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Chronic Disease Manager

The Respiratory Therapist's Role in Recognizing Pulmonary Fibrosis

by Dolly (Alma) J. Kervitsky, RCP, CCRC

Pulmonary fibrosis (PF) is, in simple terms, scarring in the lungs and occurs in many of the interstitial lung diseases (ILDs). ILD, also referred to as diffuse parenchymal lung disease (DPLD), is comprised of a diverse group of pulmonary disorders that are classified together because of similar clinical, radiographic, physiologic, or pathologic manifestations. There are more than 200 different forms of ILD.[1–3] For purposes of this article, I will limit the discussion to forms that result in PF.

Pulmonary fibrosis can be associated with a variety of disorders and classified into one of the following categories:[4]

- Systemic autoimmune disorders (e.g., rheumatoid arthritis, scleroderma, lupus, dermatomyositis)
- Exposures to agents known to damage the lungs (e.g., certain medications, occupational and environmental exposures)
- Genetic or inherited conditions (e.g., familial pulmonary fibrosis, Hermansky-Pudlak syndrome)
- Idiopathic disorders (e.g., idiopathic pulmonary fibrosis, acute interstitial pneumonia, idiopathic non-specific interstitial pneumonia).

about the author…

Dolly (Alma) J. Kervitsky, RCP, CCRC, is the principal for PF Strategies, LLC, in Black Hawk, CO.

Diagnosis

The American Thoracic Society (ATS), European Respiratory Society (ERS), Japanese Respiratory Society, and the Latin American Thoracic Society (ALAT), have published guidance to assist the medical community in accurately diagnosing and classifying ILDs. This guidance recommends employing a multidisciplinary diagnostic approach to establish an accurate diagnosis integrating clinical, radiographic, and histopathologic data. It is important to note this guidance is currently under revision to address new therapeutic strategies for idiopathic pulmonary fibrosis (IPF).[1–3]

While PF is predominantly a disease of adults, it also occurs in children and young adults. Autoimmune-related and genetic/inherited forms of PF tend to be associated with younger age onset. IPF, the most common form of PF, is most often diagnosed between the ages of 40–70. Determining the cause and pattern of PF is important since standards of care and prognosis can vary.[1–4]

Pulmonary fibrosis was once thought to be rare; but with increased awareness and improved diagnostic strategies, it is now considered to be more common than previously recognized. IPF is still considered to be a rare disease, affecting between 132,000 and 200,000 individuals in the United States.[1,5]

Characteristics of pulmonary fibrosis

Pulmonary fibrosis is generally characterized by symptoms of dyspnea and nonproductive cough, specific thoracic radiographic abnormalities, decreased lung volumes and reduced lung compliance, and characteristic microscopic patterns of inflammation and fibrosis on histology.[1]

Clinical evaluation

History and physical evaluation — A complete history and physical examination is important to identify potential exposures, comorbid conditions, family history, and onset of illness to accurately diagnose and classify PF. This includes assessing the presence or absence of physical findings; digital clubbing, systemic manifestations of autoimmune disease (peripheral circulatory abnormali-

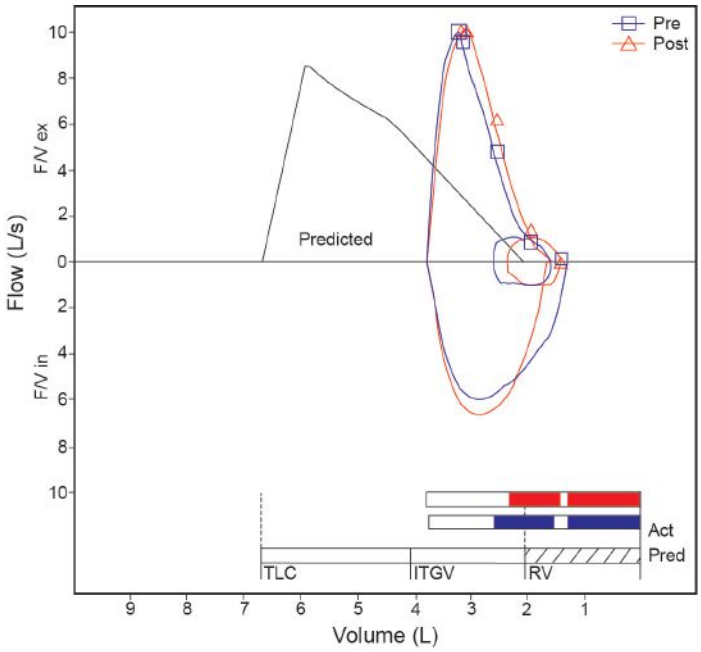

Figure 1. Restrictive Physiology

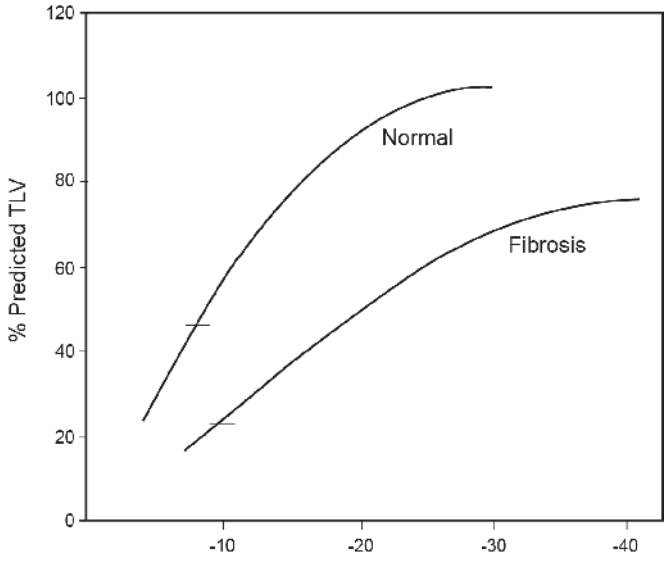

Figure 2. Lung Compliance

ties such as Raynaud's syndrome), and auscultation of the chest. Fine bibasilar inspiratory crackles, sometimes referred to as Velcro™-like crackles, are characteristic findings of PF.[1,6,7]

Pulmonary function testing — Typical findings of PF are a restrictive ventilatory defect, reduction in static lung volumes and carbon monoxide diffusing capacity of the lungs (DL_{CO}), and generally well preserved airway function (see Figure 1). Static lung compliance is decreased with a shift of the pressure-volume curve downward and to the right, when compared to normal[1] (see Figure 2).

Arterial blood gas and oximetry — Characteristic arterial gas exchange abnormalities seen in PF include resting hypoxemia and an increased alveolar-arterial oxygen-tension difference ($P(A\text{-}a)O_2$). Arterial carbon dioxide tension ($PaCO_2$) is usually normal but may be increased in advanced disease. Additionally, arterial oxygen tension (PaO_2) and oxygen saturation (SO_2) at rest may be normal in early disease.[1]

It is important to recognize limitations of pulse oximetry when an autoimmune disease or Raynaud's syndrome is present.

Exercise and six-minute walk testing — Dyspnea, one of the most common symptoms of PF, is progressive. In early disease, dyspnea may be present only with exertion; while in advanced disease, dyspnea may be present at rest. When performing pulse oximetry testing, it is important to recognize that SO_2 is often normal while sitting at rest but rapidly declines with exertion. Rest and exercise gas exchange should be performed to completely investigate PF.[1,8]

Chest imaging — High resolution computed tomography (HRCT) plays an important role in the detection and classification of PF. Diagnostic features of PF are predominantly bilateral, lower lobe, peripheral reticular opacities, and honeycombing (see Figure 3). The specific pattern and distribution of abnormalities are important to classification of PF.[1]

Lung biopsy — While not all forms of PF require a lung biopsy to make a diagnosis, in some cases clinical radiographic-pathologic correlation may be necessary. The anatomic distribution and histologic patterns found on histology are important to accurately classify PF. A trans-bronchial lung biopsy is useful when a unique histologic pattern can be seen on a small specimen, but in some cases a larger specimen obtained through surgical wedge biopsy is required.[1] Figure 4 illustrates the differences between normal and IPF histology.

Prognosis

Prognosis can vary depending on the specific form of PF and underlying histopathology. In IPF, the median

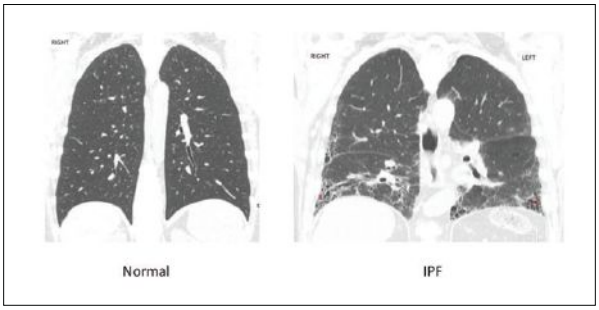

Figure 3. Chest Imaging — Coronal HRCT

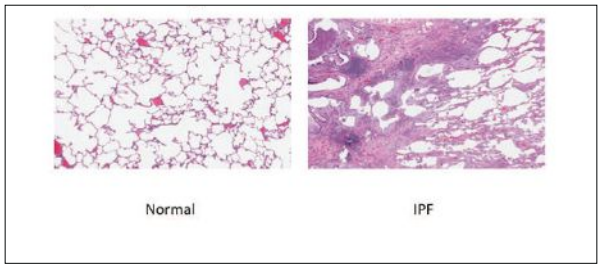

Figure 4. Pathology

survival is only two–five years following diagnosis, and the five-year survival rate ranges 20%–40%.[4]

Treatment

Until recently, therapy had been limited to treatment of symptoms (e.g., cough, hypoxemia), pulmonary rehabilitation, participation in clinical research trials, and (for eligible candidates) lung transplantation. In October 2014, the U.S. Food and Drug Administration (FDA) approved the first two medications, nintedanib and pirfenidone, to treat IPF.[9]

Role of RTs in pulmonary fibrosis

The role of RTs in caring for and supporting patients with PF is diverse.[10] RTs working in pulmonary diagnostics conduct pulmonary function tests, cardiopulmonary exercise testing, six-minute walk testing, arterial blood gas analysis, and pulse oximetry, and assist in bronchoscopic procedures to aid in the diagnosis and monitoring of disease progression. Pulmonary rehabilitation therapists extensively evaluate oxygenation needs, facilitate prescription and home equipment changes, and participate in disease education and exercise strategies. RTs may also find themselves caring for PF patients as a member of the critical care team, in case management, or as members of the home care, palliative, and hospice care teams. RTs are also valuable members of the biomedical research team, coordinating and managing clinical research trials. An increasing number of RTs are establishing and leading PF support groups. With a strong background in pulmonary medicine and an exceptional understanding of anatomy and physiology, RTs are a tremendous asset to research and clinical care teams.

A profound impact

RTs are uniquely positioned to play an important role in the accurate diagnosis and management of PF patients. Their capacity to have a profound impact on patients' quality of life is great, from determining an accurate diagnosis to being key members of clinical, rehabilitation, critical care, palliative, and hospice care teams. The current and future role of RTs in PF is diverse; and with new treatment strategies on the horizon, the expectation is that this role will grow with an expanding scope of practice for respiratory care professionals.[10] ■

DISCLOSURE

The author was a member of an advisory committee on the Insights and Needs of IPF Patients and Caregivers for Boehringer Ingelheim (Explore IPF Survey).

REFERENCES

1. Schwarz MI, King TE Jr. Interstitial lung disease, 5th ed. Shelton CT: People's Medical Publishing House – USA; 2011:3–147.
2. Travis WD, Costabel U, Hansell DM, et al. An official American Thoracic Society/European Respiratory Society statement: update of the international multidisciplinary classification of the idiopathic interstitial pneumonias. Am J Respir Crit Care Med 2013; 188(6):733–748.
3. Raghu G, Collard HR, Egan JJ, et al. An official ATS/ERS/JRS/ALAT statement: idiopathic pulmonary fibrosis: evidence-based guidelines for diagnosis and management. Am J Respir Crit Care Med 2011; 183(6):788–824.
4. Olson AL, Schwarz MI, Roman J. Interstitial lung disease. In: Breathing in America: diseases, progress, and hope. Schraufnagel DE, ed. New York NY: American Thoracic Society; 2010:99–108.
5. Olson AL, Swigris JJ, Lezotte DC, et al. Mortality from pulmonary fibrosis increased in the United States from 1992 to 2003. Am J Respir Crit Care Med 2007; 176(3):277–284.
6. Flaherty KR, King TE Jr, Raghu G, et al. Idiopathic interstitial pneumonia: what is the effect of a multidisciplinary approach to diagnosis? Am J Respir Crit Care Med 2004; 170(8):904–910.
7. Cottin V, Cordier JF. Velcro crackles: the key for early diagnosis of idiopathic pulmonary fibrosis? Eur Respir J 2012; 40(3):519–521.
8. Ferreira A, Garvey C, Connors GL, et al. Pulmonary rehabilitation in interstitial lung disease: benefits and predictors of response. Chest 2009; 135(2):442–447.
9. U.S. Food and Drug Administration website. Chowdhury, BA. Two FDA drug approvals for idiopathic pulmonary fibrosis (IPF). Available at: http://blogs.fda.gov/fdavoice/index.php/2014/10/two-fda-drug-approvals-for-idiopathic-pulmonary-fibrosis-ipf/ *Accessed March 6, 2015*
10. Kacmarek RM, Durbin CG, Barnes TA, et al. Creating a vision for respiratory care in 2015 and beyond. Respir Care 2009; 54(3):375–389.

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1. Klevens RM, Edwards JR, Richards CL, Jr., et al. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Rep.* 2007;122(2):160-166.
2. Scott RD. The direct medical costs of healthcare-associated infections in U.S. hospitals and the benefits of prevention. Centers for Disease Control and Prevention. March 2009. Available at:http://www.cdc.gov/hai/pdfs/hai/scott_costpaper.pdf. Accessed October 21, 2013.
3. Muscedere J, Rewa O, McKechnie K, Jiang X, Laporta D, Heyland DK. Subglottic secretion drainage for the prevention of ventilator-associated pneumonia: a systematic review and meta-analysis. *Crit Care Med.* 2011;39(8):1985-1991.

Clinical Perspectives

PFTs: Special Considerations for Different Age Groups

by Jeffrey M. Haynes, RRT, RPFT

Pulmonary function testing (PFT) requires patients to perform unnatural breathing maneuvers within layered boundaries of acceptability and repeatability criteria. This can be challenging in the very young, very old, or patients of any age with neurologic deficits. In addition, unlike many physiologic tests, normal values for PFT data rise and fall during the life cycle.[1] An unfortunate reality of PFTs for all ages is underutilization. However, the causes and impact of PFT underutilization are in many ways age specific. This article will review how age affects the utilization, collection, quality assessment, and interpretation of PFT data.

Underutilization

The underutilization of PFTs to diagnose and manage lung disease is a true pandemic. In a study of 97,324 patients aged 43 years and older with a new diagnosis of COPD, only 37% underwent spirometry testing to confirm the presence of airflow obstruction.[2] Much of this problem stems from the incorrect belief that most older smokers who cough likely have COPD requiring treatment. Another reason for PFT underutilization in the elderly is the belief that older patients aren't generally able to perform PFTs correctly. However, a recent study showed no difference in spirometry and diffusion capacity quality between middle-aged and elderly adults.[3] Indeed, Figure 1 shows high-quality spirometry produced by a 94-year-old patient.

Symptoms like cough, wheezing, and dyspnea in children are frequently presumed to be due to asthma. Consequently, many children are diagnosed with asthma based on symptoms alone. However, in children, the most common cause of subacute cough is protracted bronchitis; and poor conditioning is the most frequent source of dyspnea on exertion.[4,5] Complicating matters is the fact that often the parent and not the child reports symptoms to the pediatrician. This may be a significant limitation because a parent's assessment of their child's dyspnea during exercise has been shown to correlate poorly with changes in PFTs.[6]

The undeniable consequence of diagnosing lung disease based on symptoms alone is misdiagnosis and inappropriate therapy. There is simply no replacement for pulmonary function tests when considering a diagnosis of lung disease at any age.

about the author...

Jeffrey M. Haynes, RRT, RPFT, works in the pulmonary function laboratory at St. Joseph Hospital, in Nashua, NH.

Time for testing: getting started

There are several important preparatory steps that can be undertaken to facilitate the collection of accurate and high-quality data. Ensuring correct patient identity is the first order of business. It is imperative that more than one patient identifier be used to confirm that you are testing the correct patient. Elderly patients are more likely to be hard of hearing and may nod affirmatively to questions they didn't hear clearly (e.g., are you Mr. Jones?) to avoid the embarrassment and/or frustration related to perpetually having to say that they didn't hear what had been spoken.

The adage "you never get a second chance to make a first impression" holds especially true when testing young children. Approaching a young child with a serious tone sends the message that "this isn't going to be fun." My approach is to give the young patient and their parent equal amounts of attention, focusing initially on the parent. This allows the child to ease their way into interacting with the technologist and not feel that

they're alone in the spotlight. Establishing a friendly rapport with the parent may put the child at ease. Teenagers are young adults and want to be treated as such, so avoid interacting with them like you would with a child or they may quickly tune you out.

The final task before beginning to test is entering accurate demographics. All patients must have their height measured in their stocking feet, using an accurate stadiometer or measuring device. Self-reported heights are unreliable and may alter the interpretation of the collected data. Less than 25% of patients 75 years and older have normal curvature of the spine.[7] In these patients, it may be more appropriate to use arm-span length to determine the patient's maximum adult height. Clinicians should be aware that correction factors need to be applied to arm-span measurements and that correction factors may differ for gender and race.[8]

Patient instructions and coaching

It has been traditionally taught that the technologist must yell commands at the patient during spirometry testing in order to obtain maximal effort. This practice is unnecessary, frightening to children, annoying to teens, and often *less* intelligible to the aged with hearing loss. Learning how to tailor instructions and coaching to the patient's abilities will increase the likelihood of success.

Pediatric spirometry testing can be aided by the use of video game software in which patients are encouraged to continue exhalation until satisfactory expiratory time is achieved. A well-recognized downside of this technology is a patient devoting all of their attention to manipulating the video game, no longer following technologist instructions. In elderly patients with hearing deficits, the use of hearing aid devices may be of great value. Asking the patient to mimic your physical actions during a test can be a very effective strategy for young and old patients having difficulty following spoken instructions and coaching.

Assessing test quality

The American Thoracic Society/European Respiratory Society pulmonary function testing guidelines define quality measures for the most commonly performed tests.[9–11] It can be argued that some of these quality goals are too lenient while others are perhaps too strict. However, perhaps the most conspicuous shortcoming of current quality criteria is their poor applicability to the pediatric population. An excellent example of this problem is spirometry repeatability criteria. For all patients with a forced vital capacity (FVC) greater than 1L, regardless of age, repeatability criteria for FVC and forced expiratory volume in one second (FEV_1) is 150 ml. As pointed out by Seed, et al,[12] this criterion allows for 15% variability in a child with an FVC slightly greater than 1L.

Interpretation

PFT data are categorized as normal or abnormal based on reference equations derived from normal popula-

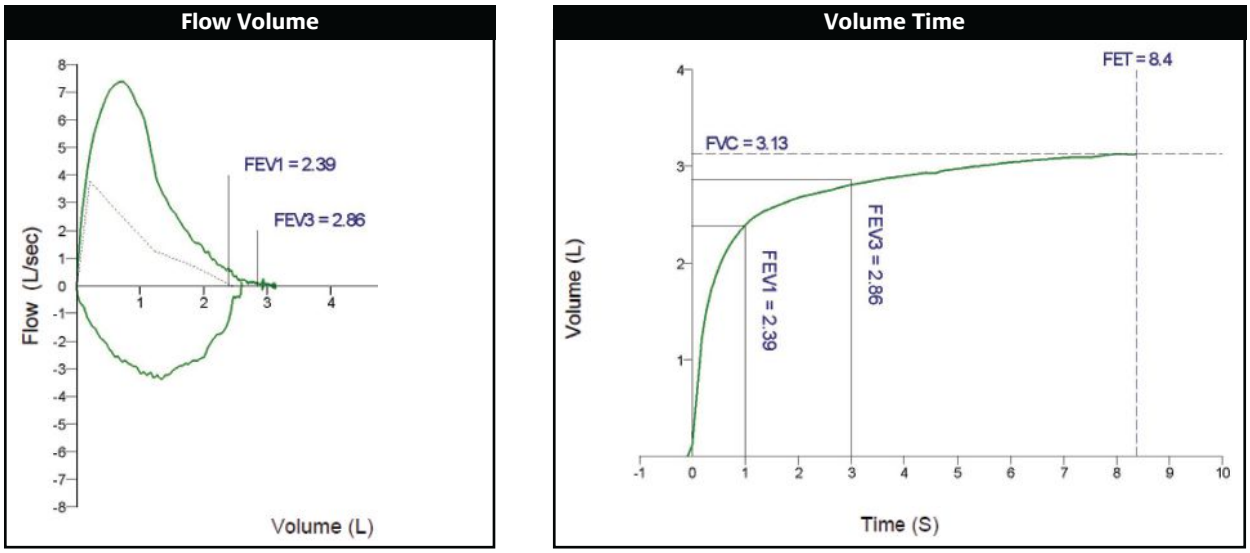

Figure 1. High-quality spirometry produced by a 94-year-old subject

tions. This becomes complicated as normal ranges for PFT data rise, plateau, and descend during the life cycle.[1] In addition, many laboratories use separate equations for children and adults, which creates a shift in percent predicted at the point of maturation. Older subjects are usually under-represented in reference equations, the perfunctory answer for which is to simply extend the line of normality to infinity. Fortunately, the Global Lung Function reference equations for spirometry covers ages 3–95 years and used superior statistical techniques to determine the proper boundaries of normality for all ages.[13]

Ensuring quality PFT's

Underutilization of pulmonary function tests is widespread and results in misdiagnosis and inappropriate therapy. With special attention to the needs of different ages, high-quality PFTs can be performed in all age groups. ■

DISCLOSURE

Jeffrey M. Haynes, RRT, RPFT, is a consultant for Morgan Scientific Inc. of Haverhill, MA.

REFERENCES

1. Stanojevic S, Wade A, Stocks J, et al. Reference ranges for spirometry across all ages: a new approach. Am J Respir Crit Care Med 2008; 177(3):253–260.
2. Joo MJ, Lee TA, Weiss KB. Geographic variation of spirometry use in newly diagnosed COPD. Chest 2008; 134(1):38–45.
3. Haynes JM. Pulmonary function test quality in the elderly: a comparison with younger adults. Respir Care 2014; 59(1):16–21.
4. Marchant JM, Masters IB, Taylor SM, et al. Evaluation and outcome of young children with chronic cough. Chest 2006; 129(5):1132–1141.
5. Abu-Hasan M, Tannous B, Weinberger M. Exercise-induced dyspnea in children and adolescents: if not asthma then what? Ann Allergy Asthma Immunol 2005; 94(3):366–371.
6. Panditi S, Silverman M. Perception of exercise induced asthma by children and their parents. Arch Dis Child 2003; 88(9):807–811.
7. Janssens JP, Pache JC, Nicod LP. Physiological changes in respiratory function associated with ageing. Eur Respir J 1999; 13(1):197–205.
8. Quanjer PH, Capderou A, Mazicioglu MM, et al. All-age relationship between arm span and height in different ethnic groups. Eur Respir J 2014; 44(4):905–912.
9. Miller MR, Hankinson J, Brusasco V, et al. Standardisation of spirometry. Eur Respir J. 2005; 26(2):319-338.
10. MacIntyre N, Crapo RO, Viegi G, et al. Standardisation of the single-breath determination of carbon monoxide uptake in the lung. Eur Respir J 2005; 26(4):720-735.
11. Wanger J, Clausen JL, Coates A, et al. Standardisation of the measurement of lung volumes. Eur Respir J 2005; 26(3):511-522.
12. Seed L, Wilson D, Coates AL. Children should not be treated like little adults in the PFT lab. Respir Care 2012; 57(1):61–70.
13. Quanjer PH, Stanojevic S, Cole TJ, et al. Multi-ethnic reference values for spirometry for the 3–95-yr age range: the global lung function 2012 equations. Eur Respir J 2012; 40(6):1324–1343.

Smoking and Its Indirect Consequences on Diet and Nutritional Health

by Connie Paladenech, RRT

While it is well known that smoking causes chronic lung disease, many types of cancer, cardiovascular disease, and other health risks, there is much less awareness of the adverse consequences of smoking on diet and nutritional status. Older smokers are at greater risk because they have smoked longer (an average of 40 years), tend to be heavier smokers, are more likely to suffer from smoking-related illnesses, and have decreased nutritional reserves.[1]

Effect of smoking on ability to taste and smell

Smokers are twice as likely to suffer from a reduced sense of taste and smell as their non-smoking counterparts, according to the American Council on Science and Health. Chemical compounds found in cigarettes blunt the ability of the taste buds to register the five basic tastes: salty, sweet, sour, bitter, and umami (the taste of meaty/savory substances). Cigarette smoke also dulls the ability of the olfactory nerves to sense smells. As the sense of taste is actually a combination of taste and smell, smoking can impair taste by interfering with both forms of sensory recognition and damaging the mucous membranes.

The more cigarettes someone smokes, the greater the loss of their sense of smell and the longer it takes to come back if one quits. It may take 10 years for a person who smokes two packs of cigarettes a day to fully regain their sense of smell.[2,3] Smell and taste disorders are often overlooked in the elderly as they are not considered critical for life. However, this may not be the case. A decrease in smell and taste results in appetite suppression that can lead to weight loss, malnutrition, impaired immunity, and worsening of other medical conditions. Further, a diminished sense of smell can be serious and even life threatening when it becomes difficult to smell fire, smoke, poisonous fumes, leaking gas, or spoiled food.[4]

Nutritional problems related to age and smoking

Nutritional problems are common in individuals experiencing smell and taste disorders. As people age, they experience a decrease in their ability to smell and taste. These changes begin around the age of 60 and become more pronounced by the time people reach their 70s — and are more pronounced in men than in women.[5] Smoking indirectly affects nutritional status by suppressing appetite through its effect on the brain and central nervous system. It is not uncommon for people to change their eating habits when their sense of taste or smell is impaired. Elderly individuals have been reported to require up to a twofold to threefold higher concentration of salt to detect it in tomato soup. The tendency toward higher salt and sugar intake in the elderly diet can be a problem for people who have or are at risk of having medical conditions such as kidney disease, diabetes, high blood pressure, or heart failure and the need to follow a specific diet. In severe cases, loss of taste can lead to depression.[6] Smoking has also been linked to a number of negative metabolic changes, including insulin resistance and an increased tendency for central obesity. Smokers tend to eat more, consume higher fat foods, and drink more alcohol while consuming less fiber and antioxidants. Smoking has been shown to impair absorption of a variety of vitamins and minerals including calcium and vitamins C and D, particularly from supplements.[7] This places smokers at increased risk of chronic disease.

about the author...

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Table 1. Safety Considerations for Individuals with Taste and/or Smell Deficits

- Make sure there is a working smoke, natural gas, carbon monoxide, or propane detector.
- Date all perishable foods and store them in the refrigerator to prevent accidental food poisoning.
- Make sure all chemical and cleaning solutions are properly labeled.
- While cooking, be very attentive to prevent food from burning and starting a fire.
- Bathe, shower, use underarm deodorant, and wash and dry clothes regularly (especially for people who live alone).

* Frye RE, Schwartz BS, Doty RL. Dose-related effects of cigarette smoking on olfactory function. JAMA 1990; 263(9):1233–1236.

Role of the respiratory therapist

Smell and taste disorders are often unrecognized by both patients and health care providers.[7] This is especially true for older patients who continue to smoke. As frontline providers of patient care, respiratory therapists have the ability — with their knowledge of disease and their role as direct patient care providers — to provide patient education and interventions that facilitate smoking cessation. We must bring these important issues to the attention of both our patients and other health care providers who may not be fully aware of the significance of this smoking-related issue. Important topics to discuss with our elderly patients who smoke include ensuring they and/or their caregivers are aware of safety issues related to the full or partial loss of their sense of taste and smell (see Table 1).[4]

Patients need to be educated on benefits of quitting smoking and be provided with the necessary tools to be successful. Smoking-cessation counseling is often avoided in the elderly due to the mistaken belief that the damage caused by smoking is irreversible and there is little benefit gained from cessation of smoking by older individuals. In fact, elderly patients experience significant benefits from smoking cessation including reduced mortality rates, increased activity tolerance, decreased respiratory symptoms such as shortness of breath, wheezing and coughing, and overall quality of life improvement.[7]

Another misconception is that elders who have smoked longer will have a harder time quitting. In reality, older individuals are more likely to quit than the younger population. Individuals over 65 are more likely not only to quit smoking but are less likely to relapse than their younger peers. Tobacco-cessation interventions and treatments are more cost effective than other secondary preventive services such as colon screenings, mammography, Pap smears, and some treatments for hypertension and high cholesterol.[8]

Respiratory therapists should be aware of resources that can be used to teach elderly patients, including tools to identify smokers, communication techniques to help intervene with smokers, treatment options, helplines that provide telephone counseling, and patient education materials (see Table 2). Using a tobacco treatment plan doubles the quitting success rate. Effective treatments combine both counseling and medications.[9] ■

Table 2. Smoking-cessation Interventions

Pharmacologic therapies

- Nicotine replacement therapy (patches, gum, lozenges, sprays, and inhalers)
- Antidepressant therapies
- Varenicline

Non-pharmacologic therapies

- Hypnosis
- Support groups
- Herbal supplements
- Acupuncture

* There is little research on the best method for ensuring success with cessation in the elderly (see U.S. Department of Health & Human Services; Public Health Service, 2008).

REFERENCES

1. Rimer BK, Orleans CT, Keintz MK, et al. The older smoker. Status, challenges and opportunities for intervention. Chest 1990; 97(3):547–553.
2. Boyce JM, Shone GR. Effects of ageing on smell and taste. Postgrad Med J 2006; 82(966):239–241.
3. Doty RL, Saito K, Bromley SM. Disorders of taste and smell. In: Basbaum AI, Kaneko A, Shepherd GM, Westheimer G, editors. The senses: a comprehensive reference. Oxford: Elsevier, Academic Press, 2008; 2:859–877.
4. Frye RE, Schwartz BS, Doty RL. Dose-related effects of cigarette smoking on olfactory function. JAMA 1990; 263(9):1233–1236.
5. Matsuda T, Doty RL. Regional taste sensitivity to NaCl: relationship to subject age, tongue locus and stimulation area. Chem Senses 1995; 20(3):283–290.
6. Frye RE, Schwartz BS, Doty RL. Dose-related effects of cigarette smoking on olfactory function. JAMA 1990; 263(9):1233–1236.
7. Cataldo JK. Clinical implications of smoking and aging: breaking through the barriers. J Gerontol Nurs 2007; 33(8):32–41.
8. U.S. Department of Health and Human Services, Public Health Services. Wallace AE, Sairafi NA, Weeks WB. Treating tobacco use and dependence: 2008 Update.
9. American Lung Association website. Stop smoking. Available at: www.lung.org/stop-smoking/*Accessed April 17, 2015*

Sleep Waves

Continuous Pulse Oximetry in Sleep Diagnostics

by Cindra Altman, CCSH, RPSGT, R.EEG/EP T

Pulse oximetry provides a noninvasive estimate of oxygen saturation measured via pulse oximetry (SpO_2). Continuous pulse oximetry is widely available and is used to collect and analyze SpO_2 data over prolonged periods of time. It is often referred to as trend oximetry when performed as a stand-alone procedure or monitor. The main indication for trend oximetry is to detect hypoxemia and guide oxygen therapy.

In sleep diagnostics, trend oximetry alone is of limited value. It has utility as a cost-effective tool to confirm the diagnosis of nocturnal hypoxemia due to chronic lung disease and as a screening tool for sleep apnea in select populations. It is not accepted for diagnosis or to rule out sleep-related breathing disorders. Continuous pulse oximetry is most beneficial when paired with the simultaneous recording of airflow, respiratory effort, and other physiologic parameters to diagnose sleep apnea and assist with positive airway pressure (PAP) titration.

about the author...

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Diagnosis of adult OSA

Pulse oximetry plays a major role in the diagnosis and evaluation of sleep-related breathing disorders, particularly obstructive sleep apnea (OSA). OSA is estimated to affect between 6%–13% of the adult population, is often undiagnosed or under-treated, and is associated with significant morbidity and mortality including increased cancer-related deaths and cardiovascular, metabolic, and neurocognitive disease.[1,2]

Continuous pulse oximetry is a required component of the polysomnogram (PSG) and the home sleep apnea test (HSAT), procedures used to diagnose and evaluate sleep-related breathing disorders.[3,4] Modern sleep acquisition systems have integrated internal pulse oximetry units that collect continuous SpO_2 values via a finger sensor. Analysis and scoring software allows for the scrutiny and trending of oxygen saturation data. Summary reports commonly include the total number of 4% or greater and/or 3% or greater oxygen desaturations, the oxygen desaturation index (ODI), mean and minimum arterial oxygen saturations, and percent of time the SpO_2 falls below 90%. Desaturations are associated with respiratory events and other recording parameters to calculate the apnea-hypopnea index (AHI) and respiratory disturbance index (RDI) for a diagnosis of OSA or other sleep-related breathing disorders.

An AHI or RDI of 5 or more meets diagnostic criteria for adult OSA in a patient with clinical symptoms of sleep disturbance and/or a diagnosis of hypertension, mood disorder, cognitive dysfunction, coronary artery disease, stroke, congestive heart failure, atrial fibrillation, or type 2 diabetes mellitus.[5] In the absence of associated clinical findings, an AHI or RDI of 15 or more meets diagnostic criteria. The Centers for Medicare & Medicaid Services (CMS) and the American Academy of Sleep Medicine (AASM) define an apnea as a cessation of airflow during sleep for at least 10 seconds.[3,6] However, their definitions of hypopnea differ. Both agree that a hypopnea requires a reduction in airflow for at least 10 seconds associated with an oxygen desaturation; but the AASM also recognizes a hypopnea as a reduction in airflow for at least 10 seconds associated with an arousal, even in the absence of a desaturation. CMS does not recognize arousal-related events. CMS requires a 4% or greater drop in SpO_2 to classify a hypopnea.[6] The

AASM recommends a 3% or greater drop in SpO_2 from pre-event baseline for classification as a hypopnea, although AASM offers an optional 4% or greater hypopnea definition that is more consistent with CMS.[3] Knowing the pulse oximetry and arousal criteria used to determine the AHI and RDI is important to meet payor-specific requirements for diagnosis and treatment of sleep apnea.

Intermittent hypoxemia

Adult OSA is usually characterized by episodes of apnea and hypopnea associated with intermittent hypoxemia, intrathoracic pressure changes, and arousals.[7] Intermittent hypoxemia is presumed to lead to ischemia-reperfusion injury and is the most likely cause of the significant morbidity and mortality associated with OSA.

In moderate to severe OSA, intermittent hypoxemia with high-frequency cycles of desaturation lasting 15–60 seconds followed by reoxygenation is a characteristic pattern seen on trend oximetry. This is a very different pattern from that seen in patients with chronic lung disease who show sustained hypoxemia with oxygen saturations usually in the mid to low 80s for prolonged periods of time.

When evaluating trend oximetry patterns, respiratory events with desaturations may worsen or not be apparent until supine or rapid-eye movement (REM) sleep occurs, leading to the intermittent nature of the desaturation pattern. At other times, events are nearly continuous and persist throughout the night. A normal or borderline trend oximetry pattern cannot exclude a diagnosis of obstructive sleep apnea.

Figure 1 shows examples of nocturnal oximetry showing A) cyclic desaturations associated with severe obstructive sleep apnea, B) intermittent cyclic desaturations associated with REM-related obstructive sleep apnea, C) normal trend oximetry despite the presence of significant arousal-related respiratory events, D) normal trend oximetry in the absence of respiratory events and arousals, E) sustained low oxygen saturations associated with nocturnal hypoxemia due to chronic lung disease.

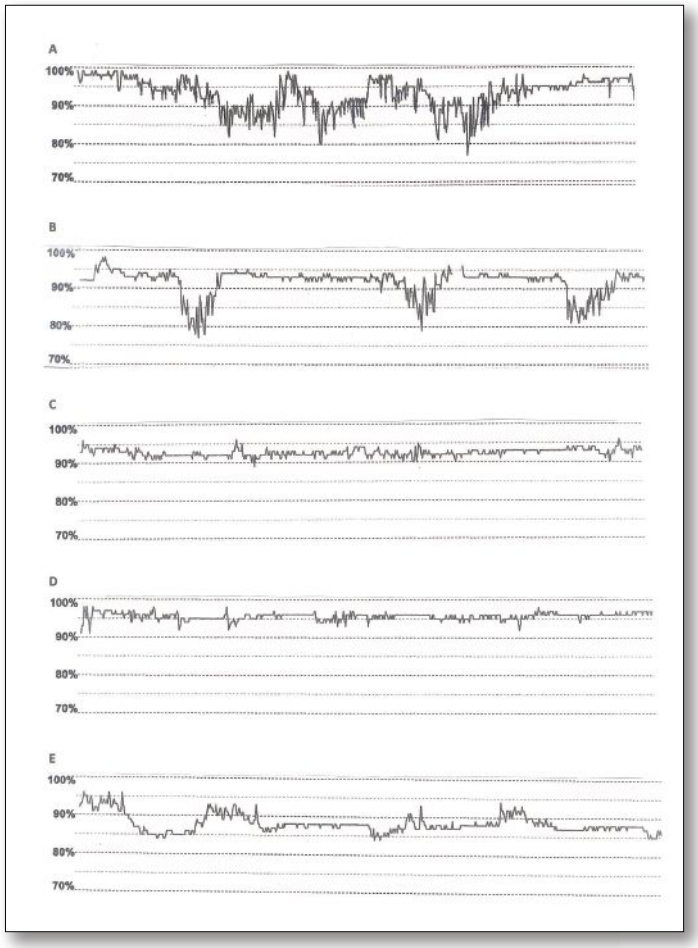
Limitations of stand-alone trend oximetry

Interpretation and use of overnight trend oximetry as a single diagnostic modality lacks standardization and defined clinical utility for sleep-related breathing disorders.[8] Today its primary use is for the evaluation of hypoxemia and assessment of oxygen and PAP therapy during sleep. It fell significantly short as a diagnostic tool for sleep apnea years ago after an abundance of literature compared results of overnight continuous pulse oximetry to PSG. The results of the studies, nicely summarized in a review article in 2001, varied greatly, with the sensitivity and specificity of stand-alone pulse oximetry controversial and inconclusive.[9]

Correlation with OSA was found to be dependent on AHI. Patients with moderate to severe OSA were more likely to have a significant ODI by trend oximetry, but there was no standard ODI threshold to determine abnormality, and no one threshold had greater validity over the others when comparing data. Trend oximetry alone was a poor discriminator for upper airway resistance syndrome, central sleep apnea, and Cheyne-Stokes respiration. Problems with signal averaging time, sampling rate, peripheral blood flow, hemoglobin, body movements, vasoconstriction, and hypotension negatively influenced clinical interpretation and reliability. Overall, PSG was found to be a superior diagnostic tool.

As home monitoring technology improved and the cost of PSG came under scrutiny, criteria for HSAT were standardized and validated for the diagnosis of sleep apnea.[4] There was now a lower cost home alternative to PSG that incorporated continuous pulse oximetry

Figure 1. Examples of Nocturnal Oximetry



with airflow and respiratory effort, reducing interest in overnight trend oximetry as a diagnostic tool in sleep medicine.

The use of stand-alone trend oximetry was further minimized with the advancement of positive airway pressure devices and the development of compliance software for home PAP units. PAP compliance download data identifies residual respiratory events to allow clinicians to track and optimize PAP treatment on a timely basis. Home PAP devices can also be interfaced with oximetry to provide SpO_2 data in compliance with download reports. Previously, overnight trend oximetry was the only SpO_2 tool to assess treatment efficacy for OSA.

Current applications in sleep diagnostics

Continuous pulse oximetry is an effective screening tool for OSA in the inpatient, perioperative, and postoperative settings, or in the absence of HSAT for the outpatient population. Like HSAT, it is a "rule in" and not a "rule out" procedure to be used when there is strong clinical suspicion for OSA. Unlike HSAT, overnight trend oximetry alone is not diagnostic and may not qualify a patient for treatment of OSA. Used in conjunction with PSG and HSAT, continuous pulse oximetry provides unsurpassed value in the diagnosis and management of sleep-related breathing disorders. Its functionality as a patient-safety feature is currently under review.

Respiratory care practitioners should be aware of the principles of continuous pulse oximetry and the clinical applications and limitations in sleep diagnostics. They should recognize the cyclic nature of oxygen desaturations in undiagnosed or inadequately treated obstructive sleep apnea for effective patient screening and management. ■

REFERENCES

1. Peppard PE, Young T, Barnet JH, et al. Increased prevalence of sleep-disordered breathing in adults. Am J Epidemiol 2013; 177(9):1006–1014.
2. Nieto FJ, Peppard PE, Young T, et al. Sleep-disordered breathing and cancer mortality: results from the Wisconsin Sleep Cohort Study. Am J Respir Crit Care Med 2012; 186(2):190–194.
3. Berry RB, Brooks R, Gamaldo CE, et al. The AASM manual for the scoring of sleep and associated events: rules, terminology and technical specifications. Darien IL: American Academy of Sleep Medicine; 2014:Ver. 2.1.
4. Collop NA, Anderson WM, Boehlecke B, et al. Clinical guidelines for the use of unattended portable monitors in the diagnosis of obstructive sleep apnea in adult patients. J Clin Sleep Med 2007; 3(7):737–747.
5. International classification of sleep disorders, 3rd ed. Darien IL: American Academy of Sleep Medicine; 2014.
6. Centers for Medicare and Medicaid Services website. National coverage determination for continuous positive airway pressure therapy for obstructive sleep apnea. Available at: http://www.cms.gov/Medicare/Coverage/Coverage-with-Evidence-Development/Continuous-Positive-Airway-Pressure-CPAP-Therapy-For-Obstructive-Sleep-Apnea-OSA-2404.html/ *Accessed March 22, 2015*
7. Dewan NA, Nieto FJ, Somers VK. Intermittent hypoxemia and OSA: implications for comorbidities. Chest 2015; 147(1):266–274.
8. Ramsey R, Mehra R, Strohl KP. Variations in physician interpretation of overnight pulse oximetry monitoring. Chest 2007; 132(3):852–859.
9. Netzer N, Eliasson AH, Netzer C, Kristo DA. Overnight pulse oximetry for sleep-disordered breathing in adults: a review. Chest 2001; 120(2):625–633.

Medicare Telehealth Parity Legislation

by John Lindsey, MEd, RRT-NPS, FAARC

On March 18, 2015, AARC members went to Washington, DC, to lobby Congress for passage of the Medicare Telehealth Parity Legislation. This bill offers new and exciting opportunities for respiratory therapists and would add RTs as qualified practitioners to the Medicare statute, something the AARC has been striving to achieve through its previous legislative initiatives.

How did telemedicine begin, and what is it?

Starting out over 40 years ago with demonstrations of hospitals extending care to patients in remote areas, the use of telemedicine has spread rapidly and is now becoming integrated into the ongoing operations of hospitals, specialty departments, home health agencies, private physician offices, as well as consumers' homes and workplaces. Telemedicine is viewed as a cost-effective alternative to the more traditional face-to-face way of providing medical care.

Telemedicine is designed to improve a patient's clinical health status by permitting a two-way, real-time audio and video interactive communication between the patient and medical professionals. The patient may be located at an originating site (hospital, physician's office, rural health clinic, skilled nursing facility, etc.); and the physician or other qualified practitioner (nurse practitioner, physician assistant, clinical nurse specialists, etc.) could be at a distant site where the beneficiary is not located.

The terms "telemedicine" and "telehealth" are often used interchangeably. For example, Medicare prefers to use the term telehealth and for many years has covered telehealth services limited mainly in rural health professional shortage areas. The Medicare Telehealth Parity Legislation would expand telehealth locations and offer additional services for pulmonary patients who otherwise may not be able to receive the care they need under current policies.

Why did the AARC decide not to reintroduce H.R. 2619 in the 114th Congress?

The AARC leadership and the government affairs staff looked hard at the prospects of H.R. 2619 (the Medicare Respiratory Therapist Access Act) moving forward in the newly controlled Republican Congress and how the AARC's 2015 congressional legislative agenda should realistically fit into the new paradigm. After some clear-eyed assessment of the new congressional landscape, the AARC decided to focus on the Medicare Telehealth Parity legislation that was introduced in the 113th Congress (H.R. 5380) and one that has distinct advantages for RTs and coverage of respiratory services in an emerging and exciting venue.

There are several advantages to supporting the Medicare Telehealth Parity Legislation:

- It has bipartisan support, a definite advantage looking at the 2015 congressional landscape — both sponsors of the bill were re-elected.
- A key supporter of the bill is the American Telemedicine Association, which is very influential on Capitol Hill.
- AARC will not be the only association lobbying for co-sponsorship and enactment. Numerous other health care associations support this bill — all who will be actively lobbying for it during their Hill visits.

about the author...

John Lindsey, MEd, RRT-NPS, FAARC, is director of respiratory care services, neurodiagnostics, and the sleep lab at CHI St. Vincent–Hot Springs in Hot Springs, AR. Also, he is on the AARC Board of Directors as a director-at-large and is co-chair of the AARC's Federal Government Affairs Committee.

What does the Medicare Telehealth Parity Legislation do?

The legislation is designed to be implemented in three phases, with each phase being two years apart. Phase one covers licensed respiratory therapists as qualified telehealth practitioners, incorporates RTs into the Medicare statute, and adds coverage of remote patient management services that include chronic conditions such as COPD, congestive heart failure, and diabetes under certain conditions. AARC has learned that proposed revisions to the bill prior to it being reintroduced would add coverage of respiratory services in the first phase instead of the second phase, which is good news. Use of the home as a telehealth site would be added in phase two. Over the course of the three phases, telehealth sites would be expanded from small metropolitan statistical areas with a population of less than 50,000 up to those with a population of at least 100,000. The legislation also requires studies that have the potential to highlight the value of RTs and how their services could improve care, reduce hospital readmissions, and lower costs.

What does remote patient management involve?

Coverage of remote patient management services for the three chronic conditions covered in the legislation is designed to help reduce hospital readmissions and save Medicare dollars. The coverage includes in-home technology-based professional consultations, patient monitoring, patient-training services, clinical observation, assessment, treatment, and any other services specified by the Secretary of Health and Human Services. The services do not include a telecommunication that consists solely of a telephone audio conversation, facsimile, or electronic text mail with a health care professional. The remote interface must be able to collect and transmit clinical data between the patient and practitioner.

Medicare beneficiaries trained by RTs via telehealth to recognize and reduce the symptoms and triggers of their chronic lung disease (such as COPD) can lead to reduced exacerbations and lower the incidence of costly acute care interventions.

What is involved in telehealth services in the home?

The home is covered as a telehealth site when the service is related to hospice care, home dialysis, home health services, or durable medical equipment and includes video conferencing. Under this provision, RTs' expertise can help minimize unnecessary, ineffective, or wasteful interventions due to the complexities of inhaler devices and oxygen systems. This is an opportunity for RTs to assist with device selection and provide patient training and education on proper inhaler techniques and appropriate oxygen saturation levels that can improve medication adherence and oxygen utilization. Coverage of home rehabilitation therapy services are expected to be added prior to the bill's reintroduction.

How does the Medicare Telehealth Parity Legislation Benefit RTs?

Respiratory therapists would benefit in five significant areas with the passage of the Medicare Telehealth Parity Legislation:

1. The Medicare Telehealth Parity Legislation recognizes RTs as practitioners in the Medicare statute, which has been a long-standing goal of the AARC.
2. It is the only telehealth bill that specifically includes RTs and respiratory services.
3. It would allow RTs to provide respiratory services and remote patient management services for COPD patients via telehealth communications that are within their scope of practice and determined to be medically necessary.
4. It offers a broader reach of services for pulmonary patients and a new way to deliver them that are currently not available to RTs as part of the Medicare program.
5. Studies called for in the legislation can have the potential to show the value of RTs and how they can improve patient outcomes.

Since the Political Advocacy Contact Team (PACT) meeting in March, the AARC has been in contact with congressional staff and has learned that the bill is expected to be reintroduced soon. Please go to the following link (https://www.govtrack.us/congress/bills/113/hr5380/text) if you wish to examine the bill introduced in the last Congress. ■

Captain, My Captain

by Anthony L. DeWitt, JD, RRT, FAARC

Under maritime law, the captain of the ship is responsible for everything that happens on the ship. The same analogy is used by lawyers to describe the relationship between the physician and those who care for the patient. If the physician gives an order — even if it is wrong — as the captain of the ship, he is responsible for that order.

This approach has a lot of surface appeal. If something bad happens, the person with four years of medical school and in the second year of residency is the person who ultimately bears the responsibility for the order. However, what about the nurse who knows the order is wrong, or the therapist who knows that the ventilator setting is inappropriate? Do they have an independent duty to act on what they know?

The answer is yes. Allied health professionals have an independent duty to the patient not to act in a manner that will harm them. Therefore, when they get an inappropriate order, challenging that inappropriate order is not an option, it's a mandate. A therapist must bring inappropriate orders to the attention of the physician, discuss the issue, and abide by the physician's decision. Put another way, the therapist cannot unilaterally decide to do something different. He can refuse to perform the order but does so at the peril of his job.

So, the "confrontationally challenged" then ask, "So why bring it up if we can't act independently to fix the problem?" The answer is because you have both a legal and moral duty to the patient, and failing to discharge that duty can get you and your employer sued even if the "captain of the ship" goes down with you. This is because the relationship between hospital, physician, and therapist is complex. The physician (except in those instances where he or she works for a hospital) is an independent contractor. When a physician obtains privileges at a hospital, he is contracted to provide patient care there within his complete discretion. He promises to follow hospital rules. The hospital cannot tell him how to practice medicine, so he is an independent contractor and not an employee. The therapist, however, is an employee of the hospital. The doctor has no direct employment relationship with the therapist, but the hospital is set up to make the therapist subordinate to the doctor.

The doctor has a duty to patients to exercise ordinary care in their treatment — in effect, to practice competently in a non-negligent manner. Much of what is accomplished in a hospital is accomplished through hospital employees, who become the physicians' "agents" by carrying out the doctors' orders. However, these same employees are also agents of the hospital. So when an error occurs and a patient is harmed, the physician, hospital, and therapist are all three potentially on the hook for damages for a breach of their duty (see Figure 1).

"But the doctor won't listen to me..."

A common complaint among staff is that the physicians, and especially residents, do not listen to therapists and consider them a bit of an annoyance. So what do you do when you have a situation where there is a bad order, and you have a physician who traditionally doesn't listen to you?

First, you have to remember the patient is counting on you. You are the last line of defense between her and a medical error. So the first thing you do is go to a resource the physician will respect and see if you can find written direction that conflicts with the order.

about the author...

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

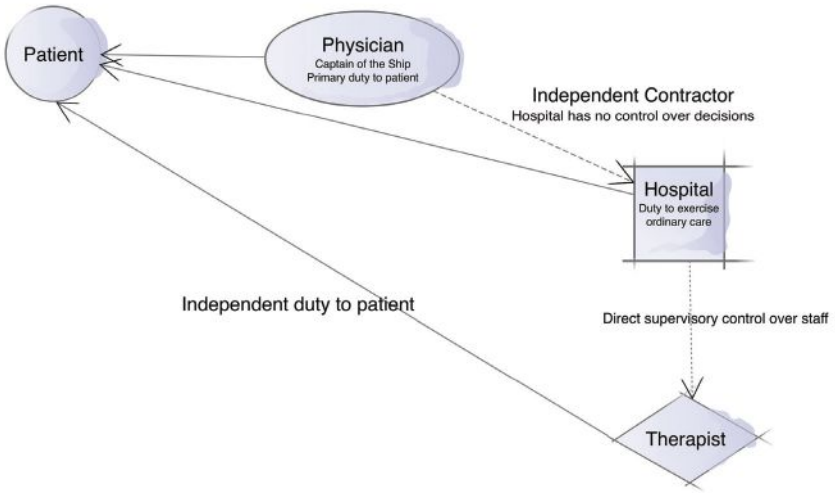


Figure 1. When an error occurs and a patient is harmed, the physician, hospital, and therapist are all potentially negligent.

Sometimes the AARC Clinical Practice Guidelines will be helpful. Sometimes it will be necessary to work strictly from what is known about anatomy and physiology. However, always prepare a detailed scientific reason for objecting to the order (see Table 1).

Next, remember that the person you're talking to has spent four years in medical school and, if a resident, may have had very little sleep in the last 24 hours. Approach them as a colleague, and do it professionally. Choose your words and your approach carefully. If a doctor has a particularly prickly personality, it may be good to get the nurse on your side before approaching him; or in some cases, it may be good to seek advice from another resident about how best to approach him.

No physician wants to harm a patient. No physician wants to get sued. You are offering a physician your best advice in order to prevent that physician from committing an error. Keeping the patient in mind and using the best communication techniques is usually the best answer.

Case in point

Early in my career as a therapist, I had a patient who presented with all the classic signs of epiglottitis. He was drooling, aphasic, had a high fever, and was crowing. I was ordered to perform an intermittent positive-pressure breathing (IPPB) treatment (because in 1980, IPPB was thought to cure everything from baldness to toenail fungus). I refused and suggested that the physician who had given the order had not seen him, and so I asked an ER doctor to look at the child. Instead he told me to "follow my orders." I called the department director, who said the same thing. Again, I refused, citing the symptoms and knowing that slapping an IPPB mask on the child's face might be fatal.

The department director came to the emergency room, took the child, held him on his lap, and in spite of his struggling (the child voided from fear) and obvious difficulty breathing, delivered the IPPB. It did no good. The crowing became louder. The child was struggling to breathe. When an anesthesiologist walked by, he heard the child before he saw him and ran into the room. He scooped the child off the ER table and ran with him to the operating room where the child was anesthetized and intubated.

There are no hard and fast rules nor easy answers when these situations arise. Every therapist is within her rights to refuse to perform a therapy she believes to

Table 1. Prepare a Detailed Scientific Reason for Objecting to the Order

Do This	Not This
MD: Why do you want me to change this order on the pressure limit? **RT:** Setting the pressure limit on this patient at 70 when the patient has peak airway pressures of 60 and plateau pressures of 55 is an indication of a need for further diagnostic studies. While your order will silence the ventilator alarm, it may also result in barotrauma and lung injury.	**MD:** Why do you want me to change this order? **RT:** Because we've always been taught not to do this.

endanger the patient. If ordered to extubate a patient, and you believe this is harmful or perhaps unlawful, you may refuse to do so. If the physician wishes to perform the task, you cannot stop her from doing so. When this happens, an incident report[1] should be prepared for the hospital; and a separate report, marked "Notes Prepared for My Attorney" should be written with the date, room number, and generic patient identification (46-year-old white male, trauma patient, bed 2) for your records. When the event is over, the notes should be placed somewhere safe under your control (a safe deposit box is ideal) in the event they are ever needed to defend your actions before the board or in a courtroom.

Sometimes, the moral duty to do no harm trumps the legal duty to follow orders. This is a decision you must make on your own terms and for your own reasons. I could not have lived with myself if I had killed that child with an IPPB treatment. You are a professional. You always have the option of making the same type of call, but exhaust your departmental resources first. ■

1. An incident report is the best place to record a disagreement. If placed in the chart, it becomes a red flag to a reviewing attorney. However, if a clinician feels she must record information in the chart, brevity is best: "received order to perform IPPB on crowing patient; refused to perform based on physical assessment."

Thank You, AARC Members!

On this month's cover of *AARC Times*, we feature you, our members. The AARC continues to be the strong organization it is because of members like you.

The people on the cover this month are respiratory care students, practitioners, telehealth professionals, disease managers, authors, members of the military, medical mission volunteers, lifesavers, newsmakers, and leaders of organizations and corporations related to the respiratory care profession. Several volunteered their time to advocate for respiratory care patients and the profession on AARC's Hill Day 2015 last March.

As you peruse this edition of *AARC Times*, we hope you will think about everything being done by you and for you — the 50,000+ strong who make up the Association worldwide and who drive the advances in respiratory care today. The AARC Annual Report in this issue highlights the many activities, programs, and projects of the Association throughout the past year.

Thank YOU for all you do, and thank you for being an AARC member! Everyone has a role to play in the profession. What's yours? ■

1. Robin Vuckovich, Montgomery, AL
2. Mark Valentine, Plano, TX
3. Peggy Watts, St. Louis, MO
4. Joel M. Brown, II, Wilmington, DE
5. Veena Erinjeri, Flint, MI
6. Shawn Rolquin, Delano, FL
7. Nick Clayton, East Setauket, NY
8. Arianna Villa, San Diego, CA
9. Dom Coppolo, Syracuse, NY
10. Heather Esparza, San Bruno, CA
11. Robby Nijjar, Sacramento, CA
12. Amber Dixon, Newington, GA
13. Lisa Trujillo, Ogden, UT
14. Jay Taylor, Durbin, ND
15. Kim Wiles, Kittanning, PA
16. Jeffrey Davis, Los Angeles, CA
17. Brooke Yeager, Charleston, SC
18. Brian Faix, Baltimore, MD
19. Richard Hinchliffe, Berlin, VT
20. Tonya Winders, McClean, VA
21. Lee Yang, St. Paul, MN
22. Fawzia Abdulmajid, Washington, DC
23. Dario Rodriquez, Jr., Union, KY
24. Theresa Bramblett, Orangeburg, SC

2014 AARC Annual Report:

Focusing on Our Core

The AARC went back to the basics last year to address the fundamental aspects of its mission

Values

You depend on the AARC to provide overall direction for the profession and the hands-on continuing education and representation you need to effectively care for your patients.

Those core values were priority No. 1 in 2014.

by Debbie Bunch

The AARC exists to meet the educational and professional needs of respiratory therapists, and last year we redoubled our efforts to make sure those needs were being met. From months-long discussions aimed at developing a new Strategic Plan for the Association to an in-the-moment collection of clinical resources for clinicians caught off guard by the nation's first Ebola patient, to the launch of a Virtual Museum to preserve the respiratory care profession's past, the AARC was on the case.

"Respiratory therapists are poised to take on greater responsibilities under health care reform, and the AARC is dedicated to providing them with the core programs and services they will need to rise to the challenges placed before them," says 2013–2014 AARC President George Gaebler, MSEd, RRT, FAARC. "In 2014 we went back to the basics, with a renewed focus on our overall goals and objectives, a mission to streamline our educational offerings, and a commitment to deliver the information that matters most to our members."

The AARC emerged from the process by year's end stronger than it has ever been before and ready to address the opportunities that lay ahead — groundwork that bodes well for respiratory therapists as everyone continues to adapt to the evolving needs of our changing health care system. What follows is a rundown of what AARC has offered over the past year. ■

New **Strategic Plan**

Where We're Going and How We're Going To Get There

As the drive toward major health care reform began to build momentum in the latter years of the last decade, the AARC recognized the need to identify the key competencies necessary for respiratory therapists to succeed under a health care system where non-physician providers would most likely be called upon to take on a large role.

The result was a series of three AARC conferences grouped together under the "2015 and Beyond" umbrella. The first convened in the spring of 2008 and created a vision for the respiratory therapist of the future. Stakeholders from inside and outside the respiratory care community gathered to fill in the broad strokes. The second conference took place the following spring and looked at specific competencies that should be possessed by this futuristic therapist. The third and final conference convened in the summer of 2010 and examined factors that would figure into the transition.

Late last year, the wealth of information gathered through these three conferences came together in a new Strategic Plan developed by the AARC leadership. Eight core objectives will lead the way:

Cultivating the future of the profession was the goal of the Association's presence at the ***USA Science & Engineering Festival*** in Washington, DC. With approximately 325,000 children, parents, and teachers attending, it proved to be a great way to introduce thousands of kids to the respiratory care profession in a setting where they were all focused on seeking out potential careers. Staffed by members from the D.C. area, the AARC booth was a big hit with kids interested in pursuing a health care field. ■

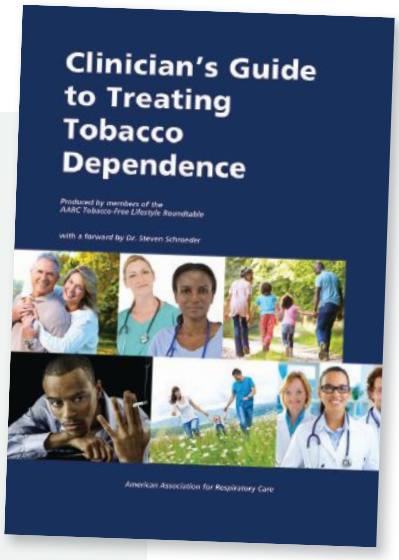
1. Refine and expand the scope of practice for respiratory therapists in all care settings.
2. Advance the knowledge base and educational preparation of respiratory therapists to ensure competent patient care and to foster patient safety initiatives.
3. Support research and scientific inquiry to strengthen the scientific foundation and promote best practice for patient care.
4. Establish professional standards and outcomes that are supported by scientific evidence.
5. Advocate for federal and state health care policies that enhance patient care, patients' access to care, and professional practice.
6. Promote partnerships with interested stakeholders to improve lung health, prevent cardiopulmonary disease, and identify and maximize the care of patients with chronic disease.
7. Broaden consumer and health care providers' knowledge and understanding of the value of respiratory therapists in providing safe, competent, and evidence-based care.
8. Assure the Association has the resources to meet the mission and strategic goals of the organization.

The AARC has identified key strategies to use in meeting these objectives and will continue to work toward full implementation by the year 2020. ■

Members of the AARC leadership attended the ***Patient Safety, Science & Technology Summit*** held in California shortly after the beginning of 2014. AARC member Jon Carlson, BS, RRT-NPS, was honored with a prestigious humanitarian award for the work he did in his hospital to implement a continuous patient monitoring system credited with saving patients' lives.

AARC leaders again traveled to California for the 2015 Summit this past January; and this time a Humanitarian Award went to AARC CEO and Executive Director Thomas J. Kallstrom, MBA, RRT, FAARC, who accepted on behalf of RTs everywhere. ■

Respiratory conditions often either have their roots in smoking or are certainly made worse by it, so helping patients kick the habit is a key objective for RTs. Our new ***Clinician's Guide to Treating Tobacco Dependency*** (https://www.aarc.org/education/online-courses/clinicians-guide-treating-tobacco-dependence/) was released in August to assist therapists as they work with patients on adopting a healthier lifestyle. ■



AARC
LEADERSHIP INSTITUTE
EST. 2014

Real World Education for Managers, Educators, and Researchers

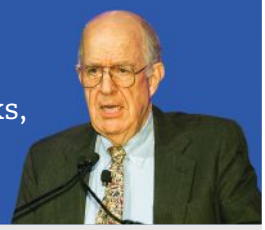
With the majority of respiratory therapists still educated at the two-year associate degree level, formal instruction in management, education, and research is lacking in the profession. Once students get on the job, many of them will eventually be called upon to move up into these areas of practice.

The AARC launched its online Leadership Institute in January of last year to help RTs prepare for these roles (www.aarc.org/education/). Featuring tracks in management, education, and research, the institute offers therapists who have already taken on advanced roles — as well as those who would like to move into these roles in the future — the opportunity to gain the knowledge they need to be successful on the job. All of the modules were developed by content experts and are specific to the respiratory care profession. "The modules have been through a strict peer-review process, and the content has been based on competencies that are vital to the respiratory care manager, educator, or researcher," emphasizes AARC Associate Executive Director-Education Shawna Strickland, PhD, RRT, FAARC. "These are immediately applicable competencies."

Indeed, even RTs who hold bachelor's or master's degrees in business or education or other fields will find the Leadership Institute modules of value in their careers because the modules focus directly on factors involved in respiratory care management, education, and research. ■

The Association was invited to the ***Social Determinants of Change Conference*** convened by the Association of Academic Health Centers in conjunction with the CDC and several major universities in March. AARC's Dr. Shawna Strickland made sure the group knew the role RTs could play in affecting these non-biological health-related factors. "Some RT-specific examples include helping eliminate smoking from home/work environments, helping eliminate mold from the home, promoting smoking cessation, and educating about washing bedding/stuffed animals to reduce allergens," she says. "When we positively affect these non-biological factors, we help an entire family or community achieve a healthier state of life." ■

Stephen Jencks, MD, MPH

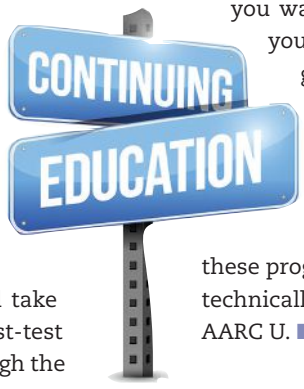


The 2013 keynote speaker at the AARC Congress in Anaheim, Stephen Jencks, MD, MPH, traveled to the Executive Office in 2014 to record a special ***COPD Readmissions*** video with AARC member Becky Anderson. Widely known for playing a major role in the research that led up to penalties for excessive readmissions, Dr. Jencks offered strategies for success and shared resources RTs can use when implementing COPD disease management programs. The session went live in June 2014 and was also promoted to the wider health care community through advertisements in the American Hospital Association newsletter. ■

One-stop Shopping for Online Continuing Education

Where do I find that course I signed up for? How do I access my test? What do you have available on aerosol therapy?

Questions like these spurred the development of the AARC University, a new platform for online on-demand continuing education courses offered by the Association. AARC U debuted mid-year, providing members with easy access to all of the online courses offered by the Association through www.aarc.org/education/. Once on the site, users can search for courses on specific topics, browse courses by general headings, sign up for and take the courses they want, and complete the post-test to earn their CRCE credits. CRCEs earned through the site automatically appear on the member's CRCE transcript, making for a seamless process.



"You can even purchase multiple courses at once if you want to, and they immediately show up in your 'classroom,'" says Dr. Strickland. "You go to your classroom, access the content, watch the video, take the test, and then access your certificate. It's that simple."

The only online education not housed in AARC U are the AARC webcasts, which are still located in Webcast Central. Since these programs air as live sessions first, they do not technically meet the online on-demand criteria for AARC U. ■

Thanks in part to the ***Pulmonary Rehabilitation Program Toolkit*** developed by the AARC and its partner organizations, Medicare released a statement near the end of the year noting a boost in the 2015 payment rate for hospital outpatient pulmonary rehabilitation programs. The new rate for CPT Code G0424 is $52.35, up substantially from the $37–$39 rates seen over the past two years. "We believe the most recent data reflects more accurate reporting of charges and that the Pulmonary Rehabilitation Toolkit has made a difference," says AARC Director of Regulatory Affairs Anne Marie Hummel. ■

Addressing Legislative Issues

A CHANGE IN DIRECTION

The AARC hosted another successful trip to Capitol Hill in March to advocate for legislation important to the profession and worked closely with the state societies to address a range of issues, including threats to state licensure. The latter came to a head in Texas mid-year, as the state's Sunset Commission took a closer look at discontinuing licensure for RTs. The Texas Society for Respiratory Care sprang into action, with the AARC government affairs staff close on its heels. Therapists throughout the state wrote to their elected officials, and representatives on both the state and national levels traveled to the state capitol for a special hearing before the legislature.

By the time the dust settled in August, the commission agreed that respiratory therapists should remain licensed in Texas, with licensure transferred from the Department of State Health Services to the Texas Board of Medicine. The last leg of the journey commenced this spring, with legislation to make it official.

On the federal level, the AARC continued to advocate for its Medicare Respiratory Therapist Access Act. With the start of a new Congress in January 2015 and its political party reconfiguration as a result of the November congressional elections, AARC assessed that rather than focus exclusively on a bill solely for RTs, AARC leadership decided that the respiratory care community would make more headway by signing on to legislation aimed at improving access to Medicare telehealth services. The Medicare Telehealth Parity Act not only expands access for a range of patients (including those with COPD) but it explicitly includes RTs as providers of telehealth services, something that currently is not permitted under Medicare.

An expansion of current Medicare telehealth coverage (the Medicare Telehealth Parity Act) would,

Patient safety has always been job number one for respiratory therapists, but with the new emphasis on eliminating medical errors, the AARC decided members could benefit from a dedicated email list where they could talk about patient safety issues with their colleagues. The *Patient Safety Roundtable* formed in May, and the discussions began. A new online course on patient safety was added to AARC U in June as well. Members had until the end of the year to take advantage of it. ■

among other things, add RTs to the roster of practitioners who can provide telehealth services such as remote patient monitoring. Under remote patient monitoring, therapists would be able to provide patient monitoring, patient training services, clinical observation, patient assessment, and treatment to patients outside the acute care hospital.

Given the fact that the legislation has the support of other clinicians on the multidisciplinary team, AARC leaders realized it would have a better chance of making its way through Congress. Plans were launched to make it the focus of our 2015 Capitol Hill Advocacy Day, which took place on March 18. AARC Political Advocacy Contact Team (PACT) members who spent the day visiting with their members of Congress reported significant interest in the legislation, which would greatly enhance the chronic disease management services available to patients not only with COPD but with a host of other conditions as well. ■

AARC's Dr. Strickland represented the Association at a meeting of the ***National Coalition on Opioid Patient Monitoring*** in November. More than 50 stakeholder groups representing hospitals, national associations, patient advocates, and industry donors gathered to share information about negative outcomes due to unmonitored opioid use outside of the ICU, along with best practices to prevent those negative outcomes. ■

AARC Associate Executive Director Douglas S. Laher, MBA, RRT, FAARC, and member Matthew Trojanowski, MSc, RRT, represented the AARC at the inaugural meeting of the ***National Coalition for Alarm Management*** held in Washington, DC, April 24–25, 2014. The key goals of the initiative are to develop a best-practice document and/or compendium of literature highlighting opportunities for caregivers to better manage alarm safety in their hospitals. Now that alarm fatigue is a Joint Commission National Patient Safety Goal (NPSG), Trojanowski says hospitals and manufacturers alike will welcome the coalition's efforts. "It is the goal of the coalition to provide support and direction to caregivers regarding the NPSG and directions to manufacturers so that the alarm packages in their equipment are synonymous with the NPSG." A second meeting will take place in September to look more closely at alarms associated with mechanical ventilation, and the AARC will be there once again to represent the profession. ■

Human Resources Survey Shows Growth of RC Profession

Meeting the needs of respiratory therapists requires a solid understanding of who those respiratory therapists are. For that reason, the AARC periodically surveys the respiratory care profession to capture an accurate picture of human resources in the field. Our latest survey took place in the spring of 2014, with the results published in the fall. Among the key findings:

- The number of RTs grew almost 19% since the last survey, from 146,117 in 2009 to 172,921 in 2014.
- On average, each RT reported caring for about six patients receiving mechanical ventilation per shift.
- It takes an average of four–five weeks to orient a new employee in an acute care hospital.

- The turnover rate in acute care hospitals for both full- and part-time therapists has not changed since 2009.
- Acute care hospitals remain the major employer of RTs; however, more therapists are transitioning to long-term acute care, up from 4.4% in 2009 to 7.6% in 2014.
- The mean salary for educational program directors has increased 8.7% since 2009.

The AARC Respiratory Therapist Human Resource Study (http://www.aarc.org/resources/tools-software/aarc-respiatory-therapist-human-resource-study-2014/) covers a wide range of factors related to the respiratory care profession — from demographics, wages, and procedures to hours, trends in patient care, and more. ■

DRIVE4COPD
Take action today. Breathe better tomorrow.

The Association wrapped up its long association with the *DRIVE4COPD* campaign in 2014, with attendance at a range of events across the country, including the AARP's Life@50+ extravaganzas and a Native American event in New Mexico called the "Gathering of Nations." As the COPD Foundation prepared to transition to a new initiative this year, the AARC looked back on the DRIVE campaign and the key role RTs played in it. "In total, the campaign screened almost 3 million people and sparked more than 3 million conversations about COPD," says AARC's Thomas Kallstrom. He emphasized the AARC's ongoing support for the COPD Foundation, "Although the DRIVE4COPD has ended, the work will not." ■

Florida Society members coordinated an AARC booth at the annual ***Health Occupations Students of America*** conference in June, ensuring these motivated students and their instructors would have the latest information about the respiratory care profession. ■

Virtual Museum Offers a Journey Back in Time

The respiratory care profession is still relatively new when it comes to health care fields. However, when you consider the Association celebrated its 65th anniversary in 2012, we do have a lot of history to be told. In order to preserve the profession's heritage, the AARC spearheaded an ambitious effort over the past couple of years to build a Virtual Museum housing historical photos and other artifacts dating back to the earliest years of the profession — and even before — when pioneering members of the medical field began developing the oxygen-delivery devices that would set the stage for the formation of respiratory care.

Thanks to generous donations from the respiratory care community, the museum debuted in July, with initial galleries running the gamut from Milestones of the Profession to Oxygen Enclosures to Negative Pressure Ventilation and more. A Legends of Respiratory Care gallery was added later in the year, with the first inductees announced at AARC Congress 2014 in Las Vegas. More galleries will be added over time.

Says key museum organizer and AARC Historian Trudy Watson, BS, RRT, FAARC, "The museum provides a 'home' for vintage images that were previously stored in file cabinets or photo albums, or stashed in a box in the back of a closet. Now they are included in a gallery and shared with others." ■

The AARC teamed up with the American Sleep and Breathing Academy to host ***Sleep & Wellness 2014*** in May. The two-day conference attracted attendees across the range of disciplines involved in sleep testing and treatment and featured a keynote address by human fatigue expert and National Transportation Safety Board member Mark R. Rosekind, PhD. ■

The ***AARC Disaster Relief Fund*** was activated in April of last year to assist members affected by the tornado that hit three counties in Arkansas at the end of the month. Grants of up to $500 each were available to members who suffered property loss during the storm. ■

OPEN FORUM format changes went into effect at AARC Congress 2014 in Las Vegas. The three new formats included: Editor's Choice, a select group of abstracts presented in 10 minute slide presentations; Poster Discussions, featuring oral presentations by the authors; and Posters, abstracts featured in posters displayed on assigned days during the meeting. ■

2014 Annual Financial Report

In February 2015, the AARC engaged the public accounting firm Salmon Sims Thomas to conduct an audit of its financial operations. It issued an unqualified opinion stating that the AARC's financial statements were presented fairly and conform with generally accepted accounting principles. In 2014, AARC's total revenues (excluding investments) were $10,386,900; total expenses were $9,544,800. Figures 1 and 2 highlight the sources of last year's revenues and expenses. Net assets at the end of 2014 were $23,197,000. ■

Figure 1. Total Revenues in 2014 *(Excluding Investments)*

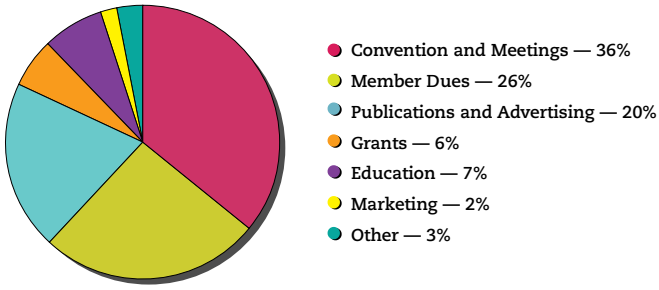
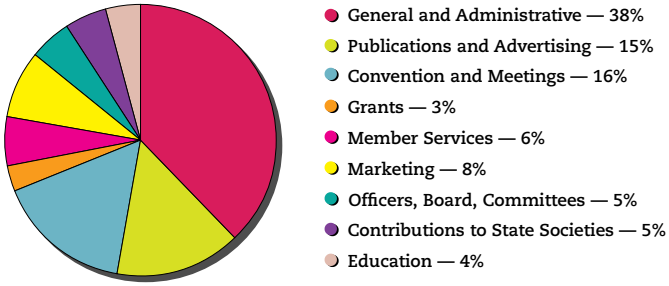


Figure 2. Total Expenses in 2014



Bring it to life with AARC + Edison Nation Medical

A partnership with ***Edison Nation Medical*** was launched in the fall to assist AARC members who have great ideas for respiratory care products but no expertise in bringing them to market. Through the program, budding inventors can submit their ideas via the Edison portal. Edison then consults with the AARC and other industry experts to determine which ideas are worthy of pursuing. Patents are sought for those ideas, and once secured, Edison works to find a manufacturer interested in the product. The AARC member who submitted the idea receives a 50% royalty on all sales and the AARC receives a small royalty as well, which goes directly to the American Respiratory Care Foundation to support research and scholarship in the profession. ■

A new ***Interactive Website*** made navigating the Exhibit Hall at AARC Congress 2014 a breeze. The online tool enabled attendees to quickly search for exhibitors, view eBooths, access show specials, email manufacturers' representatives, and more. Attendees were able to take advantage of show specials through the site as well — savings that in some cases ended up paying for their Congress trip to Las Vegas. ■

When the nation's first Ebola patient walked into a Dallas hospital in October, health care professionals across the country scrambled to learn more about how to care for people with the condition. The AARC quickly established a dedicated ***Ebola page*** on its website with a compendium of pertinent information for respiratory therapists. The page also featured the latest news and information related to Ebola and respiratory care, including a story on the brave RTs at the Nebraska Medical Center's Biocontainment Unit who helped to care for three patients stricken with the disease. ■

— 2015 —

Since 1947, the AARC has been leading the effort to advance the respiratory care profession and promote quality respiratory care. Collaborating with our 50 state organizations and other organizations, 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 combined efforts between the respiratory care profession and manufacturers in pursuing unique and innovative ways to improve both the quality and outcomes of our patients making us natural partners in today's healthcare 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 way to address those needs utilizing our combined skills and resources.

AARC CORPORATE PARTNERS

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IKARIA ADVANCING CRITICAL CARE

SUNOVION Healthy bodies, healthy lives

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AARC CONGRESS 2015

THE 61ST INTERNATIONAL Respiratory Convention & Exhibition

*200 + Sessions**
Continuing Education
Networking Events
200 + Exhibitors

Tampa, Florida • November 7-10

Join the Best in Respiratory Care for 4-days @ the Tampa Convention Center.

- 200+ Educational Sessions covering over 10 different specialty sections
- 3 days face-to-face with exhibitors in the respiratory care industry
- Direct access to original research projects and their authors

Congress Sessions Cover the Hottest Topics and the most recent discoveries.

Congress Topics will Include:

- Managing the COPD Patient
- Patient Safety: Tools & Monitoring
- Clinical Controversies in Pediatric and Neonatal Critical Care
- Critical Care Case Reports
- Evidence-Based Practices in Mechanical Ventilation

Also Attend the 3 Exclusive Pre-Congress Sessions on November 6 – for the most comprehensive experience.

Pre-Courses:

- Chronic Hypoxemia: Integration of Multi-Disciplines into the Home
- Adult & Pediatric Mechanical Ventilation
- Vascular Line Insertion Workshop

Visit Our Facebook Congress Page:
c.aarc.org/go/congress

To Learn More Visit: ***c.aarc.org/go/meetings***

* CRCE credits apply to most sessions. AARC Congress is an educational meeting of the American Association for Respiratory Care.

RC Currents

IN THE NEWS

AARC's Summer Forum
Coming July 13–15

Join respiratory managers and educators next month at the AARC Summer Forum in Phoenix, AZ, for in-depth information and strategies for the leaders in our profession. Learn the techniques, tips, and technology to run the department or classroom effectively; and prepare RTs for success in our quickly evolving health care system and earn up to 15.55 hours of continuing education credit (CRCE®).

Managers who attend will gain an added edge by engaging in the new Health Care & Leadership Consultant Workshops — where specialized consultants will focus on the View from the C-Suite, discussing consulting engagements, successes, and pitfalls. Additionally, managers will also attend RT management sessions ranging from staff engagement, to readmission reductions, and leadership across the continuum.

Educators who attend will find the sessions essential to building and maintaining a successful and sustainable RT program and curriculum. Sessions will include our CoARC's Meet the Commission covering new or pending changes to accreditation standards and the NBRC-sponsored lecture, which will explore criterion validation of the therapist multiple-choice and clinical simulation examinations.

For more information, log on to http://c.aarc.org/education/meetings/summer_forum_15/index.cfm. ■

Check Out the AARC New Members List Online

The "New Members" column can be accessed at http://c.AARC.org/new_members. Current AARC members are encouraged to check this site on the first of each month to view the names of individuals who have been approved as "Active Members" of the Association. Any current member may object to a new membership by filing a written objection with the AARC Executive Office at info@aarc.org within 30 days. ■

Submit Your Idea To Improve Aerosol Therapy

The AARC and Edison Nation Medical, the premier health care innovation marketplace, encourage AARC members to submit ideas that improve aerosol therapy for patients.

Edison Nation Medical brings 12+ years experience working with individuals and small businesses to commercialize their innovation ideas. Do you have a great product idea for improving aerosol therapy? Submit your idea today! If your idea is selected for development, you will receive an advance of $2,500, 50% of licensing royalties, and be named as the inventor on any patent application.

To learn more or to submit your idea, go to c.aarc.org/go/aarc512. ■

Educators: Help Recognize Outstanding Students

The American Respiratory Care Foundation (ARCF) is accepting applications for its undergraduate and postgraduate Education Recognition Awards now through **June 15** and is asking RC educators to help get the word out to their students. So check the list of available awards and then encourage your best and brightest students to apply.

The ARCF offers awards to students who are currently enrolled in accredited respiratory care educational programs and to respiratory therapists who are pursuing an advanced degree. Awards include registration and airfare to attend AARC Congress 2015, to be held Nov. 7–10 in Tampa, FL.

To see all of the awards bestowed by the ARCF every year, go to the Foundation's Grants, Awards and Fellowships page at www.arcfoundation.org/awards/. For more information, contact Crystal Maldonado at crystal.maldonado@aarc.org. ■

Transitions

Terry Bourgeois, RRT, a long-time member of the AARC and Louisiana Society for Respiratory Care (LSRC), died in February. He was director of the cardiopulmonary care department at Ochsner St. Anne General Hospital in Raceland, where he was known for his excellent management skills. He mentored many in the LSRC, where he was a past president and worked tirelessly on behalf of the state society in many other capacities. Bourgeois received the Ochsner Health System's Clinical Management Leader Award in 2011 and was about to receive the LSRC's Pioneer Award later this year, which will now be presented posthumously. ■

Free Peak Flow Meters Available to AARC Members Upon Request

AARC is offering free disposable peak flow meters to AARC members for community event activities. Taking asthma education into your community events like health screenings and county fairs is one way to raise the visibility of respiratory therapists and to educate the public about their health and the great work respiratory therapists do.

Now, for a limited time, AARC has a quantity of disposable peak flow meters that it can make available to you free of charge — you just pay the shipping. The peak flow meters are to be used for community events only and are not for clinical purposes.

So if you'd like to get peak flow meters for your community event, contact Kris Kuykendall (kuykendall@aarc.org) at the AARC offices and she can arrange for shipment direct to you. Be prepared to provide your AARC member number and to tell us a little about your event. ■

CONTRIBUTE
To Our "Transitions" Column

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

You can submit news about your colleagues' 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. ■

Enter for a Chance To Win a Free Membership Renewal

AARC Times is looking for creative AARC members to enter our annual AARC Photo Contest. Finalists will receive a **free** one-year membership with the chance of their photo being chosen and featured on the cover of the April 2016 *AARC Times*. For information on how to enter, go to www.AARC.org/resources/publications/aarc-times and click on the "Photo of the Year Contest" link. Deadline to submit photos is **Nov. 10, 2015**. ■

Utah Society Receives Grant for Community Service Project

The Utah Society for Respiratory Care (USRC) has been going out into the community to educate schoolchildren about lung health and the respiratory care profession for many years. Through the Breathe-zy Community Partnership Program, RTs teach the kids how the lungs work using a pig lungs dissection, showing them what it means to have asthma through a variety of fun activities, and educating them on the "criminals" to lung health like smoking and air pollution.

Now those efforts have been rewarded with a $5,000 grant from Select Health. "The USRC will be honored at a large company banquet in May," says USRC President Kim Bennion, MHS, RRT, CHC, corporate respiratory care services QA manager at Intermountain Healthcare in Salt Lake City.

However, even bigger things are on the horizon for this community service venture. According to Bennion, Intermountain Health has encouraged the USRC to apply for a $30,000 grant to further the project to include data outcomes. "We are planning to do so," she says.

Bennion believes the Breathe-zy Community Partnership Program is not only helping kids learn about lung health, but also helping the community learn about respiratory care. "You can't believe how valuable this has been for getting the profession out there," she says. ■

RT Student Members: Send Us Your Stories

AARC Times is always looking for good stories from AARC student members that relate special experiences and give the RT student perspective on the respiratory care profession they have chosen as a career.

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

Strange
But True...

Rev your engines: Working with investigators in Australia, researchers from the U.S. Department of Energy's Argonne National Laboratory are using decades of knowledge collected from the analysis of motor vehicle fuel injectors to come up with new and improved medical inhalers. Since both devices operate on the same principles of fluid dynamics, the researchers believe lessons learned from the automotive world may lead to inhalers that can be used with new classes of drugs that are now injected or applied as gels.

Fill the sink: A new study out of Sweden suggests parents can help protect their children against allergic disease simply by hand washing their dishes. Kids who came from families where the dishes were washed by hand were significantly less likely to develop conditions like asthma, eczema, and rhinoconjunctivitis than were children from families that relied on automatic dishwashers to get the dishes clean. Investigators attribute the finding to the hygiene hypothesis. ■

Longer Pre-treatment Better for Quit Attempts

In a study supported by the National Cancer Institute, researchers from the University at Buffalo and the Roswell Park Cancer Institute have found that extending the period of time smokers receive treatment with bupropion before launching a quit attempt can increase the odds of successful quitting.

Bupropion is usually begun one week prior to a quit attempt. In this trial, 95 smokers were randomized to start the drug either four weeks prior to quitting or the typical one week. Fifty-three percent of smokers in the extended bupropion group remained smoke-free 30 days after quitting versus 31% of those who took the drug for just a week prior to the quit attempt. The research appeared in a recent issue of *Nicotine & Tobacco Research*. ■

Johns Hopkins Researchers Study How To Improve Humanity in the ICU

Given the high-tech nature of the ICU and the unresponsiveness of many patients treated there, it can be easy for health care professionals to forget that it is a real person lying there in that bed, according to Johns Hopkins researchers. They recently published details of a conceptual bioethics model they believe can help bring humanity back to the ICU setting.

The investigators first identified three sources of patient dignity in the ICU: shared humanity, personal narrative, and autonomy. Then, based on interviews with patients and families in the ICU, focus groups with health care professionals who work in the ICU, and direct observations of care delivered in the ICU, they identified four consensus areas relevant to treatment with respect and dignity in the ICU:

- treatment as a human being,
- treatment as a unique individual,
- treatment as a patient who is entitled to receive professional care,
- and treatment with sensitivity to the patient's critical condition and vulnerability in the ICU.

"Patients' loss of dignity and lack of respectful treatment are harms that are just as important to prevent as hospital-acquired infections and medical errors," Dominick Frosch, PhD, a fellow at the Gordon and Betty Moore Foundation, was quoted as saying. "The work by the Johns Hopkins team is a critical foundation from which we can build to ensure that all people receive care that is respectful and preserves their dignity, whether in the ICU or any other health care setting." ■

Tool Improves Pneumonia Diagnosis and Treatment

A new clinical decision support tool for patients with pneumonia saved an average of 12 lives in a year in hospitals where it was implemented, report researchers from Intermountain Medical Center based in Utah.

The advanced computer program combines a patient's personal medical information with risk factors in real time to alert ER physicians using an icon on the ED electronic tracker board when the possibility of pneumonia in a patient reaches 40%. Once pneumonia is confirmed by the physician, the tool automatically provides a calculated severity assessment as well as management recommendations, including diagnostic testing and antibiotic selection based on current North American pneumonia treatment guidelines. "This tool doesn't take over for doctors, but it does assemble the needed information, calculates the patients' severity of illness and likelihood of infection with resistant bacteria, and presents recommendations to help doctors make better decisions," study author Nathan Dean, MD, was quoted as saying.

The research was published in a recent issue of the *Annals of Emergency Medicine*. ■

Adding B Strain Boosts Flu Vaccine Protection

Adding a strain of influenza B could improve the overall effectiveness of the annual flu vaccine, report researchers from Saint Louis University. Researchers arrived at that conclusion after studying 3,355 volunteers ages 18–64 who were randomized to receive one of three vaccines at 38 U.S. sites:

- the quadrivalent flu vaccine containing two A flu strains and both lineages of the B strains;
- the licensed trivalent intradermal vaccine for the 2012–2013 flu season;
- or an alternate trivalent intradermal vaccine containing two A strains and the B strain that was not in the licensed seasonal flu vaccine.

Those who received the quadrivalent vaccine had superior antibody responses to the B strains and equally robust responses to A strains compared to volunteers who received the trivalent vaccines that did not contain the corresponding B strains. What's more, adding another B strain didn't compromise the vaccine's ability to cause the body to mount an immune response to the other flu strains. The study was published in a recent issue of *Vaccine*. ■

Needs-based Allocation of Lungs Changes Some Outcomes

In 2005, the U.S. Department of Health and Human Services mandated the development of an allocation system for single and double lung transplants that is based on medical need instead of waiting time. The Lung Allocation Score organ allocation algorithm brought with it a change in the demographics of single- and double-lung transplant recipients.

Researchers from Baylor College of Medicine decided to see how this change has impacted survival in patients with idiopathic pulmonary fibrosis (IPF) and COPD. Results associated the change with better graft survival in IPF patients undergoing double-lung transplantation than in those undergoing single-lung transplantation. However, no survival difference was noted between single- and double-lung transplantation in COPD patients. The study was published in a recent issue of *JAMA*. ■

Explaining the Value of Early Mobility Therapy

A growing mound of evidence suggests getting acute respiratory distress syndrome (ARDS) patients up and moving while they are still on the ventilator in the ICU improves outcomes. Why this is so has been unclear until now.

Researchers from Wake Forest Baptist Medical Center used an animal model of ARDS to explore the mechanisms underlying early mobility therapy. In the study, mice with acute lung injury and the resulting muscle weakness were exercised for two days. This short duration of moderate-intensity exercise led to marked improvements in lung, limb, and respiratory muscle function. Further study involving specific pathways involved in muscle wasting revealed that early exercise turned those pathways off, leading the investigators to conclude that exercise acts on multiple proteins in the innate immune system, dampening the immune response.

The findings from the animal model were then confirmed by comparing them to banked plasma from patients who were enrolled in an earlier clinical trial in which they were randomized to early mobility versus usual care. At least one of the markers most significantly changed in the regulation of the immune response in mice was also found in humans.

The researchers believe the study gives a lot of biological relevance to how and why early mobility works. The study appeared in a recent issue of *Science Translational Medicine*. ■

Anticholinergics Linked to Increased Risk of Pneumonia

Anticholinergic medications such as those used to treat allergies may increase the risk of pneumonia in older patients. That's the take-home message from investigators at the Seattle-based Group Health Research Institute who compared health records for more than 1,000 people with pneumonia with those from 2,000 similar individuals who did not have pneumonia. All were between the ages of 65–94.

Results showed people who developed pneumonia were more likely to have filled a prescription for at least one anticholinergic medication within 90 days of their diagnosis. The researchers aren't sure how these medications may be influencing pneumonia risk but suggest they may promote breathing problems and lung infections due to the fact they cause sleepiness and an altered mental status. The study was published in a recent issue of the *Journal of the American Geriatrics Society*. ■

Unraveling the Mysteries of Cystic Fibrosis

Why does one person with cystic fibrosis (CF) suffer from severe symptoms while another has a milder form of the disease? Investigators from the University of North Carolina School of Medicine have identified several genetic pathways they believe explain the difference. When these pathways are highly expressed, CF patients have less severe symptoms. When they are expressed in lower amounts, patients experience a more severe form of the disease and are more likely to be hospitalized.

In the study, researchers used gene expression data from cells collected from 750 patients over the past decade then analyzed data on more than 4,000 pathways to find those that differentiated severe CF patients from mild CF patients. They found significant genetic variation in only two broad types of pathways: endomembrane pathways and HLA pathways. Endomembrane genes are responsible for transporting the DF508 protein from the cell nucleus to the cell membrane and for regulating the way that proteins such as CFTR are folded into the proper functioning form. The HLA genes are widely known to have roles in immune function, such as protecting against pathogens like *pseudomonas* — the bacteria that cause pneumonia in CF patients.

Investigators next plan to look at how these pathways affect patients' responses to new treatments. "We want to know if people who respond well have higher expression of these genetic pathways," study author Michael Knowles, MD, was quoted as saying. "If so, then we're really on the heels of personalized approaches to treating CF patients at the level of their genes to lessen the severity of often debilitating symptoms." The study was published in a recent issue of the *American Journal of Human Genetics*. ■

Industry Watch

Becton Dickinson acquires CareFusion

Becton Dickinson and Company (BD) has completed its acquisition of CareFusion Corporation. Calling the acquisition a major milestone in BD's 118-year history, BD Chair, CEO, and President Vincent A. Forlenza was quoted as saying, "This acquisition significantly accelerates BD's strategy and builds scale and depth in medication management and patient safety solutions. We look forward to the future with confidence as we become one of the largest global leaders in medical technology and are better positioned to partner with health care providers around the world to provide safer, more economical, and improved care."

CareFusion signs agreement with Breas Medical

CareFusion has signed an exclusive distribution agreement with Breas Medical for their Vivo line of ventilation equipment. Under the terms of the agreement, CareFusion will be the exclusive U.S. distributor for the Vivo by Breas® line of life support and bi-level ventilators, including the Vivo 50, Vivo 40, and Vivo 30. The Vivo product line is designed for home mechanical ventilation.

IPF drug receives orphan drug designation

Aeolus Pharmaceuticals Inc. has received orphan drug designation from the FDA for AEOL 10150 for the treatment of idiopathic pulmonary fibrosis (IPF). Orphan drug designation entitles the sponsor to a seven-year marketing exclusivity period, clinical protocol assistance with the FDA, and federal grants and tax credits. "We are very pleased that AEOL 10150 has been granted orphan drug designation for the treatment of patients with idiopathic pulmonary fibrosis," John McManus, president and CEO, was quoted as saying. "We look forward to providing further updates on our IPF program for AEOL 10150 in the near future."

Positive results seen for AstraZeneca drug

AstraZeneca has announced positive top-line results from the Phase III Pinnacle program, which included two pivotal 24-week studies to investigate the potential of PT003 to improve lung function in COPD patients. PT003 is a twice-daily fixed-dose combination of glycopyrronium, a long-acting muscarinic antagonist (LAMA) and formoterol fumarate, a long-acting beta-2 agonist (LABA). PT003 is the first LAMA/LABA combination to be delivered in a pressurized MDI using the unique porous particle co-suspension technology developed by Pearl Therapeutics, which was acquired by AstraZeneca in 2013.

Medtronic acquires Covidien

Medtronic PLC has successfully completed a previously announced acquisition of Covidien PLC. "The culmination of this acquisition marks a significant milestone in our industry, creating a company uniquely positioned to alleviate pain, restore health, and extend life for more patients around the world," Medtronic Chair and CEO Omar Ishrak was quoted as saying. "We can now bring together the extensive and innovative capabilities of both Medtronic and Covidien with an underlying objective to solve health care's biggest challenge — expanding access and improving clinical outcomes while lowering costs."

Weill Cornell receives TB funding

The National Institutes of Health has awarded Weill Cornell Medical College more than $6.2 million in first-year funding to support a research collaboration on tuberculosis. Six institutions will work in close alliance with voluntary pharmaceutical partners to uncover new ways to stop TB from becoming progressively less treatable worldwide. Studies will be conducted in two parallel tracks. The first will address TB infection biology in patients while the second will look at biological factors that affect the course of TB infection. The National Institute of Allergy and Infectious Diseases estimates it could spend up to $45.7 million on TB research over the next seven years.

Mallinckrodt to acquire Ikaria

Mallinckrodt PLC and Ikaria Inc. have entered into a definitive agreement under which a subsidiary of Mallinckrodt will acquire Ikaria. With this transaction, Mallinckrodt is expected to significantly strengthen its footprint in hospitals, extending its presence from its current base of diagnostic radiology and multimodal pain management in surgical specialties to include critical care respiratory therapies in neonatal ICUs. "This transaction demonstrates our ongoing commitment to transform Mallinckrodt into a leading, high-performing specialty biopharmaceutical company with a diverse and durable portfolio," Mallinckrodt President and CEO Mark Trudeau was quoted as saying.

Enterprise Therapeutics meds will treat CF

Enterprise Therapeutics Ltd has secured $2.4 million in initial Series-A financing from Epidarex Capital to fund, in parallel, low molecular weight drug discovery and new target identification programs aimed at treating respiratory diseases, beginning with cystic fibrosis. Specifically, the company will focus on the discovery of novel disease-modifying medications that target key drivers of disease pathology and progression, including the underlying mechanisms of mucus congestion.

The Joint Commission announces new executive vice president

David W. Baker, MD, FACP, MPH, has been appointed to serve as executive vice president of The Joint Commission's division of health care quality and evaluation. In his new position, he will oversee the departments of quality measurement, health services research, and standards and survey methods. He will also be responsible for Joint Commission biostatistics and data analysis activities, public reporting of performance measurement data, as well as the development, implementation, and maintenance of the performance measures used in accreditation and certification programs.

ProMetic drug receives orphan drug designation

ProMetic Life Sciences Inc. has received Orphan Drug Designation from the FDA for its orally active anti-fibrotic lead drug candidate, PBI-4050, for the treatment of IPF. In gold standard animal models proven to emulate pulmonary fibrosis in humans, PBI-4050 significantly reduced tissue scarring in the lungs, indicating the potential for clinically significant improvement and stabilization in lung function. In addition, the combination of PBI-4050 and another approved drug generated unprecedented reduction of fibrotic markers in this model, suggesting that synergistic clinical benefit may be found.

Indi announces positive study results

The *Journal of Thoracic Oncology* has published positive results from a landmark clinical validation study demonstrating that Xpresys Lung, a clinical laboratory-based molecular blood test service, helps identify benign lung nodules with high probability, according to Indi (Integrated Diagnostics®). The findings, published online, show when the test indicates a nodule is likely benign, the result is correct 84%–98% of the time, with each nodule receiving an individual score based on its molecular signature. This result reproduces the performance demonstrated in earlier research published in *Science Translational Medicine.*

Theravance and Mylan team up on new COPD drug

Theravance Biopharma Inc. and Mylan Inc. will partner on the development and (subject to FDA approval) commercialization of TD-4208, a novel investigational once-daily nebulized LAMA for COPD and other respiratory diseases. According to Theravance, TD-4208 has shown positive topline results in COPD patients in multiple Phase II studies; and the FDA recently agreed to the design of the Phase III registrational program. Theravance Biopharma and Mylan believe TD-4208 has the potential to be a best-in-class once-daily single-agent nebulized product for COPD patients who require or prefer nebulized therapy.

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

Industry Update

Featuring information on products and equipment from manufacturers

Co-Packaging Kit

Kitabis™ Pak from PARI Respiratory Inc. is the first co-packaging of generic tobramycin inhalation solution with a PARI LC PLUS® Reusable Nebulizer for patients with cystic fibrosis. The kit includes 56 single-use ampules (or a 28-day supply) along with one wing-tip tubing, a Kitabis Pak insert, and instructions for use. www.Kitabis.com

Interpreter Technology

The Language Access Network's Martti™ (My Accessible Real-Time Trusted Interpreter) offers 24/7 access to the most highly trained medical interpreters in the industry. With a simple touch of the flat-screen device, live medical interpreters of more than 210 languages are available via a dedicated, HIPAA-compliant network. The lightweight device is designed to follow a patient as long as necessary. Martti can also be used with patients who are deaf or hard of hearing. www.lan.us/

Outpatient Software

The MediLinks Outpatient software from Mediware Information Systems Inc. can help support pulmonary rehabilitation programs as they work to reduce hospital readmissions for COPD patients. The pulmonary rehabilitation software is focused on an individual treatment plan. Content follows the AACVPR guidelines and includes the Daily Treatment Note, Six Minute Walk, Clinical Outcomes Flowsheets, and Home Exercise. The software allows for flexibility of centralized scheduling to help manage the needs of pulmonary rehab programs and can be shared with other outpatient departments. www.mediware.com

Positional Therapy Device

Zzoma from Sleep Specialists LLC is worn around the upper torso to keep patients asleep on their sides, thus preventing supine or "on-the-back" sleeping in patients with sleep apnea. Clinicians may prescribe Zzoma as a first-line therapy or as an alternative for patients who cannot tolerate oral appliances or CPAP. A study in the *Journal of Clinical Sleep Medicine* found that Zzoma was equivalent to CPAP therapy in treating patients with positional obstructive sleep apnea. The device was designed by board-certified sleep physicians. www.ZzomaOsa.com

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

Classifieds

ADVERTISING SECTION

United States

Sales Rep Opportunities

Biomedical Electronics Services & Technologies (B.E.S.T Corporation) has serviced hospitals in the greater Chicago-land area and surrounding states for over 30 years. B.E.S.T represents numerous medical and biomedical manufacturers, and also repairs/rents/sells durable medical equipment. For more information on our company, please visit our website at www.ebestonline.com.

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Calendar of Events

AARC & State Society Programs

September 9

Columbia, South Carolina

South Carolina Society for Respiratory Care 44th Annual State Conference

Contact: (803) 936-7511, treasurer@scsrc.org

September 30–October 2

Hot Springs, Arkansas

44th Annual Arkansas Society for Respiratory Care State Meeting

Contact: John.Lindsey@Mercy.net

Submissions for the next available issue are due May 17.

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

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1 Needham D et al. *Archives of Physical Medicine and Rehabilitation* Vol 91, Issue 4, PP 536–542, April 2010.

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