An Official Publication of the American Association for Respiratory Care
September 2017 Vol. 41, Issue 9 www.aarc.org $11.50

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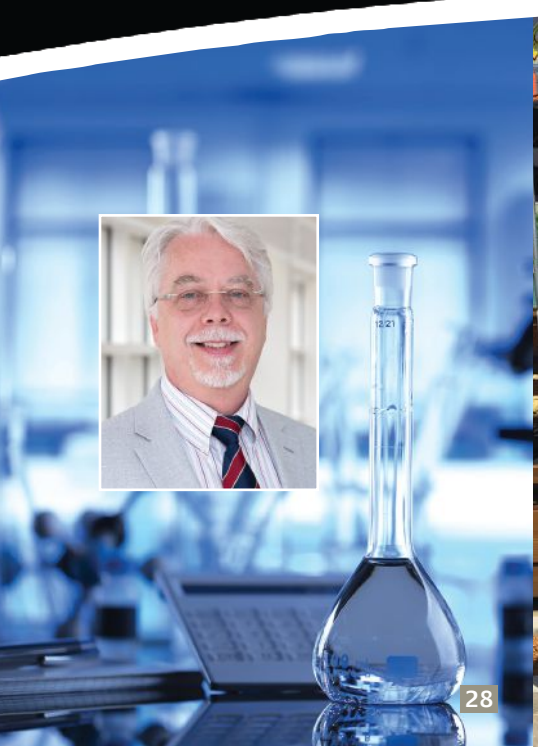

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The American Association for Respiratory Care has a Strategic Plan that includes its Mission and Vision Statements for 2015–2020.

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AARC Times and Respiratory Care — official publications of the AARC

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Printed in USA

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AARC Times (USPS 491-930) (ISSN 0893-8520) is a monthly publication of Daedalus Enterprises, Inc., for the American Association for Respiratory Care.

Periodicals Postage: Paid at Irving, TX, and at additional mailing offices. POSTMASTER: Send form 3579 to *AARC Times*, Daedalus Enterprises, Inc., 9425 N. MacArthur Blvd., Suite 100, Irving, TX 75063-4706.

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Horse Trading

by Anthony L. DeWitt, JD, RRT, FAARC

The American model of business depends, in large part, on the Supreme Court's opinion that parties have generally unlimited freedom to contract. But the freedom to contract does have limits, and when it comes to health care — an area of business that may be more heavily regulated than nuclear power — that freedom is narrowly constrained by laws like the Physician Self-Referral Law (42 U.S.C. § 1395nn), also called the Stark Law, and the Anti-Kickback Statute (42 U.S. Code § 1320a–7b).

Early in my career as a therapist, I was approached by a durable medical equipment (DME) supplier who pitched the following idea: I would come do a monthly inservice for his employees, and he would pay me $100 for each in-service. This seemed like a great idea to supplement my salary, and the man pitching the idea explained that it was a common arrangement.

After a few of these inservice sessions (e.g., infection control, oxygen therapy, oxygen safety, etc.), I soon found myself running out of topics for people whose primary skill was truck driving and not patient care. One month, I told the gentleman with whom I'd made the arrangement that I could not do an inservice because I had really run out of ideas.

"Oh," the man said, "I don't care if you miss a month. The hundred bucks is for referrals, not inservice."

My life as a free man flashed in front of my eyes. I had no power to control referrals, and we quickly came to an understanding that I would be doing no more inservice education for his organization. I wanted no more checks from him. I had never realized that the man thought I was directing customers to him.

about the author...

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

The Anti-Kickback Statute (42 U.S. Code § 1320a–7b — Criminal penalties for acts involving federal health care programs) is explicit in its prohibition on these kinds of arrangements:

1. Whoever knowingly and willfully solicits or receives any remuneration (including any kickback, bribe, or rebate) directly or indirectly, overtly or covertly, in cash or in kind—

a. in return for referring an individual to a person for the furnishing or arranging for the furnishing of any item or service for which payment may be made in whole or in part under a federal health care program, or
b. in return for purchasing, leasing, ordering, or arranging for or recommending purchasing, leasing, or ordering any good, facility, service, or item for which payment may be made in whole or in part under a federal health care program,
2. shall be guilty of a felony, and upon conviction thereof shall be fined not more than $25,000 or imprisoned for not more than five years, or both.

Paragraph 2 of the statute criminalizes the offering or paying of any remuneration. Thus, the same conduct that earns you $50 from your local car dealer (for sending him a customer) will land you in federal prison in the health care setting. And in health care, it is not just paying cash for referrals ("any remuneration … directly or indirectly, overtly or covertly, in cash or in kind) that creates liability—you can be liable if you merely exchange services for referrals.

For example, in years past, when an ambulance service brought in a smoke inhalation victim, it was considered a professional courtesy to replace the ambulance's non-rebreather mask out of the hospital's inventory. After all, the patient did not require a new mask for their hospital stay, and the ambulance might be sent out on a call at any moment. It made sense for medics to simply replenish their stores from the back room in the emergency department. Under the Anti-Kickback Statute, however, such "swapping" arrangements are likewise unlawful. The reason — human nature — is obvious. If you're in a big city and you're trying to determine which hospital to use, you go to the one that takes the best care of you as an EMT, but maybe not the patient.

Regent Management Services, Galveston, TX, recently paid $3 million to settle a case where it was alleged to have received kickbacks from ambulance providers in exchange for lucrative Medicare and Medicaid transport referrals (the settlement agreement specifically disclaims any wrongdoing). The skilled nursing facilities allegedly used their group buying power to negotiate a deeply discounted rate for their Medicare Part A transports (transports that under Medicare rules they would be responsible to pay for) in exchange for giving ambulance companies all of their Medicare Part B transports. The ambulance companies billed the facility at a deep discount for the 10–15 monthly transports for which the facility should have paid, and then they charged Medicare the full amount for the transports that it was responsible to pay. While scores of ambulance companies around the country have been cited and fined, the settlement is believed to be the first in the country where a health care facility, rather than just the ambulance company, is held accountable for an "ambulance swapping" arrangement.

In a press release issued by the Department of Justice, Gregory Demske, Chief Counsel to the Inspector General of the U.S. Department of Health and Human Services–Office of Inspector General said, "This settlement sends a message to the health care industry that both sides of a swapping arrangement can be held responsible for their improper actions, not just the entity that actually bills Medicare or Medicaid for the services."

Under federal law, a violation of the Anti-Kickback Statute is a violation of the False Claims Act, a whistleblower law that permits the person who informs the government of the fraud (in the Regent case, this was a brave ambulance executive named Dan Block) to obtain a reward between 15% and 25% of the amount recovered. And because the statute requires the defendant to pay the whistleblower's legal fees, this person often is excused from paying his attorney.

Swapping can take many forms. A DME company may offer deep discounts on oxygen masks in exchange for CPAP and sleep medicine referrals. A health care worker may be promised money "under the table" by a commercial entity in exchange for patient referrals for DME, lab work, or other health care services. Sometimes even physicians are lured into arrangements for below-market lease rates for professional office space when a hospital intends to capture all their hospital admissions. All of these arrangements can result in liability under the False Claims Act, criminal charges under the Anti-Kickback Statute, and exclusion from federal Medicare and Medicaid programs. And while a hospital can't be put in jail, individuals working there can be.

For more information on the kinds of chicanery that results in civil or criminal pursuit by the Office of the Inspector General, see http://oig.hhs.gov/fraud/enforcement/criminal/. ■

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What Respiratory Therapists Need To Know About Older Patients: A Gerontologist's Perspective

by Nancy P. Kropf, MSW, PhD

Each day, 10,000 Baby boomers turn 65, which is a trend that is expected to continue until 2030. Currently, about 46 million people age 65 and over live in the United States, which is 15% of the total population. By 2030, the number of older adults is predicted to reach 74 million, or 21% of the U.S. population.[1] The most dramatic growth is in the oldest segment of the population — i.e., those people who are 85 years and older. Currently, people who survive to age 65 can expect to live an average of 19.3 more years.[2] With these aging trends, health care providers can expect to treat more individuals who are living with chronic conditions that require health and social care, including physical and cognitive declines.

about the author...

Nancy P. Kropf, MSW, PhD, is dean and professor at Byrdine F. Lewis School of Nursing and Health Professions, Georgia State University in Atlanta, GA.

Description of the older population

Who comprises the "older population"? One important aspect is the diversity within the population, as an "older adult" can be 65 years old or 105 years old! Diversity is also evident in gender and race/ethnicity. Older women continue to have longer lifespans than men, which creates important social and economic conditions. When men are in need of support and care provision, the most typical provider is a wife. When women have care needs, their care providers are their adult children — most commonly a daughter.[3] Women also risk poverty in later life, especially women of color, with poverty rates ranging from 16% to 21%.[1] Older women often are unable to afford costly medical treatment, which forces them to make choices between basic necessities and medical care.[4]

As the majority of people over 65 years old have at least one chronic health condition, they are high consumers of health care services: 67% of this age group visited three or more physicians within the past year, and they had higher rates of prescription drug use (80% had at least one medication prescription).[5] These data suggest that many older adults are patients of multiple health care providers, which adds complexity to treatment and disease management.

Health conditions of later life

What are some of the conditions that are prevalent in later life? The most common are hypertension, stroke, cardiovascular disease, and arthritis.[1] However, some differences exist, with women having higher rates of asthma and arthritis than men. Conversely, men have higher rates of cancer, heart disease, and diabetes.

With age, there are changes that affect lung function. Musculoskeletal changes can compress the space surrounding the lungs, reducing the size of the thoracic cavity. In addition, pulmonary function is less effective as muscular declines reduce efficiency in lung clearance and expelling mucous.[6] Collectively, pulmonary disease is the third leading cause of death in the older population.[7]

Cognitive and behavioral health conditions also affect health care treatment for the older population. Alzheimer's disease (AD) is the most prevalent form of dementia, with 10% of the older population suffering from this condition.[8] In addition, risk for AD increases with age, so the rising number of people in the later stages of life forecasts an increase in the number of AD patients as well.[3]

Role of the RT in working with older patients

I have tremendous respect for the work of respiratory therapists; however, I am neither trained nor credentialed in this profession. I am a geriatric social worker by background and have worked to upgrade capacity for geriatric practice in my profession. The aging of the

population has implications for RTs, and in fact, for all health care providers. As a gerontologist, I offer a few recommendations to enhance practice with older patients.

First, treatment protocols need to be adapted for older adults who might have auditory, visual, or cognitive changes that affect their functioning. For example, appropriate communication strategies include cultural as well as physiological factors, such as avoiding "baby talk" with older patients, speaking clearly and loudly, and ensuring that treatment instructions are understandable. For example, treatment dosage instructions for twice a day should be clarified to one time in the morning and a second time in the evening. There are several good resources available about communicating with older adults (e.g., *Communicating With Older Adults: An Evidence-Based Review of What Really Works*, Gerontological Society of America, 2012).

Likewise, informal care providers may be involved as part of the care team. RTs may need to work with spouses, adult children, or others in care roles as part of the treatment process. Many caregivers are dealing with health care providers who are overseeing multiple conditions, so the RT needs to be understanding about the level of care that many informal caregivers provide to their older patients. Care providers should be considered an essential part of the care management team, as many will be intimately involved in carrying out treatment instructions with the older patient.

RTs also need to be aware of co-morbid conditions that occur in later life. Besides AD or other types of dementia, geriatric depression is a prevalent condition in many older patients who reside in long-term care settings. Estimates indicate that about half of all nursing-home residents are clinically depressed.[9] When working with a person who appears to be confused, disoriented, or disengaged, the RT should refer the patient for further evaluation. These symptoms could be an indicator of a serious condition that requires assessment and diagnosis.

Older adults are a heterogeneous group, and RT practice will probably include a diverse group of older adults. In some situations, treatment will require the RT to help an individual be as comfortable as possible at the end of his or her life, with decreased pain and suffering. In other situations, however, goals will include treating health problems and allowing the patient to resume a level of functioning, even in very old patients. Treatment options should not be based solely upon chronological age. Even very old patients can benefit from appropriate treatment and regain a level of health and functioning.

In summary, RTs across practice settings can expect to work with older patients, and pulmonary conditions are a leading cause of death in this population. In addition to understanding the physical issues of aging, RTs and other health care providers need to understand how aging-related functioning and social conditions impact care. ■

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Clinical Perspectives

Epidemiology in Respiratory Care

by J. Brady Scott, MSc, RRT-ACCS, AE-C, FAARC, and Michal Graca, MS, RRT-NPS

Epidemiology is the study of the distribution of disease in a population and the elements that influence this distribution.[1] Epidemiology helps us understand why diseases may affect some people and not others. Perhaps one of the more interesting concepts in epidemiology is that illness, disease, and poor health are not simply randomly distributed among the population. In the respiratory care world, for example, epidemiological studies may help us understand why the prevalence of asthma may be higher in one geographical location versus another. Further, it can help us understand the risk factors that are associated with a given disease.

The role of epidemiology in respiratory care

One of the major objectives of epidemiology is to identify the cause or etiology of a disease and the associated risk factors. In other words, what actually increases a person's risk for a certain disease? As respiratory therapists, we may want to best understand how pneumonia is transmitted from one person to the other. We could use this information to educate our patients on how to mitigate their risks of developing the disease. In whatever example we use, the major goal is to reduce morbidity and mortality from any disease by best understanding the cause or causes.[2]

Another objective of epidemiology is to determine the extent of disease found in the community and the burden it has on the population. This focus is particularly helpful for respiratory therapists who are planning new health programs in their communities, such as pulmonary rehabilitation or smoking cessation programs. Additionally, this information is useful for educators, as they can train future clinicians to handle shifting or changing disease characteristics of the patients they serve.[2]

Epidemiology also looks closely at the natural history of disease. As new therapeutic modalities, preventive measures, and technology emerge, their impact on the causes, treatments, and outcomes for diseases can be measured when the baseline is known. For example, the mortality rate of acute respiratory distress syndrome (ARDS) has been reported at 40%, despite the fact that ARDS is one of the most widely studied syndromes in medicine.[3] Now that prone positioning has reemerged as a viable option in the treatment of ARDS, we want to study whether the rate of ARDS mortality will fall, and why (or why not)? Epidemiological studies may help us understand what factors influenced the change, if any, in overall ARDS mortality. This could lead to further developments in new or existing therapeutic methods and measures.

Finally, it helps guide the development of public policy and regulatory decisions that relate to environmental conditions. For the respiratory therapist, this could be policy-related occupational health-related issues. For example, if the prevalence of a disease such as coal worker's pneumoconiosis increases, then policy change may be necessary to assure workers in the coal industry can do their jobs safely, and at a lesser risk for respiratory ailment.

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Times change

Epidemiology helps clinicians better understand the health-related changes that are taking place over time. In 1900, pneumonia/flu, tuberculosis, and gastrointestinal infections were the top three causes of death in the United States.[4] Over 100 years later, mortality is high in chronic and non-infectious diseases. In fact, the Centers for Disease Control and Prevention reported that heart disease, cancer, and chronic lower respiratory disease were the top three causes of death in 2015.[5] Overall, the all-cause mortality rate dropped by 54% from 1900 to 2010. This information is reassuring that efforts made in vaccination development and improvements in delivery, antibiotics, and sanitation have significantly affected the health of the American population. It also highlights the need for the medical community to continue focusing their efforts on dealing with issues such as heart disease and chronic respiratory disease.

The fact that chronic lower respiratory disease is the third leading cause of death in the United States is sobering — and it is a call to action. Respiratory therapists are uniquely positioned to make a dramatic impact on this staggering statistic. As a profession, we can advocate for therapies, better access to patients, and other interventions that can lessen the burden of respiratory-related illness on our society.

Prevention

Benjamin Franklin's adage still holds true today: "An ounce of prevention is worth a pound of cure." As health care professionals, we are always looking for ways to prevent negative health-related outcomes. Our practices are changing from the treatment of disease to the prevention of disease. Epidemiological studies support the disease-prevention mentality, as it helps get to the root of conditions that impact our patients.

In public health, "active surveillance" describes a manner of information/data collection and analysis, which is then used as a basis for action planning.[6] Respiratory care can use the study of epidemiology with active surveillance to identify patients who are at risk for specific respiratory diseases. For example, it is known that urban residents have an increased prevalence of asthma. There has been a longstanding belief

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that patients may develop asthma by living in an urban environment, simply from exposure of their physical surroundings. More recently, one study questioned whether race, ethnicity, and income may increase the risk for asthma and asthma-related hospitalization.[7] A follow-up study is underway. Being able to understand and identify the factors that place a population at risk of developing a disease can help guide the program planning that is necessary for its prevention. Understanding the factors at play allows us to target specific populations with precision, which in turn can lead to improved efficacy and efficiency in disease management and prevention efforts.

Clinical practice

Respiratory therapists in their clinical practice are well positioned to recognize patterns and make connections that could guide future research. This could lead to the development of improved tools and strategies to identify and treat those populations most at risk for a certain disease.

Diagnosis and prognosis are population-based concepts found in epidemiological studies. When prognostication of a disease occurs, this comes from experiences from similar disease stages, treatments, and other factors that are generalized from population data.[2] Common treatments or appropriate therapies are also derived from this type of information. Randomized controlled trials use population data to help identify the impact, if any, of a certain therapeutic intervention. In many cases, e.g., prone positioning in ARDS, we know that even with the intervention, there is a chance of death related to the disease. Despite this fact, we still apply the therapy, as we know the probability of death decreases with the intervention based on clinical trials.

Respiratory care epidemiologist?

The role of the respiratory therapist continues to evolve and expand. Perhaps an avenue for future respiratory therapist training will be in respiratory care epidemiology. These individuals, through rigorous training in the field of public health and epidemiology, could take the lead in understanding the distribution of respiratory disease in various populations. Maybe a respiratory therapist, either trained as an epidemiologist or collaborating with an epidemiologist, will someday identify that major risk factor or intervention that will drop the rate of death from respiratory-related disease off the "top 10 list." The major outcome of more respiratory therapists asking "why" and looking for answers is a healthier society…and that is a good thing. ■

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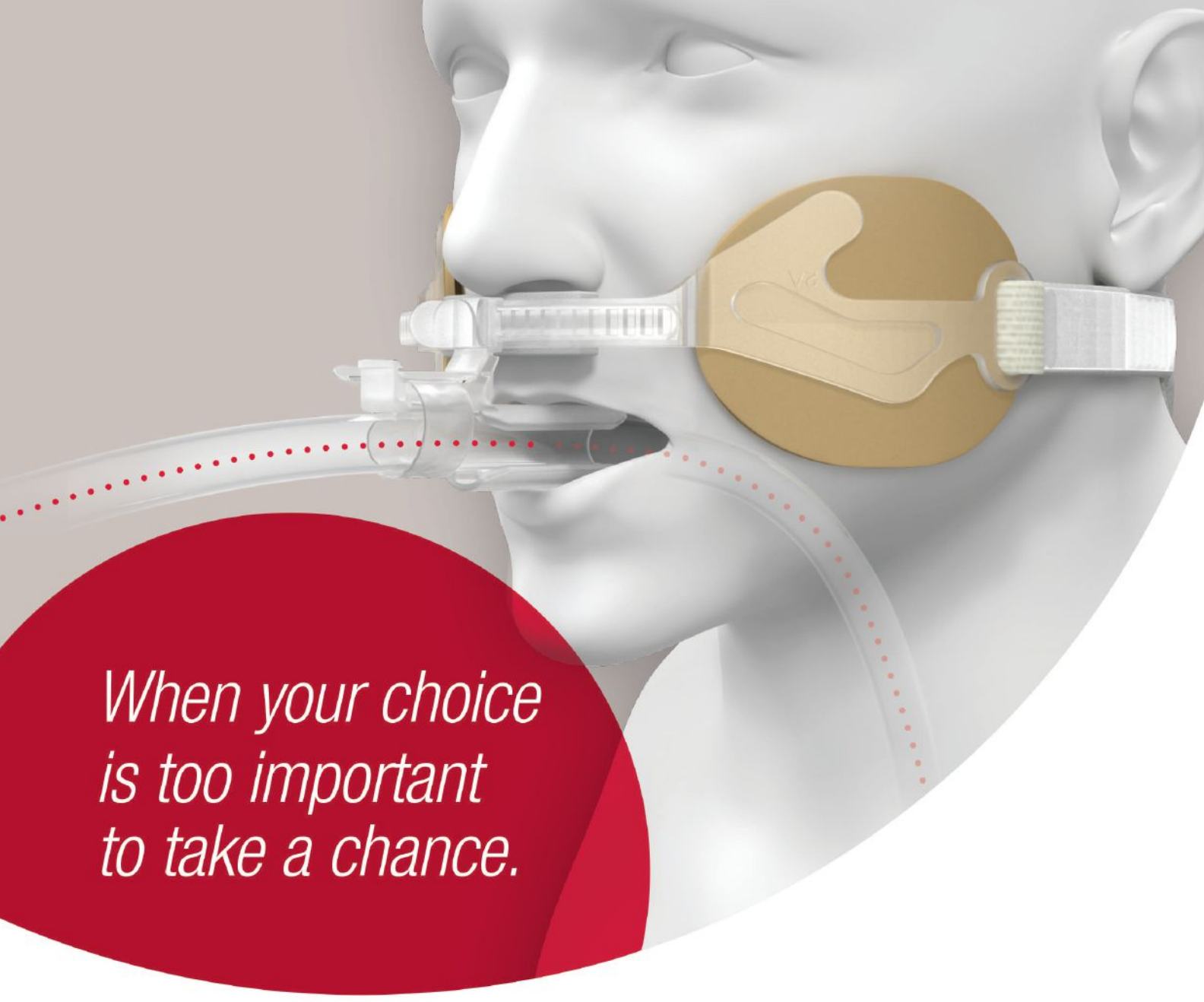

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Ventilator Support and Liberation in Patients with Spinal Cord Injuries

by Karen LaRoche, RRT-ACCS

There are approximately 17,000 new cases of spinal cord injuries (SCI) in the United States annually, according to data published in 2016 by the National Spinal Cord Injury Statistical Center.[1] Of these cases, less than 1% will have full neurological recovery, with the largest percentage of these patients resulting in incomplete tetraplegia, previously called quadriplegia.[1] While these numbers pale in comparison to other patient populations that respiratory therapists treat, such as patients with chronic obstructive pulmonary disorder or congestive heart failure, the intensity of respiratory care required for patients with SCI can be significant and life-altering.

Ventilator management for this patient population can be complex, and it is most often driven by the level of physiologic function that is preserved after injury. Without a robust bank of literature to guide us, we are often left to create strategies that rely heavily on what we know about pulmonary physiology and what our observations suggest may work. While many of us have heard phrases like, "C-3, 4, 5 keep the diaphragm alive," meaning that the function of the diaphragm is dependent upon the nerve innervation at these cerebral spinal levels (C-spine), we must also take into account the level of sensory and motor deficit associated with these injuries. The American Spinal Injury Association (ASIA) Impairment Scale is a system used to help define the degree of sensory and motor deficit a patient may develop dependent upon the degree of disruption of the spinal cord. The scale is classed A to E, with A being the most severe level of injury. Mechanical ventilation requirements will depend upon both the level of spinal cord injury and the ASIA score. The higher the C-spine injury level and the more severe ASIA scale, the greater the patient's dependence on mechanical ventilation. We must also keep in mind the work involved with generating cough, as this is dramatically affected at even a mild degree of SCI and will impact a patient's ability to mobilize secretions.

Ventilator recommendations are currently based on the literature we have as well as our understanding of lung physiology. It is important to note that these suggestions are not intended for patients presenting with acute respiratory distress syndrome (ARDS) or other acute pulmonary processes. All clinical guidelines for patients with ARDS or other acute processes should be followed until that condition is resolved. Below are a few suggestions regarding tidal volume management in a patient with SCI:

- Tidal volumes should be based on predicted body weight (PBW). SCI patients frequently experience significant weight and muscle loss secondary to atrophy, increasing the risk of under-ventilation when PBW is not used to calculate volumes.[2]
- Tidal volumes should be set at 10–20 mL/kg/PBW.[3,4] This recommendation is based on physiology and changes that occur with the loss of muscle tone in the chest and abdomen, placing the diaphragm in a suboptimal position for full excursion. The increased volumes can help mitigate persistent atelectasis as well as increase lung volumes for less stretch receptor activation from low tidal volume. This should decrease the patient's sense of shortness of breath and facilitate larger volumes for improved sputum clearance. In addition to the pulmonary toilet aspects, larger volumes may help patients with speech, increasing the quality of life for those unable to be weaned. Larger volumes

about the author...

Karen LaRoche, a respiratory care practitioner for over 20 years, is the clinical specialist for Harborview Respiratory Services at the University of Washington in Seattle, WA.

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have come under question and remain controversial. In 2016, a study published in *Spinal Cord* compared 10 mL/kg/PBW tidal volume to 20 mL/kg/PBW tidal volume.[5] The goal was to establish the safety and efficacy of using the higher tidal volumes in subacute tetraplegia patients during a 14-day weaning plan. While the investigators observed no differences in adverse events between the two groups, they also found no difference in time to wean. They concluded that the higher tidal volume was safe, but a larger trial would be needed to fully assess times to wean between the two. While this is a small study of only 33 patients, it does offer some evidence that higher volumes, which may help with some physiologic changes, appear to be safe in this patient population.

When addressing weaning and ventilator liberation with these patients, the level of injury must be considered. Realistic expectations regarding complete ventilator independence must be established accordingly, and training plans must be developed that fit the patient's respiratory muscle ability and psychological outlook. Tracheostomy must also be considered, particularly for those patients who have higher C-spine injury or an ASIA score indicating significant sensory and/or motor deficits. Most critically ill non-SCI patients supported with mechanical ventilation can be assessed for spontaneous breathing trials once the underlying process has improved. By contrast, the SCI patient may require a period of muscle re-conditioning before successful liberation can occur. For patients with higher C-spine-level SCI, this can take up to four weeks; this carries significant psychological ramifications if rushed and not done in a supportive environment. Often the patient must overcome anxiety, sensations of dyspnea, and fatigue during the training process. A multidisciplinary approach to help support all of a patient's needs can be beneficial for patient success.[3] Several current approaches to weaning include progressive pressure support or T-piece trials, with or without continuous positive airway pressure. Regardless of the system chosen, pathways that utilize a progressively increased time off of mechanical ventilation are recommended.

For patients who are unsuccessful with any weaning attempt or are identified to have a level of injury too high to safely be liberated, cuff deflation trials and movement toward life skills and quality should be targeted. Again, we do not have a robust literature to guide us. We do know, however, that communication enhances quality of life, as does the ability to eat meals. When shifting from a plan of weaning to a plan of ventilator dependence, these factors should be considered. A speech pathology professional should be consulted to evaluate swallow. We do know that successful cuff deflation depends upon the ability to continue adequate ventilation, achieved usually through good glottal control. This is a learned behavior and may require tidal volumes to be increased and inspiratory flow rates to be dropped to facilitate this. Another strategy is to utilize a speaking valve, such as the Passy-Muir, to allow ventilation to occur on inspiration and the natural airway to be used on expiration. Both techniques require patient education to master the process of speaking. Literature is neither clear nor robust regarding the superiority of one method over the other. Studies do suggest that dysphagia, which often leads to significant aspiration and pulmonary complications, can be identified sooner when ventilating with a larger tidal volume and utilizing good secretion clearance techniques and some form of speaking valve to generate back pressure.[6,7] Clear guidelines, however, are not currently available.

The lack of evidence in this patient population leaves us with the challenge of providing patient care based heavily on anecdotal experience and trial and error. Because of this, ventilator management should be assessed closely and tailored specifically to patients according to their individual physiology and neurological deficits, as well as with consideration for patient and family goals of care. The lack of evidence also highlights a great opportunity for those caregivers who are experienced with this patient population to share their knowledge and help generate good evidence. ■

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1 Myth Busting

Robert Chatburn, MHHS, RRT-NPS, FAARC

This session is a new concept. Two speakers will take the stage and share a scripted but informal discussion about the myths of a particular subject in the style of the popular television series MythBusters. We believe this will be as informative and exciting as our pro/con debates, but this session will take half the time and will involve more interaction due to both speakers being at the mike at the same time.

The first talk in this series, "Liberation from Mechanical Ventilation," will focus on the chain of events from intubation to liberation for the adult patient. We will explain the mathematics of diagnostic tests for weaning success. We will debate current guidelines and criticisms. The presentation will cover different views of the path from intubation to liberation, how and why predictive tests like the Rapid Shallow Breathing Index may or may not be helpful, and controversies in performing spontaneous breathing trials, such as whether pressure assistance should be used.

The second talk in the series, "Patient/Ventilator Synchrony," will zero in on the importance of definitions and evidence in identifying problems with patient–ventilator synchrony and what to do about them. The presentation will cover patient–ventilator synchrony problems based on where in the breath cycle they occur, how to recognize synchrony issues using ventilator graphics, and methods to improve synchrony, plus areas where more research is needed.

For both talks, the myths (in the literature and in everyday practice) will be identified and categorized as busted, plausible, or confirmed.

Robert Chatburn is a clinical research manager and director of simulation fellowship at the Cleveland Clinic in Cleveland, OH.

2 Back by Popular Demand: The Student Symposium for New Professionals

Bill Galvin, MEd, RRT, FAARC

Yes, we are back again to present a special symposium for new and aspiring respiratory care professionals. The symposium is designed to capture all the key topics that are front and center in their minds, and the topics and speakers are the very same group from years past.

The symposium will start off with a 30-minute presentation titled, "Strategic Marketing: Getting That Dream Job," by a very experienced and seasoned manager, Cheryl Hoerr, MBA, RRT, CPFT, FAARC. She will go over some marketing principles you can use to land your dream job. She will also provide an update on the current RT job market and specifics regarding your cover letter, résumé, and preparing for the interview.

Next, Dana Evans, MHA, RRT-NPS, will address the fascinating topic of "How To Lose a Job Before You Are Hired." While this may sound like a highly unlikely occurrence, there are things prospective employees do that put them at risk for not even being considered for employment. Common pitfalls and mistakes will be the focus of her presentation, so this is not to be missed.

From the job search process, the symposium will move on to professionalism. Crystal Dunlevy, EdD, RRT, will speak about the traits and characteristics of a professional and provide guidance and advice regarding staying engaged and actively participating in the respiratory care profession. A little humor and sage advice will be provided to encourage you to live up to the image of the RT, maintain your AARC membership, and join in the activities of your state society and local respiratory care community.

The last theme of the symposium will focus on acquiring your National Board for Respiratory Care credential. I will address this topic in two presentations, one on the NBRC credentialing exam and another on test-taking strategies and techniques for the Therapist Multiple Choice Exam and the Clinical Simulation Exam. You'll come away knowing what to expect at the test center, as well as how to prepare for and take a multiple choice exam and a branching logic clinical simulation exam.

If you are relatively new to our profession and are looking for employment, preparing for your credentialing exams, or want to know about professional involvement, then you don't want to miss this symposium. It was developed for the "new kid in town" and will hit the key topics facing those just starting out in the respiratory care profession.

Bill Galvin is an assistant professor in the Frances M. Maguire School of Nursing and Health Professions and program director of the respiratory care program at Gwynedd Mercy University in Gwynedd Valley, PA.

3 Pro/Con: Neo/Peds Airway Clearance

Kathleen Deakins, MSHA, RRT-NPS, FAARC

Airway clearance therapy (ACT) is considered one of the cornerstones of respiratory therapy. It is also the most common form of respiratory therapy ordered (next to aerosolized medications) for the treatment of pulmonary disease in pediatric patients.

But is airway clearance a necessary part of treatment for the prevention of pulmonary dysfunction caused by ineffective secretion clearance? What about the need for airway clearance therapy in a previously healthy patient in acute respiratory failure? In children, historical use of techniques as simple as directed cough or as complex as methods of mechanical secretion removal have evolved over many decades. In today's competitive health care market, clinicians are challenged to ask, and often justify, why the patient needs these therapies.

This interactive pro/con discussion will present unique viewpoints on recommending and using airway clearance in this setting. A bit of history and some evidence behind techniques used in pediatrics, including perspectives that support and dispute the use of different ACT modalities, will be reviewed. An examination of a guiding framework to drive appropriateness of care that includes selecting or eliminating the need for ACT through the use of protocols will be discussed.

Following this presentation, clinicians will have a better understanding of why it's important to be the expert on current literature and be able to convey the information on ACT at the local unit levels in the workplace. This informative and interactive session will prepare the clinician with tools to recommend the right interventions each and every time.

Kathleen Deakins is the clinical manager of women's and children's respiratory care, pediatric pulmonary function and infant monitoring at Rainbow Babies & Children's Hospital in Cleveland, OH.

4 Breath Sounds

Brian Cayko, MBA, RRT

Breath sounds are a quintessential aspect of a respiratory therapist's education and practice. RTs are often the "go to" clinicians when evaluating the pulmonary health of patients. Rightly so, empirically speaking, because no other clinician at the bedside has as much training and practice listening to our patients' lungs. After all, how many times have you been asked by the nurse or physician, "How do they sound?" or "What do you hear?" This is an assessment that we, as a profession, have to own. We have to get it right.

Imagine you are getting report and the therapist tells you the patient has fine crackles and is being treated with Lasix. Does this raise any flags? It should. And don't even get me started on rhonchi! That will have to wait until the session.

Here is the reality: We all learned how to classify breath sounds in school, but then we likely were shuffled off to several different clinical sites where our sharply detailed breath sound terms were quickly dulled by all kinds of slang terminology, historical lingo, and ambiguous use of ill-defined terms.

This presentation will impress upon us all why it is important for all RTs to speak the same language when it comes to reporting breath sounds. We will also discuss some of the common misconceptions and slang terminology swirling around our facilities. Finally, we will have a brief review of proper terminology, along with the etiologies linked with each term used to describe breath sounds.

Brian Cayko is director of clinical education for the respiratory care program at Montana State University-Great Falls in Great Falls, MT. He is a winner of the AARC's 2016 Speaker Academy.

5 Pulmonary Function Technology Laboratory Accreditation Readiness

Katrina Hynes, MHA, RRT, RPFT

In 2016, the American Thoracic Society (ATS) created the Pulmonary Function Laboratory Accreditation Committee. The committee is charged with establishing an accreditation program for pulmonary function laboratories across the United States. The foundation of the program will reinforce current international standards and guidelines for testing, including the key elements of a quality assurance program. These key requirements include, but are not limited to, biological quality control and mechanical models. Formal oversight and accountability of laboratories to the program will also be key components of the program's success.

A few important points that we all need to consider:

- A national accreditation program is being actively developed by the ATS Pulmonary Function Laboratory Accreditation Committee.
- Diagnosticians must be knowledgeable of the international standards and guidelines for quality control and mechanical models and should begin implementing them in their labs, if they have not done so already.
- Onsite visits will play a critical role in the proposed program to identify testing and quality model gaps and to drive the success of the accreditation process.

The goal of this symposium is to create awareness of what is to come. We hope that, after attending the "Pulmonary Function Technology Laboratory Accreditation Readiness" session, attendees will go back to their hospitals and clinics and begin the conversation with their leadership to develop an action plan. This plan should identify areas for improvement so your laboratory can become accreditation-ready and improve pulmonary function test quality within your organization.

Katrina Hynes is supervisor of the special pulmonary evaluation laboratory at the Mayo Clinic in Rochester, MN.

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Important limitations: UTIBRON NEOHALER is not indicated to treat acute deteriorations of COPD and is not indicated to treat asthma.

Important Safety Information

WARNING: ASTHMA-RELATED DEATH

Long-acting beta$_2$-adrenergic agonists (LABAs) increase the risk of asthma-related death. Data from a large placebo-controlled US study that compared the safety of another LABA (salmeterol) or placebo added to usual asthma therapy showed an increase in asthma-related deaths in patients receiving salmeterol. This finding with salmeterol is considered a class effect of all LABAs, including indacaterol, one of the active ingredients in UTIBRON NEOHALER.

The safety and efficacy of UTIBRON NEOHALER in patients with asthma have not been established. UTIBRON NEOHALER is not indicated for the treatment of asthma.

Please see additional Important Safety Information, including BOXED WARNING, and Brief Summary of Prescribing Information on adjacent pages.

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Long-acting beta$_2$-adrenergic agonists (LABAs) increase the risk of asthma-related death. Data from a large, placebo-controlled U.S. study that compared the safety of another LABA (salmeterol) or placebo added to usual asthma therapy showed an increase in asthma-related deaths in patients receiving salmeterol. This finding with salmeterol is considered a class effect of all LABAs, including indacaterol, one of the active ingredients in UTIBRON NEOHALER. The safety and efficacy of UTIBRON NEOHALER in patients with asthma have not been established. UTIBRON NEOHALER is not indicated for the treatment of asthma.

Data from a large, placebo-controlled U.S. study in asthma patients showed that LABAs may increase the risk of asthma-related death. Data are not available to determine whether the rate of death in patients with COPD is increased by LABAs. A 28-week, placebo-controlled U.S. study comparing the safety of another LABA (salmeterol) with placebo, each added to usual asthma therapy, showed an increase in asthma-related deaths in patients receiving salmeterol (13/13,176 in patients treated with salmeterol versus 3/13,179 in patients treated with placebo; RR 4.37, 95% CI 1.25, 15.34). The increased risk of asthma-related death is considered a class effect of the LABAs, including indacaterol, one of the ingredients in UTIBRON NEOHALER. No study adequate to determine whether the rate of asthma-related death is increased in patients treated with UTIBRON NEOHALER has been conducted. The safety and efficacy of UTIBRON NEOHALER in patients with asthma have not been established. UTIBRON NEOHALER is not indicated for the treatment of asthma. **Deterioration of Disease and Acute Episodes:** UTIBRON NEOHALER should not be initiated in patients with acutely deteriorating or potentially life-threatening episodes of COPD. UTIBRON NEOHALER has not been studied in patients with acutely deteriorating COPD. The initiation of UTIBRON NEOHALER in this setting is not appropriate. UTIBRON NEOHALER should not be used for the relief of acute symptoms, i.e., as rescue therapy for the treatment of acute episodes of bronchospasm. UTIBRON NEOHALER has not been studied in the relief of acute symptoms, and extra doses should not be used for that purpose. Acute symptoms should be treated with an inhaled, short-acting beta$_2$-agonist. When beginning UTIBRON NEOHALER, patients who have been taking oral or inhaled, short-acting beta$_2$-agonists on a regular basis (e.g., 4 times a day) should be instructed to discontinue the regular use of these drugs and use them only for symptomatic relief of acute respiratory symptoms. When prescribing UTIBRON NEOHALER, the healthcare provider should also prescribe an inhaled, short-acting beta$_2$-agonist and instruct the patient on how it should be used. Increasing inhaled beta$_2$-agonist use is a signal of deteriorating disease for which prompt medical attention is indicated. COPD may deteriorate acutely over a period of hours or chronically over several days or longer. If UTIBRON NEOHALER no longer controls the symptoms of bronchoconstriction; the patient's inhaled, short-acting beta$_2$-agonist becomes less effective; or the patient needs more inhalation of short-acting beta$_2$-agonist than usual, these may be markers of deterioration of disease. In this setting, a re-evaluation of the patient and the COPD treatment regimen should be undertaken at once. Increasing the daily dose of UTIBRON NEOHALER beyond the recommended dose is not appropriate in this situation. **Excessive Use of UTIBRON NEOHALER and Use with Other Long-Acting Beta$_2$-Adrenergic Agonists:** As with other inhaled drugs containing beta$_2$-adrenergics, UTIBRON NEOHALER should not be used more often than recommended, at higher doses than recommended, or in conjunction with other medications containing LABAs, as an overdose may result. Clinically significant cardiovascular effects and fatalities have been reported in association with excessive use of inhaled sympathomimetic drugs. Patients using UTIBRON NEOHALER should not use another medicine containing a LABA for any reason. **Paradoxical Bronchospasm:** As with other inhaled medicines, UTIBRON NEOHALER can produce paradoxical bronchospasm that may be life-threatening. If paradoxical bronchospasm occurs following dosing with UTIBRON NEOHALER, it should be treated immediately with an inhaled, short-acting bronchodilator; UTIBRON NEOHALER should be discontinued immediately and alternative therapy instituted. **Immediate Hypersensitivity Reactions:** Immediate hypersensitivity reactions have been reported after administration of indacaterol or glycopyrrolate, the components of UTIBRON NEOHALER. If signs suggesting allergic reactions occur, in particular, angioedema (including difficulties in breathing or swallowing, swelling of tongue, lips and face), urticaria, or skin rash, UTIBRON NEOHALER should be discontinued immediately and alternative therapy instituted. UTIBRON NEOHALER should be used with caution in patients with severe hypersensitivity to milk proteins. **Cardiovascular Effects:** Indacaterol, like other beta$_2$-agonists, can produce a clinically significant cardiovascular effect in some patients as measured by increases in pulse rate, systolic or diastolic blood pressure, or symptoms. If such effects occur, UTIBRON NEOHALER may need to be discontinued. In addition, beta-agonists have been reported to produce ECG changes, such as flattening of the T-wave, prolongation of the QTc interval, and ST segment depression, although the clinical significance of these findings is unknown. Therefore, UTIBRON NEOHALER should be used with caution in patients with cardiovascular disorders, especially coronary insufficiency, cardiac arrhythmias, and hypertension. **Coexisting Conditions:** UTIBRON NEOHALER, like all medicines containing sympathomimetic amines, should be used with caution in patients with convulsive disorders or thyrotoxicosis, and in patients who are unusually responsive to sympathomimetic amines. **Worsening of Narrow-Angle Glaucoma:** UTIBRON NEOHALER should be used with caution in patients with narrow-angle glaucoma. Prescribers and patients should be alert for signs and symptoms of acute narrow-angle glaucoma (e.g., eye pain or discomfort, blurred vision, visual halos or colored images in association with red eyes from conjunctival congestion and corneal edema). Instruct patients to consult a physician immediately should any of these signs or symptoms develop. **Worsening of Urinary Retention:** UTIBRON NEOHALER should be used with caution in patients with urinary retention. Prescribers and patients should be alert for signs and symptoms of urinary retention (e.g., difficulty passing urine, painful urination), especially in patients with prostatic hyperplasia or bladder-neck obstruction. Instruct patients to consult a physician immediately should any of these signs or symptoms develop. **Hypokalemia and Hyperglycemia:** Beta$_2$-adrenergic agonists may produce significant hypokalemia in some patients, which has the potential to produce adverse cardiovascular effects. The decrease in serum potassium is usually transient, not requiring supplementation. Inhalation of high doses of beta$_2$-adrenergic agonists may produce increases in plasma glucose. In patients with severe COPD, hypokalemia may be potentiated by hypoxia and concomitant treatment, which may increase the susceptibility for cardiac arrhythmias. In 2 clinical trials of 12-weeks duration evaluating UTIBRON NEOHALER in subjects with COPD, there was no evidence of a treatment effect on serum glucose or potassium.

ADVERSE REACTIONS: Clinical Trials Experience: Because clinical trials are conducted under widely varying conditions, the adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in clinical trials of another drug and may not reflect the rates observed in clinical practice. The UTIBRON NEOHALER safety database included 2654 subjects with COPD in two 12-week lung function trials and one 52-week long-term safety study. A total of 712 subjects received treatment with UTIBRON NEOHALER 27.5 mcg/15.6 mcg twice daily (BID). The safety data described below are based on the two 12-week trials and the one 52-week trial. **12-Week Trials:** The incidence of adverse reactions associated with UTIBRON NEOHALER in Table 1 is based on two 12-week, placebo-controlled trials (Trials 1 and 2; N=1,001 and N=1,042 respectively). Of the 2040 subjects, 63% were male and 91% were Caucasian. They had a mean age of 63 years and an average smoking history of 47 pack-years, with 52% identified as current smokers. At screening, the mean post-bronchodilator percent predicted forced expiratory volume in 1 second (FEV_1) was 55% (range: 29% to 79%), the mean post-bronchodilator FEV_1/forced vital capacity (FVC) ratio was 50% (range: 19% to 71%), and the mean percent reversibility was 23% (range: 0% to 144%). The proportion of patients who discontinued treatment due to adverse reactions was 2.95% for the UTIBRON NEOHALER treated patients and 4.13% for placebo-treated patients.

Table 1. Adverse reactions with UTIBRON NEOHALER (greater than or equal to 1% incidence and higher than placebo) in COPD patients

Adverse Reaction	UTIBRON NEOHALER 27.5/15.6 mcg BID (N=508) n (%)	Indacaterol 27.5 mcg BID (N=511) n (%)	Glycopyrrolate 15.6 mcg BID (N=513) n (%)	Placebo (N=508) n (%)
Nasopharyngitis	21 (4.1)	13 (2.5)	12 (2.3)	9 (1.8)
Hypertension	10 (2.0)	5 (1.0)	3 (0.6)	7 (1.4)
Back pain	9 (1.8)	7 (1.4)	2 (0.4)	3 (0.6)
Oropharyngeal pain	8 (1.6)	4 (0.8)	8 (1.6)	6 (1.2)

Other adverse reactions occurring more frequently with UTIBRON NEOHALER than with placebo, but with an incidence of less than 1% include dyspepsia, gastroenteritis, chest pain, fatigue, peripheral edema, rash/pruritus, insomnia, dizziness, bladder obstruction/urinary retention, atrial fibrillation, palpitations, tachycardia. **52-Week Trial:** In a long-term safety trial, 614 subjects were treated for up to 52 weeks with indacaterol/glycopyrrolate 27.5 mcg/15.6 mcg twice-daily, indacaterol/glycopyrrolate 27.5/31.2 mcg twice-daily or indacaterol 75 mcg once-daily. The demographic and baseline characteristics of the long-term safety trial were similar to those of the placebo-controlled efficacy trials described above. The adverse reactions reported in the long-term safety trial were consistent with those observed in the placebo-controlled trials of 12 weeks. Additional adverse reactions that occurred with a frequency greater than or equal to 2% in the group receiving indacaterol/glycopyrrolate 27.5 mcg/15.6 mcg twice-daily that exceeded the frequency of indacaterol 75 mcg once-daily in this trial were upper and lower

respiratory tract infection, pneumonia, diarrhea, headache, gastroesophageal reflux disease, hyperglycemia, rhinitis. **Postmarketing Experience:** The following additional adverse reactions of angioedema and dysphonia have been identified during worldwide post-approval use of indacaterol/glycopyrrolate at higher than the recommended dose. Because this reaction is reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate the frequency or establish a causal relationship to drug exposure.

DRUG INTERACTIONS: Adrenergic Drugs: If additional adrenergic drugs are to be administered by any route, they should be used with caution because the sympathetic effects of indacaterol, a component of UTIBRON NEOHALER, may be potentiated. **Xanthine Derivatives, Steroids, or Diuretics:** Concomitant treatment with xanthine derivatives, steroids, or diuretics may potentiate any hypokalemic effect of beta$_2$-adrenergic agonists such as indacaterol, a component of UTIBRON NEOHALER. **Non-Potassium-Sparing Diuretics:** The electrocardiographic (ECG) changes and/or hypokalemia that may result from the administration of non-potassium-sparing diuretics (such as loop or thiazide diuretics) can be acutely worsened by beta-agonists, such as indacaterol, a component of UTIBRON NEOHALER, especially when the recommended dose of the beta-agonist is exceeded. Although the clinical relevance of these effects is not known, caution is advised in the coadministration of UTIBRON NEOHALER with non-potassium-sparing diuretics. **Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, QTc-Prolonging Drugs:** Indacaterol, one of the components of UTIBRON NEOHALER, as with other beta$_2$-agonists, should be administered with extreme caution to patients being treated with monoamine oxidase inhibitors, tricyclic antidepressants, or other drugs known to prolong the QTc interval because the action of adrenergic agonists on the cardiovascular system may be potentiated by these agents. Drugs that are known to prolong the QTc interval may have an increased risk of ventricular arrhythmias. **Beta-Blockers:** Beta-adrenergic receptor antagonists (beta-blockers) and UTIBRON NEOHALER may interfere with the effect of each other when administered concurrently. Beta-blockers not only block the therapeutic effects of beta-agonists, but may produce severe bronchospasm in COPD patients. Therefore, patients with COPD should not normally be treated with beta-blockers. However, under certain circumstances, e.g., as prophylaxis after myocardial infarction, there may be no acceptable alternatives to the use of beta-blockers in patients with COPD. In this setting, cardioselective beta-blockers could be considered, although they should be administered with caution. **Anticholinergics:** There is potential for an additive interaction with concomitantly used anticholinergic medicines. Therefore, avoid coadministration of UTIBRON NEOHALER with other anticholinergic-containing drugs as this may lead to an increase in anticholinergic adverse effects. **Inhibitors of Cytochrome P450 3A4 and P-gp Efflux Transporter:** Drug interaction studies with indacaterol, a component of UTIBRON NEOHALER, were carried out using potent and specific inhibitors of CYP3A4 and P-gp (i.e., ketoconazole, erythromycin, verapamil, and ritonavir). The data suggest that systemic clearance of indacaterol is influenced by modulation of both P-gp and CYP3A4 activities and that the 2-fold area under the curve (AUC) increase caused by the strong dual inhibitor ketoconazole reflects the impact of maximal combined inhibition. Indacaterol was evaluated in clinical trials for up to 1 year at doses up to 600 mcg. Inhibition of the key contributors of indacaterol clearance, CYP3A4 and P-gp, has no impact on safety of therapeutic doses of indacaterol. Therefore, no dose adjustment is warranted at the recommended 27.5/15.6 mcg twice-daily dose for UTIBRON NEOHALER when administered concomitantly with inhibitors of CYP3A4 and P-gp.

USE IN SPECIFIC POPULATIONS: Pregnancy: Teratogenic Effects: Pregnancy Category C: There are no adequate and well-controlled studies with UTIBRON NEOHALER or its individual components, indacaterol and glycopyrrolate, in pregnant women. Animal reproduction studies were conducted with individual components, indacaterol and glycopyrrolate. Because animal reproduction studies are not always predictive of human response, UTIBRON NEOHALER should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Women should be advised to contact their physician if they become pregnant while taking UTIBRON NEOHALER. ***Indacaterol:*** Indacaterol was not teratogenic in Wistar rats and New Zealand rabbits at approximately 340 and 770 times, respectively, the MRHD in adults (on an AUC basis at maternal subcutaneous doses up to 1 mg/kg/day in rats and rabbits). ***Glycopyrrolate:*** Glycopyrrolate was not teratogenic in Wistar rats or New Zealand White rabbits at approximately 1400 and 530 times, respectively, the MRHD in adults (on an AUC basis at maternal inhaled doses up to 3.83 mg/kg/day in rats and up to 4.4 mg/kg/day in rabbits). **Non-teratogenic Effects: Indacaterol:** There were no effects on perinatal and postnatal developments in rats at approximately 110 times the MRHD in adults (on an AUC basis at maternal subcutaneous doses up to 0.3 mg/kg/day). ***Glycopyrrolate:*** There were no effects on perinatal and postnatal developments in rats at approximately 1100 times the MRHD in adults (on an AUC basis at maternal subcutaneous doses up to 1.88 mg/kg/day). **Labor and Delivery:** There are no adequate and well-controlled human trials that have investigated the effects of UTIBRON NEOHALER during labor and delivery. Because beta-agonists may potentially interfere with uterine contractility, UTIBRON NEOHALER should be used during labor only if the potential benefit justifies the potential risk. In human parturients undergoing Caesarean section, 86 minutes after a single intramuscular injection of 0.006 mg/kg glycopyrrolate, umbilical plasma concentrations were low. **Nursing Mothers:** *UTIBRON NEOHALER:* It is not known whether UTIBRON NEOHALER is excreted in human breast milk. Because many drugs are excreted in human milk, caution should be exercised when UTIBRON NEOHALER is administered to a nursing woman. Since there are no data from well-controlled human studies on the use of UTIBRON NEOHALER by nursing mothers, based on the data for the individual components, a decision should be made whether to discontinue nursing or to discontinue UTIBRON NEOHALER, taking into account the importance of UTIBRON NEOHALER to the mother. ***Indacaterol:*** It is not known whether indacaterol is excreted in human breast milk. Indacaterol (including its metabolites) have been detected in the milk of lactating rats. ***Glycopyrrolate:*** It is not known whether glycopyrrolate is excreted in human breast milk. Glycopyrrolate (including its metabolites) have been detected in the milk of lactating rats and reached up to 10-fold higher concentrations in the milk than in the blood of the dam. **Pediatric Use:** UTIBRON NEOHALER is not indicated for use in children. The safety and efficacy of UTIBRON NEOHALER in pediatric patients have not been established. **Geriatric Use:** Based on available data, no adjustment of UTIBRON NEOHALER dosage in geriatric patients is warranted. UTIBRON NEOHALER can be used at the recommended dose in elderly patients 75 years of age and older. Of the total number of subjects in clinical studies of UTIBRON NEOHALER, 45% were aged 65 and older, while 11% were aged 75 and older. No overall differences in safety or effectiveness were observed between these subjects and younger subjects, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out. **Renal Impairment:** Based on the pharmacokinetic characteristics of its monotherapy components, UTIBRON NEOHALER can be used at the recommended dose in patients with mild to moderate renal impairment. In patients with severe renal impairment (estimated GFR less than 30 mL/min/1.73 m^2) or end-stage renal disease requiring dialysis, UTIBRON NEOHALER should be used if the expected benefit outweighs the potential risk since the systemic exposure to glycopyrrolate may be increased in this population. **Hepatic Impairment:** Based on the pharmacokinetic characteristics of its monotherapy components, UTIBRON NEOHALER can be used at the recommended dose in patients with mild to moderate hepatic impairment. Studies in subjects with severe hepatic impairment have not been performed.

OVERDOSAGE: In COPD patients, doses of up to 600/124.8 mcg UTIBRON NEOHALER were inhaled over 2 weeks and there were no relevant effects on heart rate, QTc interval, blood glucose or serum potassium. There was an increase in ventricular ectopies after 14 days of dosing with 300/124.8 mcg and 600/124.8 mcg UTIBRON NEOHALER, but low prevalence and small patient numbers (N=49 and N=51 for 600/124.8 mcg and 300/124.8 mcg UTIBRON NEOHALER, respectively) precluded accurate analysis. In a total of four patients, non-sustained ventricular tachycardia was recorded, with the longest episode recorded being 9 beats (4 seconds). UTIBRON NEOHALER contains both indacaterol and glycopyrrolate; therefore, the risks associated with overdosage for the individual components described below apply to UTIBRON NEOHALER. Treatment of overdosage consists of discontinuation of UTIBRON NEOHALER together with institution of appropriate symptomatic and/or supportive therapy. The judicious use of a cardioselective beta-receptor blocker may be considered, bearing in mind that such medicine can produce bronchospasm. Cardiac monitoring is recommended in cases of overdosage. ***Indacaterol:*** The potential signs and symptoms associated with overdosage of indacaterol are those of excessive beta-adrenergic stimulation and occurrence or exaggeration of any of the signs and symptoms, e.g., angina, hypertension or hypotension, tachycardia, with rates up to 200 bpm, arrhythmias, nervousness, headache, tremor, dry mouth, palpitation, muscle cramps, nausea, vomiting, drowsiness, dizziness, fatigue, malaise, hypokalemia, hyperglycemia, metabolic acidosis and insomnia. As with all inhaled sympathomimetic medications, cardiac arrest and even death may be associated with an overdose of indacaterol. In COPD patients, single doses of indacaterol 3000 mcg were associated with moderate increases in pulse rate, systolic blood pressure and QTc interval. ***Glycopyrrolate:*** An overdose of glycopyrrolate may lead to anticholinergic signs and symptoms such as nausea, vomiting, dizziness, lightheadedness, blurred vision, increased intraocular pressure (causing pain, vision disturbances or reddening of the eye), obstipation or difficulties in voiding. In COPD patients, repeated orally inhaled administration of glycopyrrolate at total doses of 124.8 mcg and 249.6 mcg once-daily for 28 days were well tolerated.

PATIENT COUNSELING INFORMATION: Advise the patient to read the FDA-approved patient labeling (Medication Guide and Instructions for Use).

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Scientific Discovery Rules!

Our 2017 Jimmy A. Young Medalist has spent much of his career proving that respiratory therapists can be researchers, too.

by Debbie Bunch

As Alexander Graham Bell so famously said, when one door closes, another opens. Rob Chatburn stepped right into the one labeled "Respiratory Care" and he's never looked back.

Remember the kid from school who always seemed to have his head stuck in a science book? Robert Chatburn, MHHS, RRT-NPS, FAARC, fully admits that was him. A self-described "introspective nerd," his favorite pastimes were tinkering with his chemistry set and looking at things under his microscope. He loved nature, too, and growing up in the last house on a street in Niles, OH, that dead-ended into a forest of several hundred acres gave him plenty of opportunity to explore it.

By the time he was in high school, this year's recipient of the AARC's Jimmy A. Young Medal was sure he would end up in medicine. He even spent some time working as a taxidermist, which to him was the closest he could get to being a surgeon. After he enrolled at Youngstown State University, he decided veterinary school was really the way to go. Unfortunately, his grades — which were good enough to land him on the Dean's List — fell short of requirements for vet school, and he suddenly found himself at a loss for what to try next.

"Finally, after my third year of college, I decided to set my sights a little lower and apply to be a physician's assistant — a relatively new profession in those days," says Chatburn. When he visited the PA program at Cuyahoga Community College, though, he was quickly informed that they were only accepting Vietnam veterans with medic experience. "As a consolation, they suggested that I go down the hall and see about the respiratory therapy program," he recalls now. "Not knowing anything about it, I went there, and primarily out of desperation, applied to the program. I was interviewed and accepted."

It was a last-ditch effort that ended up opening the door to an exciting frontier that Chatburn would explore for the next 40 years.

Robert Chatburn, MHHS, RRT-NPS, FAARC, 2017 Jimmy A. Young Medalist

Digging in

"I will never forget the day of my first class. I was impressed with the profession and the instructors," he says. He flew through the program and, thanks to a classmate named Marty Miller, was soon taking his first job as a pediatric RT at Rainbow Babies and Children's Hospital in Cleveland. His department director was Marvin Lough, RRT, FAARC, who had written the first textbooks on neonatal and pediatric respiratory therapy and helped design the popular BP 200 infant ventilator.

Chatburn dug into the job, learning not only about neonatal and pediatric respiratory care but also about the compassion that is essential to caring for anyone with lung disease. "I became convinced that the most meaningful work one could do was helping others to live and regain their health," he says. "I learned how to be calm in the midst of calamity. I learned to celebrate the triumph of the human spirit."

But he still wanted to be a scientist, and when he saw an opportunity to help a physician who was doing cystic fibrosis research, he jumped at the chance. He went to Lough fully intending to resign his position in the RT department, but Lough assured him he could do both, and so he did. For the next few years he served as a clinical research specialist — a job description he got to write himself — and participated in studies delving into a range of respiratory care modalities, including pulmonary function equipment and mechanical ventilation.

"While the idea of letting a therapist do research full time was virtually unheard of, it was accepted by the hospital administration without question," says Chatburn. "To this day, I am very grateful for Marvin's visionary leadership. For the next eight years, I sat at a lab bench

Robert Chatburn receiving the Forrest M. Bird Lifetime Scientific Achievement Award for outstanding scientific contributions to respiratory care.

in our department's equipment room and learned how to be a scientist." Frank Primiano, Jr., PhD, became another mentor, and Chatburn credits him with teaching him the ins and outs of conducting research studies.

There was plenty to investigate back in the 1980s. The lab was home to equipment that would be in a museum today — an analog computer, a digital computer as big as a small refrigerator, and paper strip chart recorders. Then there was the first ear oximeter, which was bigger than a briefcase, along with Statham and Validyne pressure transducers and amplifiers, Collins water-seal spirometers, and a homemade whole-body plethysmograph. "A young person entering the respiratory care field today simply cannot imagine what it was like back then," says Chatburn.

Building equipment from scratch was their specialty. Chatburn remembers one device in particular. "Frank was a world-class authority on mathematical modeling of the respiratory system, and he had helped Marvin create a very large rigid-walled lung simulator out of huge aluminum drums connected by pipes and valves," he says. "We used it for performance testing of mechanical ventilators." That device, which took up half of Lough's office, sparked a fascination with simulation and mechanical ventilation in Chatburn that persists to this day.

From research to management

Dr. Primiano eventually spurred Chatburn to go back to school for more education, and he enrolled in electrical engineering courses at Cleveland State University. He says the skills he learned there formed the basis for his subsequent research, which quickly turned to jet ventilation. After having dinner with Miroslav Klein, MD, who introduced the concept, he came home and, with Lough's help, built the first "Rainbow jet ventilator" out of Plexiglas and fluidic control circuits. At the same time, leading neonatologists at Rainbow — Marshall Klaus, MD, Avroy Fanaroff, MD, and Richard Martin, MD — were looking at the use of high-frequency ventilation of neonates with respiratory distress syndrome, and Chatburn joined the research effort along with colleague and then neonatology fellow Waldemar Carlo, MD. Dr. Carlo remains a good friend to Chatburn and they co-author papers and book chapters to this day.

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"After initial success, I built four electrically controlled jet ventilators and patented a dual high-pressure humidification and delivery system," he says. "We used those jet ventilators to save a number of infants and children over the next 10 years, until we could buy a commercial high-frequency ventilator," he says.

Despite his passion for research, when Marvin Lough neared retirement age, Chatburn's career took a decidedly different turn as he assumed management responsibilities for the RT department. "I soon learned that skills as a scientist did not necessarily translate to being a good manager and leader. So I went back to school, first informally in external seminars, and then internally through the hospital's human resources department, eventually getting bachelor's and master's degrees," says Chatburn.

He also learned a few lessons about how measures to reduce costs don't always play out the way one would like. "At that time, University Hospitals had two separate respiratory care departments — pediatric and adult," explains Chatburn. "The director of the adult side resigned, and in true Machiavellian style, I proposed to take it over and combine the departments with the goal of increasing efficiency and quality." Redundancy was reduced, but the two departments never did really get on the same page. "The cultures of the pediatric and adult medical worlds were so different that it was always an unhappy marriage," says Chatburn.

Back to his roots

Still, Chatburn forged ahead with the managerial side of the profession, meeting and working with what he calls some "extraordinary respiratory therapists" over his time in the position, including now AARC Executive Director Thomas Kallstrom, MBA, RRT, FAARC, and Chief Business Officer Timothy Myers, MBA, RRT, RRT-NPS, FAARC. He kept his hand in research, too, crediting Terry Volsko, MHHS, RRT, FAARC, with being his most productive collaborator. "Terry and I have co-authored many papers and books, and I consider her to be the most prolific female scientist in the history of the respiratory care profession," notes Chatburn.

After 20 years at the helm of the RT department, Chatburn felt it was time to get back to his research roots full time. James Stoller, MD, was the respiratory care director at Cleveland Clinic at the time and wanted Chatburn to join his team. By the summer of 2006, he had made Chatburn "an offer he couldn't refuse," and the therapist says it was the best career decision he ever made. "Again, I was back to doing research full time under the enlightened leadership of a legendary medical director. I got to write my own job description, just as I had two decades before. But this time I got involved with not only mentoring respiratory therapists, but also medical students, nurses, physician assistants, staff physicians, and ICU fellows."

Dr. Stoller says it was one of the best recruitments he has ever made. "Rob represents the best of the profession and he is a member of a rarefied group of very talented RT academicians who are advancing the field through research and scholarship," says the physician. "He is incredibly bright and inquisitive. He understands and models that having science and inquiry are the only ways that the field advances and that the scientific and scholarly dimensions of the field are key dimensions of its being a profession."

Top three research projects

Chatburn has published more than 120 papers in peer-review journals over the years and another 200+ abstracts. When asked to cite his top three, he begins with

Jimmy A. Young, the Man Behind the Award

Every year the AARC bestows the Jimmy A. Young Medal on a member of the profession who has exceeded all expectations for meritorious service to the AARC and advancement of the respiratory care profession. The award was created in 1976 to honor the memory of Jimmy A. Young, MEd, RRT, an exemplary member of the profession and AARC leader who died suddenly at the age of 40.

Among Young's many accomplishments were serving as director of the first "inhalation therapy" department at Massachusetts General Hospital in Boston, co-authoring one of the first textbooks on respiratory care, *Principles and Practice of Inhalation Therapy*, and serving as the 22nd president of the AARC.

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"Rob has made his life's work the understanding of and classification of ventilator operation," agrees Richard Branson, MS, RRT, FAARC. "In this herculean effort, he has spent countless hours honing a system to help navigate the alphabet soup of ventilator terminology. These efforts have led to improved understanding of how ventilators work."

a study that really didn't even have much to do with respiratory care. "Amazingly enough, my most referenced study is not even about respiratory care," he says. While managing a physical therapist in a stroke clinic, he ran into a woman named Marcy Freed who had invented a technique of electrical stimulation of the throat that got amazing results in re-training people to eat normally. "I helped her get the invention approved by the FDA and we wrote about it in Respiratory Care," says Chatburn.

He believes his most important clinical work, however, is a study he conducted only recently on a new mode of ventilation for neonates called mid-frequency ventilation. "This is a mode that is intended to provide much of the benefit of high-frequency ventilation — i.e., smallest possible tidal volume and least lung strain — but using a conventional ventilator," he says. Nine years in the making, the work is still experimental, but he believes it is laying the groundwork for a universal mode that could be used with children and adults to minimize the risk of ventilation-induced lung injury.

However, he is most proud of creating the taxonomy of mechanical ventilation (with the help of his colleagues, Dr. Eduardo Mireles-Cabodevila and Dr. Mohamad El-Khatib). It's his favorite topic and it's also one cited by many of his research colleagues. "Rob's most significant contribution to the profession, without question, relates to his passion around standardized nomenclature for ventilator modes and his taxonomy of modes," says Respiratory Care Editor Dean Hess, PhD, RRT, FAARC.

"Rob has made his life's work the understanding of and classification of ventilator operation," agrees Richard Branson, MS, RRT, FAARC. "In this herculean effort, he has spent countless hours honing a system to help navigate the alphabet soup of ventilator terminology. These efforts have led to improved understanding of how ventilators work."

Dr. Stoller notes that Chatburn's "role as an educator and 'clarifier' of key principles — like his work on the taxonomy of mechanical ventilation — are invaluable contributions to the profession."

Chatburn agrees this line of study has consumed much of his time in recent years and says it's been worth every minute. "As I see it, the technological complexity of our profession has developed at an exponential rate. In contrast, our understanding of that complexity, and the sophistication of our teaching methods, has progressed at a linear rate," he explains. "If you can visualize these two curves on the same graph, you will immediately perceive that the gap between what the average therapist knows about ventilators and what needs to be known is growing at an alarming rate."

His taxonomy is now included in most of the major respiratory care textbooks and it is also the official system used by ECRI Institute in reports comparing ventilator performance characteristics.

A lifetime of service

Chatburn joined the AARC in 1980 and credits his former boss at Rainbow, Marvin Lough, with getting him actively involved. Over the past 37 years, he's also served the Association in capacities too numerous to list here. In addition, he sat on the National Board for Respiratory Care committee that developed the Neonatal-Pediatric Specialist credential. He believes his most significant service contributions, however, have resided primarily in two areas.

The first is the development of the AARC Benchmarking System. Working with Richard Ford, BS, RRT, FAARC, he designed a website capable of helping department managers track productivity. "What I learned from that experience was that proving productivity is not enough," he says. "The profession of respiratory care is now at a crossroads; we need to demonstrate that we add value to the patient experience, along with efficiency. If we cannot provide a convincing argument for 'value-efficiency,' I fear our profession will simply go extinct."

The second is his role on the Respiratory Care Editorial Board. "I have always thought of the Editorial

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Board as the single most important committee I have served," says Chatburn. "The reason is that, without the Journal — and the associated Journal Conferences and the AARC Congress — our profession would have no scientific credibility. Without that credibility, third-party payers would withdraw the funding that supports all of our salaries, and gone would be all the patient care we provide. It would be a darker world."

Most famous RT

Rob Chatburn may not have pictured himself as a respiratory therapist when he was that nerdy kid back in Niles, OH, but a memory of his first day at Cuyahoga Community College back in 1976 confirms it was the right choice for him. Says the RT, "As I was walking out of the building, I promised myself that not only would I finish the program, but someday I would be the most famous respiratory therapist in the world."

That youthful enthusiasm will play out this October in Indianapolis when Rob Chatburn receives the AARC's highest honor. "For a few minutes on that stage, when I receive the Jimmy A. Young Medal, I will be a dropout who indeed became the most famous respiratory therapist," says Chatburn. "The haunting question is, what happens after that?"

Only time will tell, but Chatburn would like nothing more than to see his example inspire those who come after him to set their sights as high as they can. "My greatest joy has been in mentoring others, and watching them become mentors. It is my highest hope that this highest honor serves as a beacon of encouragement to all who have the eyes to see." ■

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by Susan Shepherd, RRT

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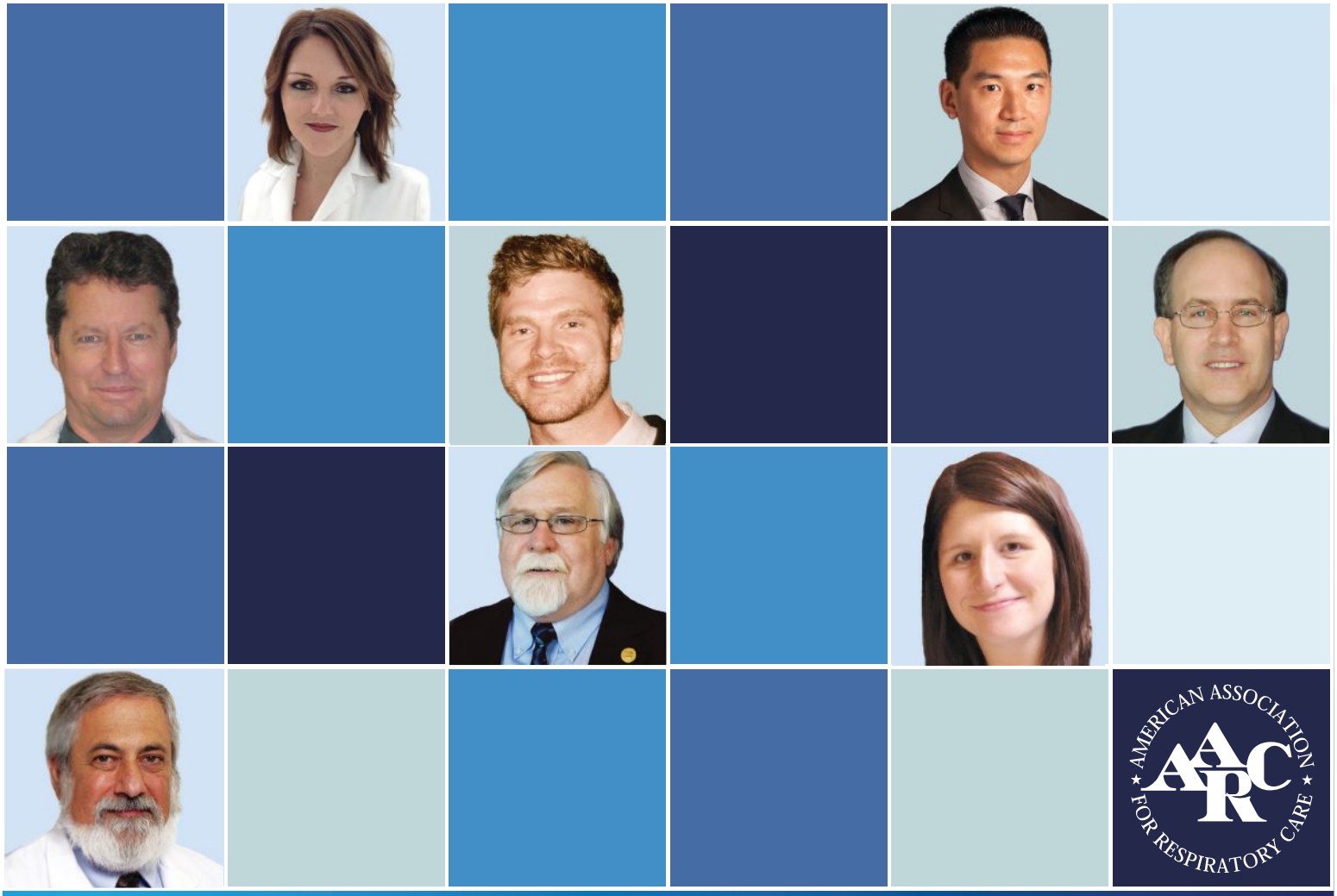

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ECMO: Who Would Ever Have Imagined?
By Ira M Cheifetz MD FAARC FCCM

Pulmonary Rehabilitation: Where We've Succeeded and Where We've Failed *By Richard Casaburi MD MEngr PhD*

Indianapolis is a town easily accessible through special trails that connect the different neighborhoods and cultural districts. Ready to taste the great brews and wines Indy has to offer? **The Indianapolis Cultural Trail** is a good way to get started. This eight-mile, convenient urban path seemlessly connects neighborhoods, cultural districts, and entertainment amenities while serving as the downtown hub for central Indiana's vast greenway system. Many local breweries and wineries are located on or very near the trail, making it easy to safely travel between stops. There are more than 30 local breweries in the Indianapolis area, with a few wineries as well. Here are some local favorites.

1▶ Sun King Brewery: Sun King has quickly become Indy's largest craft microbrewery, producing nearly 25,000 barrels a year. Exclusively distributed in the Hoosier state, Indiana is the only place you can taste this Great American Beer Festival gold medalist brew. Drop in for a packed house, growler fills, and free tastings. Try the Osiris Pale Ale for a citrusy west-coast-style pale ale or the seasonal Oktoberfest Lager for a traditional German taste. Want to spice things up? Go for the Sympathy For The Devil, a bourbon-barreled aged black ale that is part of the Sun King Reserve series.
135 N. College Ave., www.sunkingbrewing.com

2▶ Easley Winery: This family-owned and operated winery, which is located directly across the street from the Sun King Brewery, was established in 1974 — just three years after Indiana changed its law to allow wineries. The grapes used for Easley's wine are mostly grown in southern Indiana along the Ohio River. Indiana's signature grape variety is Traminette, and you must try it here. Named Best of Class in 2016 by the San Francisco Chronicle, this gold medal winner at the 2016 Tasters Guild International is a soft, semi-dry white wine with a floral aroma and hints of honeysuckle. Like a sweeter wine? Try the Reggae Red. This Indiana staple has more gold medals than Michael Phelps (well, almost).
205 N. College Ave., www.easleywinery.com

3▶ Metazoa: Looking for something a little more eccentric and maybe even pet-friendly? Yes, I said a pet-friendly brewery. Not only will you pass right by Metazoa on your way to Sun King or Easley, but the inviting and warm exterior

Photos courtesy of the Indianapolis Area Convention & Visitor Bureau and the author.

Happy Trails To You!

The Indianapolis Cultural Trail is a great way to experience the great things Indy has to offer and is one of the reasons it has become one of the most popular convention cities in the country. It stretches several miles throughout the downtown area and gives visitors a unique pedestrian experience. You can enjoy greenways and a beautiful park along the way, as well.

Considered a world-class public space, the Indianapolis Cultural Trail can lead you on a safe, leisurely stroll to connect you to entertainment amenities, restaurants, wineries, breweries, cultural districts, and more. So bring your walking shoes and take advantage of a wonderful trip along the trail during Congress 2017 this October.

Visit http://indyculturaltrail.org/map/ for more infomation. ■

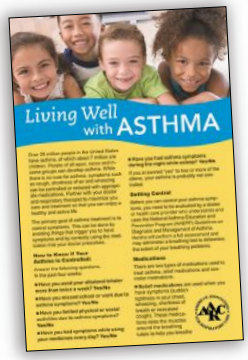
Promote Respiratory Health and EDUCATE PATIENTS

Great for RC Week Handouts!

New respiratory handouts to share with patients, at health fairs or presentations

AARC's new series of Educational Health Tip Sheets and Test Your IQ Bookmarks, are perfect for distributing to patients, at health fairs or presentations. Designed with the respiratory therapist in mind, and for patients who want to learn more about their lung health.

ALLERGIES
Tip sheet: BR0007N



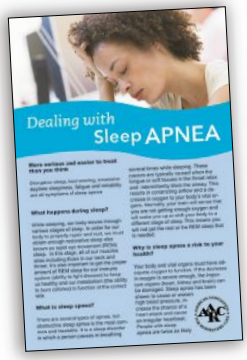
ASTHMA
Tip sheet: BR0005N
Bookmark IQ Card: PE0007

SMOKING AVOIDANCE
Tip sheet: BR0014N

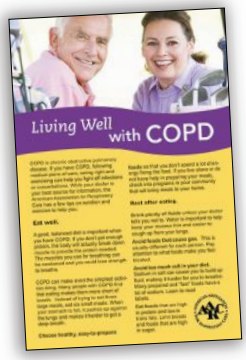
SMOKING CESSATION
Tip sheet: BR0009N
Bookmark IQ Card: PE0009

Order Today!

SECONDHAND SMOKE
Tip sheet: BR0008N
Bookmark IQ Card: PE0010



SLEEP APNEA
Tip sheet: BR0010N
Bookmark IQ Card: PE0008



COPD
Tip sheet: BR0004N
Bookmark IQ Card: PE0006

PEDIATRIC LUNG HEALTH
Tip sheet: BR0006N

Visit c.aarc.org/go/healthtips

Susan Shepherd enjoyed a stop at New Day Craft while preparing this Indy Insider story.

will draw you in. The space itself carries the beastly motif about as far as it can go. Flight boards take the shape of rhinos and bears. Five percent of the profits go to animal charities such as the Humane Society of Indianapolis, and yes, your furry friends are welcome inside. 140 S. College Ave., www.metazoa.beer

You can also hit the Indy Cultural Trail to explore the Fletcher Place and Fountain Square Districts. These vibrant neighborhoods are the newest hot spots in Indianapolis. Check out these happening places on your way through "The Square."

4▶ Chilly Water: This rock 'n' roll-themed establishment takes its name from a Widespread Panic tune, and like a good rock song, there's not much to Chilly Water — a simple dining area inside with a rotating selection of beers on a chalkboard. But those beers swept the top prizes at the Indiana Brewers' Cup in 2015. 719 Virginia Ave., www.chillywaterbrewing.com

5▶ New Day Craft: Focused on modern craft mead and hard cider, New Day Craft has been producing innovative beverages full of flavor since 2006. Their beverages have a complexity found by virtue of using whole fruit and wildflower honey. Try the South Cider for a refreshing apple and wildflower flavor, or test the Shelby Blue Ribbon for the sweet and tangy taste of strawberries and rhubarb.
1102 Prospect St., www.newdaycraft.com

6▶ Fountain Square Brewery: It all started when a couple of chemists put their heads together to do one thing: craft great beer. Located in the hip, funky Fountain Square Cultural District, the owners converted an old warehouse into a dazzling brewery reminiscent of soda fountain shops. Try the Backyard Porter or the Soul Ride IPA for a taste of Indy.
1301 Barth Ave., www.fountainsquarebrewery.com

Don't miss these other Indy favorites:

- Indiana City Brewery, 24 Shelby St., indianacitybeer.com
- Flat12 Bierwerks, 414 Dorman St., www.flat12.me
- St. Joseph's, 540 N. College Ave., www.saintjoseph.beer
- Two Deep Brewing Co., 714 N Capitol Ave., www.twodeepbrewing.com
- Round Town Brewery, 950 S. White River Pkwy. W. Dr., www.roundtownbrewery.com

▶ Susan Shepherd, RRT, is the statewide manager for RT/DME services at IU Health Home Care and the Indiana University Health Sleep Apnea Education Centers in Indianapolis, IN. ■

Wondering what the weather will be like in Indy in early October? According to AccuWeather.com, the historical high average temperature for those dates is about 70 degrees. In others words, just about perfect! Of course, no one can really predict the weather for certain, but even if there's an early cold snap or rain moves in, no worries. All the hotels are connected to the convention center by enclosed sky bridges, so no one will be getting cold or wet during AARC Congress 2017!

AARC University

Online continuing respiratory care education courses – all in one convenient location.

The AARC University online platform is designed to make earning continuing education credits for your state license or continuing competency program requirements easier than ever before.

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AARC U UNIVERSITY

http://c.aarc.org/go/aarcu

Industry Watch

Health Union survey reveals patient struggles with COPD

A new survey from Health Union that was conducted among more than 2,000 individuals with COPD suggests patients struggle with a range of issues. According to "COPD In America 2017," shortness of breath was reported by 84% of respondents, fatigue and tiring easily by 81%, being tired or weak when exercising by 66%, wheezing/noisy breathing by 52%, and chest tightness, pain, or pressure by 52%. More than half of respondents also reported problems with anxiety or panic disorders, but only 40% indicated that their doctor was effective in helping them manage it. The survey was released through Health Union's online community, COPD.net.

Rogue Valley Microdevices enters partnership with AerNos

Rogue Valley Microdevices has entered a strategic partnership with AerNos to manufacture ultra-miniature gas sensors that are small and affordable enough to use in mobile devices, wearables, and Internet of Things devices. The company believes the technology can be incorporated into smart-city and smart-home initiatives aimed at monitoring both indoor and outdoor air quality. AerNos gas sensors can detect multiple gases simultaneously, a major improvement over competitors that can detect just one or two gases.

Corbus Pharmaceuticals releases Phase 2 data on CF drug

Corbus Pharmaceuticals reported safety, pharmacokinetic, and efficacy data from its Phase 2 clinical study of anabasum for the treatment of cystic fibrosis at the European Cystic Fibrosis Society meeting in Seville, Spain, last summer. According to Corbus Pharmaceuticals, anabasum is designed to trigger the production of specialized pro-resolving lipid mediators that activate an endogenous cascade responsible for the resolution of inflammation and fibrosis while reducing production of multiple inflammatory mediators. The drug also has direct effects on fibroblasts to halt tissue scarring, effectively triggering endogenous pathways to turn off chronic inflammation and fibrotic processes without causing immunosuppression.

Researchers receive funding for ALS study

Researchers from the Scripps Research Institute, Mayo Clinic, and Johns Hopkins School of Medicine have been awarded $7.2 million from the National Institute of Neurological Disorders and Stroke to create new ribonucleic acid-based treatments for the most common form of amyotrophic lateral sclerosis (ALS) in addition to a type of frontotemporal dementia. The researchers believe that treating the starting point of ALS can lead to effective therapies.

AstraZeneca–Pieris collaboration will move forward

Pieris Pharmaceuticals, Inc., has announced that the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act has expired with respect to its collaboration with AstraZeneca to develop and commercialize anticalin proteins for the treatment of respiratory diseases. The collaboration includes PRS-060, Pieris' anticalin protein targeting IL-4 receptor alpha as well as four additional therapeutic programs against undisclosed targets. AstraZeneca reports it will make upfront and near-term milestone payments to Pieris in the amount of $57.5 million.

Neotech Products releases oral/nasal suction device

Neotech Products has released its Curved Sucker XL Oral and Nasal Suction Device, a product the company believes will be especially beneficial for pediatric patients because its curved, softer material can help prevent mouth trauma for patients who may bite down hard onto the suction device. "When customers talk, we listen," Neotech Products President Craig McCrary said. "Based on input from clinicians and parents, Neotech decided to modify our Snorkel suction device into the Curved Sucker XL."

Aeolus Pharmaceuticals can fast track Lung-ARS drug

According to Aeolus Pharmaceuticals, Inc., the U.S. Food and Drug Administration has granted Fast Track designation to AEOL 10150 for the prevention of fatal respiratory failure among patients at risk for radiation pneumonitis following a radiological/nuclear incident sufficient to cause the acute radiation syndrome (Lung-ARS). "There are currently no approved treatments for this syndrome, and we are not aware of any other compounds in advanced development for this unmet need," noted Aeolus President and CEO John McManus.

NCCN announces new studies on lung cancer

The National Comprehensive Cancer Network (NCCN) Oncology Research Program has issued funding to two investigators from NCCN member institutions through a collaborative scientific research relationship with AstraZeneca. The work will further evaluate the clinical effectiveness of osimertinib in the treatment of epidermal growth factor receptor–positive non-small-cell lung cancer. Daniel Gomez, MD, from the University of Texas MD Anderson Cancer Center, and Pasi A. Jänne, MD, PhD, from the Dana-Farber/Brigham and Women's Cancer Center, will head up the studies.

ContraFect studies *Staphylococcus aureus* treatment

ContraFect Corporation has initiated an international Phase 2 study evaluating its first-in-class lysin, CF-301, as a potential treatment for *Staphylococcus aureus* bacteremia, including right-sided endocarditis. The multicenter, randomized, double-blind, placebo-controlled study is designed to evaluate the potential for CF-301 to be used in addition to standard-of-care (SOC) antibiotics to significantly improve clinical success rates compared to SOC antibiotics alone. Safety, tolerability, and pharmacokinetics of CF-301 will also be evaluated in the study. The company expects to announce top-line results late next year.

Prolacta Bioscience studying bronchopulmonary dysplasia

Prolacta Bioscience has passed the halfway point in a clinical trial evaluating the effect of adding Prolact CR, a caloric fortifier made from 100% human milk cream, to an exclusive human milk-based diet for very low-birth-weight premature infants. The study is evaluating length of stay and incidence of bronchopulmonary dysplasia, and it has enrolled 127 of an expected 210 participants weighing between 500 and 1,250 g at birth.

Chiesi Group moves forward with Trimbow inhaler

According to the Chiesi Group, the European Medicines Agency's Committee for Medicinal Products for Human Use (CHMP) has issued a positive opinion recommending marketing authorization for the company's extrafine triple combination ICS/LABA/LAMA in a single inhaler for the treatment of COPD. The CHMP recommendation is based on the efficacy and safety data of 12 clinical studies involving more than 7,000 patients. The product will be sold under the brand name Trimbow.

AASM elects new president

Ilene Rosen, MD, MSCE, associate professor of clinical medicine at the Perelman School of Medicine at the University of Pennsylvania and program director of the Penn Sleep Fellowship, is the new president of the American Academy of Sleep Medicine (AASM) board of directors. "As our understanding of the role of sleep in care of cancer, neurological disorders, heart disorders, and other conditions expands, I look forward to serving AASM and collaborating with its members to advance patient care and quality of life for countless individuals," said Rosen. ■

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

— 2017 —

Since 1947, the AARC has been leading the effort to advance the science and practices of the respiratory care profession while promoting the highest quality of care for our patients. Collaborating with the respiratory communities at-large, we have successfully advocated at the federal, state and local level for patients, their families, the community, the profession and the respiratory therapist.

The AARC'S CORPORATE PARTNERS

The collaborative efforts between the respiratory care profession and manufacturers in pursuing unique and innovative ways to improve both the quality and outcomes of our patients makes us natural partners in today's ever changing health care continuum.

As health care finances become more strained and patient care becomes increasingly more complex, the mutual challenges become greater for the profession and its industry partners. The inherent synergies of the corporate partner concept are to provide an effective and efficient way to address those needs utilizing our combined skills and resources.

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RC Currents

IN THE NEWS

The Right Place at the Right Time

by Lynda H. Ferris, MS, RRT, AE-C, CPFT

During a recent trip, Eileen Luley, MS, RRT, RPSGT (a long-time AARC member), was directly responsible for saving two lives in less than 30 minutes at the airport in Atlanta. While waiting to board her flight, she noticed a toddler running around, then suddenly stopping; she appeared to be choking. She wasn't able to clear her airway and her mother was unable to help. Eileen, who also happens to be an American Heart Association CPR instructor, went to her aid and administered back blows until a piece of pizza crust came out of her airway. Within a short time, the little girl was back to playing in the airport, thanks to Eileen's quick actions.

Amazingly, less than 30 minutes later, Eileen's expertise as an RT was again needed when she noticed a woman in the same area in severe respiratory distress. The woman was clearly having trouble breathing and suddenly collapsed. Eileen went to her assistance immediately. The woman was still conscious but barely able to speak. She managed to relay that she had asthma and had to run to make her flight and this had triggered an attack. Eileen helped calm her and asked if she had a rescue inhaler. The woman had one in her purse, which Eileen retrieved and helped administer. After four puffs, she began to recover and breathe much more easily. The woman was able to continue on her travels with no further problems (she was actually on the same flight as Eileen, who checked on her when she boarded).

Eileen's expertise as an RT made all the difference for these two people. When I heard about what happened, I immediately wanted to share it with other therapists to help remind everyone that our profession makes a difference every day both on and off the job. ■

Eileen Luley is the director of the cardiopulmonary department at Rome Memorial Hospital.

Lynda H. Ferris is coordinator of the pulmonary rehabilitation program at Rome Memorial Hospital in Rome, NY.

AARC Seeks Respiratory Care as a Telehealth Service

The AARC initiated a Virtual Lobby Week July 10–14 to gain sponsorship of three telehealth bills that include respiratory care as a telehealth service and respiratory therapists among the professionals covered to provide telehealth and/or remote patient monitoring services under Medicare.

The bills are H.R. 2550, the Medicare Telehealth Parity Act; H.R. 2291, Helping Expand Access to Rural Telemedicine (HEART) Act; and H.R. 766 Telehealth for Individuals Residing in Public Housing. The email messages were sent only to the U.S. House of Representatives, as our lobbyists are meeting face-to-face with senators to seek introduction of companion legislation.

Follow-up was conducted at the grassroots level while members of Congress were home for the August recess. It's never too late to send emails in support of the AARC's legislation. The more co-sponsors the better to move these bills forward in the legislative process. Go to CAP Connection (http://www.aarc.org/resources/advocacy/aarc-capitol-connection/) now and make your voice heard. ■

As Seen on *AARConnect*

Have you looked at what your colleagues are talking about on the *AARConnect* discussion lists? You might find an interesting tidbit you can use in your area of respiratory care or maybe answer a question someone has asked. Here is an example of a dialogue we found on *AARConnect* while preparing this edition of the magazine.

AARConnect...

Looking to see if anyone does sleep assessments for surgery or inpatients. If you do, what happens if they score high? Do you send out a letter to their providers letting them know they scored high and may need a sleep study? We will be implementing this for our surgery patients and I am looking for some guidance from someone who already has this in place.

Andrea Fiene, BGS, RRT
Neosho Memorial Regional Medical Center
Chanute, KS

Our SAU (sleep assessment unit) and PACU (postanesthesia acute care unit) do the STOP-BANG in their EMR and then that info populates on respiratory worksheets so they know to check on those patients. If there are any signs of OSA (obstructive sleep apnea), the patient is followed up on. We can do apnea link screening in-house, and if there is a positive screen, then the patient is referred to a sleep test as an outpatient. If severe is found we have a home care that will set up the patient upon discharge on auto bipap and will wait to get payment until after the sleep test. However, the sleep test is completed within two weeks.

Dolly N. Saunders, RRT
Chesapeake Regional Medical Center
Chesapeake, VA

The anesthesiologist who pre-screens all of our ortho patients uses the STOP-BANG questionnaire. If the patient scores high, she notifies the sleep lab and we send a provider letter to the PCP to get an HST (home sleep test) order. We put these patients on a high priority list so we can get them tested prior to surgery. Most of the time, we can get them set up on an autoPAP device prior to their surgery. We have had several surgeons postpone a surgical date until the patient is tested.

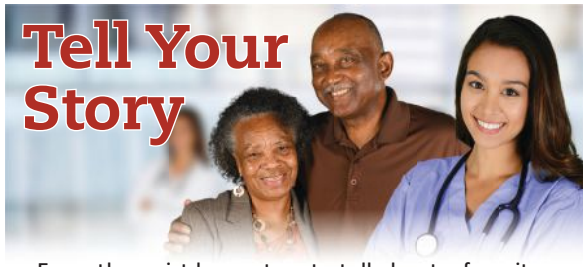
Pam Gordon, MHA, RRT-ACCS, RPSGT
Lowell General Hospital
Lowell, MA

We built the assessment questions into our nursing admission assessment for all adult patients. When the patient scores at moderate or high risk, a notice is automatically generated to the physician that notes the results and asks them to consider a sleep consult.

Ronda Hood, RRT, CPFT
Helen Keller Hospital
Sheffield, AL

If the patient does not carry a diagnosis of OSA, a staff member or LIP completes the STOP-BANG questionnaire. In the ambulatory setting, the care provider will consider pending or placing a consult order for a sleep study for a patient with a score of three or greater who has not already had a sleep study. The care provider will also update the FYI and history. In the inpatient setting, where a sleep study prior to surgery is not feasible, a score of five or greater triggers a Best Practice Advisory (BPA) in the electronic medical record, prompting staff to provide overnight continuous oximetry for the first post operative night.

James Shuke, MBA, RRT-ACCS
University of Virginia Health System
Charlottesville, VA



Every therapist has a story to tell about a favorite or most memorable patient that would interest others in the profession. Maybe it was when you first realized how much difference you were making in the lives of that patient and his family. Or maybe it was just something the patient said or did that made you laugh or cry. Our "Storytellers" column is the place to share them. Send your story to *AARC Times* Editor Marsha Cathcart at cathcart@aarc.org.

Promote. Educate. Generate Awareness.

RT Career & Patient Brochures

Great for RC Week Handouts!

Public Education

For Current or Future Patients

Brochure defines what a respiratory therapist is and how they benefit a patient's overall respiratory health. Familiarizes the patient with respiratory care and the treatments performed.

Package of 50. #BR0015

Career Information

For Students Considering A Career in Health Care

Defines the profession and the growing career opportunities as a respiratory therapist. Describes how to become an "RRT," salary expectations and the numerous specialty areas.

Package of 50. #BR0016

For Individuals Considering a Career Change

Presents the exciting and rewarding career opportunities as a respiratory therapist. Describes how to become an "RRT," salary expectations and the numerous specialty areas.

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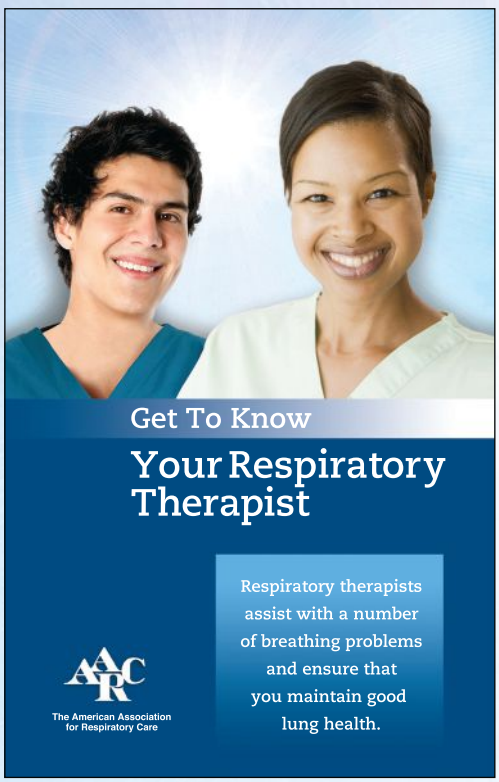
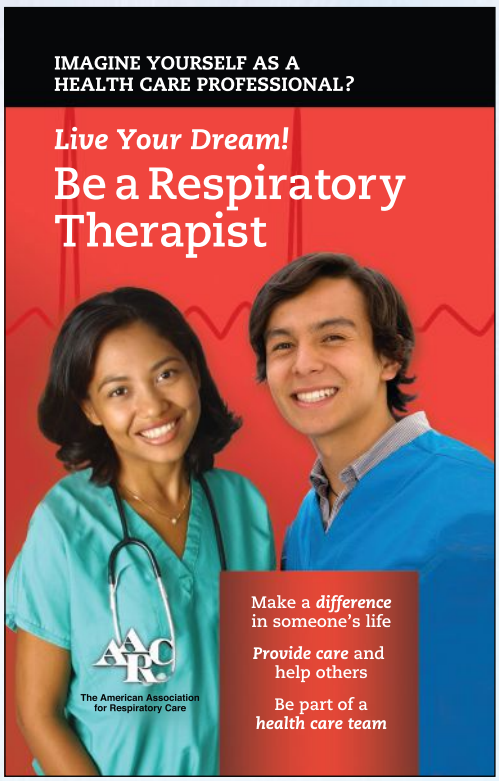
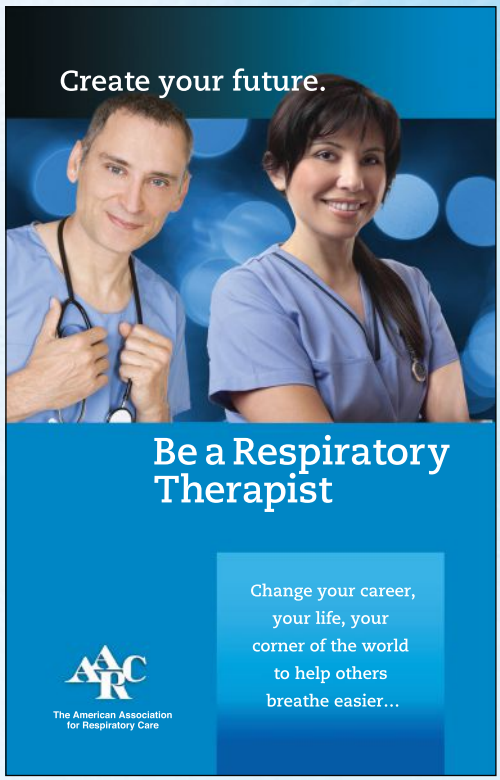






Correction

The NBRC Insight column on page 8 of the August issue of *AARC Times* had an incorrect headline. The title of the article should have been "Job Analysis Study for the Neonatal/Pediatric Specialty". We regret the error.

Contribute to Our "Transitions" Column

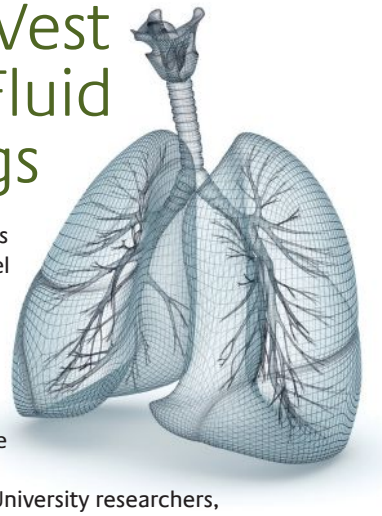
The AARC "Transitions" column is devoted to sharing news about the passing of AARC members.

You can submit news about a colleague's recent passing by going to http:c.AARC.org/transitions. Please provide any information about the member's recent obituary so that we can share it with the membership and pay tribute to a respected colleague. ■

E-cigarettes Less Addictive but Not Harmless

E-cigarettes may be addictive, but they aren't as addictive as traditional cigarettes. That's the key finding in a Penn State College of Medicine study that looked at 3,586 people who used either e-cigarettes or traditional cigarettes. Results showed e-cigarette users waited longer to start using their product after waking up and were less likely to consider themselves addicted to their product, have strong cravings for it, or feel like they really needed it. They were also less likely to say they found it difficult to refrain from using their product in restricted places. The study was published in a recent edition of *Preventive Medicine*. ■

High-tech Vest Measures Fluid in the Lungs



Radar technology that was first used by military personnel and rescue teams to see through walls and rubble in collapsed buildings has now been incorporated into a high-tech vest capable of measuring lung fluid in people with heart failure.

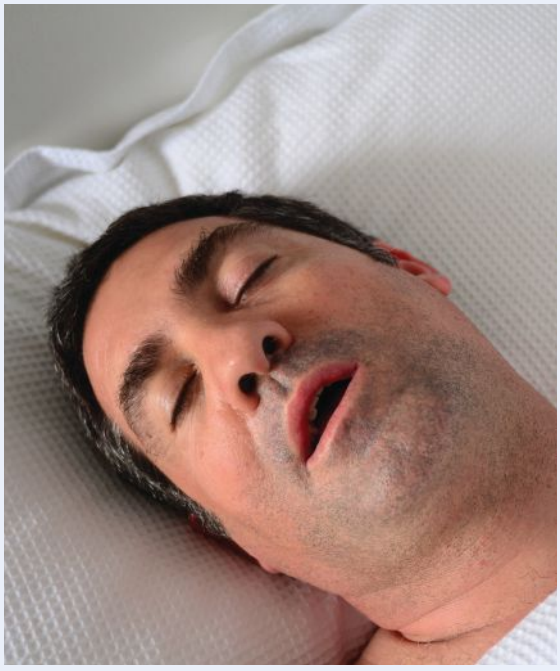
Developed by Ohio State University researchers, the vest may one day replace the current method of keeping track of fluid in the lungs, which requires patients to weigh themselves on a daily basis and report symptoms such as swelling or shortness of breath. A clinical trial is currently underway in 40 sites across the country, and researchers hope the results will show the vest effectively monitors and manages lung fluid, reduces hospitalizations, and improves quality of life.

"We can use that data to see when the lungs are trending towards being too wet and make adjustments to the medication on an outpatient basis or over the phone," site leader Dr. Rami Kahwash was quoted as saying. "The goal is to keep the patient within a normal range, feeling well and out of the hospital." The device is worn over a person's clothing and can measure lung fluid in about 90 seconds. ■

Share Your Wisdom about the Profession

Our "Reflections" column allows AARC members who have recently retired from the profession to share something special about their careers. Please look back at your career or some aspect of it and tell us what it meant to you and why. You can submit your story to *AARC Times* Editor Marsha Cathcart at cathcart@aarc.org. ■

Anti-Nausea Drug May Help with Sleep Apnea



Could a drug approved more than 25 years ago to help ease the nausea that accompanies chemotherapy be a treatment for sleep apnea? U.S. researchers set out to answer that question in a study conducted among adult patients who were divided into three groups. One was given a low dose of dronabinol, a second received a higher dose, and the third took a placebo. Participants received the drug once daily before bed for six weeks.

"In comparison to placebo, six weeks of treatment by the highest dose of dronabinol was associated with a lower frequency of apneas or hypopneas during sleep, decreased subjective sleepiness, and greater overall treatment satisfaction," noted study author David Carley, from the University of Illinois. However, neither the amount of sleep nor objective sleepiness improved. The study was presented recently at SLEEP 2017. ■

An "Off" Switch for Allergies

Australian investigators have found a way to turn off immune system mechanisms responsible for allergic reactions. By genetically manipulating dendritic cells to express the protein that would cause an allergic reaction, they were able to regulate the activation of T-cell responses and the inflammation that characterizes an allergy.

Preclinical studies will come next to see if the team can develop a single injected gene therapy that could serve as an alternative to standard therapies targeting allergy symptoms. The study was published in *JCI Insights*. ■

Donor Cells May Explain Lung Transplant Failure

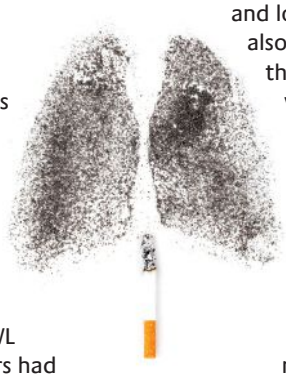
Why do some patients reject their transplanted lungs? According to Northwestern University researchers, the answer may lie in a subset of immune cells called nonclassical monocytes (NCMs) that persist in the patient receiving the transplant.

Physicians have long believed that all donor immune cells are eradicated when the lungs are flushed with a solution prior to transplantation. But these scientists discovered that NCMs — a type of immune cell whose structure and function have only recently been described — are actually retained in the blood vessels of the donor lung. They further demonstrated their fundamental role in developing primary graft dysfunction (PGD), the leading cause of death after lung transplantation.

Specifically, NCMs activate a pathway that produces a protein called CXCL2, which acts to attract damaging neutrophils into the lung. The findings suggest targeting NCMs in the donor lungs could potentially prevent the development of PGD. The study appeared in a recent edition of *Science Translational Medicine*. ■

Seeing Is Believing

Reading about the damage cigarettes can do isn't as effective as seeing that damage in a photo, report researchers from the University of Pennsylvania Tobacco Center of Regulatory Science. They used eye-tracking technology to evaluate how 112 daily cigarette smokers between the ages of 21 and 65 years old viewed pictorial warning labels (PWLs) on cigarette packs. They also presented the PWLs with text messages that either matched or did not match the photo to see if that made a difference.



Participants were asked to recall the image, text, and risk message from each PWL at a later time. The team found that smokers had greater difficulty recalling the text than they did recalling the image, and they focused faster and longer on the image than the text. They also found smokers were better at recalling the information in the text when they viewed PWLs where the picture matched the text, suggesting PWL formats where the image and text express similar messages or themes may be an optimal design strategy.

"The results clearly demonstrate that images in warnings get and hold viewing attention," explains study author Andrew A. Strasser, PhD. The study appeared in a recent edition of *Tobacco Control*. ■

Low Vitamin A Levels Increase Risk for Tuberculosis

A new study out of Harvard Medical School suggests people with low levels of vitamin A who live with people who have tuberculosis are at higher risk of contracting the disease.

The investigators reached that conclusion after collecting baseline blood samples from the household contacts of people who sought treatment for TB at 106 clinics in Lima, Peru. Of the more than 6,000 participants who agreed to have their blood analyzed, 192 became sick with TB after enrollment in the study. Researchers compared 180 blood samples obtained from people who developed TB disease during that time with blood samples obtained from household contacts who did not become sick. Results showed vitamin A levels in the baseline sample strongly predicted progression to TB disease, even after adjustment for socioeconomic status, body mass index, and other conditions thought to increase TB disease risk or affect vitamin A levels.

The study was published in a recent edition of *Clinical Infectious Diseases*. ■

Jury Still Out on Peer-Led Asthma Management for Teens

National asthma guidelines call for the use of peer-led management to help people with asthma better manage their condition. Researchers from the UK and the United States who reviewed four studies on peer-led management of asthma among teenagers found little evidence to suggest it works in that population.

Results showed a small, statistically nonsignificant increase in participants' quality of life, along with a small, statistically nonsignificant decrease in lung function. In one randomized controlled trial, interventions reduced asthma symptoms and improved self-management, but an overall lack of data made meta-analysis unfeasible, and the studies had an unclear or high risk of bias. The investigators published their findings in *Health Education Journal*. ■

"Dialysis for the Lungs" Is Under Development

A new procedure that removes carbon dioxide from the blood in a process similar to kidney dialysis is under development at Queen's University in Belfast, Ireland. Investigators are calling the procedure "dialysis for the lungs" and hope it may one day be used to facilitate gentler ventilation for critically ill patients in need of mechanical ventilation. The official title is extracorporeal carbon dioxide removal, and the procedure has been shown to be safe and effective in a preliminary study.

The new study will involve 1,120 critically ill patients in 40 different hospital sites across the United Kingdom over the next four years and is one of the largest studies ever conducted in the area of respiratory failure. ■

Strange but True . . .

Smart cars: University of Michigan researchers are working on technology that may one day be placed in motor vehicles to monitor and predict an adverse cardiac event. The goal: prevent accidents caused by drivers who have a heart attack while on the road.

T-shirt monitor: Canadian investigators have developed a "smart t-shirt" that can monitor the breathing of the wearer without wires or sensors. An antenna incorporated into the shirt consists of a hollow optical fiber coated with a thin layer of silver and can sense respiratory movements. The data are then sent to a smartphone or computer. ■

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Celebrate National Respiratory Care Week Oct. 22–28

Don't miss your chance to help promote respiratory health during our time of national recognition. Hospitals, universities, respiratory therapists, and patients can all benefit from this week of awareness. No matter how you choose to celebrate RC Week, spread the excitement and share what you're doing by visiting http://www.aarc.org/resources/programs-projects/respiratory-care-week/.

The AARC's RC Week webpage includes a free RC Week social media kit that will help you spread the word about respiratory health. It's easy to participate! Help the AARC raise awareness of lung health and recognize the respiratory therapist for the life-saving role you play every day. ■

Calendar of Events

AARC & State Society Programs

August 17–18, 2017
Lexington, KY
Pulmonary/Cardiovascular Issues: Making the Connection
Contact: ksrcbod@gmail.com and http://kentuckysocietyforrespiratorycare.org

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September 12–13, 2017
Honolulu, HI
47th Annual HSRC Conference
Contact: program@scsrc.org

September 13–16, 2017
Ocean City, MD
Annual Symposium
Contact: tstriplin@allegany.edu or http://www.conferencebythesea.net/index.html

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September 29, 2017
Fredericksburg, VA
VSRC Neonatal & Pediatric Conference
Contact: sharkrt@gmail.com

Other Meetings

September 29, 2017
Fredericksburg, VA
VSRC Neonatal & Pediatric Conference
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[1] For complete specifications, including measurements, see Operator's Manual.

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