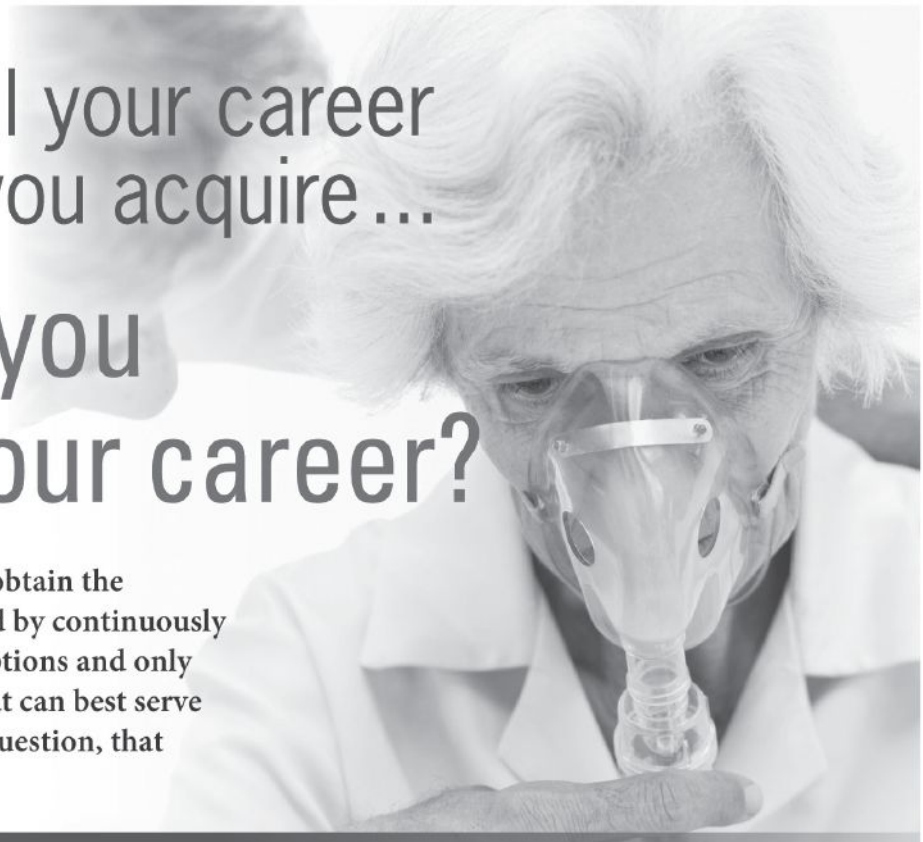

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The Long-range Implications of the Affordable Care Act

by Thomas J. Kallstrom, MBA, RRT, FAARC

We are nearing the end of a very long 2012 presidential election season; and after the economy and jobs, the topic *du jour* has been the current and future impact of the Affordable Care Act (ACA). Some components of this law were implemented earlier this year with parental health insurance available to children up to age 26 as well as some provisions for women's preventive care. The long-range implications of ACA on patient care are starting to materialize, but it is very important that we take a closer look at the health care market to determine if it will be capable of providing the same level of care in the future.

Physician shortages

Of particular concern in the near and long term will be the expected shortfall of physicians through the next two decades. The Association of American Medical Colleges estimates in a recent report that the United States will experience a shortfall of over 62,000 physicians.[1] Of particular note are specialties that manage the same patient population as respiratory therapists: allergists, anesthesiologists, and primary care physicians. Looking closer we see the number of physicians training in allergy and immunology fellowships declined 34% in the 1990s. The number of anesthesiologists is decreasing as demand increases. Primary care physicians will be impacted as well. Between 2005 and 2025, according to the American College of Physicians, the population above age 65 will increase 73% — the same group who seek care from generalists at twice the rate of those under the age of 65. Using 2005 levels as a benchmark, a 20–27% shortfall, about 35,000 to 44,000 generalists, is anticipated by 2025.

about the author...

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The critical care workforce will also be impacted. In June 2003, Congress asked the Health Resources and Services Administration (HRSA) to examine the adequacy of the critical care workforce in response to concerns that the number of pulmonary and critical care physicians would not be able to meet the needs of the aging baby boomer population. HRSA reported that the "demand for intensivists would continue to exceed available supply through the year 2020 if current supply-and-demand trends continue."[2]

Additionally, 49% of physicians — more than 150,000 physicians nationwide — said that over the next three years they plan to reduce the number of patients they see or stop practicing entirely.[3] The bottom line is that by 2025 physician shortages are expected to more than double. Couple this with the impact of the baby boomers (who will particularly require more chronic care) and we are set up for a "perfect storm."

Chronic diseases increasing

Chronic conditions are the leading cause of illness, disability, and death in the United States today, with almost 100 million people in the United States having one or more chronic condition(s).[3] By 2030, nearly 150 million Americans are projected to have a chronic condition. Along with the increasing incidence of chronic lung disease, so too will come associated costs. Chronic conditions cost the U.S. economy $470 billion (in 1990 dollars) in direct medical costs in 1995, and more than $230 billion was due to lost productivity. The estimated number of persons with chronic conditions will increase from 99 million in 1995 to 134 million in 2020 to an estimated 167 million in 2050.

Of particular concern is the increase in morbidity of COPD. Last year the Centers for Disease Control and Prevention declared that COPD was designated as the third leading cause of death in the United States.[4] Along with this high mortality comes a staggering morbidity rate, as well as common comorbidities.

Opportunities for RTs in disease management

The bottom line is that with fewer physicians and more patients entering the Medicare system, there will be an increased need for respiratory therapists to work in a disease management role outside of the hospital and in the physician's office. With particular emphasis on self-management education for the patient, having RTs play a more active role in patient care in the physician office setting can allow for less wait time and more quality time with the patient. With a higher level of understanding of their self-care, patients will likely have fewer readmissions to the hospital or emergency room, and fewer unplanned doctor's office visits. In addition to this, Medicare would also realize a reduced cost for services provided compared to the cost of the physician in the outpatient physician's office.

Moreover, Medicare is rolling out various pay-for-performance programs, either with incentive payments or penalties when quality measures are not met. One such incentive program is the new Physician Quality Reporting System. Among the physician measures to be reported are community-acquired pneumonia, asthma, and chronic obstructive pulmonary disease. Physicians reporting on these standards will gain increased Medicare payments. This and other Medicare quality incentive or penalty payment initiatives will provide even greater reasons to utilize the skills and expertise of the respiratory therapist in the physician's office.

As you know, the AARC has been collaborating with its patient partners and our members who have petitioned Congress to pass a bill that would allow coverage of services performed by RTs under Medicare Part B. This is where we can use our skills as disease managers. As this effort continues, we will be asking for your support. Change is never easy, but with change comes opportunities. Our profession can play a significant role in restructuring health care, and now is the time to make this happen. ■

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Literature Review of Sleep Diagnostics and Treatment

Here's a look at some of the latest studies to be published in the area of sleep diagnostics and treatment.

Risk factors identified for rare sleep disorder

Researchers from McGill University Health Centre in Montreal have identified several risk factors for the rare sleep disorder known as rapid-eye movement (REM) sleep behavior disorder. People with the condition do not have the normal lack of muscle tone that comes with REM sleep and, thus, tend to act out their dreams, often with violent movements that can injure either their bed partners or themselves.

Since other studies have linked REM sleep behavior disorder to neurodegenerative diseases like Parkinson's disease (more than 50% of those with the disorder go on to develop a neurodegenerative condition), these investigators decided to see whether the risk factors for REM sleep behavior disorder are similar to those for Parkinson's disease or dementia. Working with 13 institutions in 10 countries, they compared 347 people with REM sleep behavior disorder to 347 people who did not have the disorder. Of those, 218 had other sleep disorders and 129 had no sleep disorders.

Those with REM sleep behavior disorder were 43% more likely to be smokers, with 64% of those with the disorder having ever smoked, compared to 56% of those without the disorder. They were 59% more likely to have had a previous head injury with loss of consciousness, 67% more likely to have worked as farmers, and more than twice as likely to have been exposed to pesticides through work. REM sleep behavior disorder subjects also had fewer years of education: 11.1 years on average compared to 12.7 years for those without the disorder. The study was published in the June 27 online edition of *Neurology*.

REM rebound associated with CPAP compliance

A drastic increase in REM sleep in response to initial treatment with continuous positive airway pressure (CPAP) is linked to an improvement in the subjective quality of sleep. Researchers from Case Western Reserve University and the Louis Stokes Veterans Affairs Medical Center set out to determine if this rebound effect has an impact on CPAP compliance in a study published ahead of print in *Sleep Medicine* June 14.

They examined split-night polysomnographic studies conducted over an 18-month period, looking at REM rebound and slow wave sleep (SWS) rebound, then also recorded CPAP compliance at 30, 60, and 120 days. Results were compared between subjects with and without REM rebound and SWS rebound.

While CPAP compliance was greater for subjects with REM rebound across all the time periods, findings were significant only for total percentage of days used at 30 days and 60 days. SWS rebound was not associated with CPAP compliance, nor was the diagnostic apnea-hypopnea index.

OSAS and type 2 diabetes: further explaining the link

People with more severe obstructive sleep apnea syndrome (OSAS) have been shown to be at higher risk for type 2 diabetes mellitus (T2DM); but since most people with the condition are also overweight or obese, it has been difficult for researchers to definitively conclude that sleep apnea plays a role in diabetes.

Irish investigators are helping to clarify the situation in a study conducted among 7,886 prospectively assessed subjects from 22 sleep laboratories in 16 European countries. All completed overnight sleep studies. After adjustment for comorbidities, including obesity, along with demographic and anthropometric variables, moderate and severe OSAS were significant predictors of T2DM. The apnea/hypopnea index, oxyhemoglobin desaturation index, and mean oxygen saturation were significant predictors of HbA1c levels.

"Our study shows that OSAS is independently associated with metabolic disturbances," study author Brian Kent, MBBCh, was quoted as saying. "This is important

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1 ASA Standards for Basic Anesthetic Monitoring, Committee of Origin: Standards and Practice Parameters (Approved by the ASA House of Delegates on October 21, 1986, and last amended on October 20, 2010 with an effective date of July 1, 2011) - Viewed 3-21-11 at www.asahq.org/.../Standards%20Guidelines%20Stmts/Basic%20Anesthetic%20Monitor ing%202011.ashx

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because individuals with T2DM or elevated HbA1c levels are more likely to die of cardiovascular disease." Dr. Kent presented his findings at the American Thoracic Society meeting last May.

SDB may lead to altered HRV in kids

Australian investigators publishing ahead of print in *Sleep & Breathing* on June 9 find an altered heart rate variability (HRV) in children age 7–12 diagnosed with sleep-disordered breathing (SDB). The study involved 80 children who underwent overnight polysomnography, then were grouped according to their apnea-hypopnea index. HRV was measured while the children were awake and during non-REM (NREM) 1 and 2 sleep, slow wave sleep (SWS), and REM sleep.

Compared to children without SDB, those with SDB had reduced total power, low-frequency (LF) power, and high-frequency (HF) power during REM sleep, regardless of the severity of their condition. The LF/HF ratio was lower during SWS in those with moderate/severe SDB compared to controls and primary snorers. Total power, LF power, and HF power were highest during NREM 1 and 2 in all the groups, while the LF/HF ratio was lowest during SWS. An elevated blood pressure was seen during all the sleep states in the subjects with SDB. The authors call for more study to clarify the long-term cardiovascular effects of SDB on children.

Short sleep linked to increased risk for stroke symptoms

A new study out of the University of Alabama at Birmingham suggests people who don't get enough sleep are at increased risk for stroke symptoms, even if they have a healthy body mass index (BMI), no history of stroke, and are generally at low risk for obstructive sleep apnea (OSA).

The investigators arrived at that conclusion after examining self-reported sleep data from 5,666 people age 45 and older who were followed for up to three years. Among participants with a low risk for OSA and a BMI of 18.5 to 24.99, a four-times greater risk of stroke symptoms was seen in those who slept fewer than six hours a night versus those who slept seven or eight hours per night. Interestingly, no association was noted between short sleep periods and stroke symptoms in participants who were overweight and obese.

"We adjusted for many possible factors that could explain this increase, including hypertension, high cholesterol, sleep-disordered breathing, and being overweight or obese," lead author Megan Ruiter, PhD, was quoted as saying. "Despite controlling for other known stroke risk factors, we still found the association between sleeping less than six hours and reporting stroke symptoms, like sudden body weakness or numbness or deficits in vision." The study was presented at the Sleep 2012 conference last June.

Home sleep testing measures up

Results from the multi-site, randomized HomePAP Study to compare portable sleep studies and positive airway pressure autotitration with laboratory-based polysomnography (PSG) for the diagnosis and treatment of OSA suggest home testing is effective. At three months, patients in the home-based arm of the trial were using PAP therapy on average about an hour longer than those in the lab arm of the trial, 4.7 ± 2.1 hours versus 3.7 ± 2.4 hours. They were also more likely to be using their PAP therapy for four hours per night or longer, 62.8 ± 29.2% compared with 49.4 ± 36.1%. No differences were seen between groups in acceptance of PAP therapy, titration pressures, effective titrations, time to treatment, or Epworth Sleepiness Scale scores.

"A home-based strategy for diagnosis and treatment compared with in-laboratory PSG was not inferior in terms of acceptance, adherence, time to treatment, and functional improvements," conclude the authors. The study was conducted in seven American Academy of Sleep Medicine accredited sleep centers and published in the June issue of *Sleep*.

Switching to an oronasal mask may require repeat titration

Changing a patient from a nasal mask or nasal pillows to an oronasal mask might call for a repeat titration study, report researchers from Weill Cornell Medical College. They compared the efficacy of the three different mask types in 55 patients who were randomly assigned to one of the masks before undergoing a routine titration with incremental CPAP. Mild, moderate, and severe sleep apnea were all treated effectively with CPAP applied through the nasal pillows and nasal masks; but the oronasal mask required a significantly higher pressure to treat both moderately severe and severe OSA. "When changing from a nasal to an oronasal mask, a repeat titration is required to ensure effective treatment of sleep apnea, especially in patients with moderate to severe disease," write the

investigators. They published their findings in the June issue of *Sleep Medicine*.

Insomnia could lead to hypertension

People who suffer from insomnia may also have a higher risk for hypertension, find researchers from Henry Ford Hospital in Detroit who presented their findings at the Sleep 2012 conference in June.

Using an Internet-based questionnaire designed to look for patterns of insomnia symptoms, presence and severity of hypertension, and sleep and health habits, they polled 5,314 subjects. Those who self-reported insomnia were significantly more likely to also report hypertension. Hypertension was most severe among those who took longer to fall asleep and woke up more times during the night. "The cause of hypertension in insomniacs is due to the number of times the individual wakes during the night as well as their sleep latency — the length of time it takes to accomplish the transition from full wakefulness to sleep," study author Christopher Drake was quoted as saying. ■

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Ventilation for Life

Preventing and Managing Unplanned Extubations

by Keith D. Lamb, RRT

Unplanned extubation (UE) has been described as the premature removal of an endotracheal tube by either the patient or a staff member. Potential complications of UE are numerous and include cardiac arrest, bronchospasm, airway injury, increased length of ICU stay, and death.

Before we look at the evidence, let us begin with a few unplanned extubation factoids:

- 1–14% of all intubated patients become UEs.[1-3]
- The majority of UEs are male.[1,2,4]
- The majority of UEs are restrained with bilateral wrist restraints.[4]
- Most UEs do not require re-intubation.[2,4]
- There is approximately a 40% mortality rate if re-intubation is required.[1,3]
- There is approximately a 7–18% mortality if re-intubation is *not* required.[1,3]
- Most UEs happen when there are no ICU staff in the room.[2,4]

The evidence

In order to effectively appreciate why, how, when and to whom UEs occur, we need to have a good understanding of the risk factors, or "common" similarities among these patients. There is a myriad of articles by investigators who have written on this topic, and below are brief descriptions of a few of the key writings.

In a paper by Robin de Groot et al, 74 UEs occurred out of 3,476 patients studied, comprising 2% of all mechanically ventilated patients in the study group.[1] Analysis revealed that the first and second categories of the Ramsay Sedation Scale score (see Table 1) were associated with a high risk for an unplanned extubation. Male sex, subunit of the intensive care unit, length of stay in the ICU, and sedation managed with midazolam at time of UE were also risk factors for an unplanned extubation. UE patients had lower hospital mortality than mechanically ventilated patients without UEs, 10% versus 30%, respectively. Forty-seven percent (n = 35) of the patients with UEs had to be re-intubated.

In a paper by Arnaud W. Thille et al, where 340 patients were studied, 31 patients (9%) experienced UE. Of these, 65% required re-intubation. In comparison, out of the patients in this study who were intentionally extubated, only 15% were re-intubated.[2]

A large multidisciplinary survey was conducted and published in Respiratory Care. The survey was completed by 1,976 clinicians, including 419 respiratory therapists, 870 critical care nurses, and 605 critical care physicians.[5] The majority of respondents considered movement of the endotracheal tube above the carina (by 3 cm, 2 cm if an air leak is present) a moderate risk for unplanned extubation. Respondents considered the following as high risk for unplanned extubation: absence of physical restraints (72% of respondents), a nurse/patient ratio of 1/3 (60%), trips out of the ICU (59%), light sedation (43%), and bedside portable chest x-ray (29%). Additionally, most respondents considered accidental removal of the nasogastric tube (71%) or tugging on the endotracheal tube (87%) by the patient to be risk factors for UE.

Dr. Krinsley and colleagues demonstrated that UE was associated with increased hospital and ICU length of stay but decreased mortality in this heterogeneous population of adult patients.[3] These findings were explained by the diverse outcomes of the UEs

about the author...

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1. When used from intubation to extubation. Data on file.

Table 1. Ramsay Sedation Scale

1	Patient is anxious and agitated or restless, or both
2	Patient is cooperative, oriented and tranquil
3	Patient responds to commands only
4	Patient exhibits brisk response to light glabellar tap or loud auditory stimulus
5	Patient exhibits sluggish response to light glabellar tap or loud auditory stimulus
6	Patient exhibits no response

that required re-intubation and UEs that remained extubated. Patients with UE who did not require re-intubation had remarkably good outcomes. It remains incumbent on ICU teams to institute protocols for regular identification of patients ready to be liberated from mechanical ventilation.

A paper published in the *American Journal of Critical Care* by Mary Jarachovic et al suggested that the majority of patients with UEs (83%) had their ET tubes secured by a commercially available securing device compared to 7% by cloth tape and 10% by endotracheal tube ties. Also, 83% of patients experiencing UE were *not* being managed by a weaning protocol, and 93% had no pain management protocol in use at the time of UE.[4]

Steps to minimize UE potential

Although it is unlikely that unplanned extubations will ever be completely avoided in all circumstances, below are several steps that can be taken to help minimize the potential.

Quality improvement initiatives

- Track your own UE rate.
- Promote a reporting system that is anonymous and detailed so that you can survey (local) risk factors.
- Institute new strategies only after careful evaluation and research on how it will impact your own system (e.g., tube-securing methods).

Appropriate ET stabilization and placement

- Evaluate tube placement on a regular basis.
- View daily chest x-ray, if available, to maintain appropriate depth.
- Use a standard securing method and maintain proficiency at using it.
- Remind staff of the importance of maintaining a stable airway during routine nursing care and transfer of patient.

Aggressive liberation, sedation, and analgesia protocols

- Develop and employ a functioning liberation protocol.
- Coordinate your liberation efforts with synchronized sedation vacations.
- Remind everyone how to recognize levels of agitation and pain that are unsafe.

Education

- Teach staff how to spot the warning signs of potential offenders.
- Remind staff, attendings, residents, and nurses to follow established protocols and liberation strategies.
- Teach family members what to look for and how to help staff members keep their loved ones safe.

Improve outcomes

Unplanned extubations are associated with worse outcomes and injury, especially if there is a need for re-intubation. Although UEs cannot be completely eliminated, there are several steps that can and should be implemented in order to minimize the potential for UEs and their resultant clinical sequelae. Appropriate sedation, physical restraints, supervision, and strict adherence to proper airway securing methodology, as well as following well-established liberation protocols, can significantly decrease UEs and improve outcomes. ■

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Testing for Alpha-1 Antitrypsin Deficiency in a Pulmonary Rehabilitation Setting

by Valerie Naegele, RRT, and Rebecca Persinger, RD, PhD, FCCP

Pulmonary rehabilitation programs and Better Breathers' Clubs run by respiratory therapists provide an ideal opportunity to test those at risk for alpha-1 antitrypsin (AAT) deficiency, a hereditary disorder that may lead to severe respiratory disease. Many patients who come to these programs have never heard of AAT deficiency and do not think their breathing problems could be the result of a hereditary disorder.

The pulmonary rehabilitation center at Tri-City Medical Center in Oceanside, CA, takes a multidisciplinary approach to managing patients with COPD. Alongside the regular pulmonary rehabilitation schedule and other management and treatment programs is a testing program for AAT deficiency aimed at raising both patient and clinician awareness of this widely underdiagnosed disorder.

AAT deficiency: an inherited form of COPD

Patients with severe AAT deficiency typically present with COPD, and it is estimated that 1–3% of all COPD cases in the United States may be attributable to the disorder.[1] However, only about 5% of severe AAT-deficient individuals have been identified to date.[1] AAT deficiency cannot be diagnosed on clinical presentation alone; the only way to confirm it unequivocally is to carry out laboratory investigations into the level of alpha$_1$-proteinase inhibitor (PI) in the patient's blood (the protein that is lacking in AAT deficiency) and to determine the individual's genetic make-up with respect to the gene that controls these levels.

AAT deficiency is associated with liver disease and early onset emphysema[2] and was initially described in the 1960s by researchers in Sweden, who observed that alpha$_1$-PI was missing from the serum of individuals with emphysema — a genetic basis was therefore suggested.[3] Since then, the structural features of alpha$_1$-PI have been described and extensive research has been carried out on its role in normal human physiology.[4,5] When alpha$_1$-PI is at a normal physiologic concentration, it protects the lung from damage mediated by a key protease, neutrophil elastase, by inhibiting that protease. This enzyme is released by neutrophils in response to infection or inflammation. AAT deficiency leads to a lack of adequate inhibition of neutrophil elastase activity, resulting in the destruction of lung tissue.

It is now understood that the alpha$_1$-PI protein is produced by the SERPINA1 gene. As with all genes, mutations may arise for unexplained reasons, and these mutations are heritable. Gene mutation of SERPINA1 can lead to AAT deficiency and, to date, more than 100 variants (alleles) of the gene have been identified. When individuals have certain mutated forms of SERPINA1, their risk of developing emphysema is greater than that of the normal population.[6]

The multitude of gene variants include the PiMM, PiSZ, PiZZ, or PiNull subtypes.[4] All individuals inherit one allele from each of their parents, and the level of alpha$_1$-PI in the body depends on the particular set of alleles that have been inherited. Normal individuals will possess two copies of the M allele, with serum levels of AAT in the range of 100–220 mg/dL. When two abnormal Z variants are present, severe AAT deficiency results and disease risk is increased. The S and Z mutations cause misfolding of alpha$_1$-PI during its synthesis in the body. The abnormal Z protein is retained by the liver and does not reach the bloodstream or the lung where it is needed, whereas the S protein is degraded within the liver cell.[5]

about the author...

Valerie Naegele, RRT, is a pulmonary rehabilitation therapist at Tri-City Medical Center in Oceanside, CA. Rebecca Persinger, RD, PhD, FCCP, is a medical affairs professional at Grifols Inc. based in Seattle, WA.

Depending on which set of alleles they inherit, AAT-deficient individuals may possess one or two copies of an abnormal gene and, in the latter case, may develop severe AAT deficiency. Relatives of individuals diagnosed with AAT deficiency should be advised of their increased risk and the availability and implications of genetic testing.[4] It is probable that someone in the family of a carrier may have a PiZZ genotype, which carries a high risk of emphysema.

Symptoms and diagnosis

Severe forms of AAT deficiency are frequently associated with progressive, moderate-to-severe emphysema that may become apparent in adults at any age regardless of smoking history, potentially resulting in a significantly lower life expectancy.[7] Distinguishing the symptoms of AAT deficiency is far from straightforward because the clinical picture can be similar to COPD in general.[8] Patients will commonly exhibit a shortness of breath after activity or during exercise, resulting in wheezing, a cough, or excessive sputum production. AAT-deficient patients may also experience frequent infections of the lower respiratory tract and may have a medical history of asthma and/or suspected allergies.

A study has shown that the average number of physicians visited by an AAT-deficient patient before his/her diagnosis is 2.7 (±2.4), with one-fifth reporting that they have consulted four or more physicians prior to their diagnosis.[1,9] The average time from symptom onset to diagnosis of AAT deficiency has been reported as 8.3 (± 6.9) years.[1,9] These facts illustrate the shortcomings in diagnosis rates of patients and provide a rationale for empowering RTs to lead the way with targeted detection of AAT deficiency wherever possible.

Guidelines for AAT deficiency testing

Guidelines for the diagnosis of AAT deficiency have been published by the European Respiratory Society and the American Thoracic Society.[4] The undertaking of genetic testing, or the discussion of such, is recommended depending on the individual patient's presentation, as outlined in Table 1.

It is recommended that all adults who display symptoms of COPD or emphysema, or asthma with persistent airflow obstruction, be considered for testing. Asymptomatic individuals with persistent airway obstruction who are regularly exposed to occupational risk factors or who smoke should also be tested, as should siblings of AAT-deficient individuals.

Under-recognition of AAT deficiency may result from a lack of understanding of the genetic basis of the disease. The variety of disease states that are presented in the clinic may also keep clinicians from considering the condition, as can a lack of standard algorithms for iden-

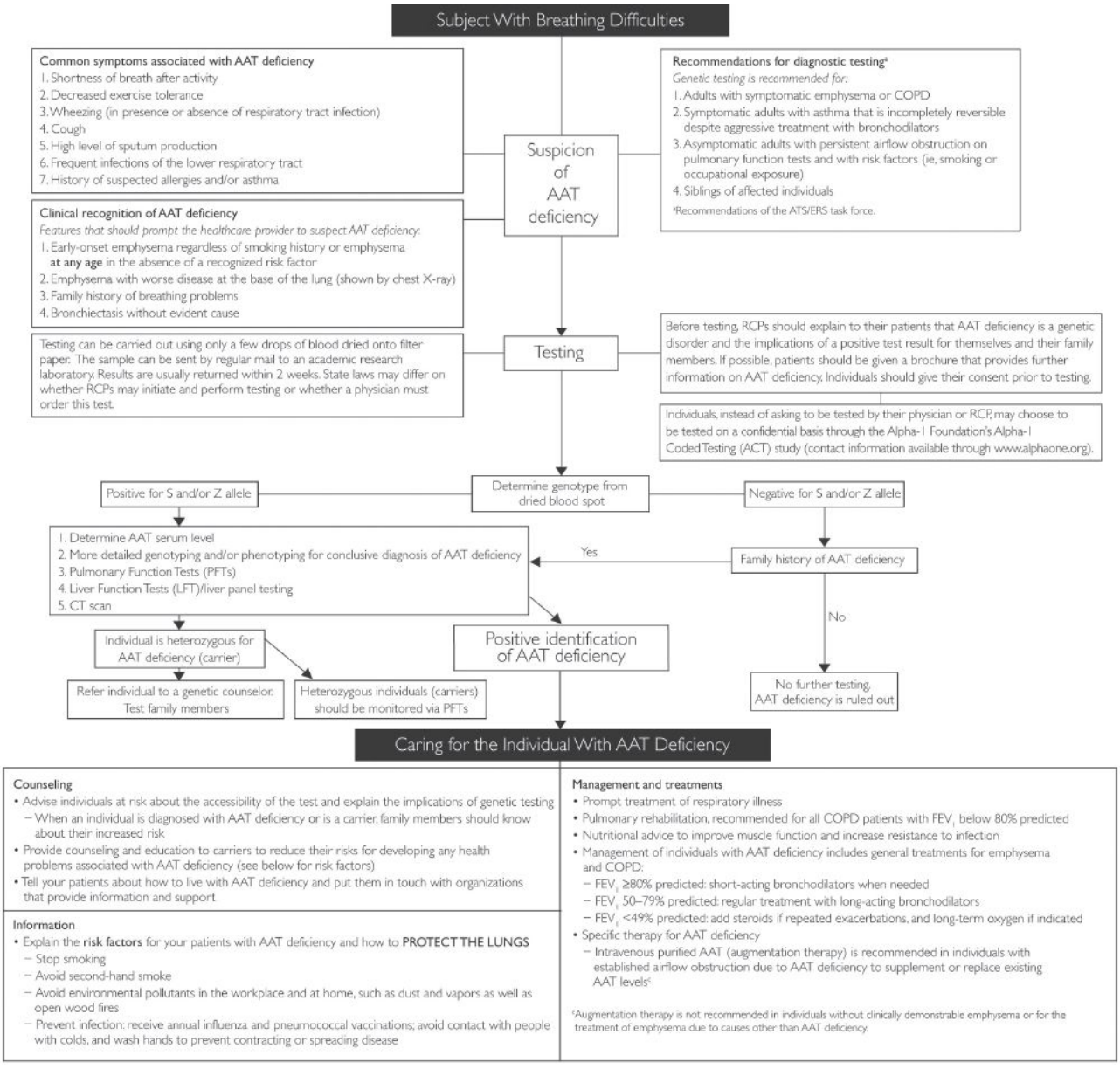
Table 1. ATS/ERS Task Force Guidelines for the Recommendation of Diagnostic Testing for AAT Deficiency

Type A Classification*	• Symptomatic adults with emphysema, COPD, or asthma with airflow obstruction that is incompletely reversible after aggressive treatment with bronchodilators.
	• Individuals with unexplained liver disease, including neonates, children, and adults, particularly the elderly.
	• Asymptomatic individuals with persistent obstruction on pulmonary function tests with identifiable risk factors (e.g., cigarette smoking, occupational exposure).
Type B Classification**	• Adults with bronchiectasis without evident etiology.
	• Adolescents with persistent airflow obstruction.
	• Asymptomatic individuals with persistent airflow obstruction and no risk factors.
	• Adults with anti-protease 3-positive vasculitis.

*Genetic testing is recommended.
**Genetic testing should be discussed and could reasonably be accepted or declined.

ADAPTED from Reference 4.

Figure 1. The AAT Management Algorithm Used in the Tri-City Medical Center Pulmonary Rehabilitation Program



tifying affected patients. In our personal experience, the health care community is improving in its ability to detect AAT deficiency; however, there is still some way to go in identifying the many patients and carriers of this disorder.

The aim of pulmonary rehabilitation is to reduce the symptoms of chronic respiratory disease, increase patients' participation in physical and social activities, and positively impact their overall quality of life.[10] RTs in the pulmonary rehabilitation program at Tri-City Medical Center incorporate AAT testing into the mix by working alongside physicians in the targeted detection of AAT-deficient individuals with symptoms that might be indicative of the disorder. Most of the indicators suggestive of AAT deficiency are routinely investigated in the respiratory therapy clinic, making the respiratory therapist a key player in detecting individuals with active disease.

Table 2. The Genotypes and AAT Levels of Seven Patients Who Tested Positive for AAT Deficiency, from a Sample of 55 Who Were Tested at Tri-City Medical Center

Genotype*	AAT Level (mg/L)
MS	180.7
MS	143.9
MS	135.2
MZ	126.6
MZ	114.1
SZ	Insufficient sample
SNull/Rare	68.8

*M is the normal component of the gene and normal levels of alpha-1 PI are produced. Z, S, and Null/Rare are abnormal genetic variants, which, when inherited, lead to reduced production of alpha-1 PI.
ADAPTED from Reference 4.

An integrated algorithm

Testing for AAT deficiency is straightforward and simple; alpha-1 antitrypsin deficiency screening test kits are available free and require only a few drops of the patient's blood. Test samples are then sent to an academic research laboratory where genotyping is undertaken. A polymerase chain reaction-based protocol can detect the S or Z alleles in the sample DNA; and if a positive result is returned, the absolute serum level of AAT is determined by nephelometry. Other confirmatory tests are available (e.g., phenotyping, gene sequencing) when diagnostic suspicion persists but polymerase chain reaction testing does not demonstrate a high-risk genotype.

At Tri-City, RTs follow a sequence of patient selection, testing, and aftercare outlined by a standard algorithm (Figure 1) to test for AAT deficiency. In line with the recommendations from the American Thoracic Society (ATS) and the European Respiratory Society (ERS), they first indicate which patients require a diagnostic test.[4] These requests are signed-off by a medical director. Prior to testing, pulmonary rehabilitation staff give a talk entitled "What is COPD?" that includes information on AAT deficiency testing. In their experience, patients are rarely familiar with AAT deficiency or its hereditary basis. Further information is provided on the day of testing when patients are given the opportunity to discuss the testing protocol, its significance, and the possible outcomes and implications of the result with the RT administering the test. Emphasis is placed on making patients aware of the heritable basis of AAT deficiency and the risk that the disease might extend to other blood-related members of their families.

Positive diagnoses are followed by RT-led aftercare, which is centered on educating patients about AAT deficiency and how it might impact their lives. In the case of a positive diagnosis, modifications that patients can make to their lifestyles in order to optimize their quality of life are explained. Patients are supplied with a brochure that details the nature of AAT deficiency, and they are also put in touch with the relevant support organizations (see sidebar). Finally, the patient's physician is informed of any testing decisions or results.

Successful outcomes

The success of the targeted approach taken at Tri-City Medical Center has been demonstrated by the detection of both heterozygous and homozygous patients (Table 2). Between January 2009 and October 2009, 55 individuals from the pulmonary rehabilitation programs and Better Breathers' Clubs at Oceanside and Mission Viejo, CA, were tested. Of these, seven individuals tested positive for AAT deficiency or were carriers of the disorder with one abnormal genetic variant. This targeted approach confirms that, even by testing a few patients, RTs will find that some of their COPD patients have an AAT deficiency.

Detecting AAT deficiency in this way has several advantages. RTs can apply their expert knowledge to ensure that the Global Initiative for Chronic Obstructive Lung Disease guidelines for the management of pulmonary disease are closely followed.[11] They may then use their specialist care skills to suggest methods for managing pulmonary disease, including particular changes that patients can make to their lifestyles to reduce morbidity. Following a positive diagnosis, patients can be supervised by the RT as they undergo standard emphysema treatments, such as prompt treatment for

Support Organizations

- Alpha-1 Association: www.alpha1.org
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respiratory infections; administration of oxygen, bronchodilators, and steroids; and support to aid smoking cessation. Furthermore, programs such as this can identify individuals who would benefit from receiving augmentation therapy for their AAT deficiency.[4] This therapy involves the administration of an intravenous infusion of a purified preparation of $alpha_1$-PI to replace the missing protein in individuals with the disorder. Awareness of a positive diagnosis for AAT deficiency is vital information for both patients and their RTs. Moreover, it is important to discuss with individuals the advantages and disadvantages of being tested for AAT deficiency so they can make an informed decision.

The example set at Tri-City Medical Center demonstrates the key contribution made by RTs and how testing and management programs can be carried out with minimal input from other health care professionals, effectively streamlining patient care. The need for continued training of RTs to understand AAT deficiency is therefore important, as is the dissemination of structured algorithms among health care professionals for the detection of this disease. ■

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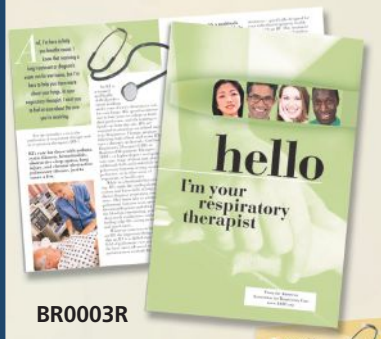

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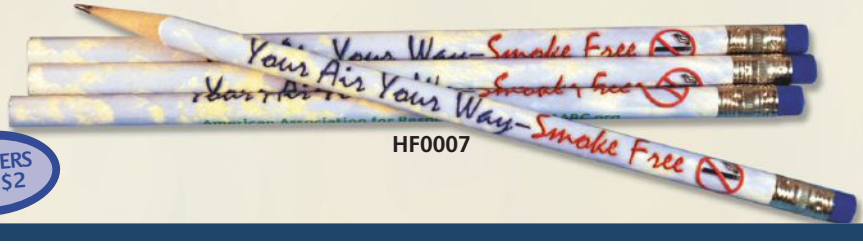

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Bronchial Thermoplasty: Another Treatment Option for Severe Asthma

by James Canfield Jr., MBA, RPFT

Asthma is a serious public health problem. It is one of the top five chronic diseases globally, along with heart disease, stroke, cancer, and diabetes. Key statistics from the American Lung Association and the Centers for Disease Control and Prevention show the following:

- More than 22 million Americans suffer from asthma.
- Each year complications from asthma attacks result in approximately:
  - 13.6 million unscheduled doctor office visits,
  - 1.8 million emergency room visits, and
  - 500,000 hospitalizations.[1]
  - 4,000 deaths.[2]

Those of us in respiratory care know how life-altering severe asthma can be for our patients. The increased burden of severe asthma can lead to a substandard quality of life for these patients, and few treatment options exist to adequately control their disease. Patients with severe asthma (per American Thoracic Society criteria) generally require high doses of controller medications to achieve control.[3] We frequently examine patients with severe asthma that is difficult to control despite numerous asthma medications. Many of these patients can no longer maintain employment.

Now, however, there may finally be a treatment option that offers hope. In April of 2010, the U.S. Food and Drug Administration approved the Alair® Bronchial Thermoplasty System (Boston Scientific Corp., Sunnyvale, CA) for the treatment of severe, persistent asthma in patients 18 years and older whose asthma is not well controlled with inhaled corticosteroids (ICS) and long-acting beta agonists (LABAs). In patients with severe asthma, bronchial thermoplasty (BT) improves asthma-specific quality of life with a reduction in severe exacerbations, ER visits, hospitalizations, and days lost from work/school and other daily activities due to asthma.

The procedure

Our pulmonary interventional service at El Camino Hospital in Mountain View, CA, began offering BT treatments in July 2010. BT uses thermal energy to reduce the excessive airway smooth muscle (ASM) responsible for airway constriction in asthma patients. The procedure is performed as an outpatient procedure and involves introducing the Alair catheter into the patient's lungs through a standard flexible bronchoscope inserted through the nose or mouth. The tip of the catheter is expanded to touch the walls of the airway. The catheter delivers controlled radiofrequency energy along the length of the airway walls in 10-second bursts, causing a reduction of the excessive ASM.

The procedure, like many other minimally invasive flexible endoscopy procedures, is performed under moderate sedation. Some centers may prefer deep sedation. It is currently performed in three treatment sessions, which are routinely scheduled at least three weeks apart. Physicians treat a different part of the lungs in each treatment session. Each session lasts about an hour; and following a period of recovery from the sedation, patients can go about their everyday activities at home.

about the author...

James Canfield Jr., MBA, RPFT, is the lead diagnostic/interventional pulmonary technologist for the pulmonary interventional program at El Camino Hospital in Mountain View, CA.

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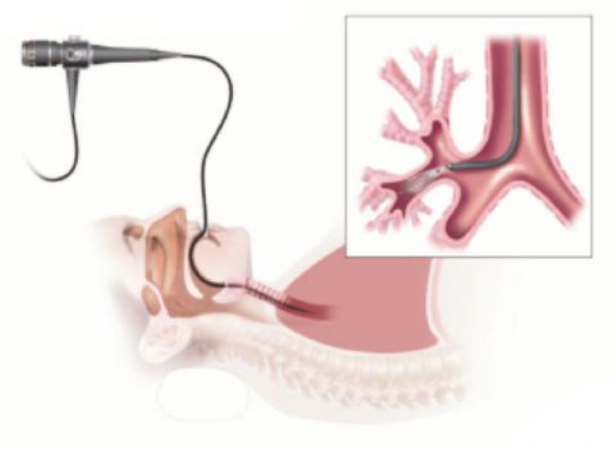

Clinical studies

Bronchial thermoplasty has been studied in five clinical studies, three of which were randomized controlled clinical trials and have been published in peer-reviewed journals.[4-6,] The pre-clinical work in canines confirmed the persistent reduction in ASM out to three years.[7] The three randomized controlled trials each demonstrated improvements in various aspects of asthma control.

The Asthma Intervention Research 2 (AIR2) Trial, published in the January 2010 issue of the *American Journal of Respiratory and Critical Care Medicine*,[4] studied patients on high doses of ICS and LABA and determined, compared to sham bronchoscopy, BT resulted in improved asthma quality of life and the following clinically meaningful benefits:

- 32% reduction in severe exacerbations requiring systemic steroids.
- 84% reduction in emergency department visits for respiratory symptoms.
- 73% reduction in hospitalizations for respiratory symptoms.
- 66% reduction in days lost from work, school, or other daily activities due to asthma.

The results of the Asthma Intervention Research (AIR) Trial were published in the *New England Journal of Medicine* in March of 2007 and demonstrated that, compared to a control group receiving standard-of-care medications, there was a:

- 50% decrease in asthma exacerbations
- 2.6-fold increase in days with no asthma symptoms
- 45% reduction in rescue medication use
- Statistically significant improvement in asthma control and asthma quality of life, as measured by the validated ACQ (Asthma Control Questionnaire) and AQLQ (Asthma Quality of Life Questionnaire) scores, respectively.[8]

The Research in Severe Asthma (RISA) Trial was a smaller study, published in the *American Journal of Respiratory and Critical Care Medicine* in December 2007, that looked at the safety of BT in symptomatic, severe, refractory asthma patients and its ability to reduce oral steroid use in these patients.[9] More BT-treated patients were able to completely wean off of these medications compared to controls.

Safety

The most common side effect found in these studies was an expected transient increase in the frequency and worsening of respiratory-related symptoms, including asthma (multiple symptoms), respiratory tract infections, wheezing, dyspnea, and chest pain. These events typically occur within a day of the procedure and resolve on average within seven days with standard care.

Long-term follow-up out to five years has been completed in two studies, the Feasibility Study and the AIR Extension Study. The RISA Extension Study reported follow-up out to three years.[10] All three of these studies were published in abstract form. These data have shown no safety signal of concern. The safety profile for the BT-treated patients has demonstrated consistency over time based on the percentage of subjects reporting respiratory adverse events, the number of respiratory adverse events per subject, and the number of hospitalizations and emergency room visits due to respiratory symptoms per subject.

Over the six years of follow-up in the Feasibility and AIR Extension studies, a stable adverse event profile, including ER visits and hospitalizations for respiratory symptoms, and no deterioration in either pre- or post-bronchodilator FEV_1 at the two-, three-, four-, or five-year evaluations, were demonstrated. An assessment of annual CT scans in the Feasibility Study showed no clinically significant differences in high-resolution CT scans taken annually out to five years.

Over the four years of follow-up to date, the RISA Extension study has also demonstrated a stable adverse event profile, including ER visits and hospitalizations for respiratory symptoms, and no deterioration in either the pre- or post-bronchodilator FEV_1 at the two-year or three-year evaluations compared to the values recorded at the end of the RISA Trial.

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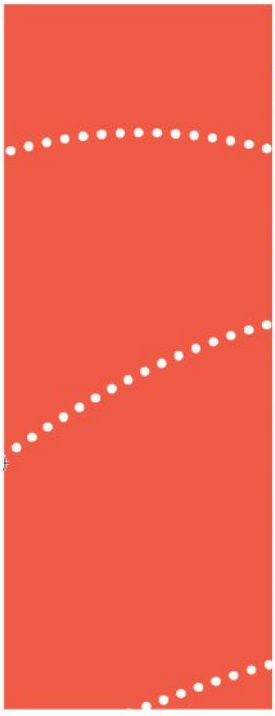

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Important benefits for patients

Bronchial thermoplasty provides an alternative treatment for severe asthmatics still symptomatic despite treatment with available asthma medications. Randomized, controlled clinical trials with BT have demonstrated important benefits for patients, including significant improvement in quality of life, asthma symptoms, severe exacerbations requiring corticosteroids, days lost from work/school/other daily activities due to asthma, and health care utilization.

While our current patient treatment experience at El Camino Hospital is limited, it is our hope that among our treated patients BT will prove to be a viable option. Pulmonologists, allergists, asthma experts, and respiratory therapists should become knowledgeable about bronchial thermoplasty and appropriate patient selection for this procedure. ■

DISCLAIMER

James Canfield Jr. is not affiliated with the Alair® Bronchial Thermoplasty System or Boston Scientific Corp. mentioned in this article.

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A Hospital-to-Home Program for Ventilator-dependent Children Sets the Standard of Care

by John Tamasitis, RRT-NPS, and Lynn Shesser, MBA, MSN, RN

Home mechanical ventilation of children with chronic or degenerative respiratory and neuromuscular disorders can be a practical alternative to institutional care. Advances in portable medical technologies and therapies, a focus on family-centered care, and upfront dialogue with third-party payors have contributed to safe and successful experiences in home ventilation. The home ventilator program of the Children's Hospital of Philadelphia (CHOP) is an interdisciplinary initiative between CHOP's inpatient units and its home care department for children who require chronic respiratory mechanical support and weaning. Our comprehensive team of health care professionals provides an abundance of expertise, education, communication, and collaboration to support families in successfully bringing high-tech respiratory care into the home. The program is unique in its interdisciplinary, interdepartmental programming that seamlessly transitions patients across the continuum of care while setting a recognized standard of care and promoting best practices for our community.

The financial, emotional, and social costs of maintaining technology-dependent children in acute care settings for prolonged periods of time prompted an interest in finding lower-cost environments of care. Influencing this effort were third-party payors, the development of sophisticated, portable home medical equipment, a growing market of home nursing care and other skilled therapies, and the expansion of home infusion and enteral therapies.[1]

Prepping the family and the environment for a technology-dependent child's safe return home requires extraordinary teamwork and communication between an extensive group of health care professionals and the family to create a safe home situation. The goal is for the family to manage their child's care at home, integrate the management of their child's needs into their activities of daily living, maximize the child's opportunity for growth and development, and improve quality of life for the child and the entire family. As part of discharge preparation, a team of professionals led by respiratory therapy educates and empowers families to care for their child independently, arranging for assistance from other skilled professionals like shift nursing, physical therapists, or teachers. The team also provides emotional and social support that allows families to leave the hospital confident in their ability to function in the community under the most challenging circumstances. CHOP's program is open to ventilator- and oxygen-dependent children of all ages and with many diagnoses. For some candidates (e.g., those with chronic lung disease of prematurity), weaning from ventilator dependence is expected. For others with deteriorating neurological conditions (e.g., spinal musculature atrophy), weaning is not anticipated. Discharge home with knowledgeable, capable caregivers is the goal.

about the authors...

John Tamasitis, RRT-NPS, is the manager of clinical operations, respiratory therapy at Children's Hospital of Philadelphia Home Care in Philadelphia, PA.

Lynn Shesser, MBA, MSN, RN, is the quality improvement coordinator at Children's Hospital of Philadelphia Home Care in Philadelphia, PA.

CHOP's respiratory care department directs the home ventilator program. The current program is eight weeks long, and all elements formally adhere to the AARC Clinical Practice Guidelines for long-term invasive mechanical ventilation in the home. The program's uniqueness lies in its delivery. CHOP has created a multidisciplinary program that stresses communication and safe hand-offs at all opportunities across the health care continuum. RTs, deemed competent to participate, manage daily program activities. Program objectives are to:

1. Establish optimal respiratory status using home medical equipment.
2. Train and educate caregivers in all aspects of care.
3. Create a medically and developmentally safe home environment for a technology-dependent child.

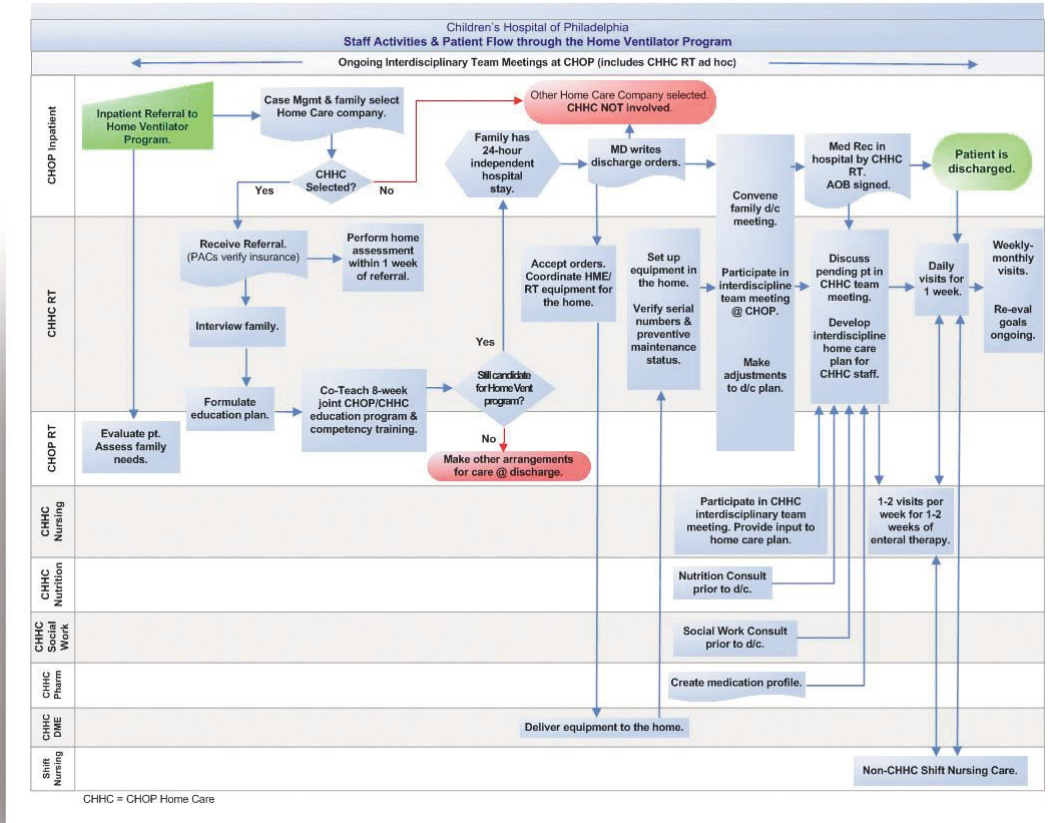
Children with neuromuscular disorders, central hypoventilation syndromes, spinal cord injuries, and craniofacial and airway abnormalities compose the majority of children with tracheostomy and long-term ventilation needs.[2] The population includes children requiring chronic respiratory support (with and without tracheostomies), including those needing daily noninvasive, positive- and negative-pressure ventilation. Many are premature infants with chronic lung disease sent home to thrive and grow, with anticipated weaning support in the home. In all cases, acute needs and equipment use are high. Continuous positive airway pressure (PAP) and bi-level PAP usage has increased, possibly a result of increased availability of pediatric-sized equipment as well as improved monitoring capabilities and changing practice patterns lending to fewer tracheostomies.[3]

Teamwork is key

Teamwork is the centerpiece of CHOP's home ventilator program, with the patient and the family at the center of each team. Our inpatient team is coordinated by the hospital case manager. When CHOP Home Care becomes involved, home care RTs join the inpatient team and work with the hospital case manager to coordinate discharge. Our RTs then lead the home care planning team and collaborate with the in-home care team, transitioning care flawlessly from the hospital to the home.

Successful inpatient family preparation for discharge is dependent on continual dialogue, including daily rounds and regular interdisciplinary meetings, caregiver education and skills assessment, documented progress reports addressing both clinical and educational needs, and formal hand-offs (see Figure 1).

Figure 1. CHOP's Home Ventilator Program Algorithm



Enrollment begins the process

Once a patient is identified as a candidate for the home ventilator program, a hospital-based RT begins discussing discharge needs with the family and other team members; and the case manager helps the family to identify a home care company. If the family selects CHOP Home Care as its designated home care provider, our RT interviews the family and outlines our program and services. Within one week of referral to CHOP Home Care, our RT performs an extensive home assessment to ensure that the home can be safely and adequately outfitted to accommodate a technology-dependent child. The assessment focuses on the home's electrical capacity, other environmental requirements, and oxygen and fire safety (see Figure 2). This RT also meets with the inpatient RT to formulate an educational plan that will support hospital discharge. Respiratory therapists offer an individualized, flexible education schedule based on caregiver availability.

Family education is comprehensive

Formalized family training includes an eight-week structured program in which clinicians deliver subject matter consistently, thoroughly, and repeatedly. Week-to-week milestones are designed for skill and knowledge mastery at the family's pace. Coursework involves reading, bedside training, and classroom training at our Connelly Resource Center for Families and culminates with a 24-hour independent inpatient stay that simulates the home environment. Our inpatient and home care RTs are the subject matter experts. They are deemed competent following successful completion of annual and ongoing competency assessments. These include supervisory appraisals and peer-to-peer review of topics including ventilators, oxygen administration and safety, cuff safety, trach care, hand hygiene, phone triage, medication reconciliation, and more.

For families/caregivers, RTs manage a uniform checklist of essential teaching topics ranging from basic clinical skills to emergency management to adjustments in quality of life. Each RT teaches specific modules and documents caregiver competency, when it is achieved, on one tool. Caregiver competency assessment includes thorough understanding of the subject, with active discussion and many opportunities for return demonstration of tasks. Training is considered complete only when our clinical professionals deem caregivers proficient in performing all required tasks for independent care of their child and able to verbally manage emergency scenarios. For this reason, emergency preparedness — including response to electrical outages, weather emergencies, and equipment troubleshooting — is thoroughly addressed. Nurses, social workers, and dietitians are also part of this supportive teaching team.

Home equipment needs are assessed

CHOP Home Care is certified as a durable medical equipment company by the Centers for Medicare and Medicaid Services. Our RTs outfit the home with equipment prescribed by physicians. Equipment needs are based on the child's past and current medical history, a complete medical assessment, and tests of daytime and night-time breathing efficiency.[4] Many patients also require nutritional support. For these, CHOP dietitians calculate caloric needs and recommend feeding programs that may require the use of enteral feeding pumps.

In the hospital, health care personnel orient caregivers to all equipment expected to be used in the home. CHOP Home Care delivers equipment directly to the hospital so that families can learn on devices that are planned for home use. RTs review equipment function and home safety guidelines with the family. The respiratory therapy team and nurses must deem caregivers competent to use home equipment prior to a child's discharge.

Financial issues

Literature cites that the hidden costs of caring for such technology-dependent children may include:

- Lost wages of mother or father
- Out-of-pocket expenses for non-reimbursable items
- Co-pays, when only a percentage of fees are covered by insurance
- Cost of skilled nursing care.

In Pennsylvania, the State's Medical Assistance Program covers medical expenses for children with chronic illnesses, thereby limiting the financial burdens on families. Some of CHOP's home-ventilator patients have private medical insurance that covers related expenses. Costs that are not covered by private insurance are covered by Pennsylvania's Medical Assistance program as secondary insurance. These rules vary by state.

24-hour in-hospital stay simulates home daily living

Following the completion of all other necessary training, but prior to the physician writing discharge orders, the inpatient unit arranges a 24-hour independent hospital stay for the child and two trained parents and/or caregivers. During the 24-hour stay, caregivers are responsible for administering all medicines, checking ventilator settings, responding to ventilator and other alarms, weighing, feeding, performing therapies, and anything else needed for the child. They are expected to perform tracheostomy tube changes as well as walk off the unit with the child and his/her equipment without an accompanying staff member.

Figure 2. CHOP's Home Safety Assessment Form

CHHC Rev: v4 8/2009 — Home Safety Assessment — Page 1 of 1

Home Safety Assessment

Dwelling is: ☐ House ☐ Apartment ☐ Other: _____		List Number of Floors in Dwelling: _____	
Emergency preparedness plan reviewed	☐ yes	Telephone available	☐ yes ☐ no
		Enter Phone Number	
Fall risk assessment completed	☐ yes ☐ no	911 Available	☐ yes ☐ no
		List Name of Local Hospital	

O_2 Safety	☐ N/A
CHHC Oxygen guidelines reviewed	☐ yes ☐ no
No smoking sign posted	☐ yes ☐ no
O_2 3 ft from electrical outlets	☐ yes ☐ no
O_2 10 ft from heat source	☐ yes ☐ no
Spare tank location identified	☐ yes ☐ no
Storage is appropriate	☐ yes ☐ no

Electrical Requirements	
Electricity supplied to home	☐ yes ☐ no
Electrical outlets grounded	☐ yes ☐ no ☐ n/a
Appropriate extension cords in use on HME	☐ yes ☐ no ☐ n/a
Amperage adequate for HME	☐ yes ☐ no ☐ n/a

Environmental Requirements	
Adequate access to HME	☐ yes ☐ no ☐ n/a
Door size adequate for HME	☐ yes ☐ no ☐ n/a
Infestation of bugs or rodents absent	☐ yes ☐ no
Obstacles to safe use of HME absent	☐ yes ☐ no ☐ n/a
Obstacles to safe mobility absent	☐ yes ☐ no
Refrigerator/freezer operational	☐ yes ☐ no
Clean and adequate water supply	☐ yes ☐ no
Heat and/ or Cooling adequate in home	☐ yes ☐ no
Environment suitable for home care and/or HME	☐ yes ☐ no
Pets (type):	☐ yes ☐ no
Appropriate storage & disposal of medical supplies and sharps	☐ yes ☐ no ☐ n/a

Fire Response/Safety		Fire extinguishers present	☐ yes ☐ no
Emergency exit procedure reviewed	☐ yes	Fire extinguishers functional	☐ yes ☐ no
Smoke detectors present	☐ yes ☐ no	Fire extinguishers checked in the past 30 days	☐ yes ☐ no
Smoke detectors functional	☐ yes ☐ no	Family encouraged to purchase fire extinguishers and where they can be purchased.	☐ yes ☐ no
Smoke detector checked in the past 30 days	☐ yes ☐ no	CO Monitor present	☐ yes ☐ no
Family encouraged to purchase a smoke detector and where it can be purchased	☐ yes ☐ no	CO Monitor functional	☐ yes ☐ no
All medical equipment checked for its fire safety Concerns	☐ yes ☐ no	CO Monitor checked in the past 30 days	☐ yes ☐ no
		Family encouraged to purchase a CO monitor and where it can be purchased.	☐ yes ☐ no

Patient/Caregiver informed of all potential hazards identified in the Home Safety Assessment.
☐ yes ☐ no ☐ n/a

Recommendation:

Patient/Caregiver confirms understanding of safety concerns and recommendations to improve patient safety.
☐ yes ☐ no – clinician notified of concerns ☐ n/a

Plan/Follow-Up actions:

CHHC Signature:	**Patient Name:**
Date:	**Date of Birth:**
	Medical Record Number:

Caring for a ventilator-dependent patient is a family affair, including the big sister.

During the 24-hour stay, both family caregivers do not have to be present simultaneously, but they need to decide when each will provide care and when each will sleep. The *on duty* care provider must stay awake to respond to alarms. Some care, such as a trach change, requires two people. For that task, both caregivers need to be present.

RTs set up the home environment

If the 24-hour in-hospital stay is successful and while the child remains hospitalized, CHOP Home Care prepares the home for the child's return. Respiratory therapists work with the family to identify a safe and convenient location to outfit a room for the child. The RT also rechecks the home's electrical capacity and/or enhancements made by the electric company as follow-up to an initial electrical inspection. This confirms that the home has enough amperage to power all required equipment.

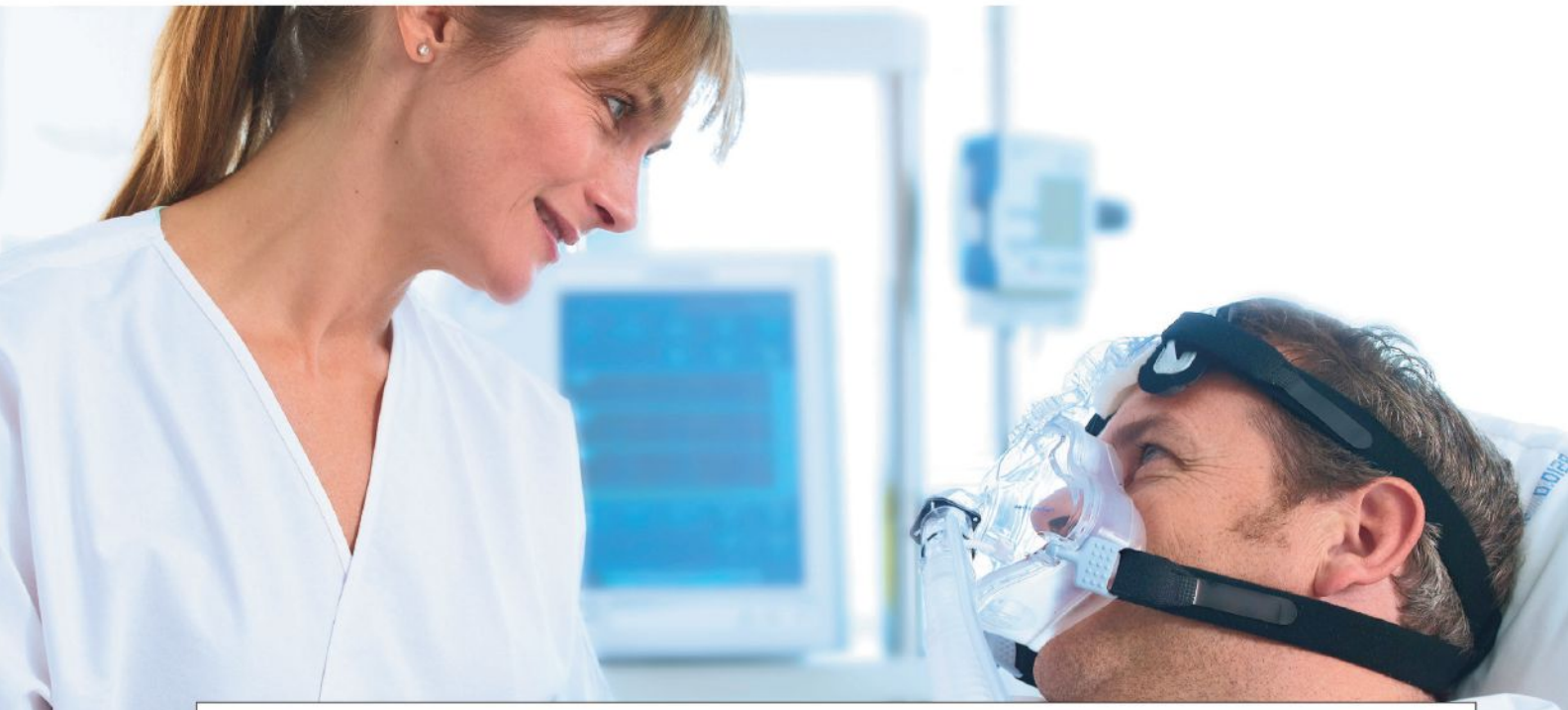
In the week prior to discharge, prescribed medical equipment is delivered to the home. Equipment generally includes:

- Back-up ventilator (primary home ventilator is delivered to the patient at the hospital)
- Capnometer
- Pulse oximeter
- 2 heater/humidifiers
- 2 suction machines
- 2 oxygen tanks (oxygen back-up is a safety requirement per Joint Commission regulations)
- Enteral feeding pump.

Working with the family, the home care RT reviews orders for completeness, assembles the equipment, and sets up the environment. To promote smooth workflow and convenient care, rolling carts and power strips organize equipment and related supplies. The RT verifies that all the equipment functions properly, has audible alarms, and is installed at safe distances from electrical outlets and heat sources to ensure patient safety.

Hospital discharge reflects success

Just prior to discharge, a home care RT who has been communicating with the family and the inpatient health



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care team for nearly two months formally participates in the final inpatient interdisciplinary discharge team meeting. This RT also makes one last inpatient visit with the family to perform medication reconciliation and discuss patient/family rights and responsibilities related to home care. Once home, the family will have access to CHOP Home Care's 24-hour on-call system for clinical and equipment issues. Families that are Pennsylvania residents will also be referred to the Pennsylvania Home Ventilator Assisted Children's Program, funded by the Pennsylvania Department of Health, which provides consultation and support.

Hospital discharge is an exciting as well as intense time. The child is transported home by the CHOP transport team, generally accompanied by a parent/caregiver. Once at the home, the transport team hands off pertinent patient information to the home care RT, a CHOP home care nurse, and private duty nurses. The in-home care team reviews medical orders and performs in-home medication reconciliation together. Now, this in-home team begins to work as a unit just as the inpatient interdisciplinary team worked.

CHOP Home Care personnel will perform ongoing intermittent visits, assessments, and teaching at predetermined intervals, based on patient acuity and protocols. Private-duty agency nurses will tend to the child 16–24 hours each day. Open and ongoing communication with physicians, CHOP Home Care, and shift nursing is essential for a safe and successful transition to home.

Now we are performing community outreach to shift-nursing agencies since CHOP Home Care does not provide the shift-nursing services that these families generally require. We are advocating for more comprehensive communication with shift-nursing agencies for the patients we share. As needed, our respiratory therapists and agency nurses meet to familiarize these nurses with the child and family, orient them to the use and operation of the child's equipment, and discuss all needs prior to discharge. We have offered sessions in our office where we provide simulation training on the equipment that will be used in the home, and we are available in the home to manage set-up and provide mentoring to shift nurses. In addition, we encourage representatives from the shift-nursing agency to participate in the patient's

Respiratory therapist Scott Weisman, CRT, checks in on his small home-ventilator patient.

discharge conference so that all home care providers are cognizant of the most current discharge orders and plans for the patient. Together, all of these activities contribute to the child's safe transition from hospital to home.

Setbacks are evaluated

When our home ventilator program patients get readmitted to the hospital, CHOP Home Care evaluates the reason for admission to determine if it was preventable. For patients admitted with a lower respiratory tract infection, RTs make additional home visits to identify the source. Infection surveillance activities include an exploration of the child's exposure to infectious diseases and/or assessment of the family's technique for changing circuits, managing humidification, suctioning, or hand hygiene. These are always followed by supplementary education and reinforcement of skills. In all cases, whether the admission was respiratory in nature or due to another clinical issue, CHOP Home Care resumes care by receiving the patient at home, reviewing orders, updating the care plan, and providing education specifically targeted to the patient's and family's needs.

Re-evaluating and enhancing the program

To provide the safest and most comprehensive up-to-date services, we continually re-evaluate and enhance our home ventilator program. With simulation proving to be an extremely effective education tool, the respiratory care department is planning to collaborate with CHOP's simulation lab to develop emergency simulation exercises for its home ventilator program. RTs will create a series of mock emergency scenarios and, using computerized manikins, will observe the family for appropriate management. These sessions will be followed by debriefings to promote feedback on the family's response.

Measuring outcomes is an important component of our program evaluation. We keep track of readmissions, numbers and timings of ER visits, the number of lower respiratory tract infections, and weaning of patients from ventilators.

Critical success factors

The success of CHOP's home ventilator program stems from three elements: standardization of its most basic components, orchestrated communication and interdisciplinary collaboration, and commitment from personnel. The program fosters a safe, interdepartmental care path for technology-dependent children with potential for discharge to home. It provides *the same comprehensive program and the same quality care to every patient, every time.*

Communication and safe hand-offs are essential for success. Because there are so many players supporting the technology-dependent child's discharge home, it is essential that all remain in the communication loop. This is accomplished through hospital rounds; interdisciplinary team meetings prior to discharge; inpatient and home care interdisciplinary care plans; clinical notes in a common electronic medical record accessible by both inpatient and home care staff; common teaching plans and documentation of competencies; and ongoing phone contact from CHOP to home care, skilled nursing services, and the family.

CHOP's dedicated staff supports this entire program. Their commitment to problem solving and pursuing the best for each child and family is remarkable and has contributed to the program's continuous quality improvement.

History has proven that it is medically possible, and in many circumstances socially and financially beneficial, to move the ventilator-dependent child out of the acute care setting to home. Over the past 15 years, our staff has learned how best to support this experience. CHOP has developed a best practice for the community.

Even so, not all families have the ability or resources to care for their technology-dependent child at home. For those situations, the health care team needs to discuss other residential options and assist the family in transitioning their child to an alternate facility. Whether or not home care is a possibility, the goal is for each child to progress as far as his or her potential will allow. ■

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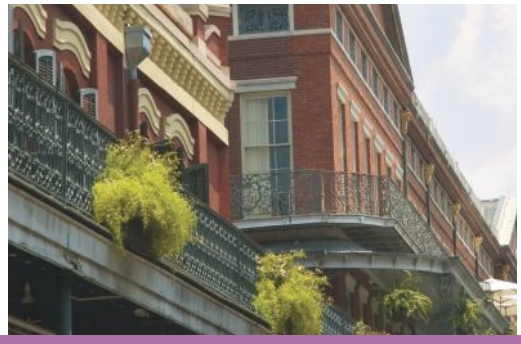

FIVE MORE CONGRESS SESSIONS YOU

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1 Program Committee Spotlight: Respiratory Controversies

WHO: Ira M. Cheifetz, MD, FAARC
WHAT: Division Chief, Pediatric Critical Care Medicine
WHERE: Duke Children's Hospital, Durham, NC

Despite the growing wealth of clinical data and experience in the profession of respiratory care, clinical controversies will always exist. One key controversy focuses on the clinical value of full-feature ventilators in relation to the financial requirements.

On the one hand, it may be argued that full-feature ventilators truly add clinical value, as the number of modes and potential strategy options are increased. The argument for augmentation of the clinical armamentarium rests on a perceived need for improved matching of ventilatory support, via increased availability of modes and features, to the physiology/pathophysiology of each individual patient.

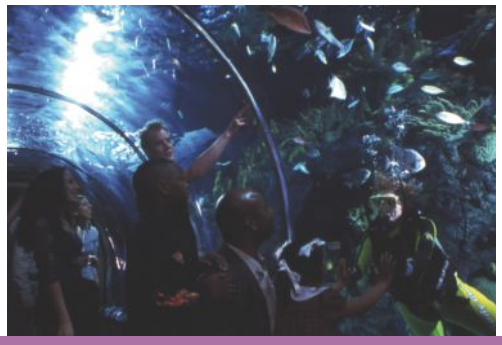
On the other hand, it should be noted that no mode has been demonstrated in clinical trials to be clearly superior to any other with respect to definitive outcomes. Thus, one is left to weigh the balance between the increased financial outlay and the potential for improved clinical outcomes (along with an associated potential for financial savings). Without definitive data, this debate is likely to continue for quite some time. Hopefully, future clinical trials will help answer the question of whether full-feature ventilators add clinical value.

A second ongoing controversy in respiratory care is whether RTs should perform routine respiratory care functions or whether these functions should be delegated to other health care personnel. In the evolving health care

(continued on page 56)

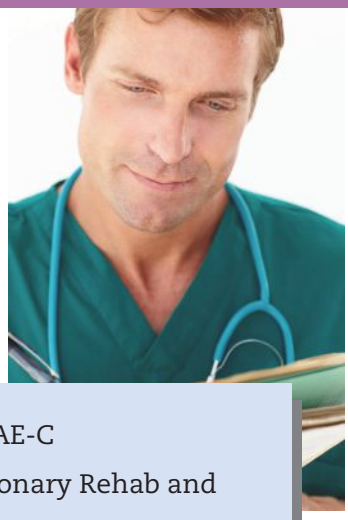
Coming Attractions, Part 2






WON'T WANT TO MISS THIS NOV. 10–13

Last month we previewed five sessions everyone will want to attend at AARC Congress 2012. We have five more previews this month, once again written for us by the lecturers and/or symposium organizers themselves.



2 The Business of Pulmonary Rehabilitation

WHO: Debbie Koehl, MS, RRT-NPS, AE-C

WHAT: Program Coordinator, Pulmonary Rehab and Patient Education Program

WHERE: Indiana University Health Methodist Hospital, Indianapolis, IN

The new Medicare benefit for pulmonary rehabilitation (PR) that was signed into law a few years ago has had a ying-yang effect on PR programs nationwide. While it has spurred the development of new programs in some places, it has also led to reimbursement woes for many others, with many having a hard time keeping their doors open under the current payment structure.

At AARC Congress 2011 in Tampa, we presented a set of lectures on the "how to's" of pulmonary rehabilitation. The session met with positive reviews from our audience members, and we wanted to continue the trend this year in New Orleans with another block of lectures for PR professionals. In keeping with the need to review billing and other key practices, the 2012 session is titled, "The

(continued on page 56)

Program Committee Spotlight: Respiratory Controversies (continued)

arena, a renewed focus on efficiency, effectiveness, quality of care, and productivity is essential for the success of respiratory care departments, hospitals, and health systems. With patient acuity and complex technologic interventions on the rise, the role of the respiratory therapist in delivering "traditional" or "routine" therapeutic respiratory interventions in the new health care landscape must be reevaluated. There are clearly opposing viewpoints on this "hot topic." Although there is no clear right answer, the optimal approach must include a comprehensive evaluation of resources available (financial and personnel), populations served, complex technology offered, and individual characteristics of each respiratory care department, hospital, and health system. It is likely that the approach will vary from institution to institution.

This year's Respiratory Controversies Symposium will address both of these cutting-edge issues as Neil MacIntyre, MD, FAARC, and Dean Hess, PhD, RRT, FAARC, square off on the merits of full-feature ventilators; and Garry Kauffman, MPA, RRT, FAARC, and Timothy Myers, MBA, RRT-NPS, argue the pros and cons of routine respiratory therapy delivered by RTs. ■

The Business of Pulmonary Rehabilitation (continued)

Business of Pulmonary Rehabilitation." Topics will cover how to structure a PR program, reimbursement for a program (and how the "Pulmonary Rehabilitation Toolkit" developed by the AARC and its partners may help improve it), the skills needed by PR professionals, and how to go about building the business.

Like most of us who work in PR, you probably need some new and stimulating ideas to keep your programs fresh and updated. Whether you are new to PR or a seasoned professional, this session can help ensure you are on the cutting edge. Our dynamic speakers are always available to answer your questions and help you with new ideas. Attending these sessions offers a great opportunity to network with your PR colleagues, as well. ■

39th Donald F. Egan Scientific Memorial Lecture

Behind a Mask: Tricks, Pitfalls, and Prejudices for Noninvasive Ventilation

Stefano Nava, MD, first became acquainted with noninvasive ventilation (NIV) back in the late 1980s when he started using the modality mainly with his end-stage COPD patients. This year's Egan lecturer says he "immediately realized the hidden potential" and went on to spend the next two-plus decades of his career teasing that potential out — not only for his own patients but for the hundreds of thousands of others worldwide who have benefited from his research on the topic.

"NIV has become the 'gold standard' for the treatment of acute respiratory failure in certain pathologies — i.e., COPD exacerbation, cardiogenic pulmonary edema, pulmonary infiltrates in immunocompromised patients, and during weaning from invasive mechanical ventilation," says Dr. Nava. "Now there are several new areas for expanding its application." One area that's particularly exciting for him is the potential for NIV to decrease the rate of nosocomial infections, which in turn can reduce the mortality rate.

Dr. Nava will cover this and other new frontiers in the use of NIV in his Egan Lecture. He will also describe the evidence-based science backing up the modality and explain how RTs and other clinicians can avoid the pitfalls that can derail effective use. He plans to offer some "real life" accounts of NIV use as well in an attempt to get the audience thinking about even more ways to put this noninvasive technology to work for patients.

"When properly applied, and with the correct setting, NIV is a real form of ventilatory support, just like invasive mechanical ventilation," says Dr. Nava. "The only difference is the interface — i.e., mask versus tube." His dream for the future: "To expand NIV use outside the 'usual and well known' centers."

Dr. Nava currently serves as a researcher and professor at Policlinico S Orsola-Malpighi/University of Bologna in Bologna, Italy. He received the American Respiratory Care Foundation's Hector Leon Garza, MD International Achievement Award at the 2010 AARC International Respiratory Convention & Exhibition in Las Vegas, NV, for his prolific research into NIV and other respiratory topics, along with his support for respiratory care in his country. ■

NEW ORLEANS SPEAK

20 Words and Phrases To Know Before You Go to Congress This November

With its convergence of cultures, New Orleans, LA, is unique among American cities, so it is no wonder the language spoken there is peppered with words and phrases rarely heard in other places in the country. AARC member Terry Forrette, MHS, RRT, who lives and works in the New Orleans area, put the following dictionary together to help attendees at AARC Congress 2012 get up to speed on the local vernacular.

1. **Where Y'at** (where ya at): A greeting between two people, asking how you are. An appropriate response would be "Arite."
2. **Arite** (auugh-write): A response to the greeting "Where y'at?" or a response by itself when meeting someone.
3. **Crescent City:** A nickname for New Orleans, originating from the shape of the Mississippi River as it bends around the city.
4. **Cajun** (Kay-jun): French Acadians who settled here from Canada. Now used to describe Southeast Louisiana, its people, culture, and food.
5. **Creole** (cree' ole): Descendants of French, Spanish, and Caribbean natives; has also come to mean any person whose ancestry derives from the Caribbean's mixed nationalities.
6. **Dressed sandwiches:** Sandwiches served with lettuce, tomatoes, and mayonnaise: "the works."
7. **Gris gris** (gree gree): Voodoo good luck charm.
8. **Gumbo:** A thick spicy soup usually made with seafood, chicken, or sausage.
9. **Jambalaya** (jom'bə-LIE-ə): A rice-based dish containing meat and seafood that is seasoned with Cajun spices.

10. **Lagniappe** (lan' yap): Something extra that you didn't pay for — thrown in to sweeten the deal — like a baker's dozen.
11. **Laissez les bons temps rouler** (Lazay lay bon tom roulay): Let the good times roll.
12. **Muffuletta** (moo fa' lotta): And a lotta it is! Super-large, round, fat sandwich filled with salami-type meats, mozzarella cheese, pickles, and olive salad.
13. **"N'awlins"** (Nyoo Ahhlyins or NAW-lns): One of the many ways to pronounce New Orleans, usually used by locals.
14. **Neutral ground:** Median or grassy area between the paved areas on a boulevard. Named for the original Canal St. division between the Americans and Creoles, who did not like each other.

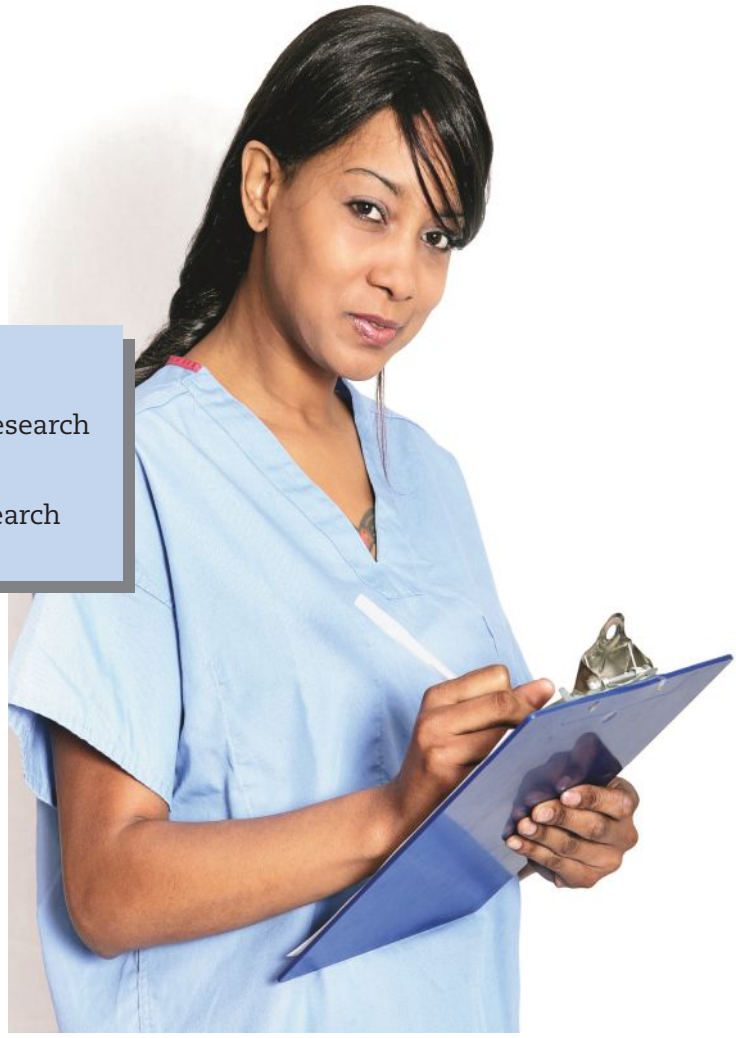
15. **Parish:** Analogous to the American "county." New Orleans is in Orleans Parish, the airport is in Jefferson Parish.
16. **Pass a good time:** Have a good time.
17. **Vieux Carre'** (Vooo ca ray') (View ca ray'): French for "Old Quarter," this is a term used for the French Quarter.
18. **Voodoo** (voo' doo): A form of religion commonly associated with witchcraft that was imported from the Caribbean during the early 1800s. Marie Laveau, who is buried in St. Louis Cemetery No. I, was a famous voodoo priestess.
19. **Y'all** (yawl, pronounced as one syllable): A contraction of "you" and "all," used as a pleural form of "you" and meant to include a group of individuals. As in "Y'all want to go get a muffuletta?"
20. **YeahYouRite** (spoken as one word): An emphatic statement of agreement and affirmation. As in, "It's hot." "Yeahyourite." ■

3 Nitric Oxide Controversies

WHO: Robert DiBlasi, RRT–NPS, FAARC

WHAT: Manager, Clinical Diagnostics, and Research Associate

WHERE: Seattle Children's Hospital and Research Institute, Seattle, WA



Recent evidence suggests that using noninvasive respiratory devices as an initial form of support and therapeutic intervention following extubation from mechanical ventilation may improve outcomes in neonates. Inhaled nitric oxide is being used with noninvasive ventilation at an increasing rate, but many questions remain.

For example, while clinical and bench research has verified that nitric oxide therapy can be delivered safely and effectively in intubated, mechanically ventilated patients, there are no published data that address whether these systems operate effectively with high-flow nasal cannula, conventional and bubble CPAP, or noninvasive ventilation. Nitric oxide delivery devices continuously sample gas from the noninvasive system, but it is likewise unclear whether this sampling affects tidal volume and pressure delivery to the patient. Many of these noninvasive systems also operate at lower flow rates than a ventilator, are subjected to greater leaks, and have vastly different gas delivery mechanisms. Clinicians are often left wondering if the set nitric oxide level is what the patient actually receives.

This lecture will review all of the clinical studies that have used inhaled nitric oxide during noninvasive respiratory support, as well as address future studies. I will also discuss the findings of a recent comprehensive bench study conducted in our laboratory that evaluated inhaled nitric oxide delivery accuracy and addressed potential safety aspects with all of the noninvasive devices.

Following this presentation, clinicians should be inspired to ask more research questions about how different FDA-approved devices interact with one another and whether this interaction can impact patient safety. If nothing else, these studies would provide "peace of mind" for clinicians already using inhaled nitric oxide with noninvasive devices. ■

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4 Hospital to Home

WHO: Greg Spratt, BS, RRT, CPFT

WHAT: Director of Clinical Marketing, Oridion Capnography, and Chair, AARC Home Care Section

WHERE: Needham, MA

A study by Jenks et al found that almost one in five Medicare beneficiaries (19.6%) who had been discharged from a hospital were readmitted within 30 days; one in three (34.0%) were readmitted within 90 days. For COPD patients, 30-day readmissions were even higher, at 22.6%.[1] In 2005, the Medicare Payment Advisory Commission reported that Medicare expenditures for potentially preventable readmissions may be as high as $12 billion a year.[2]

The Patient Protection and Affordable Care Act, which was signed into law on March 23, 2010 — and upheld by the Supreme Court in June — will modify Medicare's payment rules for hospitals. The act established a number of new programs, demonstrations, and pilots, including several aimed at reducing readmissions. These programs will receive $500 million in funding over five years and likely will be expanded.[3,4]

The act also creates *financial incentives* for hospitals to lower readmission rates. For discharges starting on Oct. 1, 2012, readmissions for three high-volume and/or high-rate conditions (acute myocardial infarction, pneumonia, and heart failure) will be tracked. Hospitals with high rates of readmissions for these conditions will have all payments reduced by an adjustment factor up to 1% in FY 2013; 2% in FY 2014; and 3% in FY 2015 and beyond. The program will be expanded by four or more conditions in FY 2015 and is likely to include COPD.

"Hospital to Home" is a joint project of the AARC Home Care and Management Sections that is based on a directive from the AARC Board of Directors and executive team to explore opportunities for RTs to be involved in programs to reduce readmissions. The first action was a survey of the AARC membership to determine current activity and membership opinions on readmissions. The project has now moved into an exploration of potential models for RT-led programs to reduce readmissions, specifically in cardiopulmonary diagnoses. This symposium will bring attendees up to date on the latest progress being made by the project. ■

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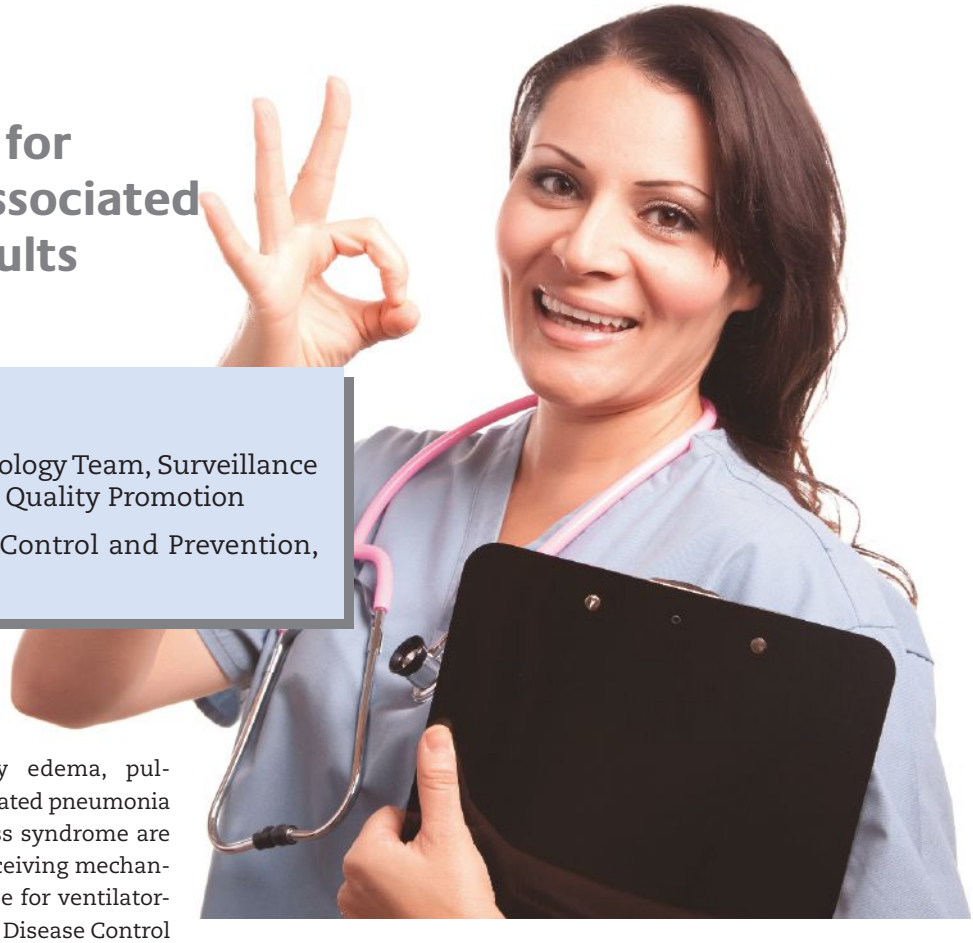
5 Improving Surveillance for Ventilator-associated Events in Adults



WHO: Shelley Magill, MD, PhD

WHAT: Team Leader, Epidemiology Team, Surveillance Branch, Division of Healthcare Quality Promotion

WHERE: Centers for Disease Control and Prevention, Atlanta, GA

Complications like pulmonary edema, pulmonary embolism, ventilator-associated pneumonia (VAP), and acute respiratory distress syndrome are common in critically ill patients receiving mechanical ventilation. To date, surveillance for ventilator-associated events in the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN) has been limited to VAP.

Surveillance for VAP is challenging due to the lack of reliable, valid definitions. In an era wherein public reporting and inter-facility comparisons of health care-associated event rates are becoming common, and in which health care facility reimbursements may be tied to performance in reducing rates of health care-associated conditions, reliability of surveillance definitions is important.

In collaboration with several partner organizations, the CDC convened a VAP Surveillance Definition Working Group to develop a new surveillance approach for adult patients on mechanical ventilation. This Working Group has now developed a useful surveillance definition algorithm for ventilator-associated events (VAE) based on objective, readily available clinical data. The algorithm focuses on more general measures of conditions and complications in adult patients on mechanical ventilation, with the goal of enhancing patient safety, and will be implemented in the NHSN in January 2013.

This presentation will describe limitations of the current approach to VAP surveillance, the Working Group process, and the VAE surveillance definition algorithm. Lecture attendees will develop a better understanding of the rationale for the new approach and the definitions included in the VAE surveillance definition algorithm, as well as the important role that respiratory care professionals have in implementing VAE surveillance. ■

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My Experience Presenting a Research Poster at AARC Congress 2011

by Tara Mahaffey, BA, RRT

about the author…

Tara Mahaffey, BA, RRT, graduated in June and is now a respiratory therapist at Harborview Medical Center in Seattle, WA.

In June 2011, Bob Bonner, MEd, RRT, the respiratory care program director at Highline Community College in Seattle, WA, asked me if I would be interested in a respiratory research assistant position that had become available. The opportunity sounded very exciting to me, and the following week I had an interview with Rob DiBlasi, RRT-NPS, FAARC, Seattle Children's Hospital's respiratory research coordinator.

His goal was to work with a student on a project in which they would undertake every step of the research process, utilizing him as a guide and mentor along the way. I was very excited to have been given the opportunity to interview for the position — and was even more ecstatic a few days later when I was offered the position and he jokingly informed me that it was my calculator watch that had scored me the job!

As a research assistant, I have been involved in several different projects, including aerosol and nitric oxide studies, as well as an animal study in which I anesthetized, intubated, and ventilated a piglet at the Seattle Children's Research Institute. My time spent as a research assistant, however, was focused on one project in particular. In this study, we tested four subacute care ventilators on a simulated infant with chronic lung disease to evaluate ventilator parameters such as trigger and pressure-time product.

The research process began by identifying a question and stating our hypothesis. Next we designed the study. We used a spontaneous breathing lung model with me

chanics similar to an infant with chronic lung disease to test the functionality of the four ventilators. All of the data collected from the lung model was recorded on a computer. The next step was to reduce the data. This probably took the most time; however, after reducing the data we were able to analyze it and interpret our findings. The last step was to report our findings.

To communicate the findings of the study, we wrote an abstract and submitted it to the AARC Open Forum. Writing an abstract proved to be a great learning experience, as it was a way to more formally summarize the research process. Soon after submitting the abstract, we received an email saying it had been accepted to be presented for the Respiratory Care Open Forum at the AARC's 2011 International Respiratory Convention & Exhibition in Tampa, FL.

We next created an Open Forum poster that was very similar to the abstract; but the data was also summarized visually, using charts, pictures, and diagrams. Rob was a pro at putting posters together, and it did not take long at all to create. The file was then sent to a print shop, and a 4' x 6' poster arrived just in time for me to present the research in Tampa.

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To fund my trip to Tampa, I received the Michael Sipes Student Scholarship. Cindy and Michelle Sipes (wife and daughter of the late Mike Sipes), were gracious enough to arrange and purchase my flight and hotel accommodations in Tampa. Also, I was working as an intern at Harborview Medical Center in Seattle; and part of my trip was generously funded by the respiratory care department's discretionary fund. With my arrangements made and my trip funded, all that was left was for me to prepare for my presentation.

During the first portion of the Open Forum all of the presenters stood by their posters, answered questions, and discussed their research with those interested. There were 16 presenters in this particular session, and the next hour was devoted to each person individually presenting their research on stage to the attendees.

Each presenter had three to five minutes to discuss their research and then some time was allotted for questions and answers. I had practiced my presentation in my head and to my friends probably hundreds of times, and on Nov. 6 I finally presented our abstract at a pediatric session of the Open Forum. I was the second to last person to present and was so nervous! Rob, two of my bosses from Harborview Medical Center, and one of my teachers had come to watch me present, and I couldn't have felt more supported. The five minutes flew by; and even though I was nervous, my practice had paid off and my presentation went pretty smoothly!

I feel so fortunate to have had the opportunity to work so closely with Rob, and I have learned so much from him. He has been a great teacher and mentor throughout this process. In addition, my experiences at the AARC Congress changed the way I think about the respiratory care profession. It was really exciting to be in the company of so many talented and enthusiastic people so passionate about our profession. The experience is one that will stick with me forever and continue to motivate me to keep learning and growing as a respiratory therapist ■

28th Phil Kittredge Memorial Lecture

Thinking Outside the Box: Moving the RC Profession Beyond the Hospital Walls

The days when clinicians could wait patiently in acute care hospitals for people with serious medical conditions to come to them for care are quickly coming to an end. However, with the provisions in the Affordable Care Act and other drivers of change, today's health care professionals are increasingly being charged with going out into the community to prevent illness before it strikes and treat it proactively when it does.

In this year's Kittredge Lecture, Timothy Myers, MBA, RRT-NPS, will explain how this new paradigm is impacting respiratory care and what the profession needs to do to rise to the challenges of the future. "Right now, three quarters of the respiratory care workforce is based in acute care facilities and educational programs," notes Myers, the AARC's associate executive director of brands management. "But the knowledge, skills, and attributes of the respiratory therapist need to be accessible throughout the entire continuum."

He will make the case that RTs should become physician extenders for patients with respiratory conditions, focusing on the management and treatment of acute conditions as well as on the diagnosis, assessment, management, and education of those with chronic respiratory conditions. "With health care reform and a sharper focus on quality, improvements in safety and outcomes will be required," Myers says. "The respiratory therapist must be prepared to step forward to meet these challenges and opportunities."

RTs possess a unique and diverse set of clinical skills important to patients with cardiopulmonary disease, plus a long history as "pioneers of change," and Myers believes they are well positioned to make the leap. "The past 65 years have witnessed the technology, skill sets, and scope of practice of the respiratory therapist grow exponentially," Myers explains. "But to be a significant part of the future health care model, we must re-energize the profession to be the difference maker for respiratory care patients across the entire continuum of care and provide reliable, high-quality, and safe care that produces positive clinical and financial outcomes for the health care system." ■

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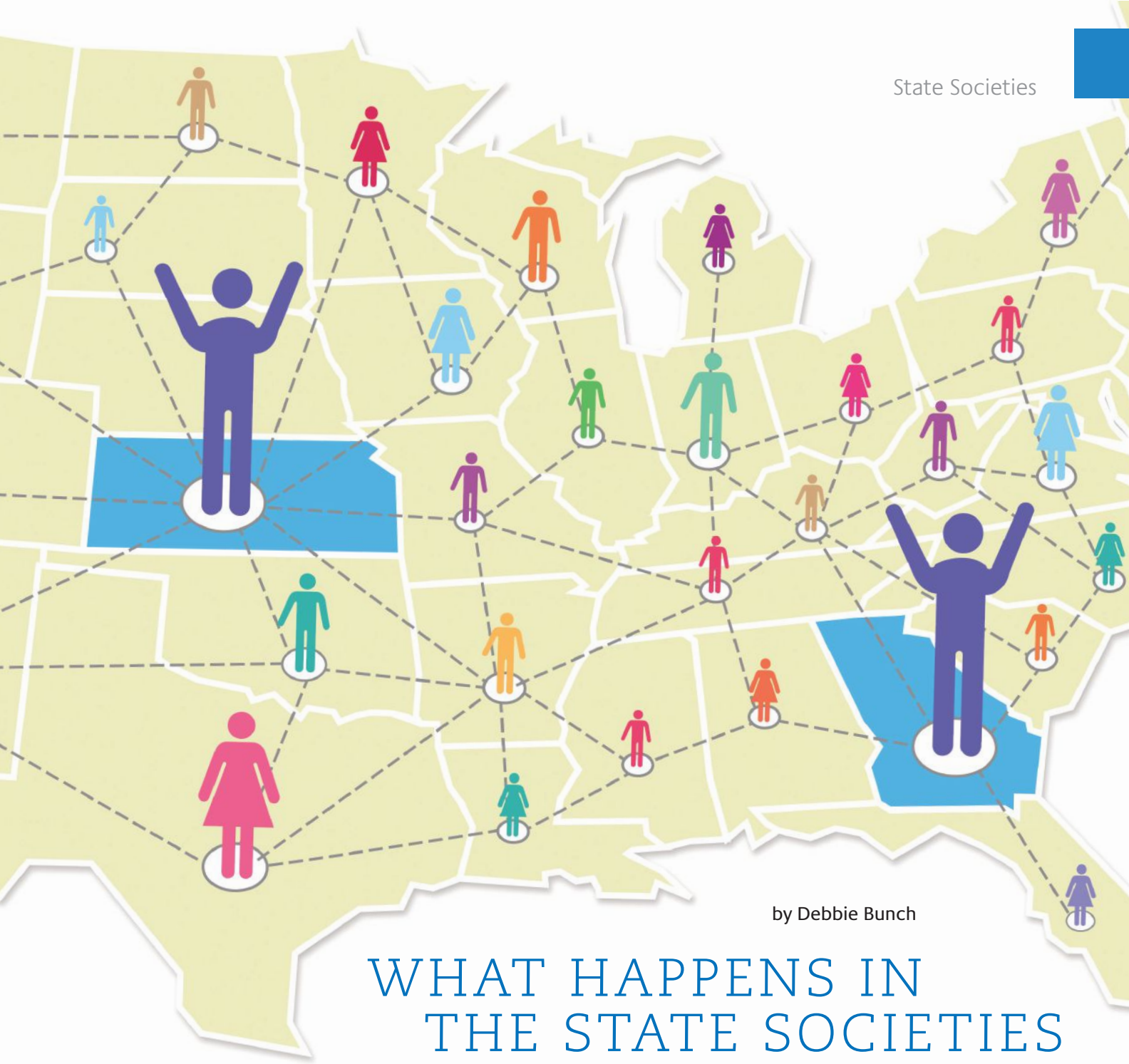
- If you have a story for the photo, please send that, too.



by Debbie Bunch

WHAT HAPPENS IN THE STATE SOCIETIES *Doesn't Stay* in the State Societies *Anymore*

Best practice reports from Georgia and Kansas show how the House of Delegates' Affiliate Best Practices Committee is helping to spread the word about projects and programs that work.

The heart and soul of the AARC has always resided out in the heartland, where members gather in state societies designed to provide everything from local continuing education opportunities to a stepping stone to service on the national level. But for many years, the AARC state societies operated much like Las Vegas — in other words, what went on in the state societies stayed in the state societies. Several years ago, the AARC House of Delegates (HOD) launched the Affiliate Best Practices Committee in an effort to help the state societies break out of that mold.

"The committee was formed to share good ideas and practices with other affiliates so that we could benefit from the knowledge of others and learn more about what worked and what did not work in both small and large affiliates," says AARC HOD Speaker Karen Schell, MHSc, RRT-NPS, RPFT, who chaired the committee for four years before becoming speaker-elect in 2011. "The HOD officers, members, and affiliates are all busy people; and if we can share ideas that work and adapt them to our individual needs, it helps us work more efficiently and meet the needs of our members."

In their hands

As the current chair of the committee, Teri Miller, MEd, RRT, CPFT, is carrying on the tradition by seeking out best practices that can be presented to the full House of Delegates at their spring and fall meetings. Results are then placed in the HOD library on AARConnect (the AARC's social networking site), where they can be accessed by any state affiliate at any time.

Miller came to the position after making a best-practice presentation of her own that focused on a new magazine launched by the Georgia Society for Respiratory Care (GSRC). "The GSRC actually had a newsletter, which had been published on and off for a number of years prior to the magazine development; but the board of directors decided that we needed to improve communication within the state in a very visual way that gave therapists something we could 'put in their hands,'" explains Miller. She stepped up to serve as the inaugural editor, and *GSRC The Magazine* was born. "Throughout the early years, we surveyed the membership regularly regarding satisfaction with the magazine and ideas and topics of interest for future issues," she continues. "The feedback was positive and, as our membership consistently increased along with attendance to educational meetings, we felt the venture met the needs of the society and our goals."

Today the magazine is led by Nancy McDowell, BS, RRT, who is expanding the content and also linking the publication more closely with the state society's online presence. "Currently, a digital version of each issue is available to members by logging on to the GSRC website," she explains. The magazine also has its own Facebook page.

Beginning with the Summer 2012 issue, the digital publication is being shared with academic RC programs in the state as well, which can now post a link to the magazine right on their own websites. "As editor, one of my stated goals is to increase our membership within

the recent graduates," says McDowell. She feels giving them access to the digital version is the first step — although she emphasizes *GSRC The Magazine* is not ready to go "totally digital" just yet.

"We try to get a print copy on the table in every respiratory team room in Georgia as a recruiting tool," she says. "If we were to go 100% digital at this point it would limit our ability to increase our membership." But like everyone else in the publishing world these days, she believes digital is the way of the future for her magazine. "Once we get our membership high enough, I plan to give our members the choice of either a print or digital copy."

Keeping members engaged

Keeping members engaged with the publication has been another top goal, and she's accomplishing it by sprucing up the cover art. What used to be a pretty seasonal photo is now a more meaningful picture tied to actual content. She also ensures each issue contains feature articles and columns that will resonate with members — something she learned after she asked members what they wanted to see in the publication. "While they recognized the importance of including committee reports in each issue, all felt that we needed to include articles that would have a practical impact on their professional development," says McDowell. Feedback on those articles and columns has been overwhelmingly positive. "After one issue that addressed the role of preceptors, I was receiving phone calls from my former nightshift colleagues at three in the morning," she says.

Another recent article tackled the importance of pursuing advanced degrees and included practical information on resources and suggestions on financing this pursuit. Every issue also features at least one story targeting the student demographic (along with an AARC membership application) to promote their active involvement in the state society.

McDowell says producing the magazine is a team effort and especially credits her colleagues Jan Fernandez, BSRT, RRT-NPS, CPFT, and Jeryl Huckaby, BS, RRT, who contribute many of the articles. "Without their support, I am certain my hair would be totally gray," she jokes.

Once she receives all the content, she invests about a month and a half in the editing and production process. The cost of producing the publication is offset by paid advertising, which comes mainly from Georgia health care companies and hospitals; and each issue also contains "house ads" that allow the GSRC to promote its meetings and educational opportunities, along with those available from the AARC. "It generally evens out nicely," says McDowell.

All the participants of the Strategic Planning Workshop were totally committed to their common goal.

Charity Clark and Karen Schell recruit volunteers.

Strategic planning

Two best practice presentations out of the Kansas Respiratory Care Society (KRCS) were spurred a couple of years ago by some problems the society was having with association structure and operations. "Our society was structured in a way that impaired cohesive involvement from our membership; and our board of directors (BOD) lacked focus, unity, and productivity at meetings," says Meg Trumpp, MEd, RRT, AE-C, who was serving on the board at the time. "We needed help!"

Someone mentioned that Garry Kauffman, MPA, RRT, FAARC, who was then a leader in the highly successful Pennsylvania Society for Respiratory Care, had developed a strategic planning workshop to help other AARC state societies replicate that success and suggested they bring him in. That was in October of 2010, and the workshop was scheduled for the beginning of November. "We knew that if the BOD was functioning more efficiently, we would be able to provide more opportunities for our members to get involved," says Trumpp, who presented on the workshop at a 2011 House of Delegates' meeting.

Before coming to Kansas, Kauffman advised the group that they would have to let go of the past, embrace the future, and be prepared to work. He began the workshop by asking the board members to define their core values, and only those values that achieved 100% agreement made the cut and were allowed to move forward. From there, the group performed a SWOT analysis — "SWOT"

More than 150,000 people turned out for the largest annual music festival in Kansas — the Country Stampede.

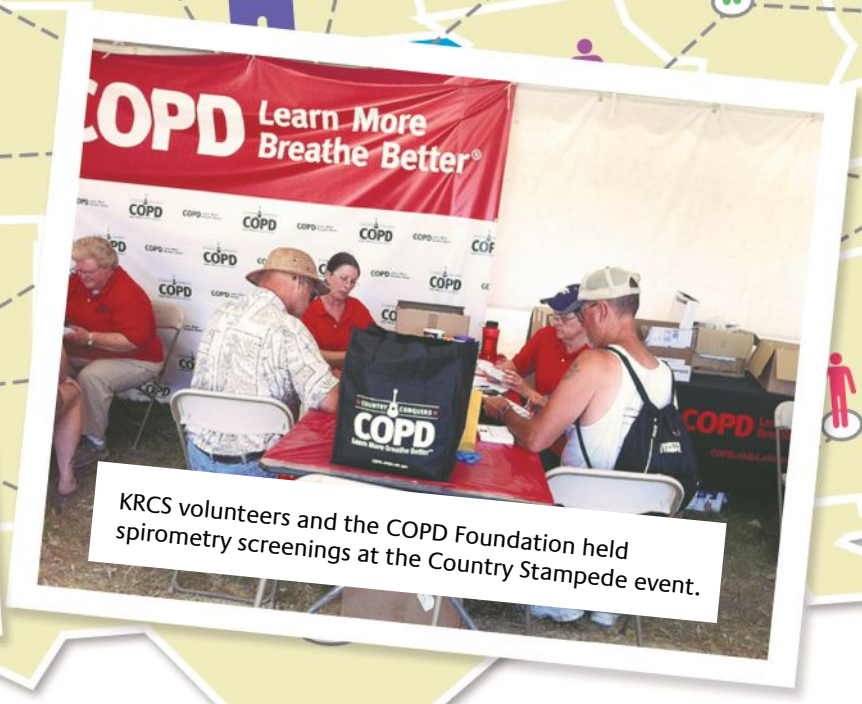
RTs promoted the DRIVE4COPD campaign in the Wichita River Festival Parade.

stands for strengths, weaknesses, opportunities, and threats — to identify obstacles that needed to be overcome and avenues for future development. "This insight was evident as we wrote our new mission statement: 'To educate, advocate, and promote the profession and practice of respiratory care,'" says Trumpp.

Detailed action plan

With the mission statement in hand, the board members then divided into small groups to write detailed action plans for accomplishing each of the core strategies as well as to establish the framework for an organizational restructuring that ultimately saw the elimination of eight state chapters, a new structure for the board, a code of performance, a new format for meetings, and a bylaws revision reflecting the changes.

"The new BOD consists of 13 members instead of 21," explains Trumpp. "With seven elected officers, we keep experienced resources in leadership roles; and with six appointed trustees, we allow members to become active on the BOD



KRCS volunteers and the COPD Foundation held spirometry screenings at the Country Stampede event.

and gain experience for a leadership role." She goes on to say that their state society is committed to mentoring the future leadership and providing a variety of opportunities for members to be active in the KRCS.

The board also agreed to adopt *AARConnect* as its primary means of communication (outside of face-to-face meetings) by setting up communities for its three core strategies. "This was the key to keeping everyone involved in conversations and keeping drafts of working documents, approved documents, and reports in one easily accessible place," says Trumpp.

Virtual site visits

An offshoot of the KRCS workshop provided the topic for the second KRCS best practice, presented this time by Charity Clark, BS, RRT, whose membership on the KRCS board coincided with Kauffman's visit. "As a new member to the BOD, I had many questions. I started asking how the state society connected with members over such a large geographic area," explains Clark. "About the same time our society had the pleasure of working with Garry Kauffman and going through a restructure. It was the perfect opportunity to include new and exciting ways to advocate, educate, and promote our profession across the state."

Clark says the KRCS, like many state societies, had always relied on face-to-face meetings to network with members. But given today's busy workplaces and family life, "face-to-face" wasn't cutting it anymore. "Many American adults today use email or the Internet for communications in their daily life," explains Clark. "In addition, personal scheduling needs, work/life balance issues, the price of gasoline, and limited time to travel across the state were obstacles to building strong connections within the state society." So she and her colleagues decided it was time to make better use of their Internet presence. First off, they decided to create a feature on their website called a "Virtual Site Visit." Basically, the KRCS contacts RC departments around the state and asks them if they can send in some "site visitors" to take pictures and learn more about what makes their department special. The article and photos are then posted on the website so that other members in the state can get to know those RTs and their department on a more personal level. "The goal is to allow therapists from all over to view the stories and pictures to gather a personal touch as to who the respiratory therapists in Kansas are and how they serve the patients in our state," says Clark.

So far, the feature has received rave reviews, and everyone Clark and her group have contacted has agreed to take part. "It may be for the donuts we bring to each site we visit," she says with a smile. "However, I am assuming it is really because the opportunity to share the amazing work being done by their respiratory therapists is exciting and an honor."

A team of volunteers

The group has also worked hard to increase the number of KRCS members who are willing to serve as volunteers for various state society projects and programs. Through multiple outreach efforts, the state society has built a roster of about 100 members who have volunteered to take an active

role in one or more of the society's three core mission areas: promote, educate, and advocate. Ongoing communication with these members is achieved through three volunteer groups set up on *AARConnect*. When a volunteer opportunity arises in one of the groups, a blast email goes out to all of the members.

"For example, the society received a request a while back from a representative for a mobile spirometry program sponsored by the COPD Foundation," says Clark. "They were in search of RTs to be present at a local multiple-day country concert event to perform screenings/spirometry to the public and educate them about COPD." The blast email went out, and the company quickly had all the volunteers it needed and even established a waiting list with the overflow. "A member of the society wrote back to me within minutes stating, 'Thanks for the notice on the spirometry screening. I emailed and am confirmed for that Friday. This list is a great way to distribute this type of info.'"

Clark says the KRCS is continuing to explore new ways to use online communities to get the word out about the state society and what it is doing for RTs and their patients. "One of the goals for this year is to catch the attention of nonmembers through the use of social media," she says. By establishing a presence for the state society on Facebook, Twitter, and other sites, she and her colleagues believe they can give people a little taste of what the KRCS has to offer and entice them to join. "Learning about opportunities and about what other therapists outside of your own work world are doing is inspiring and motivates others to be a part of something great."

Replicating success

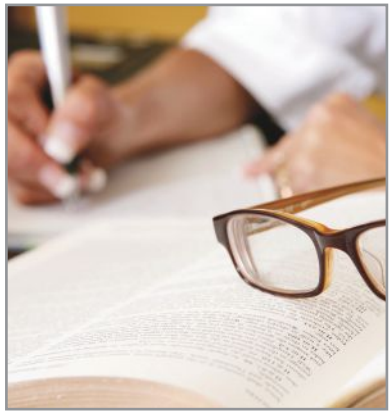
Aristotle said, "The whole is greater than the sum of its parts," and the work being done by the HOD Affiliate Best Practices Committee reflects that axiom. By sharing best practices across state society lines, the AARC reaps the exponential benefits that can only come when success is replicated throughout a professional association. ■

by Debbie Bunch

Working for the Greater Good

The American Respiratory Care Foundation supports scholarship, research, and more

The application process for ARCF scholarships, grants, and fellowships is fully described on the Foundation website at www.arcfoundation.org/awards



When the AARC convenes in New Orleans

next month for the 58th International Respiratory Convention & Exhibition, the first event on the program will be the annual Awards Ceremony honoring top performers in the profession. Some of those awards will be bestowed by the AARC, National Board for Respiratory Care, and Committee on Accreditation for Respiratory Care; but the majority will come from the American Respiratory Care Foundation (ARCF), established by the AARC in 1974 to support scholarship, research, and patient-focused activities in the area of respiratory care.

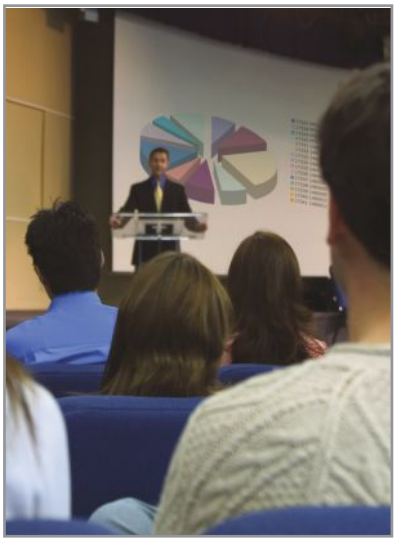
"The Foundation has grown to become the philanthropic arm of the AARC and now provides not only entry-level scholarships but also advance degree scholarships, research grants and fellowships, Journal Conference support, numerous achievement awards, and support for other specific projects that will advance the respiratory care profession," says ARCF Vice Chair Neil MacIntyre, MD, FAARC. "At its core, the Foundation is focused on building the professional side of respiratory care."

As we all get ready to recognize the 2012 ARCF honorees in New Orleans, we thought this would be the perfect time to take a closer look at all the things the Foundation does for the greater good of our profession.

Education Recognition Awards

Today every respiratory therapist who enters the profession must graduate from a two-year associate's degree program. Back in 1974, however, school programs had been around for only about 10 years, and many people were still entering respiratory care from the on-the-job trained route. It's not surprising, then, that support for students seeking formal education in respiratory care was a chief goal of the new foundation. Working closely with state respiratory care societies and the National Board for Respiratory Care, the ARCF slowly but surely gathered the funds to establish endowments that would fund education recognition awards for RC students in perpetuity.

Today the Foundation offers four education recognition awards for students enrolled in accredited undergraduate programs in respiratory care and another two for students seeking a post-graduate education. Students applying for the undergraduate awards must



submit either a literature review, limited clinical investigation, or an essay on a topic related to the profession. Post-graduate applicants are required to submit an essay delineating their accomplishments, articulating their goals, and relating those goals to health care in general and respiratory care in specific.

"I was very honored to receive the William F. Miller Postgraduate Education Recognition Award in 2008," says Janelle Gardiner, MS, RRT, AE-C. "Obtaining this award allowed me to successfully complete my master of science in respiratory care leadership at Northeastern University in May of 2009. Since then I have been fortunate to be promoted to assistant professor at Weber State University in Ogden, UT." She says receiving the award gave her an even better understanding of the importance of higher education and helped lead to her continued pursuit of advanced degrees. This fall she began coursework toward a doctorate degree at A.T. Still University.

Receiving the NBRC/AMP Gareth B. Gish, MS, RRT Memorial Postgraduate Education Recognition Award in 2009 has had an equally positive effect on the career of AARC member Ashley Dulle, MBA, RRT, AE-C. Like Gardiner, she finished her master's program and is now an educator, serving as respiratory therapy program director at Bossier Parish Community College in Bossier City, LA, and an instructor in cardiopulmonary science at LSU Health in Shreveport.

Dulle says she was driving home from a Louisiana Society for Respiratory Care board meeting when she received the good news, and two of the first people she called were her colleagues and mentors, Jim Lanoha, RRT, and Doug McIntyre, MS, RRT, FAARC. "They shared in my celebration, but the most rewarding part was that they both knew Gary Gish and told me stories about him," she recalls. ■

Research Fellowships and Grants

The New Horizons in Respiratory Care Symposium at AARC Congress 2012 will take attendees on a trip back in time to revisit a May 1974 event that many who were in the profession at the time thought might put them out of business as RTs. Specifically, the federal government, in conjunction with the American Thoracic Society, held a conference on respiratory therapy that seriously questioned the scientific basis of the profession.

Widely known as the "Sugarloaf Conference" (because it took place at the Sugarloaf Center in Philadelphia), this meeting had profound and long-lasting effects on the respiratory care profession. While the immediate issue of the profession's value was quickly resolved — government officials backtracked on their most derogatory statements soon after the conference concluded — the conference was a wakeup call for a profession that was only beginning to recognize the value of scientific study. Now that value had become crystal clear, and one of the many upshots was the development of research fellowships and grants supported by the ARCF.

The ARCF is currently taking donations to support its mission.

Go here to see a new way to donate: www.arcfoundation.org/support

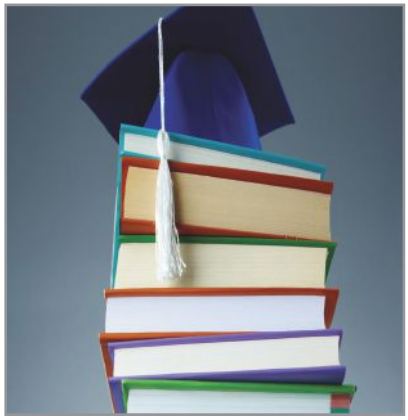
Today the Foundation awards five research fellowships and three research grants designed specifically to promote scientific investigation into the treatments and modalities that make up day-to-day practice in the profession. RTs who have received these awards have added significant value to the scientific record.

"As a bedside caregiver and educator for over 25 years in the neonatal and pediatric respiratory field, I was grateful that I was able to investigate the benefits of NAVA — neurally adjusted ventilator assist — as a new mode of ventilation for our patients," says AARC member Diane Howard, BSEd, RRT-NPS, education coordinator at The Toledo Hospital/Toledo Children's Hospital in Toledo, OH, and recipient of the VIASYS Healthcare Fellowship for Neonatal and Pediatric Therapists in 2009. "This award allowed me to share research that demonstrated NAVA was a viable mode of ventilation for neonates that could potentially decrease chronic lung disease in the premature infant."

She and her colleagues published their results in the December 2011 issue of *The Journal of Pediatrics* in a paper titled "Neurally Adjusted Ventilatory Assist in Neonates Weighing <1500 Grams: A Retrospective Analysis."

Dave Crotwell, RRT-NPS, FAARC, from Seattle Children's Hospital in Seattle, WA, received the Philips Respironics Fellowship in Non-Invasive Respiratory Care at last year's Congress and used the funds to perform two studies in his research lab. The first evaluated pressure delivery using the Philips Respironics NeoPAP in a spontaneously breathing neonatal lung model. The second focused on pressure and ventilation effects of noninvasive respiratory support devices in a spontaneously breathing lung model. Both will be presented next month during the Open Forum at AARC Congress 2012.

"I was honored to receive the ARCF award in Non-Invasive Respiratory Care last year, especially because the work I received the award for improved the quality and safety associated with the application of noninvasive ventilation in our institution," says Crotwell. "These funds allowed us to continue our quality improvement work during these tough economic times." ■



Achievement and Literary Awards

In addition to funding research conducted by up-and-coming investigators in the profession, the Foundation also honors those who have already made major contributions. It does so through its achievement and literary awards.

The four awards in the former category are among the most prestigious offered in the respiratory care profession. The Forrest M. Bird, MD, PhD, ScD Lifetime Scientific Achievement Award, Thomas L. Petty, MD Invacare Award for Excellence in Home Respiratory Care, and Hector Leon Garza, MD International Achievement Award have honored some of the most respected investigators in the profession, including Ira M. Cheiftz, MD, FAARC, James K. Stoller, MD, MS, FAARC, and Stefano Nava, MD, to name a few.

The Dr. Charles H. Hudson Award for Cardiopulmonary Public Health recognizes efforts by those inside and outside of the profession who have positively influenced the public's awareness of cardiopulmonary health and wellness. Among the recent winners have been Ted and Grace Ann Dorney Koppel and Congressman Mike Ross.

This year the Foundation will add a fifth award to this category, thanks to a grant from Philips Respironics. The Mike West, MBA, RRT, Patient Education Achievement Award will recognize outstanding achievement in disease management, and West himself will receive the inaugural award. One of the first RRTs to recognize the importance of educating patients to help them manage their chronic pulmonary diseases and the profound impact such self management has on the patients' quality of life, West has made it his quest throughout his career to ensure that patients, caregivers, and industry have the highest understanding of respiratory disease and the best solutions for treating them.

The Literary Awards go to the authors of the top papers in Respiratory Care over the previous year. Every year members of the Editorial Board revisit the papers, with an eye toward determining which have had the most impact on the profession and patients. In the past few years, recognition has gone to authors who published studies ranging from "Randomized Controlled Trial of a Breath-actuated Nebulizer in Pediatric Asthma Patients in the Emergency Department" to "Implementing the 2005 American Heart Association Guidelines, Including Use of the Impedance Threshold Device, Improves Hospital Discharge Rate After In-Hospital Cardiac Arrest." ■

Respiratory Care Journal Conferences

Scientific evidence reigns supreme in respiratory care, and experts debate the latest treatments and modalities in an effort to determine which are best for patients with pulmonary conditions. Sorting out the myriad issues involved in these debates takes a consensus of opinion, and the Foundation helps the profession achieve that consensus through regularly scheduled Respiratory Care Journal Conferences.

Last month the ARCF sponsored its 51st Respiratory Care Journal Conference in St. Petersburg, FL, where respiratory experts from all over the world gathered to discuss the topic, "Adult Mechanical Ventilation in Acute Care: Issues and Controversies." As has been the case with the previous 50 conferences, the papers will be published in an upcoming issue of Respiratory Care, the Association's science journal, where they will go a long way toward settling questions pertaining to clinical practice in hospitals and other health care facilities around the world.

Respiratory Care Editor in Chief Dean Hess, PhD, RRT, FAARC, says the Journal Conference papers are among the most downloaded and cited papers published by the Journal, and some have been the most up-to-date clinical reviews on the subject matter available anywhere. "A good example," he says, "is 'The Chronically Critically Ill Patient,' which we published in June."

But what really sets these conferences apart from the crowd are the discussions that take place after the papers are presented. "The papers themselves are evidence-based clinical reviews; but in the discussions that follow, the conference participants are less constrained and say what they really think about the subject," says Dr. Hess. "In fact, the presenters are chosen, in part, based on their ability to contribute to the discussions. We have been able to attract some of the world's experts to participate in these conferences, and the support of the Foundation has made that possible." ■

The International Connection

This year marked a change in day-to-day command for a major program that had been jointly sponsored by the AARC and ARCF since its inception in 1990. The 2012 class of International Fellows marks the first to be supported solely by the AARC. But without the Foundation, this program, which brings respiratory professionals from other nations to our shores every fall to visit respiratory care facilities in two cities before attending the AARC International Respiratory Convention & Exhibition, would never have come to fruition.

Over the years, the Foundation has been essential in supporting hundreds of fellows from dozens of countries who have gone back to their own nations and put the knowledge they gained here to work for the benefit of their patients. In many cases — particularly in Central and South American nations — the fellows have taken what they learned during their U.S. visits and used it to promote the development of respiratory care professions in their own countries.

However, while the Foundation is no longer involved in the Fellowship Program, it still has a hand in promoting respiratory care around the world. The International Endowment Fund was established in 1997 to:

- Ensure that respiratory therapists in other countries continue to benefit from training programs and enhance their skills through programs sponsored by the ARCF;
- Ensure that proper competency examinations related to respiratory care can be established to fit the needs of practicing professionals in their country; and
- Ensure that qualified respiratory therapists worldwide continue to practice in safe working conditions. ■

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[1] Wilson, J. Reducing Total Costs of Aerosolized Medication Delivery Using the AeroEclipse II Breath Actuated Nebulizer. Resp Care 2011 Oct;56(10):1634.

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SCAN CODE TO SEE HOW THEY SAVED

Watch a video (http://tinyurl.com/9fjbsj4) of the 2012 Minnesota-Wisconsin Vent 5K

A good time was had by all at the Minnesota-Wisconsin Vent 5K last May.

Ventilator 5K and Community Grants

In 2007, in an effort to increase support for patient-focused philanthropic activities in the profession, the ARCF departed from its usual mission of building endowments for research and scholarship to develop a new program aimed at engaging local therapists in raising funds on the community level for local lung health concerns.

The Ventilator 5K — or "Vent 5K" for short — is a friendly competition in which teams of respiratory therapists get together to push ventilators around a predetermined track. The fun comes when teams dress up their ventilators — and in many cases, themselves as well — to match themes chosen by the team members. Teams collect pledges from their friends, family, co-workers, and anyone else they can convince to contribute; and those funds then go to the ARCF, which uses the money to issue community grants to other therapists looking for support for local patient education and care activities.

All Vent 5Ks that take place before a cutoff date in the fall are automatically entered into the national Vent 5K competition to determine the top event for the year. The winner historically receives a major piece of respiratory equipment donated by a vendor at the annual AARC Congress.

A new tradition

The event has grown to be a new tradition in many areas of the country. Bryan Wattier, BA, RRT, clinical education coordinator for the RC program at the Mayo School of

Click on www.lunghealthco.org for more information about the Colorado Lung Health Connection.

Health Science in Rochester, MN, and his colleagues in Minnesota and Wisconsin have been hosting the Vent 5K at their annual North Region Respiratory Care Conference (NRRCC) for several years now. The latest contest took place last May and involved six schools in the two states.

"We chose a course that will be close to the participants attending the conference," explains Wattier. "This year we had the course circling the civic center where the NRRCC was being held." Students set up their vents in the vendor hall at the meeting and received donations from the conference participants ahead of the contest. "More than 100 people attended the event, including students and NRRCC participants who stopped by to see what was going on," says Wattier. Together the teams raised $1,050 to send to the ARCF. The feedback from the students who participated was overwhelmingly positive.

Giving back to communities

Funds raised through the Vent 5K events have supported a number of worthwhile causes.

"In the spring of 2011, a community partnership was formed between Youngstown State University, Akron Children's Hospital, and the Girl Scouts of North East Ohio to address the asthma management issues for children in Northeastern Ohio," says AARC member Teresa Volsko, MHHS, RRT, FAARC, director of respiratory care at Akron Children's who helped the group apply for an ARCF community grant to help fund a project that would meet that goal. "Using the content in the Girl Scouts' Asthma Awareness Patch Program, we hosted a one-day

Having his own equipment proved to be the most cost-effective option for post-program exercise for Randall Foster.

Foster's home exercise equipment helps him maintain the goals he achieved in pulmonary rehab. Kathy Geier (left) recently visited Foster and his wife in their home and was pleased to see how well he is doing.

event at Youngstown State University."

Certified asthma educators from the Community Outreach, Education and Support Center at Akron Children's Hospital Mahoning Valley, and faculty from the respiratory care, exercise science, and food and nutrition programs at Youngstown State University, led a series of educational sessions. Through these 20-minute, activity-filled sessions, girls from 5–17 learned how the lungs work with and without asthma, received instruction in asthma triggers and medications, and were taught about the importance of exercise and a healthy lifestyle. An interactive session held at the end of the day also helped the girls see how they could pull all of their new information together to help someone with asthma.

Volsko and her colleagues conducted pre- and post-testing to gauge the value of the program, and the results were published ahead of print in Respiratory Care on July 10, 2012.

Life-changing support

RTs who participated in a Vent 5K in Nebraska a couple of years ago were happy to see another community grant go to help fund much needed pulmonary rehabilitation for Randall Foster, a local respiratory patient who otherwise would not have been able to take advantage of this life-enhancing program. Kathy Geier, BA, RRT, an instructor at Southeast Community College in Lincoln who helped organize the Vent 5K, recently visited him and his wife in their home, where Foster now works out daily using exercise equipment they purchased for that purpose. When asked about his pulmonary rehab program, he said, "You get out of it what you put into it." That meant not only learning how to exercise but also developing an understanding of the importance of oxygenation during exercise.

"At first he was resistant to the idea of needing O_2 during exercise and refused to use it," Geier says. "After education through pulmonary rehab and experiencing how much better he felt when wearing O_2 during exercise, he began to accept it. Now he wouldn't be found exercising without it." She says Foster continues to be grateful for the ARCF grant. "It has changed his life."

First resistant to the idea of exercising with oxygen, now Foster wouldn't be caught without it.

Moving mountains

Over in Colorado, patients and professionals attending the annual Thomas L. Petty, MD Moving

Click on www.lunghealthco.org/2011-conference for a slideshow of last year's conference.

Mountains Lung Health Conference sponsored by the Colorado Lung Health Connection appreciated the grant they received as well. The conference is designed to bring people with COPD together with health professionals so they can learn more about their conditions and the proven steps they can take to minimize their symptoms and live life to its fullest. RTs and physicians from the respiratory care community volunteer their time as speakers, and patients pay only a nominal cost to attend — $15 per person or $20 per couple. The rest of the cost is covered by generous donations, such as the one the group received in 2011 through the ARCF community grant.

Jack Buchanan attended with his wife Bev and says the event made a real difference in the way he views and treats his condition. "I learned that you're not handicapped — you're not going to be cured — but life can be so much better, and it has been," he says. "I also learned about transtracheal oxygen; and without that conference, I wouldn't have learned about it and had it done." ■

Enhance the Profession, Offer Your Support

None of the Foundation programs covered on these pages would be possible without generous monetary contributions from respiratory care industry, the AARC state societies, and individual members of the respiratory care profession.

"I believe that the Foundation plays a critical role in the enhancement of the profession by providing numerous grants and scholarships to RTs in order for those respiratory therapists to further their careers and provide the research and leadership to continue to make respiratory care a most important health care profession," emphasizes ARCF Chair Michael T. Amato, MBA. "It is because of these state-of-the-art educational and scientific programs that RTs should embrace their foundation."

Amato notes that only through tax-deductible donations made by members of the profession will the Foundation remain strong and viable, and continue to grow, making it possible to develop additional awards, scholarships, and programs that work to ensure a solid future for respiratory care. "If every AARC member donated a mere $10 each year, the Foundation could provide more advanced scholarships, especially those that would develop the leaders in respiratory care for the future."

To learn how to make a contribution, visit www.ARCFoundation.org and click on "Support" in the menu that runs along the top of the page. Amato notes that even a small contribution makes a big difference in helping the ARCF support the scholarship, research, and patient-focused community activities that define a true profession. ■

NEW ORLEANS

Join us for the 58th International Respiratory Convention & Exhibition

AARC Congress 2012

Saturday through Tuesday • November 10-13, 2012

Ernest N. Morial Convention Center, New Orleans, LA

Join us this fall when AARC Congress 2012 returns to one of our favorite convention cities. Why should you be there? It is an unparalleled opportunity to maximize the return on investment in your chosen profession.

Pre-Congress Sessions on Friday, November 9, 2012

- Mechanical Ventilation 2012
- Patient Safety Starts with You

Congress Sessions Saturday through Tuesday

- Over 250 sessions* dedicated exclusively to respiratory care
- 3 days face-to-face with industry exhibitors and their products, most offering discounts exclusive to Congress attendees
- Networking with respiratory therapists and industry leaders
- Direct access to original research projects and their authors in more than 20 Open Forum sessions

American Association for Respiratory Care

Check the website or your September ***AARC Times*** for the complete advance program, housing and travel.

AARC CONGRESS 2012

Here are some of the featured sessions for 2012:

Emerging Controversies in ARDS

Hosted by three physicians, this symposium will address controversial treatment options for patients with ARDS. Is there sound science in using **Neuromuscular Blockers**? Are there patient tradeoffs to **CO_2 Removal?** Do **ECMO** treatment strategies improve outcomes? These and other questions will be answered.

Program Committee Spotlight: Respiratory Controversies

Do Full Feature Ventilators Add Value?

Don't miss out on this opportunity to hear two global experts on mechanical ventilation debate whether ventilators really need to offer "full feature capabilities". Are they the future of mechanical ventilation or do we simply need ventilators that can move "good air in, bad air out"? This lecture will provide a point/counter-point discussion on the relevance and value of full feature ventilators.

Routine Respiratory Care: Should It Be Done by the Respiratory Therapist?

Two nationally recognized experts in department management debate whether or not traditional bedside respiratory care should be performed by RTs. Has the evolution of our current healthcare model necessitated the growth and value of respiratory therapists to be used exclusively as consultants and critical care experts? Can nurses, LPNs, and EMTs deliver equally effective care to patients requiring aerosol therapy, incentive spirometry, and MDIs? Opposing viewpoints from the respiratory care administrator's office are presented.

* Topics are subject to change

** CRCE credits apply to most sessions, offering 25 or more for the entire event*

Find out more and register at www.AARC.org/education/meetings.

Industry Watch

Maquet wins awards for portable heart-lung support system

According to Maquet Cardiopulmonary, its CardioHelp® System has won three awards in recognition of its innovative design and advanced technology, and was selected as a finalist for a fourth award. CardioHelp is the world's smallest portable heart-lung support system providing ECLS to support circulation and respiration for up to six hours in patients whose heart and/or lungs are failing, according to Maquet spokesmen.

Among the honors: the 2011–2012 European Association for Cardio-Thoracic Surgery Techno College Innovation Award, Gold Winner in the EMEA Best in Biz Awards 2012 in the Small/Medium Business Product of the Year category, and the Silver Winner in the 2012 Medical Design Excellence Awards in the Critical-Care and Emergency Medicine Products category. It is also a finalist for the Most Innovative New Product Award at the European Life Science Awards 2012, according to Maquet.

FDA approves Tudorza Pressair for COPD maintenance

Forest Laboratories Inc. and Almirall S.A. recently announced the FDA has approved Tudorza™ Pressair™ (aclidinium bromide inhalation powder) for long-term maintenance treatment of bronchospasm associated with COPD. Tudorza is a twice-daily inhaled long-acting muscarinic antagonist (LAMA) that produces bronchodilation by inhibiting acetylcholine's effect on muscarinic receptors in the airway smooth muscle. The most common adverse reactions reported were headache, nasopharyngitis, and cough. Forest says it expects Tudorza Pressair to be available to wholesalers in the fourth calendar quarter of 2012. Forest's products include anti-infective, respiratory, gastrointestinal, and pain management and is based in New York, NY. Almirall, headquartered in Barcelona, researches, develops, and manufactures its own R&D and licensed drugs and has 12 affiliates in Europe and Mexico.

Philips teams up with Therapeutic Monitoring Systems

Philips Healthcare is integrating clinical decision support (CDS) software made by Therapeutic Monitoring Systems into its cardiopulmonary monitors. The CDS-enabled monitors will be tested in a pilot program in the ICU at Ottawa Hospital. Spokesmen of the hospital believe the new monitors may be able to reduce patient time on mechanical ventilation as well as prevent ventilator-related complications and increase patient comfort.

Linde acquires Lincare

The Linde Group has entered into a definitive agreement for the acquisition of Lincare, a U.S.-based home health care company. Linde expects to double sales in its North American Gases Division with the acquisition of Lincare.

CareTouch releases app for HME patients, providers

A new iPhone, iPad, and iPod Touch app has been released by CareTouch Communications to help home medical equipment providers communicate with and efficiently manage their growing patient populations. The app allows patients to track their therapy, communicate with their HME provider, and order supplies right from their iOS personal device. The free MyCareTouch app is the latest addition to CareTouch360, a technology platform that offers multi-modal patient communications and management for HME providers.

Rosetta Genomics announces results of lung assay study

A study validating the company's miRview® lung assay was published in the online edition of the *Journal of Molecular Diagnostics*, according to Rosetta Genomics. The miRview lung assay is based on the expression levels of eight micro RNAs, measured using a sensitive quantitative RT-PCR platform. The assay was validated on an independent set of 451 samples, more than half of which were preoperative cytologic samples. Over 90% of the samples were successfully processed,

with an overall accuracy of 94%, Rosetta reports. Scientists observed similar performance in both pathologic and cytologic samples, demonstrating the assay's ability to differentiate between four major types of lung cancer: squamous cell carcinoma, non-squamous non-small cell lung cancer, carcinoid, and small cell carcinoma.

Monaghan Medical receives AANMA award

Monaghan Medical has received the Top Ten Innovations in Technology Award from the Asthma and Allergy Network Mothers of Asthmatics for its AeroChamber Plus® Flow-Vu® Anti-Static Valved Holding Chamber. The Top Ten awards go to products that are FDA approved, cost effective, and designed to meet the lifestyle needs of patients.

Monaghan also announced in August it will continue its partnership as a contracted vendor with Premier Inc. The respiratory therapy products contract includes the holding chamber, nebulizer, peak flow meter, and accessory categories.

Kimberly-Clark sterilization wrap gets FDA approval

Kimberly-Clark Health Care has received 510(k) clearance from the FDA to market the KimGuard One-Step portfolio with one-year maintenance of package integrity for KC300 to KC600 for Pre-vacuum Steam and Ethylene Oxide, ensuring users that their instruments wrapped with KimGuard One-Step Sterilization Wrap will maintain sterility on the shelf for at least a year. These additional clearances will assist facilities in complying with The Joint Commission's sterilization processing guidelines.

Sorin acquires California Medical Laboratories

Sorin Group has acquired California Medical Laboratories Inc., a manufacturer of cardiovascular cannulae. The acquisition represents an ideal complement to Sorin's existing cannulae offering and to the recent acquisition of the Estech minimally invasive cannulae product line, according to a Sorin spokesman.

Brainstorm Cell Therapeutics reports initial results from ALS treatment study

Brainstorm Cell Therapeutics Inc. is conducting a Phase I/II trial to ensure safety and tolerability of its NurOwn™ proprietary technology for the treatment of ALS. According to lead investigator Professor Eldad Melamed, "There have been no significant side effects in the initial patients we have treated with BrainStorm's NurOwn technology. In addition, even though we are conducting a safety trial, the early clinical follow up of the patients treated with the stem cells shows indications of beneficial clinical effects, such as an improvement in breathing and swallowing ability as well as in muscular power." The company has received FDA Orphan Drug Designation for its NurOwn stem cell therapy, and the first U.S. trial is scheduled to begin at Massachusetts General Hospital later this year.

Nextrials plans iPad app

Nextrials Inc. is planning to release an Apple® iPad™ app for its clinical trial management platform, Prism®, according to a Nextrials spokesman. With the new iPad application, pharmaceutical and biotech researchers will receive anytime/anywhere access to key data points, reports, and statistics about ongoing studies. This will allow them to view real-time data related to patient recruitment/enrollment status, demographics, queries, and monitoring, according to the company.

"The Prism iPad app gives sponsors the ability to better manage investigator site data, logistics, and costs, regardless of user location; and from the health care viewpoint, since the iPad's usage at the bedside is increasing, primary care physicians can use the same device to see applicable patient data immediately through the subject's permanent health record," Robert Barr, chief technology officer at Nextrials, was quoted as saying.

AVI BioPharma is now Sarepta Therapeutics

AVI BioPharma Inc. has changed its name to Sarepta Therapeutics Inc. The company is focused on the development of first-in-class RNA-based therapeutics to improve and save the lives of people affected by serious and life-threatening rare and infectious diseases. Its lead therapeutic candidate is eteplirsen, for the treatment of Duchenne muscular dystrophy. Potential treatments for the lethal hemorrhagic fever viruses Ebola and Marburg are also being planned.

Brief submissions and photos for this column may be sent to Marsha Cathcart, *AARC Times* editor, at cathcart@aarc.org. ■

Evolution of CRT and RRT Credentialing Programs

by Robert C. Shaw, Jr., PhD, RRT, FAARC, and Kerry E. George, MEd, RRT, FAARC

This article explains changes the National Board for Respiratory Care plans to implement regarding examinations for the Certified Respiratory Therapist (CRT) and Registered Respiratory Therapist (RRT) credentials. One effect of these changes will be to remove one examination from the hierarchical system through which individuals achieve the RRT credential. Another effect will be to require those achieving the RRT credential to demonstrate strong abilities in both gathering information and making decisions about the care of patients while taking the Clinical Simulation Examination.

Historical milestones

In April 2012, the AARC celebrated 1947 as the year in which the professional association began. The NBRC was incorporated as the credentialing organization for respiratory therapists in 1960. The following milestones also are worth noting to provide context for the evolutionary changes planned for the CRT and RRT credentialing programs:

- The first credential the NBRC awarded after it was incorporated was the RRT.
  — Successful RRT candidate passed an examination in the multiple-choice format (the Therapist Written Examination) *and* an examination in the oral format (the Oral Examination) starting in 1961.
  — After the AARC started the certification program in 1969, the NBRC agreed to take over the program in 1975.
  — The RRT examination system transitioned from oral to clinical simulation examinations in 1979 while retaining the multiple-choice examination.
  — Because of evidence there were tasks in common among entry-level and advanced-level therapists, starting in 1983 a candidate was required to achieve the certification level of credential before attempting to achieve the registry level.
- There were few schools for respiratory therapists in the early years.
  — The demand for respiratory care grew rapidly after World War II as a result of advancing technologies.
  — The emphasis for credentialing was to assess competence *by whatever means competence was acquired* including (1) training on the job, (2) short, intensive courses, (3) technical schools, (4) community college programs, and eventually (5) bachelor's degree programs.
  — The only route for new therapists to become credentialed today is by completing formal education through college-level programs.

Of the 50 states, all but one have come to rely on achievement of the CRT to contribute to the regulation of respiratory care practice. There are other elements of regulation that belong to the states alone. The power to conduct investigations and subpoena witnesses comes to mind. Therefore, respiratory care regulation involves partnerships between states and the NBRC that has relied on faith in a system that confers both the CRT and RRT credentials.

about the author...

Robert C. Shaw, Jr., PhD, RRT, FAARC, is the assistant executive director and psychometric program director for all examination programs at the NBRC in Olathe, KS.

Kerry E. George, MEd, RRT, FAARC, is the treasurer, chair of the Therapist Multiple-Choice Examination Committee, and vice-chair of the Judicial and Ethics Committee at the NBRC in Olathe, KS.

Within the respiratory therapy profession, there are many levels of proficiency; the national leadership for respiratory therapists incrementally and purposefully built the current two-tiered system. Because other health professions choose to regulate one level of practice does not mean that there are not multiple proficiency levels among its practitioners.

The door is not closed to continued evolution of the credentialing system in respiratory care. As the system evolves, the NBRC will continue to support both the CRT and RRT credentialing programs and those who have achieved those credentials.

Multiple-choice examination conceptual changes

Changes to the new multiple-choice examination for respiratory therapists are related to an evolution in concept about what CRT and RRT credentials have and will mean. The current concept is illustrated in Figure 1. The scope of practice for CRTs has been conceived as a subset of the scope of an RRT. The NBRC, the AARC, and the CoARC have jointly stated that the RRT represents the standard of excellence for respiratory therapists. There are more than two scopes of competence represented in Figure 1. Some scopes of competence can be less than is expected for someone who has achieved the CRT credential while others may exceed expectations for the RRT credential.

The future concept, which the NBRC expects to implement in 2015, is illustrated by Figure 2. The critical difference between original and modern concepts is that the content over which candidates for CRT and RRT credentials will be assessed will be the same. Figure 1 illustrates content differences between the CRT and RRT scopes. Figure 2 illustrates CRTs and RRTs will be separated based on proficiency. Increased proficiency while providing care is expected to result in higher accuracy, more effective interventions, reduced costs, and greater speed. Increased proficiency while taking a test over respiratory care content is expected to manifest in a higher score.

The change in concept is justified in part because educational preparation is more similar today than it used to be. The fact that CoARC now accredits programs to one standard is an important change that helps justify the future concept about CRT and RRT credentialing programs. In addition, internal research conducted by the NBRC has demonstrated convergence of the scope of practice.

For more information on the CRT and RRT credentialing programs, contact the National Board for Respiratory Care at info@nbrc.org or (888) 341-4811.

Figure 1. Current concept

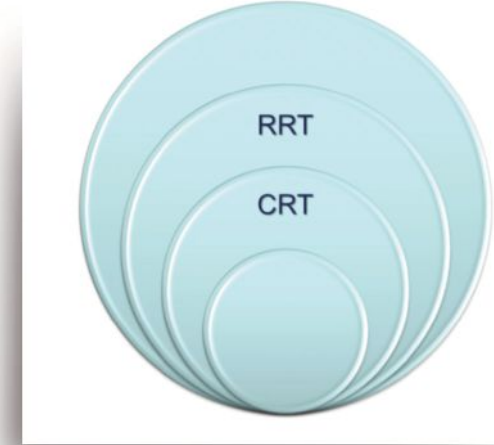


Figure 2. Future concept

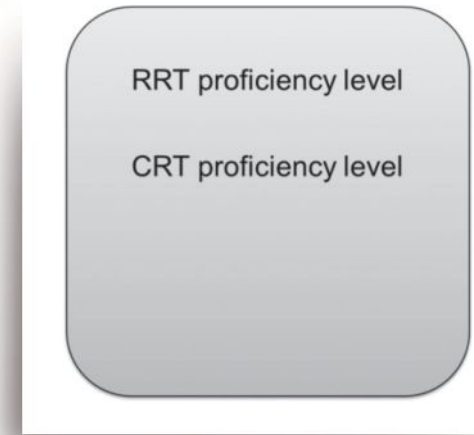
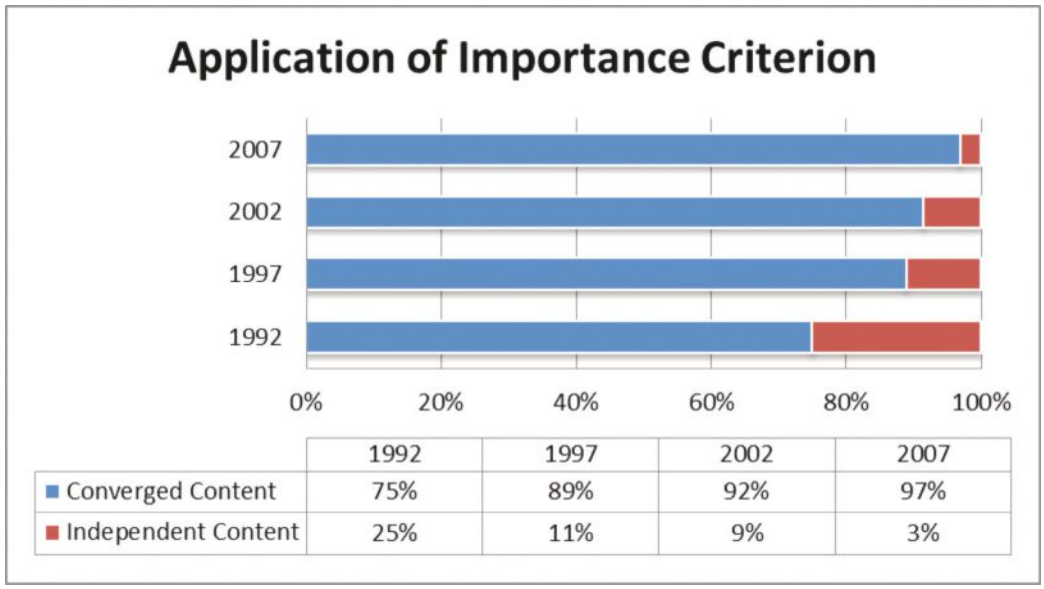


Figure 3. Trend in convergence based on importance to practice



	1992	1997	2002	2007
Converged Content	75%	89%	92%	97%
Independent Content	25%	11%	9%	3%

As Figures 3 and 4 illustrate, job analysis survey responses indicated a CRT was expected to function within a substantial subset of content that was done by an RRT in 1992.* As subsequent studies were done, CRT and RRT scopes of competence converged to the point that very little difference remained in 2007.

Three RRT tasks were excluded from the examination for the CRT credential in 2007. Those three tasks nearly met the extent-in-practice criterion for CRT examination content. Nine additional RRT tasks were excluded from the examination for the CRT credential. Here again, these tasks nearly met the importance-to-practice criterion for CRT examination content. Results about these few tasks and information in Figures 3 and 4 convinced the NBRC trustees that prospective CRTs and RRTs should be assessed over the same content at the point of entry starting in 2015.

RRT is the standard for excellence for respiratory therapists, and CRT is the standard for licensure in 49 states. This convergence evidence indicated to the NBRC that a new concept for the credentialing system was justified. While Figure 2 is not the only potential new concept on which the NBRC could have settled, it does respect precedent.

* Two groups of respondents rated tasks based on expectations for entry level and advanced level therapists. Information in Figure 3 shows percentages of converged and independent examination content when extent-in-practice and importance-to-practice thresholds were applied. The extent threshold was 50% of survey respondents and the importance threshold was 2.5 out of 4.0.

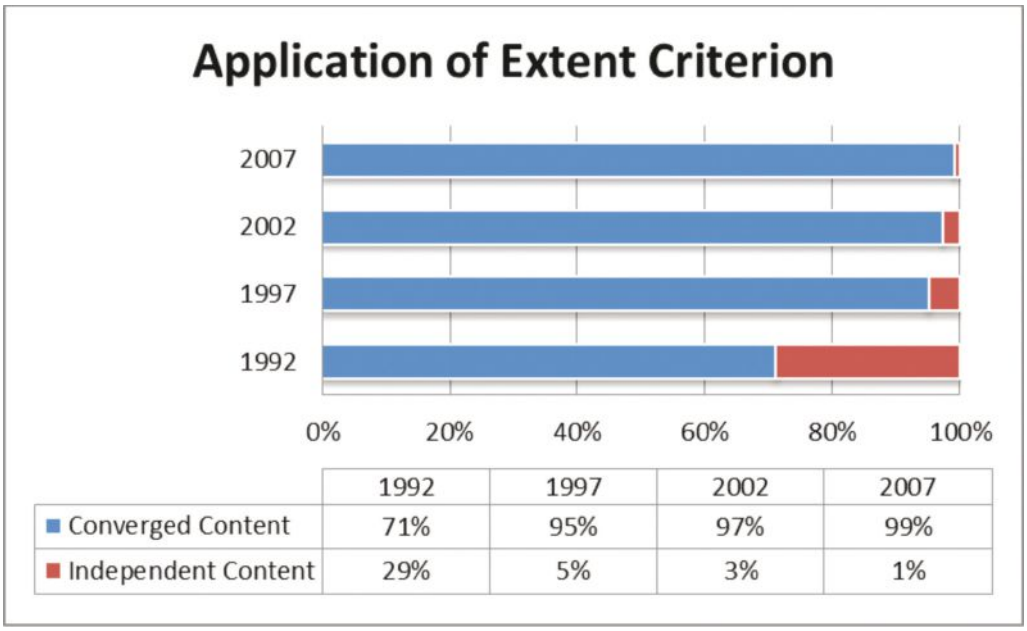
Evolution of multiple-choice exams

In 1988, the NBRC reduced the number of items on the examination for the CRT from 200 to 140 because a study indicated that using fewer items would not diminish the accuracy of competence measurements. In 1994, the NBRC reduced the number of options for each test item from five to four. Nothing will fundamentally change about the test-candidate interaction when the new multiple-choice examination for therapists is implemented. Hence, CRT examination scores will continue to be based on 140 items.

The examination will differ from the current CRT examination by having two passing points. In keeping with what Figure 2 proposes, meeting or exceeding the low passing point will result in achievement of the CRT credential. Achieving a test score equal to, or greater than, the high passing point will result in eligibility to take the Clinical Simulation Examination. Persons who subsequently pass the Clinical Simulation Examination will achieve the RRT credential.

Although the new multiple-choice examination will contain the same number of items as the current CRT Examination, we expect the new exam will contain a higher proportion of items at the application and analysis levels of cognition compared to what Table 1 shows for the current CRT Examination. A job analysis study was underway but not completed when this article was written, so specific information about this change will be released about this time next year.

Figure 4. Trend in convergence based on extent in practice



	1992	1997	2002	2007
Converged Content	71%	95%	97%	99%
Independent Content	29%	5%	3%	1%

Evolution of the Clinical Simulation Examination

The start of computer-based testing in the year 2000 has been associated with several benefits.

- Candidates may schedule testing appointments on any of about 300 days of each year.
- Most candidates may test at centers closer to home.
- Final results from each test administration are given to candidates as soon as they finish.
- Opportunities for candidates to collaborate while testing are reduced.
- Each new item is evaluated during pretesting among large, randomly assigned samples from the candidate population before use as a scored item on future tests.

Providing instant scoring of simulation examinations administered by computer created a new challenge. The examination committee increasingly struggled to keep the content of problems current. When Clinical Simulation Examinations were administered in paper format and results were delayed by several weeks, it was possible to fix option scoring before scores were released. Subsequently, the content of problems could be readily revised before they were used again. In other words, the delayed scoring model created an environment that was conducive to updating problem content.

After instant results reporting began in 2000, a test form (10 active and one pretest simulations) was administered for several months. When the form was retired, some of the problems already had been selected for forms that had been, or soon would be, released. Taking a problem out of play to update content meant a multiyear commitment to pretesting the revised problem before assessing whether the changes were valid. These factors discouraged content updates enough for the content of some problems to lag behind practice.

The simulation solution

After an ad hoc committee considered alternative test formats to address this issue, the NBRC trustees accepted

Table 1. Comparison of Current Cognitive Level Distributions by Examination

	Percentages of Items for Each Multiple-Choice Examination	
Cognitive Level	**CRT**	**RRT**
Recall	25	6
Application	53	15
Analysis	22	79
Total	100	100

Table 2. Comparison of Test Specifications

Type of Problem	Specifications	
	Current 10-Problem	Future 20-Problem
A1. COPD Conservative Care	1 or 2	2
A2. COPD Critical Care	1 or 2	2
B. Trauma	1 or 2	3
C. Cardiovascular	1 or 2	3
D. Neurological/Neurosurgical	1 or 2	2
E. Pediatric	1	2
F. Neonatal	1	2
G. General Medical/Surgical	Optional	4

a proposal for a new examination that retains simulation characteristics. The solution the trustees approved was to halve the length of each problem while doubling the number of problems. Candidates will continue to have four hours to complete the examination, which will contain 20 problems, each of which will be half the length of the current simulation problems.

These changes presented the NBRC an opportunity to enhance the psychometric properties of the Clinical Simulation Examination. First, the NBRC will standardize each test form more thoroughly. Table 2 presents a comparison of current and future specifications. The current specifications permit some variability in test form assembly; variability has been removed from the 20-problem specifications.

NBRC trustees also decided to change the ways in which simulation examination scores and passing points are determined. Currently the Clinical Simulation Examination really contains two *short* tests. A candidate must clear two hurdles, one for competence in gathering information and one for making decisions. Test score accuracy should increase when based on one long test compared with two short tests. The way the trustees will lengthen the Clinical Simulation Examination is to combine information-gathering and decision-making scores into one total score.

The future examination will produce one total score with one passing point. Simulation examinations will continue to contain sections devoted to information gathering and sections devoted to decision making. By combining all problem responses into one score, the NBRC expects the precision of test scores to increase. To ensure that mistakes in candidates' decision making cannot be offset by points from information-gathering sections, the passing level for information-gathering sections will increase.

Summary

Changes described in this article are substantial, but they respect precedent and are next steps to an evolving examination system that began in 1961.

Candidates for CRT and RRT credentials initially will be assessed over the same scope of competence. Two passing points will differentiate CRTs from those who become eligible to take the Clinical Simulation Examination and potentially achieve the RRT credential.

Within the same four-hour test administration, Clinical Simulation Examination candidates in the future will be tested by information-gathering and decision-making sections within twice as many patient scenarios. Each scenario will contain half the number of sections as current problems. Candidates will achieve a single score that will determine the pass-or-fail outcome.

Candidates have had to schedule three testing appointments on at least two different days while attempting to achieve the RRT credential. In the future, candidates may achieve the RRT credential by scheduling two testing appointments on two different days.

Contact the National Board for Respiratory Care

The NBRC Board of Trustees and its committees are interested in your questions, comments, and concerns. You may contact the NBRC by email at nbrc-info@nbrc.org, by phone at (888) 341-4811, or visit the NBRC website at www.nbrc.org. ■

Marketplace

Featuring information on products and equipment from manufacturers

Infant/Pediatric Ventilator

Airon Corporation introduces its pNeuton mini: an infant/pediatric critical care transport ventilator with nCPAP. The mini's patient range is 400 grams to 25 kg and can provide invasive ventilation or nCPAP. It's ideal for areas like L&D or the MRI where you need a variety of support levels with patient alarms. Pure pneumatic technology eliminates the need for any batteries. The pNeuton mini meets airworthiness criteria and is ruggedized for any transport conditions you may encounter. www.AironUSA.com

Upgraded Physical Activity Monitoring System

An enhanced version of the Actical physical activity monitoring system from Philips Respironics is intended for researchers who need real-time ambulatory monitoring in real-world applications. The Actical system allows users to collect and examine high-resolution data on a subject's physical activity, steps, and energy expenditure levels for longer periods of time than was possible with the previous Actical system. With enhancements that include fast and more epoch length options, including the ability to collect epoch lengths as short as 1 second and collect raw data at 32 Hz, users can better meet the specific needs of their studies. www.philips.com

▶ Press releases and photos on new products are welcome. Send to Marsha Cathcart, *AARC Times* editor, at cathcart@aarc.org.

RC Currents

IN THE NEWS

2012 International Fellows, Host Cities Announced

The globalization of respiratory care is supported by the AARC every year through a program that brings health care professionals from abroad to our shores to tour respiratory care facilities in two cities before attending the International Respiratory Convention & Exhibition.

The AARC is proud to announce its 2012 class of international fellows and the cities that will be hosting them this fall:

- Ling Liu, China (Honolulu, HI, and Oakland, CA)
- Manling Liu, China (Portland, OR, and Oakland, CA)
- Raul Castro Garcia, Ecuador (Charleston, SC, and Winston-Salem, NC)
- Audrey Forson, Ghana (Emporia, KS, and Salt Lake City, UT)
- Job Joseph, Haiti (Charlottesville, VA, and Washington, DC)
- Anitha Nileshwar, India (Brooklyn, NY, and Baltimore, MD)
- Sanihe Ugurlu, Turkey (Cincinnati, OH, and Rochester, MN)

Please join us in congratulating these outstanding international colleagues on their fellowships as well as the AARC members in the various cities who have volunteered to organize the facility visits that will make their trips to the various U.S. cities educational and memorable. ■

COPD Screening Events Contribute Data for CHEST Study

The AARC's active involvement in screening the general public for COPD via health care expos and other events has now paid off in the publication of a study in the August issue of CHEST.

The paper, which was co-authored by AARC Associate Executive Director in Charge of IT Operations Steve Nelson, MS, RRT, FAARC, along with Lisa M. LaVange, PhD; Yonghong Nie, PhD; John W. Walsh; Paul L. Enright, MD; Fernando J. Martinez, MD, FCCP; David M. Mannino, MD, FCCP; and Byron M. Thomashow, MD, FCCP, finds a staged approach to screening can detect clinically significant airflow obstruction.

The research grew out of an Agency for Healthcare Research and Quality statement questioning the usefulness of spirometry screening in healthy adults who are not reporting symptoms. That statement spurred a consensus conference on the topic hosted by the National Heart, Lung, and Blood Institute and the COPD Foundation. A three-staged approach to screening consisting of a brief questionnaire, peak flow measurement with a pocket spirometer, and diagnostic quality spirometry was developed by conference participants.

In their study, Nelson and his colleagues used this approach to screen adults, most of them participants in the health screening events supported by the AARC and its members. Overall, 5,638 people completed pocket spirometry. Among that group, 5.6% were identified with PEF <70% predicted and sent for spirometry. Spirometry was performed by RTs with pulmonary function testing experience. Results showed:

- Based on 729 participants with acceptable spirometry, 63.1% of those with abnormal PEF tested positive for clinically significant airflow obstruction, compared to 5.5% with normal PEF.
- The estimated prevalence of significant COPD was 8.7%, and sensitivity and specificity were 40.7% and 97.7%, respectively.

With such a high specificity of PEF to clinically significant reduced airflow by spirometry, it can be concluded that PEF is a useful tool in detecting people at risk for COPD. Nelson and his colleagues further conclude, "Using a pocket spirometer in a screening program can reduce the number of diagnostic spirometry tests required. A step-wise approach to detect undiagnosed people with clinically significant airflow obstruction can reduce costs and increase accuracy."

They believe this approach could increase the ease of finding previously undiagnosed COPD at an earlier stage in asymptomatic patients and also improve the care of COPD patients in clinical practice. ■

AARC Executive Office Hosts Taiwanese Exchange Students

The AARC Executive Office received a special visit recently from three Taiwanese RC students who are here in the United States through an exchange program between their university and an RC program in Hurst, TX. Wu Mei-Jung, Huang Hui-Fang, and Chiou Jing-Ru are spending three weeks at Tarrant County College thanks to a sister school relationship between the U.S. college and China Medical University (CMU).

"This is the third year in a row that we have accepted students from CMU for a three-week visit to our school," explains John Hiser, MEd, RRT, FAARC, program director at Tarrant County College. "Their instructor is Chia-Chen Chu, MS, SCRT, FAARC, who is the Governor for Taiwan for the International Council for Respiratory Care, a past international fellow, and recipient of the Koga Medal."

The trip over to Irving to visit the AARC office came at the request of Chia-Chen Chu, who wanted the students to see the Association headquarters in action. "He is very familiar with what the AARC does, and he specifically requests that the students get a tour of the AARC Executive Office so that his students can understand what the AARC does," says Hiser. "He is grooming future leaders of the profession in Taiwan." ■

▶ Strange But True…

Fat can be good: Fat-free salad dressings may be easier on the waistline, but they don't do much to help you absorb nutrients from the fresh vegetables in your salad, report Purdue University researchers. It takes fat-based dressings to get the job done.

Arm's length: Studies have shown women need reading glasses at an earlier age than men. A new meta-analysis suggests the reason lies in the fact that women have shorter arms and tend to hold reading material closer to their eyes. No differences were seen between the sexes in the ability to focus clearly on objects. (*Investigative Ophthalmology & Visual Science*, June issue)

Sing for your care: Starving artists in New York City have a new option for paying their medical bills at one facility. Lincoln Medical and Mental Health Center in the Bronx is offering to knock $40 off the bill for every hour an artist shares his craft with the facility, such as painting a mural or performing a concert.

Don't bug us: Australian scientists at Monash University are working on a new type of mosquito that might help rather than hinder public health. In one case, researchers genetically engineered mosquitos to infiltrate and overcome populations of wild and potentially disease-spreading mosquitos. In another, regular mosquitos were infected with bacteria that make them significantly less likely to spread dengue. The overall goal is to get these re-engineered mosquitos to replace the normal disease-spreading pests. ■

RC Week 2012 — Proud To Be a Respiratory Therapist

RC Week, Oct. 21–27, is that special time of year when respiratory care professionals everywhere are celebrated. Show your enthusiasm and pride in your chosen profession with events for recognition, fun, and lung health awareness with your RC team, your patients, your community, local students, and more. As the official sponsor for Respiratory Care Week, the AARC provides a great website at www.AARC.org/rcweek. Make it your favorite destination for event ideas, planning tips, photo sharing, and more.

There's more in store for RC Week this year! Check it out at www.aarc.org/rcstore. ■

Florida RTs Reach Out to Bright Young Minds at HOSA Conference

by Jamy Chulak, BS, RRT

Valencia College students once again partnered with the AARC to be a part of the Health Occupations Students of America (HOSA) National Leadership Conference. The conference was held at Disney's Coronado Springs Resort in Orlando, FL, in June.

This conference is comprised of high school students whose education is focused on health care careers. We were fortunate to represent the AARC for the second time in three years. Our entire class of 2012 (26 students who graduated in August) signed up to participate in the three-day event. Kim Harvey, director of clinical education at Valencia College, volunteered to serve as a judge during the 2012 HOSA competition as well.

HOSA has around 120,000 members nationwide, through 47 state associations and 3,200 secondary and post-secondary chapters. This large organization has provided students an opportunity to explore health-related fields at an early age.

Hundreds, if not thousands, of attendees continuously poured into the vendor hall throughout the three days of the meeting. The respiratory care booth was once again one of the more popular booths, with our engaging students paying it forward. The bright young attendees were excited to be able to intubate our manikin, hold a pig lung that was being ventilated, experience chest physiotherapy, and get an SpO_2 check. They also came away with a lot of valuable information provided by our group and the AARC. It was especially exciting to get return visitors who wanted to challenge themselves at intubating — or "gross out" a friend by holding the pig lung. Comments like, "I heard about this booth!" were all too common. It was fun.

Many of the attendees were very impressed with the scope of practice described by our students here in the Orlando area. Intrigue grew as we explained how we work directly with physicians in surgical, medical, and emergency settings while caring for patients when they need us most. We talked about how patients with COPD, along with the aging baby boomers, will impact the future demand for health care in general and our profession in specific, raising a curious eye among many of these high school students.

While the majority of these young students were certainly familiar with the field of respiratory care, health careers as physicians, nurses, and EMT/paramedics, as well as dental hygienists, had captured their minds early in their education. We hope we changed a few of those minds during this conference. These students are focused, driven, and interested in enhancing "the delivery of quality health care to all people."

The annual HOSA conference is a great place to connect with high school students interested in health care careers, but we all need to reach out to our local HOSA chapters as well to describe how a future in respiratory care can be fulfilling to these young bright minds (www.hosa.org). Our future may depend on them. ■

Jamy Chulak, BS, RRT, is the respiratory care program chair at Valencia College in Orlando, FL.

Protecting Precious Lungs

by Kelly Welton, BA, RRT-NPS

"Do NOT let anything happen to their lungs!" said the attending thoracic surgeon.

There were two of them, side by side. Completely under, fully supported by machines. Two 14-year-old boys with dilated cardiomyopathy, awaiting transplants. They witnessed the whirs and clicks of the LVADs, all the IV pumps, the rhythmic cycling of the ventilators, and the beep-beep-beep of the cardiac monitors. All that noise and yet this corner of the ICU was eerily quiet.

What were the chances? Two boys, same age, same size, would need two hearts. Soon. They were complete strangers, and their fate was to be determined by outside events that may or may not happen, plus their blood type.

Days went by. Finally, they each received donor hearts within one day of each other. They did well and went home.

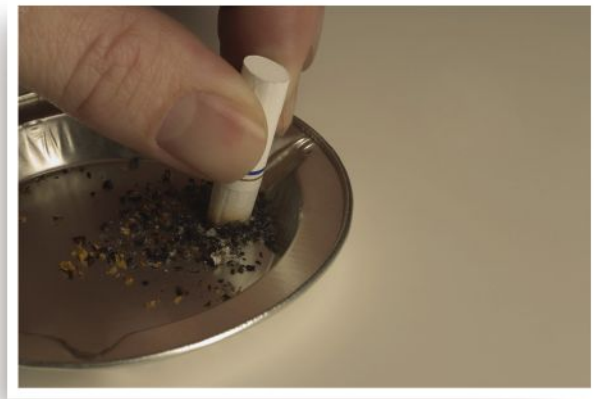
About six months later, in walks a familiar-looking woman with a strapping teenage boy, her son — one of the recipients. They came in for a check up and stopped by to bring us cake and to say, "thank you." This scrawny kid who had lain in bed, suspended somewhere between life and death for weeks, was making straight A's in school and now looked like a running back. I was proud to be able to say we knew exactly how to take care of his lungs. ■

Kelly Welton is an AARC member from Anaheim, CA, where she serves as an RT at Kaiser Permanente. If you have a "rewarding moment" story to share about your work as an RT, contact us at www.aarc.org/members_area/aarc_times/letters/index.asp.

CF Drug May Work for COPD, Too

COPD patients may benefit from a drug developed to treat certain strains of cystic fibrosis (CF), report researchers from the University of Alabama at Birmingham. In their investigations, the drug ivacaftor, which was recently approved by the FDA for the treatment of CF, activated the cystic fibrosis transmembrane regulator (CFTR) protein and normalized airway hydration and mucus clearance in human volunteers who both smoked and had COPD.

"Our studies demonstrate that cigarette smoking causes an acquired abnormality of mucus clearance that is mediated through CFTR, and that this pathway can be pharmacologically reversed in the laboratory by drugs that activate CFTR," lead author Steve Rowe, MD, was quoted as saying. "This opens the potential of a new therapeutic paradigm to treat individuals with COPD and deserves testing in well-controlled clinical trials using agents known to augment CFTR function." Dr. Rowe and his colleagues published their findings in the online journal *PLoS One* on June 29. ■



Injectable Oxygen Revives Rabbit in Respiratory Distress

U.S. researchers led by an investigator from Harvard Medical School have successfully delivered oxygen to rabbits in respiratory distress using injectable gas-filled microparticles.

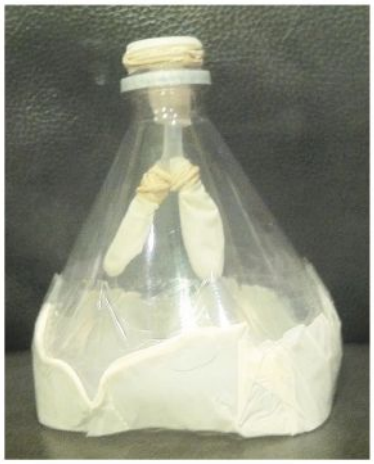
A device known as a Sonicator was used to produce a foamy liquid solution containing microparticles that consisted of a single layer of lipids that were capable of trapping a tiny pocket of oxygen. The investigators injected the mixture directly into the bloodstream of severely oxygen-deprived rabbits, and the infusions restored the rabbits' blood oxygen saturation to near-normal levels within seconds. Even when their tracheas were completely occluded for 15 minutes, hypoxemia was significantly reduced, and the rabbits were less likely to experience cardiac arrest or organ injury when compared to controls.

"The ability to administer oxygen and other gases directly to the bloodstream may represent a technique for short-term rescue of profoundly hypoxemic patients, to selectively augment oxygen delivery to at-risk organs, or for novel diagnostic techniques," write the authors. "Furthermore, the ability to titrate gas infusions rapidly may minimize oxygen-related toxicity." The study was published in *Science Translational Medicine* on June 27. ■

Giving Kids a First-hand Look into the Lungs

When her five children were growing up, Kim Bennion, MHS, RRT, was concerned about the limitations she saw in the science programs at their schools. With the help of her husband, Kent Bennion, BS, RN, the RT at Intermountain Healthcare in Salt Lake City, UT, decided to put her professional background to work by volunteering to conduct dissection classes during regular school hours and after school programs. "We have assisted students in dissecting bovine hearts, lungs, eyes, brains, and kidneys," says the AARC member. "Of course, my passion is the dissection of lungs and the opportunity to teach about lung health."

Bennion obtains the bovine body parts needed for the dissections from a local meat packing plant. For the lung section, she also builds a "chest" from a two-liter soda bottle, a wye, gloves, rubber bands, and some tape. "By sealing the wye in the bottle and attaching the fingers of the glove to serve as the lungs, I am able to show them how the lungs work in the chest by pulling the 'diaphragm' down to make the lungs fill," she explains.



Kim Bennion's homemade "chest" is always a hit with the kids.

To help the kids understand the physiology of gas exchange, she uses the example of a box car picking up and offloading supplies. She then talks about how "smoking messes up the railroad tracks" needed by the box cars to pick up cargo (oxygen) and offload waste (CO_2). "They love that example," she says. "It really helps them understand how the lungs move air in and out and why what you expose yourself to breathing might impact your lungs and overall health." She says she regularly gets calls from parents who are amazed that their children are able to explain such a complex function in such simple terms.

Bennion pulls down on the "diaphragm" of the "chest" to show the children how the "lungs" fill with air.

From there, she turns to the bovine lungs, noting color and anatomy. She also uses a straw to inflate a section of the lungs — a favorite with the kids. Since the children use razor blades to do the dissection, a teacher is required to be present and parents must sign release forms for their children to participate. Funding for the gloves, blades, plastic bags, handouts, bovine parts, and other materials come out of Bennion's own pocket, although she is currently seeking some grant funding to help with expenses. Right now, Bennion and her husband are able to travel to about one school a week, but she's hoping to expand the program soon by getting other RTs from the Utah Society for Respiratory Care involved.

"Any RT could do this," she says. "Simply locate a meat packing plant in your area, arrange for the proper acquisition and disposal of the parts, contact your local schools or Board of

Education, and submit your proposal." She estimates about a six-hour time commitment to conduct one course, including prep time. Drive time, however, must be added to that.

Bennion has been conducting the dissection classes in local schools since 1997 and says she regularly gets calls from former students who report they still remember what they learned. "I can tell you that I have received over three calls this year alone from former students, now in their mid 20s, who thanked me for the exposure." These young people tell her the lessons they learned as children have stayed with them through the years, making it easier for them to refuse smoking when tempted by peers and avoid smoking in bars and other places today. But for one student, the dissection class had an even more special meaning. "One particular student, now 26, attended the class in a wheelchair, as she had cerebral palsy with profound kyphoscoliosis," explains Bennion. "To include her more fully, we obtained permission from her to discuss what happened in her chest due to her skeletal deformity."

Many years later, this young woman told Bennion that after that lesson, her fellow students would regularly have her lean to her unaffected side and then instruct her to "take a deep breath so your air sacs can fill up" because they didn't want her "air sac balloons" not to get air. "She thanked me for making her feel so special that day and for thinking to include her so that others would understand her malady rather than be afraid to ask her questions," says Bennion.

That was a powerful lesson for this RT. "I cried as I realized that she had felt special, others more fully understood her trials, and the students had actually understood how important an effective breath could be to lung health."

For more information on how to start a lung dissection program in your local schools, contact Kim Bennion at Kim.Bennion@imail.org. ■

EDITOR'S NOTE: Are you involved in a respiratory care-related volunteer activity in your community? Tell us about it at www.aarc.org/members_area/aarc_times/letters/index.asp.

Bennion and her husband Kent have been teaching dissection classes in local schools since 1997.

▶Transitions

Teresa DeTano, MHA, MPH, RRT, has been promoted to vice president, operations integration and quality at Marion General Hospital in Marion, OH. DeTano has been with the OhioHealth system since May 2006, serving first at Morrow County Hospital and then at Marion General, where she previously led quality and compliance efforts.

Rose L. Boneff, RRT-NPS, has received the annual President's Award for Excellence in Instruction at Ivy Tech Community College-Northeast in Fort Wayne, IN. Boneff is director of clinical care education for the respiratory care program.

Gail Gane, BA, RRT, died in August after injuries received during a horse riding accident. At the time of her death, Gane was director of clinical education for the RT program at Robeson Community College in Lumberton, NC, where her colleagues have established an endowed scholarship in her memory.

We welcome news about AARC members. Submit notices online at www.AARC.org/transitions. ■

RT Student Members: Send Us Your Stories and Editorials

AARC Times is always looking for good stories from AARC student members that relate special experiences and give the RT student perspective on the respiratory care profession they have chosen as a career. We have published the stories of several student members in *AARC Times* this year, and we continue to encourage you to share your experiences.

Have you volunteered at a summer asthma camp or helped organize the DRIVE4COPD program in your state? Have you advocated for respiratory therapy in your state capitol or on Capitol Hill? Maybe you and your RC student friends have collaborated to build a house with Habitat for Humanity. Perhaps you witnessed a lifesaving event outside the hospital setting or experienced something that took your breath away. Whatever the story, we are interested in seeing it.

If you have a story to tell, please contact *AARC Times* Editor Marsha Cathcart at cathcart@aarc.org and include in the subject line, "Student Member Story." Be sure to give us your full name, AARC member number, a brief description of the story subject, and why you would like to have it published. Then attach a Word document of the story. We hope to hear from you soon! ■

Half of Kids with Asthma Have Poor Asthma Control

According to a recent International Consensus (ICON) on Pediatric Asthma, 50% of children with asthma have uncontrolled symptoms. The report blames the lack of asthma control on misdiagnosis and under treatment. "Diagnosis and care for children with asthma remains challenging in many areas of the world, including the United States," says Stanley Fineman, MD, president of the American College of Allergy, Asthma and Immunology (ACAAI), one of four medical groups involved in the consensus document. "Our hope is that the publication and use of the ICON on Pediatric Asthma can help change this problem."

The ICON was launched at the European Academy of Allergy and Clinical Immunology (EAACI) meeting held last June. In addition to the EAACI and ACAAI, the ICON is supported by the American Academy of Allergy, Asthma & Immunology and the World Allergy Organization. ■

Secondhand Smoke May Raise Diabetes, Obesity Risk

Exposure to secondhand smoke may raise a nonsmoker's risk of both diabetes and obesity. That's the take-home message from researchers at Los Angeles' Charles R. Drew University.

Using serum cotinine levels to verify passive smoking, the investigators examined data from more than 6,300 adults who participated in the National Health and Nutrition Examination Survey from 2001 to 2006. Current smokers made up 25% of the sample; 41% were classified as nonsmokers. People who identified themselves as nonsmokers but had cotinine levels above 0.05 ng/mL were defined as secondhand "smokers" and comprised 34% of the total.

After controlling for age, sex, race, alcohol consumption, and physical activity, the researchers found that, compared with nonsmokers, secondhand smokers had a higher measure of insulin resistance, higher levels of fasting blood glucose, and higher hemoglobin A1c over the past three months. They also had a higher rate of type 2 diabetes, as defined by a hemoglobin A1c greater than 6.5%. Secondhand smokers had higher body mass indexes when compared to nonsmokers as well. The study was presented at The Endocrine Society meeting held last summer. ■

2013 Call for Papers — Medical Devices Design

The Design of Medical Devices Conference is seeking original two-page papers that demonstrate new technologies and applications in the field of medical device design. Submissions from academic and industry researchers, clinicians, and practitioners are encouraged.

Authors of accepted papers will be invited to present at a conference scientific poster session in 2013, sponsored by the University of Minnesota. Preliminary papers are due Oct. 24, and author instructions can be found at www.dmd.umn.edu/papers.html. ■

Once-in-a-Lifetime Nicotine Vaccine May Be in Our Future

Weill Cornell researchers may have come up with a lifetime vaccine against nicotine. The new vaccine is neither a traditional active vaccine, such as the polio vaccine, nor a passive vaccine, such as the type of vaccine being tested against breast cancer, but a third type known as a genetic vaccine.

The researchers took the genetic sequence of an engineered nicotine antibody and put it into a harmless adeno-associated virus. They included information that directed the vaccine to go to liver cells known as hepatocytes. The antibody's genetic sequence inserted itself into the nucleus of the hepatocytes, and these cells started to produce a steady stream of the antibodies along with the other molecules they make.

In mice studies, the vaccine continuously produced high levels of the antibody, which resulted in little of the nicotine administered to these mice reaching the brain. Activity levels of the mice treated with both nicotine and the vaccine were not reduced while mice that received nicotine alone showed signs of lower blood pressure and heart activity, signs that the nicotine had reached their brains and cardiovascular systems.

"Smoking affects a huge number of people worldwide, and there are many people who would like to quit but need effective help," study author Dr. Ronald G. Crystal was quoted as saying. "This novel vaccine may offer a much-needed solution." Plans are currently underway to test the vaccine in rats and then primates. The research appeared in the June issue of *Science Translational Medicine*. ■

Antibacterial Products Linked to Childhood Allergies

Could antibacterial soaps and other products containing antibacterial agents be harming children with allergies and asthma? They may be, report Johns Hopkins Children's Center researchers publishing in the online ahead of print June 18 edition of the *Journal of Allergy and Clinical Immunology*.

In their study, kids with the highest urine levels of triclosan (an antibacterial agent used in soaps, mouthwash, and toothpaste) had higher levels of food IgE antibodies compared to children with the lowest triclosan levels. Children with the highest urinary levels of parabens (preservatives with antimicrobial properties used in cosmetics, food, and medications) were more likely to have detectable levels of IgE antibodies to environmental allergens like pollen and pet dander when compared to those with low paraben levels.

"The link between allergy risk and antimicrobial exposure suggests that these agents may disrupt the delicate balance between beneficial and bad bacteria in the body and lead to immune system dysregulation, which in turn raises the risk of allergies," the study authors noted. ■

Nominate an AARC Member for "Success Stories" or "Interesting People"

Do you know an AARC member who would be a good choice for one of our "people" features in "RC Currents"? If so, provide this information to the editor at the address below: the member's name, job title, place of work, city, and state; why you think they should be featured; and their contact information. Send to: Editor Marsha Cathcart, cathcart@aarc.org with "Success Stories" in the subject line. ■

How Did You Celebrate Respiratory Care Week?

We want to hear about what you did to celebrate National Respiratory Care Week this year. Upload your high-resolution photos to www.aarc.org/rcweek with a brief description before Nov. 5, especially identifying your organization. You just might find your story on the AARC website or in an upcoming issue in "RC Currents." ■

National Health Observances

- **Respiratory Care Week**; Oct. 21–27; AARC, (972) 243-2272; www.AARC.org/rcweek
- **Lung Health Day**; Oct. 24; AARC, (972) 243-2272; www.AARC.org/rcweek

New Clues in the Fight Against Infections

New work out of St. Jude Children's Research Hospital is shedding an unexpected light on the way the body battles infections. The study focused on the NOD-like receptor protein 6 (NLRP6), which belongs to a family of proteins that are part of the innate immune response. Working in mice with and without the NLRP6 gene, the researchers focused on the innate immune response to *Listeria monocytogenes*, *Salmonella typhimurium*, and *Escherichia coli*.

Surprisingly, mice without NLRP6 were far more likely to survive infection with lethal doses of the bacteria than their normal counterparts. The NLRP6-deficient mice had fewer bacteria in their livers and spleens one and three days after infection, and they also had higher than normal circulating levels of monocytes and neutrophils. The findings suggest that mice lacking NLRP6 mount a more effective immune response.

The investigators went on to show that NLRP6 suppresses activity in pathways that trigger production of proteins called cytokines, which promote inflammation to combat infection. Specifically, NLRP6 regulates the nuclear factor-kappa B and mitogen-activated protein kinase pathways.

The result was a surprise, according to lead author Paras Anand, PhD. "This is the first member from the NLR family of proteins that inhibits rather than activates pathways involved in the innate immune response. NLRP6 might represent an entirely new subclass of these NLR proteins that functions to impede bacterial clearance." The study appeared in *Nature* last July. ■

New Members

Welcome to the AARC

U.S. Members

A

Austin, Jaymes, Dothan, Al
Barnes, Kaylee, Troy, Al
Curry, Kaylee, Cottonwood, Al
Esterly, Raymond, Mobile, Al*
Johnson, Rena, Springville, Al*
Mattews, Tiffany, Prattville, Al
Omar, Ahmed, Mobile, Al
Powell, Michael, Tuscaloosa, Al
Rhodes, Michael, Headland, Al
Shiver, Amanda, Hartford, Al
Sims, Kristen, Midland City, Al
Smith, Christy, Headland, Al
Smith, Trimese, Dothan, Al

Domingue, Pamela, Hot Springs National Park, Ar*
Pitts, John, Ward, Ar*
Riley, Harrell, Bryant, Ar*

Allen, Morgan, Mesa, Az
Anaya, Norma, Gilbert, Az
Barrett, William, Phoenix, Az
Beyer, Julie, San Tan Valley, Az*
Borrego-Nikolaus, Amanda, Tempe, Az
Brawner, Christopher, Mesa, Az
Bruner, Franceen, Phoenix, Az
Buccigrossi, Christine, Mesa, Az
Cameron, David, Mesa, Az
Chacon, Paul, Chandler, Az*
Chapman, Amber, Phoenix, Az
Crain, Matthew, Chandler, Az
Dawson, Lance, Chandler, Az
De La Fuente, Gabriella, Phoenix, Az
Del Toro, Andrea, Gilbert, Az
Dennis, Jennifer, Gilbert, Az
Dort, Kerianne, Scottsdale, Az
Faber, Randi, Mesa, Az
Flores, Alexia, Tolleson, Az
Flower, Andrew, Scottsdale, Az
Gammie, C, Tucson, Az*
Goldberg, Candice, Phoenix, Az
Guengerich, Bethany, Gilbert, Az
Hemenway, Wayne, Gold Canyon, Az
Hill, Gary, Chandler, Az
Holtman, Gwen, Anthem, Az
Horton, Pamela, Lake Havasu, Az*
Ibrahim, Ibrahim, Gilbert, Az
Jordan, Orace, Marana, Az
Krumsiek, Frederic, Glendale, Az
Landis, Sylina, Phoenix, Az
Linn, Christine, Mesa, Az
Loewen, Joan, Anthem, Az*
Manley, Amy, Mesa, Az*
McCartie, Dawn, Mesa, Az
McClendon, William, San Tan Valley, Az
McIntyre, Zachary, Gilbert, Az
Natalizia, Melissa, Cave Creek, Az
Negrin, Beatriz, Chandler, Az
Nguyen, Hahn, Phoenix, Az
Olson, Suzie, Phoenix, Az
Park, Joon, Tempe, Az
Patterson, Lydia, Mesa, Az
Petcu, Nicole, Peoria, Az*
Petrovich, Tavia, Chandler, Az
Poitras, Katielynn, Chandler, Az
Poston, Desiree, Chandler, Az
Rafiei, Kaveh, Mesa, Az
Rike, Hannah, Gilbert, Az
Robinson, James, Chandler, Az
Rugg, Kaitlin, Gilbert, Az
Sellers, Vanessa, Mesa, Az
Showers, Kyle, Queen Creek, Az
Slattery, Nicholas, Mesa, Az
Sorensen, Erik, Tucson, Az
Spencer, William, San Tan Valley, Az
Steiner, Desiray, Mesa, Az
Stover, David, Tucson, Az*
Sutkovic, Ajla, Peoria, Az*
Thomatis, Andre, San Tan Valley, Az
Weller, Dana, Phoenix, Az
Wilshusen, Joshua, Globe, Az*
Yarman, Kathie, Tuba City, Az*

C

Abayon, Maria, Chula Vista, Ca
Abdu, Muna, San Jose, Ca*
Abugan, Narcissus, Escondido, Ca
Alavanza, Reuben, San Bernardino, Ca*
Albitz, Catarina, Riverside, Ca
Alcazar, Noemi, Poway, Ca
Allen, Kevin, Bonita, Ca
Alvarado, Marcia, Escondido, Ca
Alvarez, Isabel, Santee, Ca
Amoguis, Gaylene, Chula Vista, Ca
Anderson, Gary, Anaheim, Ca*
Argentera, Ray, San Pedro, Ca
Arias, Aaron, Walnut, Ca
Armpalu, Ardo, Chula Vista, Ca
Arzola, Mary, Oak Hills, Ca
Ashcroft, Lauren, Rancho Cucamonga, Ca
Ashton, Noah, Santee, Ca
Ashworth, Michael, Santee, Ca
Avila, Mariela, Palm Springs, Ca
Bactad, Rubielyn, Imperial Beach, Ca
Badar, Patrick, West Covina, Ca
Barrion, Ryan, Anaheim, Ca*
Barron, Susana, Spring Valley, Ca
Basa, Bryan, Carson, Ca
Bautista Cruz, Christian, Ontario, Ca
Bautista, Michael, Cerritos, Ca
Becker, Leslie, Oak Hills, Ca*
Beckner, Scott, San Diego, Ca
Benavides, Elvia, Cypress, Ca
Benge, Hannah, Bakersfield, Ca
Bernal, Jamie, Glendora, Ca
Biltz, Justin, San Diego, Ca
Bitetti, Gail, Bakersfield, Ca
Boucher, Francisco, Montclair, Ca
Brack, James, Placentia, Ca
Braley, Rita, Sacramento, Ca*
Breuer, Matthew, San Diego, Ca
Briseno, Jesusita, Oceanside, Ca
Burgos, Jeramie, Riverside, Ca
Burrows, Brandy, Antioch, Ca*
Cabotage, Camille, Pleasant Hill, Ca*
Cabrera, Miguel, San Diego, Ca
Cachu, Jose, San Ysidro, Ca
Callaway, Anthony, Compton, Ca
Camerino, Jeffrey, Norwalk, Ca
Campbell, Brian, San Diego, Ca
Campos, Marcos, San Diego, Ca
Canez, Samantha, Bakersfield, Ca
Cao, Cuong-Anthony, Laguna Hills, Ca
Capozzi, John, San Diego, Ca
Carabajal, Craig, Bakersfield, Ca
Carandang, Krischele, Rancho Cucamonga, Ca
Cardona, Ruben, Tustin, Ca
Carl, Rebecca, Montclair, Ca
Carrillo, Katrina, Orange, Ca*
Cassidy, Cameron, Santee, Ca
Castillo, Jesus, San Diego, Ca*
Castrejon, Yadira, Fontana, Ca
Cayabyab, Mark Allen, Elk Grove, Ca*
Chandarath, Kathleen, San Diego, Ca
Charles, Brent, Bakersfield, Ca
Chhuo, Eric, Montebello, Ca*
Chighizola, Renee, Lakeside, Ca
Chuang, Elsie, Cupertino, Ca*
Chung, Marichelle, San Gabriel, Ca*
Chupinij, Benny, Long Beach, Ca
Cirasole, Judith, Whittier, Ca
Cobb, Steven, Cerritos, Ca*
Coffman, Brita, Bakersfield, Ca
Collins, Cori, Bakersfield, Ca
Concepion, Ruben, Midway City, Ca
Coonce, Leah, San Bernardino, Ca*
Covarrubias, Anthony, Ontario, Ca
Crisostomo, Rosanne, Cerritos, Ca
Cruz, Lorne Elliott, Chula Vista, Ca
Custodio, Vicente, San Diego, Ca
Dannemann, William, Coronado, Ca*
Dechico, Michelle, Chula Vista, Ca*
Deelo, Hani, El Cajon, Ca
Devela, Arielle, Chula Vista, Ca*
Dizon, Ruby, Chula Vista, Ca
Dodero, Brian, Yorba Linda, Ca
Dragon, Gerino, San Diego, Ca
Duarte, Monique, Walnut, Ca
Duong, Jimmy, Sacramento, Ca*
Erlendson, Kimberly, San Dimas, Ca
Erlewine, Stacy, Fresno, Ca*
Escobar, Michael, Fontana, Ca
Espino, Marlyn, San Bernardino, Ca
Estrada, Jaime, Chula Vista, Ca
Farin, Mariel, San Diego, Ca*
Felder, Jacob, Encinitas, Ca
Feldman, Jeremy, Santee, Ca
Felix, Sandy, Bakersfield, Ca
Fishero, Tarren, San Diego, Ca*
Flores, Jeremiah, Diamond Bar, Ca

These individuals have been approved for membership in the AARC. Any member may object to a new membership by filing a written objection with the Executive Office within 30 days. *Active Members

Flores, Laurie, Downey, Ca
Flores, Nancy, Riverside, Ca
Fontelera, Erwin, Norwalk, Ca
Ford, Scott, Lancaster, Ca*
Francisco, Kenneth, San Diego, Ca
Frank, Dallas, West Covina, Ca
Galaureac, Michelle, Buena Park, Ca
Gallardo, Julius, Fontana, Ca
Gamboa, Ashley, Bakersfield, Ca
Garcia, Brandi, San Diego, Ca
Garza, Nicholas, Chula Vista, Ca
Gavin, Patricia, San Marcos, Ca
Gaxiola, Manuel, Santa Ana, Ca
Golez, Jerry, San Jose, Ca*
Gonzalez, Luis, Temecula, Ca
Gonzalez, Michelle, Hacienda Heights, Ca
Gonzalo, Remigio, Mira Loma, Ca*
Gore, Paul, San Diego, Ca
Gorme, Teresa, Lakewood, Ca
Gray, Danielle, Victorville, Ca
Gressitt, Leesa, San Diego, Ca
Grigsby, Elizabeth, Stockton, Ca*
Guan, Huimin, Monterey Park, Ca*
Guivo, Maria Josefina Fatim, Ontario, Ca
Haber, Randee, Santa Rosa, Ca*
Hakker, Marissa, Bakersfield, Ca
Hanna, Craig, Mount Shasta, Ca*
Harrison, Katrina, Los Angeles, Ca
Hegland, Greg, La Mesa, Ca
Hernandez, Courtney, Bakersfield, Ca
Hernandez, Luz, Lake Elsinore, Ca
Hernandez, Theodore, San Dimas, Ca
Herrera, Myrna, Upland, Ca
Herrington, Lan, Carlsbad, Ca
Hoang, Tuan, Irvine, Ca
Hoang, Vu, Irvine, Ca
Houston, Robert, Carson, Ca
Hussein, Ghassan, Fontana, Ca
Ilano, Christof-John, Fontana, Ca
Isaac, Darrell, Tustin, Ca
Ison, Ricardo, Bellflower, Ca
Jaramillo, Tanhya, Imperial Beach, Ca
Jimenez Carrillo, Lilian, San Diego, Ca
Jimenez, Grace, Bakersfield, Ca
Johns, Robert, Aguanga, Ca
Jun, Murphy, Chino Hills, Ca
Karvala, Sherri, Rancho Cucamonga, Ca
Kincaid, Stephanie, Adelanto, Ca
Kizziar, Aimee, Folsom, Ca*
Koch, James, San Marcos, Ca*
Lail, Hoshang, Manteca, Ca*
Larson, Kelly, Tustin, Ca
Lee, Cheol, Rancho Cucamonga, Ca
Lenkov, Aleksandr, La Mesa, Ca
Leyva, Alyssa, Corona, Ca
Lindsey, Heather, Westminster, Ca
Llamas, Elizabeth, San Bernardino, Ca
Lopez, Hilda, Chula Vista, Ca
Lopez, Patricia, Lamont, Ca*
Lora, Stephanie, Chula Vista, Ca
Lucaci, Christian, Garden Grove, Ca
Ludlow, Amanda, Bakersfield, Ca
Ly, Giang, Eastvale, Ca
Lynch, Rodney, Anaheim, Ca
Lytal, Chris, Chino, Ca
Macias, Armando, Fontana, Ca
Magers, Amber, Redlands, Ca*
Makk, Bridget, Fremont, Ca*
Mallari, Timothy, Sacramento, Ca
Manantan, Francis, Cerritos, Ca
Manlosa, Iverson, Escondido, Ca
Mann, Stephanie, Roseville, Ca*
Manullang, Rocky, Redlands, Ca
Martinez, John Paul, Anaheim, Ca
Matining, Rhommel, Carson, Ca
McCauley, Christopher, Santee, Ca*
McLaughlin, Julie, El Cajon, Ca
Medina, Dinnel, Alta Loma, Ca
Meekhof, Cynthia, Winchester, Ca*
Melgar, Geovanna, Kingsburg, Ca*
Mellizo, David, Murrieta, Ca
Mendez, Lizet, Cypress, Ca
Middleton, Garrilynn, Bakersfield, Ca
Milligan, Sara, Bakersfield, Ca
Mitskus, Katie, Buena Park, Ca
Montanez Martinez, Patricia, La Puente, Ca
Mooneyham, Ashley, Lake Elsinore, Ca
Moore, Michelle, San Diego, Ca
Morales Andujo, Gabrielle, Ontario, Ca
Moroyoqui, Carlos, Whittier, Ca
Muse, Adriana, Chula Vista, Ca
Myers, Jay, Ventura, Ca*
Nahat, Micheline, Glendale, Ca
Navarro, Jessica, Bakersfield, Ca
Navarro, Xavier, Oak Hills, Ca
Nguyen, Johnny, Westminster, Ca
Nguyen, Lance, Santa Ana, Ca
Nguyen, Lina, Lawndale, Ca
Nichols, Kimberly, San Diego, Ca
Norman, Brett, San Diego, Ca
Noyes, Roger, Santee, Ca
Nungaray, Elizabeth, Escondido, Ca*
Nwaozo, Justin, Union City, Ca
Ocampo, Leonard, Torrance, Ca
Oliver, Jaimee, La Verne, Ca
Oliver, Magali, Fontana, Ca
Operana, Patrick, Chula Vista, Ca
Orejel, Roberto, Whittier, Ca
Owen, Ron, El Cajon, Ca*
Padilla, Cindy, Chula Vista, Ca
Pandya, Yatin, Bakersfield, Ca
Panergo, Cyrel, Buena Park, Ca
Parodi, Mary, Saugus, Ca*
Pearman, Donald, San Diego, Ca*
Penn, Krystle, Modesto, Ca
Perrichon, Jaime, San Diego, Ca
Perry, Danielle, Bakersfield, Ca
Peters, Megan, Taft, Ca
Pham, Linh, Anaheim, Ca
Pham, Thuong, Fountain Valley, Ca
Phandanouvong, Foster, San Diego, Ca
Phoumin, Rose, San Diego, Ca
Pichardo, Belen, Corona, Ca
Pierce, Nikko, Whittier, Ca
Poe, Daniel, Rancho Cucamonga, Ca
Pons, Ann Margareth, Montclair, Ca
Popko, David, Riverside, Ca
Porras, Jettrick, Buena Park, Ca
Pounds, Valerie, Alpine, Ca*
Poyaoan, Domingo, San Diego, Ca
Presto, Brian, Riverside, Ca
Pulido, John, Oceanside, Ca
Punsalan, Joel, Walnut, Ca
Quaintance, Chris, San Diego, Ca
Quintero, Ernesto, Imperial, Ca
Ramirez, Jordan, Anaheim, Ca
Rayas, Carlos, Pomona, Ca
Rayor, Rick, Seal Beach, Ca
Razzaqui, Tauqeer, Chino Hills, Ca
Reed, Christopher, San Diego, Ca
Reno, Jessica, Santa Ana, Ca
Reyes, Marie, Lomita, Ca
Reynaga, Eric, Fontana, Ca
Rivera, Michelle, San Dimas, Ca
Rivera, Robert, Riverside, Ca*
Robinson, Haby, San Diego, Ca
Robledo, Lauren, Claremont, Ca
Rocha, Monica, Oceanside, Ca
Rodriguez, Juliet, Ontario, Ca
Rollman, Karen, Carlsbad, Ca
Romine, Amanda, Lake Forest, Ca
Romo, Miguel, San Diego, Ca
Russell, Scott, Westminster, Ca
Ryder, Jessica, Bakersfield, Ca
Sa, Eric, Westminster, Ca
Sabio, Lisa Marie, San Diego, Ca
Sakaue, Catherine, San Dimas, Ca
San, Sinnat, Bakersfield, Ca
Sangalang, Francheska Paula, Rancho Cucamonga, Ca
Santillan, Jesse, Mira Loma, Ca
Santos, Julian, San Diego, Ca
Santos, Susan, Huntington Beach, Ca*
Schommer, Melissa, Seal Beach, Ca
Sejkora, Richard, Lake Elsinore, Ca
Serrano, Ramon, Anaheim, Ca
Shannon, Christopher, Victorville, Ca
Shelton, Boriana, Port Hueneme, Ca*
Shimabukuro, Dean, Garden Grove, Ca
Silva, Claudia, Bakersfield, Ca
Silva, Robert, Rancho Cucamonga, Ca
Simington, Joseph, Bakersfield, Ca
Singh, Ashwin, Ontario, Ca
Smith, Christopher, Victorville, Ca
Smith, Lisa, Bakersfield, Ca
Smith, Marquette, San Diego, Ca
Smith, Terrance, San Diego, Ca
Spaulding, Nicole, Los Angeles, Ca*
St John, Kelly, San Diego, Ca
Steed, Heather, El Cajon, Ca
Stewart, Christina, Sacramento, Ca*
Strickland, Mohee, Altadena, Ca
Suarez, Evelyn, Long Beach, Ca
Sweet, Joseph, La Palma, Ca
Sweis, Maher, Westminster, Ca
Taggart, Ashlyn, San Diego, Ca
Talabis, Francis, Covina, Ca
Tanwangco, Portia, San Diego, Ca
Taylor, Weston, Alta Loma, Ca
Terry, Reginia, Los Angeles, Ca*
Tigno, Melissa, Chino Hills, Ca
Tiras, Michael, Forest Falls, Ca*
Tran, Christina, Santa Ana, Ca*
Trinh, Victoria, San Diego, Ca
Tschupp, Jennifer, San Diego, Ca
Valdez, Shane, Anaheim, Ca
Valle, Danielle, San Bernardino, Ca
Van Sant, Cameron, Chino Hills, Ca
Vasquez, Santiago, Santa Ana, Ca
Vaughn, Erika, Bakersfield, Ca
Velasquez, Diosdado, Costa Mesa, Ca
Viduya, Joseph, Elk Grove, Ca*
Villa, Danelle, Adelanto, Ca
Villalobos, Gina, Ontario, Ca
Villanueva, Christopher, Garden Grove, Ca
Vo, Kate, Anaheim, Ca
Vue, Yeu, San Diego, Ca
Walker, Peggy, Redondo Beach, Ca*
Wellnitz, Laura, Lakeside, Ca*
Wesson, Jennifer, Bakersfield, Ca
Wheeler, Robert, Rialto, Ca
Williams, Dave, Loma Linda, Ca*
Wills, Adam, San Diego, Ca
Winetrout, Seth, Ontario, Ca
Winkelman, Kim, Forest Falls, Ca
Wong, Allen, Whittier, Ca
Woods, Aaron, Rancho Cucamonga, Ca
Wright, Dewayne, Long Beach, Ca
Yassine, Abdallah, Ontario, Ca
Yi, William, Anaheim, Ca
Zimmerman, Jacy, Citrus Heights, Ca*

Burdan, Winifred, Littleton, Co
Buss, Melody, Castle Rock, Co*
Carino, Richard, Aurora, Co
Dabiri, Andre, Aurora, Co
Ehlers, Desirae, Denver, Co*
Golden, Tiffany, Castle Rock, Co
Greenup, Jason, Colorado Springs, Co*
Martin, Sheri, Denver, Co
Medvedskaya, Galina, Aurora, Co
Saurwein, Dawn, Erie, Co*

Stratton, Tove, Thornton, Co
Vigil, Eli, Denver, Co
Wislon, Charles, Castle Rock, Co*

Bryant, Hopeton, Bridgeport, Ct
Corbo, Elise, Greenwich, Ct
Cordero, Melissa, Bristol, Ct*
Dixon, Carolyn, Bridgeport, Ct
Greene, Maryanne, Beacon Falls, Ct*
Gregoire Riodin, Rose Laure, Bridgeport, Ct
Ines, Arceli, Stamford, Ct*
Langley, Tina, Norwalk, Ct
Nay, Marcia, Middlebury, Ct*
Salvatore, Rosa, Stamford, Ct
Sulinski, Michelle, Derby, Ct*
Wasielewski, Tracie, Guilford, Ct*
Weiss, Paul, Monroe, Ct*

D

Abraham, Tiara, Wilmington, De
Anderson, Kimber, Middletown, De
Atkinson, Victoria, Saint Georges, De
Beaman, Theodore, Newark, De
Beamer, Scott, Wilmington, De
Bowen, Alison, New Castle, De
Boyd, Erin, Wilmington, De
Brown, Douglas, Wilmington, De
Chun, Connie, Newark, De
Hale, Amy Lynn, Hockessin, De
Holloway, Wysteria, Wilmington, De
Thomas, Phylicia, Newark, De
Tiano, Rebecca, Newark, De
Wall, Allyson, Wilmington, De
Wuest, Melissa, Smyrna, De

F

Andrews, Robert, New Port Richey, Fl*
Block, Susan, Boca Raton, Fl*
Brown, Stephen, Milton, Fl
Chapman, Ronald, Bell, Fl*
Easton, Phillip, Boca Raton, Fl*
Ervolina, Kathleen, Holiday, Fl*
Espanol, Christina, Apopka, Fl*
Fusco, Jessica, Orlando, Fl*
Galarza, Nicolas, Naples, Fl*
Golden, Joseph, Orlando, Fl
Goodwin, Christy, Panama City, Fl*
Hayhurst, Petra, Palm Coast, Fl*
Haynes, Henrietta, Jacksonville, Fl*
Lindsey, Justine, Lake Worth, Fl
Miller, Jacqueline, Fort Lauderdale, Fl*
Naranjo, June, Plantation, Fl*
Navarrete, Antonia Nympha, Miami, Fl*
Olawale, Jeffrey, Fort Lauderdale, Fl*
Privett, Vanessa, Deltona, Fl*
Ramirez, Marcela, Margate, Fl*
Raub, Sandra, Miami, Fl*
Ruddock, Thaddeus, West Palm Beach, Fl*
Seddique, Mary, Port St Lucie, Fl*
Seddique, Sabrina, Ft Pierce, Fl*
Spencer, Kara, Winter Springs, Fl*
Stewart-McDonough, Robin, Crestview, Fl*
Tetreault, Rachelle, Port St Lucie, Fl*
Utley, Melinda, Milton, Fl*
Vaughan, Lisa, Orlando, Fl*
Ward, Jeffrey, New Port Richey, Fl*
Wilson, Willie, Ocala, Fl*

G

Allah, Nafiyyah, Atlanta, Ga
Alsbrooks, Brittany, Madison, Ga*
Blake, Amili, East Point, Ga
Butts, Tania, Atlanta, Ga*
Chakole, Preeti, Marietta, Ga
Drew, Glenda, Preston, Ga*
Dubois, Debee, Atlanta, Ga
Hancock, Emily, Atlanta, Ga
Henault, David, Fayetteville, Ga*
Ijeoma, Jane, Douglasville, Ga
Kazemi, Rodney, Atlanta, Ga
Kiser, Matthew, Gillsville, Ga*
Kuecher, Elizabeth, Atlanta, Ga
Kyung, Elva, Lilburn, Ga
Lewis, Christina, Atlanta, Ga
Limay, Abdalnasir, Lithonia, Ga
Luong, Thao, Lawrenceville, Ga
McCarthy, R, Alpharetta, Ga*
McCrainey-Edwards, Sharonikkah, Stockbridge, Ga*
Moss, Clifton, Pooler, Ga*
Myles, Bernita, Douglasville, Ga*
Patel, Bharti, Alpharetta, Ga*
Perkins, Tamethia, McDonough, Ga
Roberts, Kayla, Crandall, Ga*
Shannon, Shanice, Covington, Ga
Snodgrass, Daisy, Alpharetta, Ga*
Stolle, Bonnie, Alpharetta, Ga*
Tranthem, Michael, Albany, Ga*
Vaquero, Kristie, Covington, Ga
Wiggins, Rondi, Canton, Ga*
Wilson, Joann, Newnan, Ga*

Beaver, Ronald, Hagatna, Gu*

H

Daugherty, Mary, Pearl City, Hi*
Holcombe, Timothy, Kalaheo, Hi*
McKeague, Laurie, Mililani, Hi*

I

Allen, Stephanie, Des Moines, Ia
Anderson, Chelsey, Casey, Ia
Arias Lopez, Karla, Ankeny, Ia
Barton, Kevin, West Des Moines, Ia
Beall, Jason, Ankeny, Ia
Boyd, Chuck, Urbandale, Ia
Brighton, Hillary, Ankeny, Ia
Chai, Robert, West Des Moines, Ia
E, Martha, Vinton, Ia*
Frieden, Amanda, West Bend, Ia
Hayes, Andy, Carlisle, Ia
Hickle, Jill, Altoona, Ia
Jerden, Rima, Des Moines, Ia
Kauzlarich, Kelly, Carlisle, Ia
Mahoney, Shawn, Des Moines, Ia
Makokha, Lucy, Des Moines, Ia
Murray, Amanda, West Des Moines, Ia
Van Donsel, Amy, Janesville, Ia*

Butler, Kevin, Nampa, Id*
Rasmussen, Denice, Mullan, Id*

Adams, Deshaun, Maywood, Il
Bauman, Carol, Belleville, Il
Durley, Rachel, Collinsville, Il
Easley, Shannon, Granite City, Il
Furey, Sarah, Swansea, Il
Graves, Elizabeth, Carlyle, Il*
Green, Annalea, Madison, Il
Hayes, James, Granite City, Il
Jarman, Shane, Gillespie, Il
Johnston, Lisa, Mahomet, Il
Kimmel, Signe, Warrensburg, Il*
Kron, Bridgette, Belleville, Il*
Kuchta, Kimberly, Lockport, Il*
Laux, Erika, Swansea, Il
Ortega, Harold, Gurnee, Il*
Patton, Jeff, Granite City, Il
Porter, Nicole, Collinsville, Il
Potts, Tonya, Eldorado, Il*
Rowe, Maureen, Belleville, Il
Sansoucie, Stephanie, Granite City, Il*
Shay, Aric, Naperville, Il*
Simon, Camilla, Belleville, Il
Stephens, Tegan, Collinsville, Il
Stolte, Nicole, Lenzburg, Il
Thankachan, Sateesh, Gurnee, Il*
Velasquez, Patricia, Lake Zurich, Il*
Weintz, Connie, Christopher, Il*
Wieland, Roma, Chillicothe, Il*

Bingham, Dorothy, Pierceton, In
Burgess, Kathleen, Indianapolis, In*
Cervantes, Cristina, Whiting, In*
Gruener, Amanda, Brownsburg, In*
Harry, Audrieanna, Parker City, In
Hartzell, Daniel, New Haven, In
Helmick, Eric, Fort Wayne, In*
Lethig, Terri, Indianapolis, In*
Matherly, Leslie, Terre Haute, In*
Mead, Nikkesha, Valparaiso, In*
Pate, Brian, Batesville, In*
Plemons, Heather, Huntertown, In
Sharp, Erica, Indianapolis, In
Simpson, Jessica, Cutler, In*
Sullivan, Jodi, Linton, In*
Ulmer, Teresa, New Haven, In
Walter, Laura, Roanoke, In*

K

Cvetkovic, Marija, Kansas City, Ks
Dalinghaus, Danielle, Frankfort, Ks*
Klima, Deborah, Oberlin, Ks*
Ross, Jillian, Louisburg, Ks*
Yang, Monica, Kansas City, Ks

Bell, Leslie, Cold Spring, Ky*
Branham, Leslie, Columbia, Ky*
Wesbter, Jeff, Aberdeen, Ky*

L

Burkett, Alicia, Denham Springs, La*
Donaldson, Lauryn, Jefferson, La*
Fink, Connie, Ponchatoula, La*
Flint, Felicia, Keithville, La*
Fussell, Nicole, Covington, La*
Marretta, Ginger, Destrehan, La

M

Augustin, Lordie, Brockton, Ma*
Freitas, Jessica, Stoughton, Ma*
Grant, Kathleen, Lynn, Ma
MacLean, Scott, Southbridge, Ma*
Souza, Jeff, Plymouth, Ma
Troy, Julie, Lynn, Ma*
Watts, Nathan, Assonet, Ma*

Beiler, Kimberly, Grantsville, Md
Cunningham, Tara, Grantsville, Md
Davis, Wheaton, Cumberland, Md
Drake, Patricia, Pikesville, Md*
Fleegle, Codi, Hancock, Md
Gelles, Katelyn, Keedysville, Md
Hayes, Gail, Middletown, Md*
Hegerich, Margie, Mount Airy, Md*
Horstkamp, Joan, Owings, Md*
Miller, Brittany, Oakland, Md

Pajan, Robbin, Chesapeake City, Md
Pattison, Robert, Westernport, Md
Stephan, Robbie, Cumberland, Md
Twigg, Kelsay, Frostburg, Md
Twigg, Linda, Frostburg, Md

Iaconeta, Patricia, Saco, Me*

Brenner, Ryan, Hudsonville, Mi*
Empie, Sam, Sand Lake, Mi*
Fountain, Theresa, Detroit, Mi*
Jacob, Kurian, Clinton Township, Mi*
Klapp, Ross, Grand Rapids, Mi*
Martorana, Ken, Warren, Mi*
Massey, Robert, Three Rivers, Mi*
McGaughy, Darrell, Grand Blanc, Mi*
Miller, Tina, Wyoming, Mi
Nowakowski, Lisa, Alpena, Mi*
Phillips, Helen, Clarkston, Mi*
Pileri, Jessica, Vassar, Mi*
Reinecke, April, Muskegon, Mi*

Alden, Dustin, Rochester, Mn
Ali, Anab, Rochester, Mn
Allen, Ryan, Red Wing, Mn*
Evavold, Abbey, Battle Lake, Mn
Fox, Christopher, Caledonia, Mn
Hamblin, Aaron, Hopkins, Mn
Inglett, Jarred, Caledonia, Mn
Lubbert, Alison, Rochester, Mn*
Lystrom, Phoebe, Bloomington, Mn
Mohamed, Mohamud, New Brighton, Mn
Montet, Danielle, Wykoff, Mn
Muse, Abdisalaam, Minneapolis, Mn
Offord, Grace, Hayfield, Mn
Scofield, Douglas, Lakeville, Mn*
Tamminga, Matthew, Rochester, Mn
Walz, Michael, St Louis Park, Mn*
Wilhelm, Jayden, Rochester, Mn

Benter, Rabekah, Golden City, Mo*
Blake, Denee, Buffalo, Mo*
Bliven, Angela, Liberty, Mo
Delt, Janille, Raymore, Mo*
Ferguson, Danielle, O Fallon, Mo
Henke, Donald, Marceline, Mo*
Hockaday, Xaine, Saint Joseph, Mo
Hossin, Linda, Dardenne Prairie, Mo*
Leek, Mandy, Cape Girardeau, Mo*
Lewis-Bey, Dewanda, Florrisant, Mo*
McCormack, Carrie, Fair Grove, Mo*
Newman, Christian, Raytown, Mo
Wenzelburger, Matthew, Saint Louis, Mo*
Williams, Trevor, New Madrid, Mo*

Cain, Lydia, Eupora, Ms*
Damiens, Charles, Gulfport, Ms*
Drummond, Daphne, Brandon, Ms*
James, Nina, Southaven, Ms
McCoy, Christopher, Brandon, Ms*
Seymour, Stephanie, Ocean Springs, Ms*

N

Adams, Marly, Browns Summit, NC
Al-Hassan, Hamida, Greensboro, NC
Alley, Amber, Walnut Cove, NC
Allsbrook, Tabitha, Enfield, NC*
Almond, Andrew, Mebane, NC*
Amster, Cynthia, Cary, NC*
Anderson, Denise, Tarboro, NC
Bales, Tiffany, Rocky Mount, NC
Barker, Pamela, Walkertown, NC
Battle, Nicole, Kelford, NC
Beddingfield, Alan, Carthage, NC*
Brown, Brandy, Eden, NC
Butler, Christina, Rocky Mount, NC
Cannon, Larissa, Greensboro, NC
Clifton, Kim, Reidsville, NC
Collet, Jason, Kannapolis, NC*
Corum, Lois, Eden, NC
Daughtridge, Morgan, Nashville, NC
Gibbs, Kayla, Eden, NC
Gleave, Leslie, Whitsett, NC
Hawkins, Ashley, Tarboro, NC
Honaker, Chasity, Lawsonville, NC
Hufton, Doris Lynn, Elm City, NC
James, Huston, Burlington, NC
Julian, Kelly, Randleman, NC*
Marshall, Seema, Raleigh, NC
Massey, Kristie, Halifax, NC
McCollum, Chelsea, Reidsville, NC
McDaniel, Sherri, Eden, NC
Millner, Tonya, Eden, NC
Mitchell, Taylor, Kernersville, NC
Peatross, Veronica, Eden, NC
Pike, Belinda, King, NC
Rahman, Jeffery, Mint Hill, NC*
Revah, Anita, Hendersonville, NC*
Rhodes, Brittney, Stoneville, NC
Roberts, Jessie, Stoneville, NC
Roland, Jessica, Mayodan, NC
Ruiz, Sharon, Fayetteville, NC*
Sessoms, Ashley, Hobgood, NC
Simo, Jeremy, Winterville, NC*
Simpson, Alicia, Reidsville, NC
Smith, Jettie, Yanceyville, NC
Smith, Kim, Greensboro, NC
Stevens, Courtney, Reidsville, NC
Valentine, Latoya, Eden, NC
Wakene, Eyob, Greenville, NC
Walker, Teresa, High Point, NC
Waltman, Robin, Maxton, NC*
Webster, Lauren, Madison, NC
Whidden, Frank, Murphy, NC*
Whittaker, Mark, Fayetteville, NC*
Williams, Brittany, Reidsville, NC
Williams, Valarie, Rocky Mount, NC
Wofford, Ronnie, Greensboro, NC
Zhang, Ying, Rocky Mount, NC

Strand, Christa, Portland, ND*

Crook, Michelle, Nehawka, Ne*
Finken, Jill, Waverly, Ne*
Jackson, Dana, Lincoln, Ne*

Murphy, Sarah, Exeter, NH*

Agatone, Zoe, Thorofare, NJ*
Czepiel, John, Middletown, NJ*
John, Davis, Rockaway, NJ*
Kardos, Alex, Hamilton, NJ
McGann, Katie, Glassboro, NJ
Mosely, Niesha, Lindenwold, NJ*
Orjih, Innocent, Lindenwold, NJ*

Abrisz, Anna, Albuquerque, NM
Allen, Erika, Rio Rancho, NM
Biewer, Jenna, Albuquerque, NM
Clark, Cynthia, Albuquerque, NM
Colvett, Staci, Albuquerque, NM
Corsey, Aurora, Rio Rancho, NM
Dao, Jennifer, Albuquerque, NM
Fejeran, Karen Rose D, Albuquerque, NM
Fenner III, Jerold, Albuquerque, NM
Gonzales, Kelli, Albuquerque, NM
Gonzales, Nicole, Rio Rancho, NM
Harmer, Patrick, Rio Rancho, NM
Koller, Valerie, Albuquerque, NM
Koontz, Lisa, Albuquerque, NM*
Ortiz, Michael, Albuquerque, NM
Quintana, Kimberly, Rio Rancho, NM
Sanchez, Eric, Albuquerque, NM
Smith, Karen, Rio Rancho, NM
Van Hoose, Zandria, Rio Rancho, NM

Alvarez, Aritma, Las Vegas, Nv
Anderson, Jill, Las Vegas, Nv
Arambula, Andres, Henderson, Nv
Bartolome, Erick, Las Vegas, Nv
Briones, Krizia, Las Vegas, Nv
De Mesa, Jillian, North Las Vegas, Nv
Gegefu, Hiwot, Las Vegas, Nv
Lee, Vu, Las Vegas, Nv
Napitan, Susan, North Las Vegas, Nv
Obert, Dianne, Las Vegas, Nv
Ramirez, Jose, Las Vegas, Nv
Roberts, Cheyenne, Henderson, Nv
Secondline, Raven, Las Vegas, Nv
Steiner, Christina, Las Vegas, Nv
Wallace, Larren, Henderson, Nv*
Walls, Brandon, Las Vegas, Nv
Willis, Jayleen, Las Vegas, Nv
Wozney, Leticia, Las Vegas, Nv
Wurtz, April, Las Vegas, Nv

Belance, Lydia M, Queens Village, NY*
Bodiongan, Jeanelle, Floral Park, NY
Bounds, David, Ballston Spa, NY*
Capparelli, Sabrina, Armonk, NY*
Comiskey, Terence, Carmel, NY*
Delly, Magda, Brooklyn, NY*
Dunn, Kelley, Lindenhurst, NY
Eng, Christine, Fresh Meadows, NY
Enojado, Oliver, Elmhurst, NY*
Fabian, Richard, Binghamton, NY*
Fox, John, Brooklyn, NY
Galetovic, Nico, Mohegan Lake, NY
Gyemibi, Tara, Bronx, NY
Hambel, David, East Patchogue, NY*
Henry, Julia, Bronx, NY
Jiang, Johnny, Brooklyn, NY
Leung, Michelle, Flushing, NY
Liu, Bin Lun, New York, NY
Mardy, Joade, Brooklyn, NY*
Margolis, Andrew, Setauket, NY
Molloy, Kevin, West Harrison, NY*
Mounsey, Alyssa, Yorktown Heights, NY
Riley, Rosalyn, New York, NY*
Schimoler, William, Brooklyn, NY*
Stapelkamp, Matthew, Plainview, NY
Stevens, Patricia, Chittenango, NY*
Walker, Shanai, Bronx, NY

O

Appod, Joseph, Mentor On The Lake, Oh
Bell, Kevin, Burton, Oh
Berberick, Whitney, Sandusky, Oh*
Brock, Kelli, Ashtabula, Oh
Brusk, Daniel, Broadview Heights, Oh
Bucy, Jeffrey, Belpre, Oh
Cooper, Jon, Streetsboro, Oh
Croasmun, Brian, Canal Fulton, Oh*
Currence, Anissa, Cortland, Oh
Cutlip, Brenda, Nova, Oh*
Fischer, Michael, Ashtabula, Oh
Fout, Theresa, Marion, Oh*
Goessl, Kristin, Columbus, Oh*
Grammel, Marc, Geneva, Oh
Hootman, Kaitlyn, Williamsfield, Oh
Kennedy, Lori, Ashtabula, Oh
Koers, Dean, Painesville, Oh
Lacy, Kathleen, Cleveland, Oh
Lo, Yan, Twinsburg, Oh
Loveland, Steven, Columbus, Oh*
Manack, Chris, Campbell, Oh
McMillan, Deborah, Toledo, Oh*

Norrod, Paula, Kettering, Oh*
Pinson, Melissa, West Milton, Oh*
Reed, Kenny, Ashtabula, Oh
Robbins, Tiffany, Madison, Oh
Roch, Danielle, Parma, Oh
Rose, Jessie, Madison, Oh
Safford, Christopher, Lisbon, Oh
Smith, Amanda, Painesville, Oh
Taylor, Christina, Cortland, Oh
Taylor, Shellie, Marysville, Oh*
Taylor, Wendy, Conneaut, Oh
Tebbe, Nicholas, Columbus, Oh*
Thomas, Derek, Lewis Center, Oh*
Volann, Kristen, Painesville, Oh
Was, Mark, Mentor, Oh
Watson, Crystal, Conneaut, Oh
Whitesel, John, New London, Oh*
Williamson, Jack, Canton, Oh*

Adams, Roy, Enid, Ok
Barker, Amy, Alva, Ok
Emerson, Sam, Kingfisher, Ok
Goins, Trisha, Owasso, Ok
Grantz, Jim, Enid, Ok*
Hill, Katherine, Lahoma, Ok
Jarrett, Jim, Enid, Ok
Parra, Amy, Enid, Ok
Ward, Kelly, Enid, Ok*

Hilt, Daniel, Milton Freewater, Or*

P

Ballard, Sahreeda, Philadelphia, Pa
Barber, Marykate, Collegeville, Pa
Barry, Tracylynn, Pittsburgh, Pa*
Blickenstaff, Tracy, York, Pa*
Choi, Miuchi, Philadelphia, Pa
Concepcion, Christie, Seven Fields, Pa*
Cox, Andrea, York, Pa*
Diaz, Joanny, Harrisburg, Pa
Donze, Stephen, West Chester, Pa
Dorsorne, Stephanie, Philadelphia, Pa
Drap, Benjamin, Greensburg, Pa*
Emeigh, Cortney, Williamsburg, Pa
Estifanos, Merebai, Upper Darby, Pa
Gonsorick, Lisa, Downingtown, Pa
Gowans, Dana, Philadelphia, Pa
Guarneri, Rachel, Lincoln University, Pa
Hahn, Zachariah, McConnellsburg, Pa
Herron, Matthew, Scranton, Pa*
Hill, Anthony, Royersford, Pa
Hill, Lindsay, West Chester, Pa
Johnson, Jeri, Philadelphia, Pa*
Joise Varughese, Jojo, Philadelphia, Pa
Kotsalos, Vicki, Hummelstown, Pa*
Koveal, Stefanie, Glen Mills, Pa
Light, Katherine, Broomall, Pa
Ludwig, Jordan, Stevens, Pa*
Lutzow, Jaclyn, Abington, Pa
Murosky, Debbie, Pittston, Pa*
Myers, Kristan, Shirleysburg, Pa*
Owu, Edwin, Media, Pa
Palmer, Rachel, Stowe, Pa
Prchlik, Heather, West Chester, Pa
Rios, Sarah, Coatesville, Pa*
Shyokina, Valerie, Langhorne, Pa
Thompson, Lauren, Garnet Valley, Pa
Wagner, Wesley, Salisbury, Pa
Watkins, Amy, Lancaster, Pa
Williams, Jolene, Breezewood, Pa

Feliciano-Rivera, Joel, Carolina, PR*

R

Chatowsky, Lisa, Charlestown, RI*

S

Andrews, Carey, Florence, SC
Azzarelli, Courtney, Bamberg, SC
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Calendar of Events

AARC & State Society Programs

September 18–19
Honolulu, HI
39th Annual Hawaii State Respiratory Care Conference
Contact jikehara@lava.net

September 26–28
Hot Springs National Park, AR
41st Annual Arkansas Society for Respiratory Care State Meeting
Contact John Lindsey at John.Lindsey@Mercy.Net or call (501) 622-1974

September 26
AARC Live Webcast
Advances in Transport Mechanical Ventilation
Contact AARC, (972) 243-2272, www.aarc.org/education/webcast_central

October 21–27
Respiratory Care Week
Contact AARC, (972) 243-2272, www.aarc.org/rcweek

October 24
Lung Health Day
Contact AARC, (972) 243-2272, www.aarc.org

October 24–26
Atlantic City, NJ
New Jersey Society for Respiratory Care Annual Shore Conference
Contact Michele DaSilva at education@njsrc.org or www.njsrc.org

October 25
Newark, DE
Delaware Society for Respiratory Care's Annual Trends in Respiratory Care Conference
Contact www.delawarelung.org or Laurene Eckbold at Leckbold@christianacare.org,

November 9–13
New Orleans, LA
AARC Congress 2012, Mechanical Ventilation 2012 (pre-course), Patient Safety Starts with You! (pre-course)
Contact AARC, (972) 243-2272, www.aarc.org/education/meetings

December 12
AARC Live Webcast
How Quality Care Impacts Payment — What You Need To Know
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Submissions for the next available issue are due Oct. 13.

For information on submitting calendar events, contact: Beth Binkley, AARC Times 9425 N. MacArthur Blvd, Suite 100, Irving, TX 75063-4706, (972) 243-2272 Fax (972) 484-2720 E-mail binkley@aarc.org

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References: 1. Han J, Liu Y. Effect of ventilator circuit changes on ventilator-associated pneumonia: a systematic review and meta-analysis. *Respiratory Care*. 2010;55:467-474. **2.** Coffin S MD, MPH, Klompas M MD, Classen D MD, et al. Strategies to Prevent Ventilator-Associated Pneumonia in Acute Care Hospitals. *Infect Control Hosp Epidemiol*. 2008;29:S31-S40.

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