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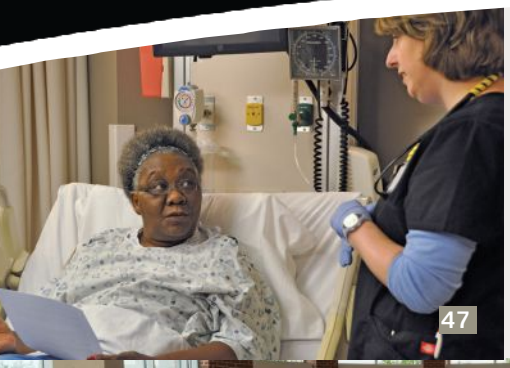

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Ventilation for Life

Closed-loop Ventilation: Part 2

by Tony Ruppert, MSRC, RRT-ACCS, CPFT

EDITOR'S NOTE: This article is the second of two on closed-loop ventilation in an *AARC Times* "debate." Part 1 (written by Robert Chatburn, MHHS, RRT-NPS, FAARC) appeared in the Ventilation for Life column of the October issue of *AARC Times* and presented the "pro" position.

"Respiratory therapists have the skills and ability to manage ALL modes of ventilation…."

This recent comment from a physician colleague has prompted my reflection on existing modes of ventilation management. Although I appreciated his compliment and confidence in the RT's expertise, I began to critically consider the extent to which providers are sufficiently trained and prepared to utilize advanced modes of ventilation. In this particular exchange, we were discussing a patient who was failing ventilation with a form of closed-loop ventilation that is increasingly used throughout institutions in the United States and who required transition to conventional ventilation. Transitions such as this can be challenging.

Closed-loop ventilation structure manages patient ventilator parameters with processors and monitoring systems that feed into algorithms. The technological influx of patient care decision making via closed-loop systems is not exclusive to mechanical ventilation. Other examples of closed-loop automation are prevalent in anesthesia, fluid management of the hypovolemic patient, and even ICU sedation protocols. Additionally, closed-loop control of oxygenation has been studied and is being evaluated outside of the United States.[1,2] Closed-loop mechanical ventilation technology has significantly changed the way RTs practice ventilator management. However, closed-loop ventilation is not the answer for every patient on mechanical ventilation. RTs need to be educated and aware of various limitations of closed-loop ventilation as we continue to collaborate more actively in patient care and decision making in the intensive care units.

about the author…

Tony Ruppert, MSRC, RRT-ACCS, CPFT, is the education coordinator for Wellspan Pulmonary Services at York Hospital in York, PA. He is also the president-elect of the Pennsylvania Society for Respiratory Care.

Marketplace creates confusion and challenges learning

First, we should recognize that the number of ventilator devices and manufacturers in the market limits the fluency of RTs to be experts in all advanced modes of ventilation. As of 2013, four common ventilators shared 47 unique names of modes. Understandably, the multiplicity of ventilators and mode names with associated patented technology leads to confusion and difference in application among ventilator suppliers. Although not all 47 modes are closed-loop, a significant number have varied trigger, targeting, and adaptation schemes.[3] It is no longer appropriate to believe all ventilators are equal and that limited training is sufficient to care for the increasingly complicated patient. Nor is it practical for RTs to understand all of the differences between varied advanced closed-loop algorithms.

Research surrounding closed-loop ventilation can be misleading

We must understand that it may be difficult to ever validate the superiority of closed-loop ventilation strategies compared to human interaction. After all, closed-loop ventilation strategy is based on mathematical formulas and human-created protocols. This is evident in research where many of the modes investigated will select breathing patterns and variables that are equivalent to clinician judgment.[4,5]

To further challenge the ability that research can prove closed-loop supremacy, ventilator protocols vary throughout institutions worldwide. The variability of therapist-/physician-driven protocols is evident in single center research studies where studied variables include closed-loop and protocol ventilator management. Therefore, care must be taken when reading investigative conclusions that compare closed-loop to conventional modes because of the variability of ventilator protocols among institutions across the globe.

Automated protocols may not be the best for non-standard patients

The automation of ventilator protocols within closed-loop control contributes to an interesting deficit of knowledge for RTs and medical clinicians. Our field has proven that protocols, even varied between institutions, are key effective patient management strategies. Admittedly, protocols are effective education tools. On the other hand, medical protocols may limit practice variation and create a situation where clinicians cannot care for difficult, critically ill patients.[6]

Our physician colleagues are seeing similar knowledge deficits in medical education. Recently during a conversation with an attending intensivist, we discussed how closed-loop medicine and protocols are removing the "human factor" from medical decision making. Residents at many institutions are trained to follow protocols on most patients. However, it has been observed that it is more difficult for residents to critically think outside of protocol in the difficult patients or within institutions with less computerization of decisions. The same fear of critical-thinking deficits can be applied to the field of respiratory care. Ventilator management experts must recognize the need to consider stepping away from the protocol within the closed-loop modes as the patient deteriorates.

Do we really want a lack of human contact at the bedside?

A decrease in the RT's presence at the bedside does not necessarily equate to improved patient care. Automation of ventilation research has demonstrated a decreased number of interventions of ventilator parameters by RTs, including weaning from mechanical ventilation.[7–9] Perhaps labor savings or "doing more with less" has been proposed within our industry because of published conclusions on closed-loop ventilation. However, consider automated systems in the commercial jet cockpit or surgical suites. No one should rightfully suggest pushing these pilots or anesthesiologists aside due to artificial intelligence. Equally, a respiratory therapist's place is at the bedside with their patients. Subsequent evidence will strengthen the need for RTs to be cognizant and actively involved in each patient's care.

Does lack of ventilator alarms equate to best ventilator care parameters?

Alarms normally indicate the presence of an unsafe condition. Closed-loop modes have decreased the number of alarms[10] as the ventilator automatically adjusts flow, volume, and pressure within parameters set by the clinician. We cannot contest that the lack of any alarm, especially false alarms, reduces risk of alarm fatigue. Yet, alarms may be delayed or not activate due to closed-loop automated adjustments despite a deteriorating trend of the patient. The reader should be challenged as we may ignore the compromised patient in situations where the ventilator is quiet and not alarming. The respiratory therapist needs to be mindful that the lack of ventilator alarms may not equate to the right mode. Therefore, we should frequently assess all mechanically ventilated patients, even the "quiet" patients on closed-loop control, and adjust prior to an unsafe condition.

Common closed-loop modes may not be appropriate in active or critically ill patients

Pressure regulated volume control (PRVC) is an example of adaptive ventilation and appears to be a common mode in many ICUs. This mode adapts to the patient by reducing or increasing the inspiratory pressure to the lowest level possible to achieve clinician-set tidal volume. However, without appropriate clinician assessment, an unrecognized increased work of breathing may be imposed on the critically ill patient, creating an unfortunate situation. Multiple studies and personal experience have demonstrated an increased work of breathing with some closed-loop modes like PRVC. Kallet et al concluded there was no work of breathing benefit of PRVC in lung protective ventilation when compared to providing sufficient inspiratory flow in volume control modes. Kallet also concluded that clinicians need to be vigilant in monitoring tidal volumes with this mode.[11] A later study demonstrated that awake patients are more comfortable with less work of breathing on a clinician-set pressure support level than PRVC or volume control mode.[12]

Adaptive support ventilation (ASV) research has not demonstrated clear clinical benefits over traditional management. Research investigations surrounding closed-loop modes like ASV have targeted safety, equivalency, or non-inferiority as outcomes.[7,9,13] In the light of proven safety or equivalency, we must still be aware of pitfalls of surrendering all patients to automated venti-

lation. Actively breathing patients' tidal volumes with adaptive ventilation may exceed 10 mL/kg predicted body weight (PBW) despite the plateau pressure less than 30 cm H_2O.[14] Specifically tailored settings with conventional ventilation should be considered in critical ARDS or severe restrictive lung disease given the possibility of unsafe tidal volumes in ASV.[13,15] The implication of increased tidal volume (>8 cc/kg PBW) despite "safe" plateau pressure may be debated by clinicians but should be recognized during patient assessment.

Research has clearly established that closed-loop ventilation can act as a guardrail of safety and will reduce the number of interventions necessary by respiratory therapists, especially during weaning. Additionally, the modes of automation reduce the number of false alarms, freeing up time for the RT perhaps to care for the more critical patient. These positive effects make these systems particularly appealing to ICU clinicians. Despite these strengths, however, all providers should be aware of the limitations as they attempt to make fully informed decisions regarding best, individualized patient care. The respiratory therapist needs to be the "brain" of ventilator management as opposed to the "hand" documenting occasional assessments. Innovative automated systems will continue to assume a larger role in critical care, and so the education of respiratory therapists must continue to advance. The challenge in our field is whether the current education system can provide the necessary skills in the minimal time required. The ability to develop therapists with clinical professional judgment in light of evolving technology such as closed-loop ventilation is paramount to our profession. ■

REFERENCES

1. Kramer GC, Kinsky MP, Prough DS, et al. Closed-loop control of fluid therapy for treatment of hypovolemia. J Trauma 2008; 64(4 Suppl):S333-S341.
2. Gholami B, Bailey JM, Haddad WM, Tannenbaum AR. Clinical decision support and closed-loop control for cardiopulmonary management and intensive care unit sedation using expert systems. IEEE Trans Control Syst Technol 2012; 20(5):1343–1350.
3. Mireles-Cabodevila E, Hatipoglu U, Chatburn RL. A rational framework for selecting modes of ventilation. Respir Care 2013; 58(2): 348–366.
4. Wysocki M, Brunner JX. Closed-loop ventilation: an emerging standard of care? Crit Care Clin 2007; 23(2):223–240.
5. Nguyen B, Bernstein DB, Bates JH. Controlling mechanical ventilation in acute respiratory distress syndrome with fuzzy logic. J Crit Care 2014; 29(4):551–556.
6. Chia JY, Clay AS. Effects of respiratory-therapist driven protocols on house-staff knowledge and education of mechanical ventilation. Clin Chest Med 2008; 29(2):313–321.
7. Beijers AJ, Roos AN, Bindels AJ. Fully automated closed-loop ventilation is safe and effective in post-cardiac surgery patients. Intensive Care Med 2014; 40(5):752–753.
8. Linton DM, Renov G, Lafair J, et al. Adaptive support ventilation as the sole mode of ventilatory support in chronically ventilated patients. Crit Care Resusc 2006; 8(1):11–14.
9. Lellouche F, Bouchard PA, Simard S, et al. Evaluation of fully automated ventilation: a randomized controlled study in post-cardiac surgery patients. Intensive Care Med 2013; 39(3):463–471.
10. Zhu F, Gomersall CD, Ng SK, et al. A randomized controlled trial of adaptive ventilation mode to wean patients after fast-track cardiac valvular surgery. Anesthesiology 2015; 122(4):832–840.
11. Kallet RH, Campbell AR, Dicker RA, et al. Work of breathing during lung-protective ventilation in patients with acute lung injury and acute respiratory distress syndrome: a comparison between volume and pressure-regulated breathing modes. Respir Care 2005; 50(12):1623–1631.
12. Betensley AD, Khalid I, Crawford J, et al. Patient comfort during pressure support and volume controlled-continuous mandatory ventilation. Respir Care 2008; 53(7):897–902.
13. Lellouche F, Brochard L. Advanced closed loops during mechanical ventilation (PAV, NAVA, ASV, SmartCare). Best Pract Res Clin Anaesthesiol 2009; 23(1):81–93.
14. Branson RD, Chatburn RL. Controversies in the critical care setting. Should adaptive pressure control modes be utilized for virtually all patients receiving mechanical ventilation? Respir Care 2007; 52(4):478–488.
15. Sviri S, Bayya A, Levin P, et al. Intelligent ventilation in the intensive care unit. S African J Crit Care 2012; 28(1):6–12.

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Depression in Patients with COPD

by Karen L. Gregory, DNP, RRT, FAARC

Depression is a leading cause of disability worldwide and has been associated with chronic comorbidities, adverse health outcomes, and increased morbidity and mortality in patients with chronic illness.[1] Depression is well recognized as a major comorbidity in chronic obstructive pulmonary disease (COPD). Symptoms of depression tend to be linked with more severe stages of COPD,[2] resulting in physical, functional, and psychological impairment.

A systematic review of 64 studies on patients with chronic disease concluded that the prevalence of depression ranged from 37%–71% in COPD patients, comparing to or higher than the prevalence rate of other chronic illnesses.[3] Literature shows depression is a strong predictor of mortality in COPD patients admitted to the hospital for acute exacerbations.[1,4] An estimated two-thirds of patients with coexistent COPD and depression do not receive antidepressant treatment.[1] Lack of treatment is also associated with poor quality of life and premature death.[2]

Risk for depression in COPD

Lack of social support, loss of mobility, and physical deterioration has shown to increase risk for depressive symptoms in COPD patients. Research has consistently implicated the joint contribution of genetic and environmental risk factors in the pathogenesis of depression.[5] Tobacco use increases the severity of COPD, causing a decline in activities of daily living, physical strength and endurance, and increased risk of depression. Individuals who are depressed are less likely to quit smoking, and highly nicotine-dependent smokers are at higher risk for depression and relapse.[6]

Patients with severe COPD are twice as likely to develop depression compared to patients with mild COPD.[2] Symptoms of depression are reported more often in women than in men with COPD, primarily because of the differences in perceived severity of symptoms.[7] Higher St. George Respiratory Questionnaire (SGRQ) scores, history of cardiovasular disease, and younger age at diagnosis have also been identified as risk factors of depression in COPD.[2,8] Table 1 provides risks of depression.

about the author...

Karen L. Gregory, DNP, RRT, FAARC, holds a doctor of nursing practice at the Oklahoma Allergy and Asthma Clinic in Oklahoma City, OK. She is also an assistant professor at Georgetown University School of Nursing and Health Studies in Washington, DC.

Treatment of depression

Evidence does not support depression being treated differently in the presence of COPD.[8] Validated instruments should be used to diagnose depression and guide the medical treatment regimen. Mild or subthreshold depression may involve exercise, informal counseling, or psychosocial interventions, such as cognitive behavioral therapy (CBT).

Pharmacotherapy is a mainstream treatment for depression requiring further care.[9] Antidepressants such as selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants, and low-dose benzodiazepines may be effective in some COPD patients. SSRIs can be used as first-line agents, particularly in patients with significant fatigue or pain syndromes associated with the episode of depression. Tricyclic antidepressants are effective treatments for depression, anxiety, or insomnia but must be used with more caution and monitoring given their potential for cardiotoxicity.[9] Benzodiazepines should be used with caution in patients with hypercapnia.

Empirical support using CBT to treat mild to moderately severe acute major depression demonstrates effectiveness in improving physical and psychological well-being.[7,9] Cognitive behavioral therapy teaches patients to monitor and challenge self-negating thoughts and has

gained support because of its effectiveness in achieving symptomatic relief for patients with chronic illness.[7,9] Recent studies are demonstrating utility of CBT in conjunction with medications in achieving control and preventing relapse in patients with chronic illness.[9]

Pulmonary rehabilitation and smoking-cessation programs are vital components of disease management and have been shown to prevent or reduce depressive symptoms in COPD patients.[8] Pulmonary rehabilitation programs utilize an interdisciplinary team of health care professionals integrated into a comprehensive program tailored to the individualized needs of each patient.[10] Multicomponent exercise training is associated with the greatest improvements in symptoms of depression in COPD compared to other nonpharmacological approaches.

Prevention of depression

Prevention requires a paradigm shift toward a proactive, ongoing assessment of depression with immediate implementation of appropriate interventions if symptoms emerge. Screening for depression in COPD patients should be performed at the initial health care provider visit and again with any changes in clinical, psychosocial, or economic status.[3] Genetic predisposition, disease symptoms and severity, sleep history, smoking status, geographic location, and psychosocial milieu must be addressed at each health care encounter. Implementing effective preventive strategies in existing health care programs, training health care personnel, and adapting an individualized medical treatment regimen may prevent or reduce the risk of depression in patients with COPD. Table 2 describes treatment options for patients with depression and COPD.

Patient education

Patient education is the cornerstone of disease management of chronic illness.[8] Components of pulmonary rehabilitation that include psychological interventions incorporated into components of disease management, exercise, nutrition, and social networks will serve a vital role in the prevention of depression in COPD. Smoking cessation is a critical part of education that promotes decreased rate of decline in lung function, decreased symptoms, and potentially reduces the number of exacerbations.[6]

Role of the respiratory therapist

Understanding the relationship between depressive disorders and chronic illness is critical to health care delivery and achieving excellent clinical outcomes. Untreated or unidentified symptoms of depression in patients with COPD have detrimental effects on physical functioning, social interaction, and health care utilization. Unfortunately, depression is often not identified, assessed, or treated in patients with COPD.

Respiratory therapists play a vital role in patient education and management of patients with lung disease. RTs are leaders in all components of pulmonary rehabilitation programs. Patient education strategies must include adherence to medical treatment regimen, coping strategies, and identification of worsening symptoms. As experts in lung disease pathophysiology, RTs should serve as leaders in assessment and recognition of worsening lung disease status. Facilitating a team approach to achieve successful clinical outcomes is an important role of the respiratory therapist. RTs must ensure that assessment of COPD patients includes a depression screening using a validated instrument. Table 3 describes six validated depression-screening instruments.

Table 1.
Risk Factors for Depression

Family history
Prior depressive episode
Chronic illness
Substance abuse
Female gender
Trauma
Stressful life events
Poor social support
Dementia

Table 2.
Treatment Options for Depression and COPD

Psychiatric consultation
Counseling
Pulmonary rehabilitation
Antidepressant therapy
Personalized interventions
Support groups (Better Breather's Club)
Support for monitoring adherence to treatment regimens
Psychological therapy, cognitive behavioral therapy, and counseling
Telephone health mentoring using cognitive behavioral therapy
Prescribed exercise regimen
Smoking cessation
Yoga, tai chi, relaxation therapy
Support for family and/or caregiver

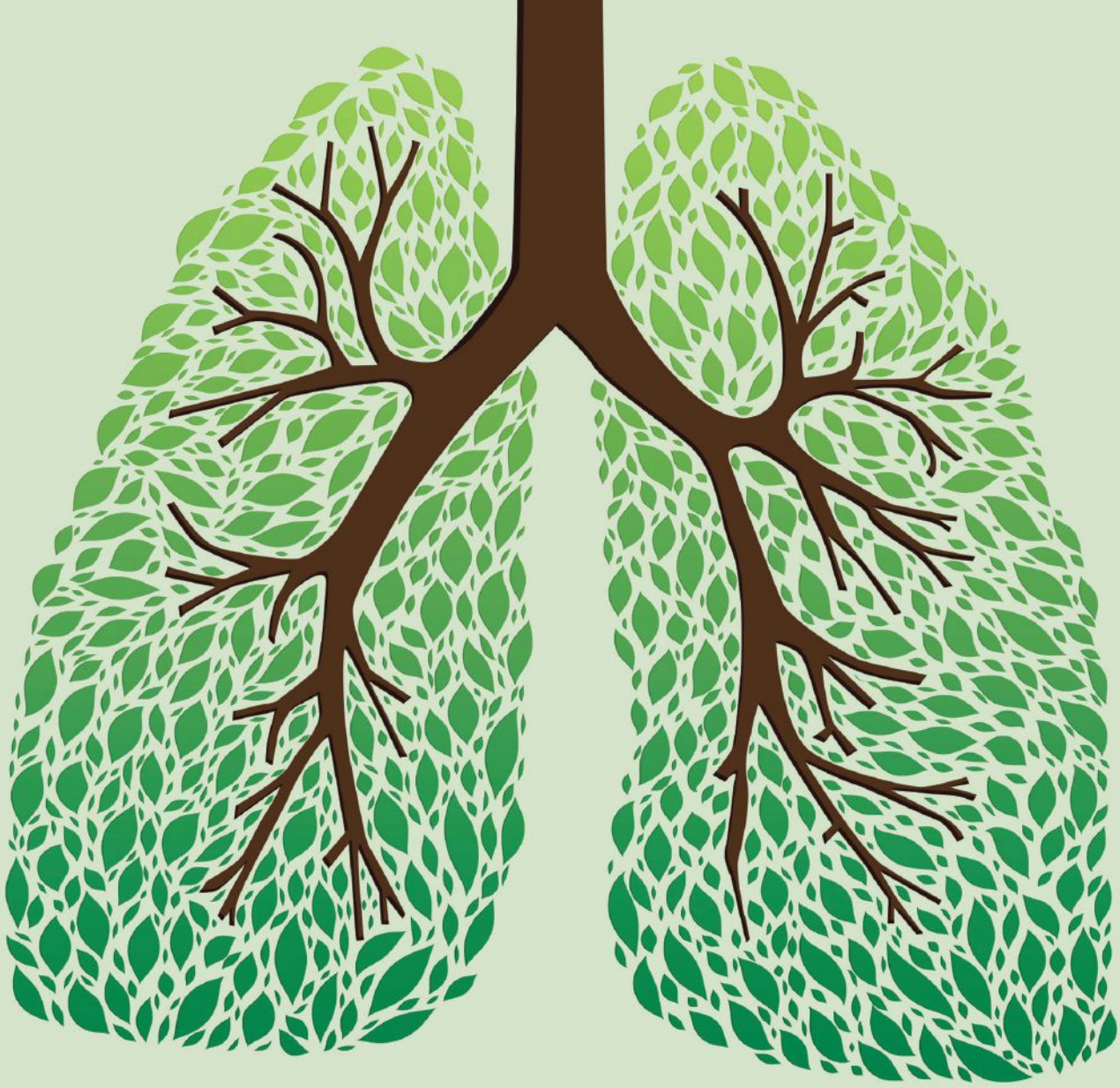
Depression in COPD patients is associated with worse health-related quality of life and poor clinical outcomes. Untreated depression has devastating consequences — including poor coping strategies of COPD patients — and may increase health care utilization. Many effective pharmacologic and non-pharmacologic treatments are available that can improve COPD symptoms and pulmonary function, reduce exacerbations, and improve quality of life. Depression screening improves diagnosis rates and needs to be addressed at each health care encounter. Understanding depressive symptoms and implementing appropriate medical management and interventions, including psychological interventions, is important for improving a patient's quality of life, decreasing health care utilization, and achieving excellence in clinical outcomes. ■

REFERENCES

1. Hillas G, Perlikos F, Tsiligianni I, Tzanakis N. Managing comorbidities in COPD. Int J Chron Obstruct Pulmon Dis 2015; 10:95-109.
2. Schneider C, Jick SS, Bothner U, Meier CR. COPD and the risk of depression. Chest 2010; 137(2):341-347.
3. Maurer J, Rebbapragada V, Borson S, et al. Anxiety and depression in COPD: current understanding, unanswered questions, and research needs. Chest 2008; 134(4 Suppl):43S-56S.
4. Quint JK, Baghai- Ravary R, Donaldson GC, Wedzicha JA. Relationship between depression and exacerbations in COPD. Eur Respir J 2008; 32(1):53-60.
5. Klengel T, Binder EB. Gene-environment interactions in major depressive disorder. Can J Psychiatry 2013; 58(2):76-83.
6. Lembke A, Johnson K, DeBattista C. Depression and smoking cessation: does the evidence support psychiatric practice? Neuropsychiatr Dis Treat 2007; 3(4):487-493.
7. Panagioti M, Scott C, Blakemore A, Coventry PA. Overview of the prevalence, impact, and management of depression and anxiety in chronic obstructive pulmonary disease. Int J Chron Obstruct Pulmon Dis 2014; 9:1289-1306.
8. Global Initiative for Chronic Obstructive Lung Disease (GOLD) website. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: updated 2015. Available at: http://www.goldcopd.org/uploads/users/files/GOLD_Report_2015_Apr2.pdf *Accessed Aug. 1, 2015*
9. Pumar MI, Gray CR, Walsh JR, et al. Anxiety and depression-Important psychological comorbidities of COPD. J Thorac Dis 2014; 6(11):1615-1631.
10. Nici L, ZuWallack R. Chronic obstructive pulmonary disease-evolving concepts in treatment: advances in pulmonary rehabilitation. Semin Respir Crit Care Med 2015; 36(4):567-574.

Table 3. Depression Screening Validated Instruments

Instrument	Number of Items	Score Range	Score Criteria	Literacy Level	Sensitivity	Specificity	Comments
Patient Health Questionaire-2 (PHQ-2)	2	0-6	Positive response warrants administration of PHQ-9	6th-9th grade level	83%	90%	Assesses frequency of depressed mood and anhedonia over the past two weeks.
Patient Health Questionaire-9 (PHQ-9)	9	0-27	0-4 none 5-9 mild 10-14 moderate 15-19 moderately severe 20-27 severe	6th-9th grade level	88%	88%	Emulates DSM-IV, useful for making a diagnosis of depression and monitoring response. Permission is not required to reproduce, translate, display or distribute the PHQ-9.
Beck Depression Inventory	21 13 7	0-63	10-19 mild 20-29 moderate ≥30 severe	3rd-5th grade level	90%	79%	Copyright protected and can be purchased from Psychcorp.com.
Major Depression Inventory	10	0-50	Mild depression 20-24 Moderate depression 25-29 Severe depression ≥ 30	3rd-5th grade level	86-92%	82-86%	Questionnaire is brief and can be scored diagnostically by the DSM-IV and ICD-10.
Geriatric Depression Scale	5	0-5	≥ 2 Positive for depression	3rd-5th grade level	94%	81%	Yes or no responses for easier comprehension.
Zung Depression	20	20-80	20-44 normal 45-59 mildly depressed 60-69 moderately depressed ≥70 severely depressed	3rd-5th grade level	84%	72%	Practical for repeated use, has been used widely in various patient groups and in healthy persons.



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Crimes Against Persons

by Anthony L. DeWitt, JD, RRT, FAARC

Many years ago, a close friend, Bill Nillson, RRT, was working in an emergency room as a therapist when a gunshot victim arrived by ambulance. Chest tubes were placed and EKG leads affixed. The physician started emergency treatment and made the call to the surgeon. Things were going swimmingly when the person who started the endeavor — the person who did the shooting — arrived in the ER. Waving his gun around, he told those there that he had intended to kill the victim, not wound him, and that if they did not want to suffer the same fate (he emphasized this proposition with the weapon), they would let the patient die.

The physician turned to the man and began to implore him to let the doctor do his duty because as a physician he was honor bound to try and save the man's life. The gunman was hearing none of this. While he was distracted by the doctor, Nillson calmly stepped back and pulled the wire connecting the leads from the EKG to the monitor. "Look," he told the gunman, "you got your wish. He's dead." A white line traced silently across the monitor. Everyone looked at the monitor, including the gunman.

The gunman never checked to see if the man was still breathing, he just turned around and left (to be later arrested). Once he was gone, the resuscitation started again in earnest, and the patient survived in spite of the gunman's best efforts.

At another time in another venue, another person I know reported to their physician's office to have the bandages on their surgically repaired arm changed. The young resident, who had not been present in the surgical suite and who did not know the patient at all, grabbed the arm in the precise place where it had been operated upon and applied pressure without thinking.

"If you don't let go of my arm" this petite southern belle exclaimed, "I'm going to kick you." The resident physician, aghast at being addressed in this manner, backed out, left the room, and sent in the meanest nurse he could find. The nurse found the operating surgeon and sent him in instead.

"Did you tell the resident you were going to kick him?"

"Yes," she told the surgeon, "and if you grab me where he grabbed me, I'm going to kick you, too!"

about the author...

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Special laws protect health care workers

These two disparate situations illustrate two scenarios where health care personnel faced, if not actual assault (in Mr. Nillson's case, with a deadly weapon) then threatened assault. Most clinicians are adept at dealing with the excitable patient illustrated in the second example but may not know that special laws protect them in most of the states with respect to an attempt by anyone to harm them in the course of doing their job.

Alabama's law, AL Code §13A-6-21, protects "a health care worker, including a nurse, physician, technician, or any other person employed by or practicing at a hospital..." from an intentional assault that results in physical injury to any person. Alaska's law protects only emergency medical technicians (EMTs) and "medical professionals" but defines that term narrowly as "a nurse, nurse aid, or nurse practitioner." Arkansas' law, AR Code §5-13-202, is broader. It says that a person commits battery in the second degree if they knowingly cause physical injury to a person performing medical treatment or emergency medical services and includes physicians, persons certified as EMTs, and

any other licensed or certified health care professional. California's law is more specific, and Colorado imposes up to twice the maximum sentence on the offender if they injure a health care worker through criminal action. Thus, in nearly every state, health care personnel have protections while performing their jobs.

These laws exist primarily because the ethics of the medical professions prevent a health care worker from fighting back when attacked, even by a competent patient. If a patient or visitor assaults a therapist, the therapist may surely cover up and back away, but usually it is considered an ethical breach to strike back at a patient (or a visitor) because they have a duty to those individuals to protect them from harm. Since health care workers may not act to protect themselves, the law offers them some protection in the form of special laws.

Of course, in some instances, the statutes simply won't protect a health care worker but may instead simply provide a vehicle for prosecution after the fact. Even if the patient knows the law exists, it won't apply if the patient is medically impaired (example: an untoward reaction to a drug). Similarly, if the patient is hypoxemic, hypercarbic, seizing, or suffering from dementia, a violation of the law is unlikely to be prosecuted because a patient cannot form the intent to injure someone while they are unable to think clearly. However, that doesn't mean that a health care worker should not learn their state's law and keep a copy of it handy.

Engage in simulations and use emergency strategies

When loved ones are in the hospital, particularly when life is in peril, people often react badly. A husband whose wife may have meant the world to him may displace his guilt at not being home when she fell and assert his right to defend her from the very people who are there to help her. A spouse may jump up and demand information at the slightest moan or may go running into the hall when the patient merely experiences hiccups. Every professional has seen these overreactions and, in most cases, has dealt with them by providing information and exercising patience and understanding.

Yet, just as most patients' family members and, indeed, most patients can be reasoned with and talked out of aggression toward health care workers, there are some people who simply like the idea of bullying people and threatening them, and a hospital just provides a target-rich environment for them. No health care worker should be required to put up with that.

Most hospitals have a policy for dealing with a visitor who is disruptive or a family member who threatens staff and other visitors. This usually involves calling hospital security and, in some cases, law enforcement to remove the offending party from the facility. Most states also have temporary restraining orders (or "orders of protection") that can be used to keep a violent person out of the hospital. In those situations where a health care worker is threatened or physically assaulted or battered, however, knowing the law could help law enforcement and the local prosecutor ensure that you get the full benefit of the law's protection.

As a victim of a crime, you usually have a right to know about any deals the prosecutor reaches with the perpetrator; and you also have the right to speak at sentencing through what is called a "victim impact statement." These are often powerful and affect the way a judge exercises his discretion at sentencing.

No one wants to use their own hospital's services because they were assaulted while caring for a patient. Likewise, no one wants to lose their job because they fought back when they were assaulted. Numerous communication strategies exist to defuse dangerous situations.[1] Every therapist should understand those strategies and should engage in simulations with other health care workers to learn how to apply those strategies in an emergency. Having practiced with these methods will ensure that if a potentially violent situation occurs, the therapist can walk away at the end of the day without the need for a trip to the emergency room. ■

ADDITIONAL READING

1. Institute for Healthcare Communication website. Strangers in crisis: emergency and hospital-based clinicians (a health care communications course). Available at: http://healthcarecomm.org/training/faculty-courses/strangers-in-crisis/ *Accessed Sept. 11, 2015*

Patient Advocacy: Is There a Role for the Respiratory Therapist?

by Thomas J. Kallstrom, MBA, RRT, FAARC

As part of our professional responsibility as respiratory therapists, it is important to realize that beyond the hands-on care that we provide our patients we must also have a longer and broader vision of our purpose. I have spoken to many patients with chronic pulmonary disease and the clinicians who care for them who frankly are frustrated by the fact that once the patient is diagnosed, treated, and sent home, there seems to be a missing component because the patient gets lost in the system and is left to fend for themselves. That lost component is the need for an advocate for the patient.

I went through this with my parents as they neared the end of their lives when they needed someone to help them as they traversed the health care jungle. They were not able to go it alone. As a result, there were a lot of adjustments in my schedule and many calls to my parents, providers, and payers, as well as frequent trips and necessary interventions taking place back home. The bottom line is that my parents needed advocacy at every juncture — and they were not the exception.

With the thought of advocacy in mind, I would like to share some AARC-supported initiatives that may provide that necessary level of care and the important communication with patients so in need of it.

Telemedicine

As mentioned in a previous column, telemedicine is a growing part of health care that can position the RT to (at a distance) assess, intervene, and educate patients and caregivers. We are starting to see some evidence-based studies that are demonstrating the fact that teaching self-management combined with telemedicine is likely to result in positive outcomes.

Self-management interventions in COPD patients are associated with improved health-related quality of life as measured by St. George's Respiratory Questionnaire (SGRQ) as presented in a study that showed a reduction in respiratory-related hospital admissions and an improvement in dyspnea.[1] This is a significant study as it looked at over 3,000 patients who participated in 23 studies.

An area that almost all respiratory care departments are heavily involved in is pulmonary rehabilitation. Another evidence-based study published in 2011 from 10 studies and 850 patients demonstrated that, indeed, home telehealth (home telemonitoring and telephone support) decreased the rates of hospitalization and emergency department visits. Findings for hospital bed days of care varied among studies, however.[2] Pulmonary rehabilitation certainly can be a logical starting place for telemedicine in the United States.

Looking more specifically at the RT, we find credible evidence that telehealth can reduce health care utilization.[3] A study consisting of 314 patients (684 visits) who received telemedicine consultations demonstrated this. Common reasons for referral to the study were abnormal radiology (38%), chronic obstructive pulmonary disease (26%), and dyspnea (13%). A physical exam was performed by a registered nurse or respiratory therapist in 90% of visits. The most common diagnoses were COPD (29%), benign pulmonary nodule (11%), asthma (6%), and lung cancer (6%). Telehealth consultation resulted in a change in management for 41% of patients. Only 8% of patients required an in-person clinic as a result.

This is an exciting time as there is an opportunity for us to become participants — if not leaders — in this emerging area of care. The AARC is in full support of a

about the author...

Thomas J. Kallstrom, MBA, RRT, FAARC, is executive director of the AARC.

new bill called the Medicare Telehealth Parity Act of 2015 introduced in the U.S. Congress in July 2015. The Bill is H.R. 2948 and will expand opportunities for Medicare beneficiaries who suffer from pulmonary disease by:

1. covering respiratory services when furnished via an interactive telecommunications system,
2. including an individual's home as a telehealth site, and
3. naming RTs as qualified telehealth professionals.

The bill also covers remote patient monitoring for patients with certain chronic conditions that include COPD when furnished as part of chronic care management services. I encourage you to learn more about this opportunity by going to www.aarc.org/careers/career-advice/professional-development/telehealth-and-the-rt/.

Pelican grant

Another great opportunity exists for respiratory therapists to enhance patient self-management. The AARC is a partner in a Patient-Centered Outcomes Research Institute (PCORI) study that seeks to measure the effectiveness of providing COPD patients access to peer coaches.

The lead researcher on this grant, Jerry Krishnan, MD, PhD, has asked the AARC to work with him on this study. They need 450 patients; and as of October 2015, patient enrollees were about half way to the goal. If you are interested in participating or are able to enroll post-discharged COPD patients into the study, I ask that you directly contact me at Kallstrom@aarc.org.

This study will measure the efficaciousness of post-discharge education for COPD patients, all of which is done via phone counseling by a highly trained peer group of COPD patients. Outcomes to be measured will include adherence to oxygen prescription, health care utilization, and patient-reported outcomes. Secondary outcomes will include quality-of-life measurements.

Both of these initiatives are great opportunities for us, and I encourage you to join us as we try to position the RT in a position where their role in disease management will become the norm and not the exception.

Finally, if you will be at the 61st AARC International Respiratory Convention & Exhibition this year, you should know that we are hosting our first Patient Advocacy Summit. It will take place on Nov. 6, and you are invited to attend. It is there that we hope to bring together patients, clinicians, and varied Association leadership in a venue that allows for active interaction, sharing, and learning about how we as a profession and an association can better provide for our patients. I hope to see you at AARC Congress 2015. ■

REFERENCES

1. Zwerink M, Brusse-Keizer M, van der Valk PD, et al. Self management for patients with chronic obstructive pulmonary disease. Cochrane Database Syst Rev 2014; 3:CD002990.
2. Brooks D. Telehealth technology: an emerging method of delivering pulmonary rehabilitation to patients with chronic obstructive pulmonary disease. Can Respir J 2011; 18(4):196.
3. Raza T, Joshi M, Schapira PM, Agha Z. Pulmonary telemedicine — a model to access the subspecialist services in underserved rural areas. Int J Med Inform 2009; 78(1):53–59.

Chronic Disease Manager

COPD Patient Clinics

by Anil C. Singh, MD, MPH

Chronic obstructive pulmonary disease is a common, preventable, and treatable condition defined by persistent airflow limitation leading to a chronic inflammatory response. It is usually progressive and associated with enhanced inflammation in the airways and lungs. The term "emphysema" is a pathological term defined by parenchymal destruction and describes one of several structural abnormalities that occur in the lung. This destruction contributes to airflow limitation and a subsequent decrease in gas transfer with narrowing of the peripheral airways and leads to decreases in FEV_1.[1]

COPD is now the third-leading cause of death in the United States — one of the only diseases whose prevalence and mortality is on the rise — and is a significant economic burden with an estimated annual cost of $49 billion.[2,3] The diagnosis of COPD by the 2014 Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria is made clinically and with spirometry. The clinical symptoms of COPD are dyspnea, cough, sputum production, and a history of exposure to risk factors. The COPD Assessment Test or the Modified Medical Research Council Questionnaire for breathlessness (MMRC) are necessary tools to assess the clinical impact on the patient's health status. However, spirometry is required to make the diagnosis utilizing a post-bronchodilator ratio of $FEV_1/FVC < 0.70$ and assesses the severity of the disease. The spirometric data and worsening stage set by the GOLD criteria correlate well with hospitalizations, exacerbations, and mortality.[1] However, in a population study using health administrative data from Ontario, Canada, researchers found only about one-third of patients with a diagnosis of COPD had pulmonary function testing, which certainly may lead to either underdiagnosis or overdiagnosis of the disease.[4]

A COPD exacerbation is defined as an acute event with worsening respiratory symptoms that are beyond normal day-to-day variations and may eventually lead to a change in medications. The most significant predictor of having an exacerbation is a history of a prior exacerbation; and the more the exacerbations, the worse lung function becomes.[1,5,6]

COPD severity is classified into four severity stages. The combined COPD assessment considers all methods to stage the patient, including spirometric data, exacerbation history, and clinical assessment based on either the COPD Assessment Test (CAT) or MMRC questionnaire.[1] Medications and pulmonary rehabilitation are then used based on the patient's stage of disease.

Predictors of readmissions correlate with gaps in care including correct diagnosis; correct medication; education; affordability of medications; smoking-cessation counseling; interactions with a pulmonologist, primary care physician (PCP), and hospitalist; post acute management; and home care.

Outpatient clinics supplement post-discharge COPD care

Allegheny General Hospital in Pittsburgh, PA, under the direction of two pulmonologists (myself and Tariq Cheema, MD) and a respiratory coordinator (Joe Gordon, RT), formed a COPD task force to evaluate ways to reduce hospital readmissions,

about the author...

Anil C. Singh, MD, MPH, is the program director of the pulmonary/critical care fellowship; co-chair of the Breathing Disorders Institute at Allegheny General Hospital in Pittsburgh, PA; assistant professor of medicine at Temple University; and medical director at the Lifecare Hospitals–Suburban Campus.

developed a discharge checklist, and created a position using a respiratory therapist as a coordinator of care. As part of the checklist, patient care is provided within 72 hours post discharge. During this pilot phase, the team filled in many of the gaps that otherwise would have been lost, including transportation issues, medication use and compliance, correct diagnosis, referral to pulmonary rehabilitation, spirometry, and proper staging of COPD via protocols developed to help standardize care. The goal is to further evolve these clinics throughout a health care system covering a wide geographical range and connecting patients, PCPs, and pulmonologists via standardized protocols that have been developed.

Role of the primary care physician

The primary care physician serves a vital role in this process, and early GOLD-stage COPD patients present to their offices initially. The goal is to certify PCP physicians with a "respiratory certificate of excellence" if they are willing and able to follow the protocols for the care of the COPD patient. The objective is to engage the PCP in the care of the COPD patient.

Outpatient services offered in COPD clinics

The services planned for patients in these clinics are multidisciplinary and include:

- correct diagnosis via GOLD staging (CAT or MMRC questionnaire/spirometry),
- comorbidity management,
- help with affordability of medications by providing social workers,
- mental health counseling for issues with anxiety and depression,
- pulmonary rehabilitation,
- nutrition counseling,
- smoking-cessation counseling,
- action plans for acute exacerbations,
- disease education and management,
- administration of appropriate vaccinations,
- proper techniques for medication usage, and
- end-of-life counseling.

Role of the RT in COPD clinics

The role of the RT is the nucleus of our program, as the role of a respiratory coordinator serves to bridge the gap and fully connect the patient. Several COPD studies have failed to show significant improvement in outcomes with predominantly nurse-led home management programs, and it was decided that having an RT to lead could change this outcome. The respiratory coordinator is responsible for identifying primary patients admitted for a COPD exacerbation into the hospital and finding patients at risk for potential COPD exacerbations in the future who may be admitted for another diagnosis. The RT is responsible for collecting data and ultimately coordinating all aspects of the patient's care. This includes inpatient management; follow-up appointments to the breathing center and PCP offices; post-acute care follow up with nursing homes, LTACs, and home care companies; and phone calls to the patients at risk for exacerbations. In the clinics, the RT's role is similar in coordinating the patient's care in an effort to prevent any COPD exacerbation. ■

REFERENCES

1. Global Initiative for Chronic Obstructive Lung Disease (GOLD) website. Global strategy for the diagnosis, management, and prevention of COPD: updated 2015. Available at: www.goldcopd.org/uploads/users/files/GOLD_Report_2015_Apr2.pdf *Accessed Aug. 12, 2015*
2. American Lung Association website. Trends in COPD (chronic bronchitis and emphysema): morbidity and mortality. Available at: www.lung.org/finding-cures/our-research/trend-reports/copd-trend-report.pdf *Accessed Aug. 12, 2015*
3. Ford ES. Hospital discharges, readmissions, and ED visits for COPD or bronchiectasis among US adults: findings from the Nationwide Inpatient Sample 2001-2012 and Nationwide Emergency Department Sample 2006-2011. Chest 2015; 147(4):989-998.
4. Gershon AS, Hwee J, Croxford R, et al. Patient and physician factors associated with pulmonary function testing for COPD: a population study. Chest 2014; 145(2):272-281.
5. Criner GJ, Bourbeau J, Diekemper RL, et al. Executive summary: prevention of acute exacerbations of COPD: American College of Chest Physicians and Canadian Thoracic Society Guideline. Chest 2015; 147(4):883-893.
6. Celli BR, Decramer M, Wedzicha JA, et al. An official American Thoracic Society/European Respiratory Society statement: research questions in chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2015; 191(7):e4-e27.

The 2015 Jimmy A. Young Memorial Lecture Report: Criterion Validation Studies for the CRT and RRT Credentialing System

The NBRC has presented the Jimmy A. Young Memorial Lecture each year since 1978 to honor the memory of a remarkable contributor to the respiratory care profession. Within the span of 15 years, Jimmy A. Young went from being an on-the-job trainee to achieving the RRT credential (#263). He directed an education program in Boston, directed a department in one of Boston's leading hospitals, became the 22nd president of the AARC, and was a trustee of the NBRC at the time of his unexpected death. Robert C. Shaw, Jr., PhD, RRT, FAARC, assistant executive director and psychometrician for the NBRC, presented the 2015 lecture in Phoenix, AZ, on July 15.

Dr. Shaw began the lecture by explaining that two criterion validation studies were done in 2013 for the Therapist Multiple-Choice (TMC) Examination and the Clinical Simulation (CS) Examination. Results of these studies were intended to document whether test scores were related to the clinical performances of respiratory therapists. The NBRC has documented results of studies like these since the early 1980s after the first of these studies contributed to the settlement of a civil rights lawsuit. The Board accepted the results of the studies in 2014, which was the final step in deciding to associate results from the TMC Examination with the CRT credential. The Board also decided to associate TMC Examination results and results from the new 20-problem CS Examination with the RRT credential after evaluating results of these studies.

about the speaker...

Robert C. Shaw, Jr., PhD, RRT, FAARC is the assistant executive director and psychometrician of the National Board for Respiratory Care.

Sampling

A restricted range of abilities can negatively influence results of studies like these. The NBRC had planned to avoid such range restriction by seeking to involve people who were still in training, recently graduated, and had been working for many years. Important to efforts to recruit volunteers was a $100 incentive for each case. Persons who participated in the TMC and CS studies received $200.

Approximately 500 therapists participated in each of the two studies. The span of experience was wide, ranging beyond 40 years. Geographic distributions mirrored population centers within the United States and mirrored the gender subgroup proportions that have been observed in the population. A wide variety of work settings was represented in the sample. Dr. Shaw stated that he thought the incentive worked well in encouraging participation from a representative sample of the population.

Correlations

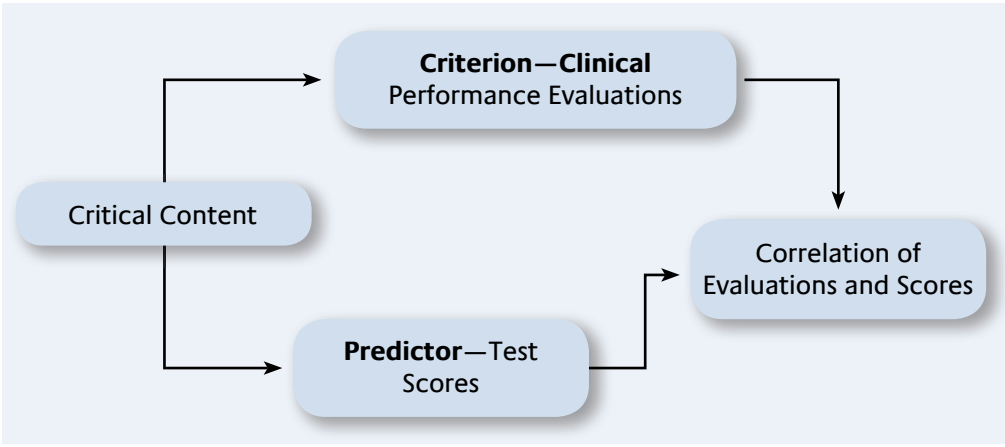
Dr. Shaw illustrated the intent behind the TMC and CS studies while using the graphic shown in Figure 1.

Critical content had been identified through a job analysis study in 2012. Both the predictor and criterion instruments were developed from the same body of content in 2013. The predictor produced scores after test takers responded to test items or problems. The criterion produced scores after each supervisor of a test taker evaluated the test taker's clinical abilities. The TMC validity coefficient (R) was 0.47 and the CS validity coefficient was 0.48 — both of which were statistically significant in strength.

Comparisons

Each study also proposed to answer whether the credential status of test takers was linked to the examination mean score and examination pass rate. Doing

Figure 1
Criterion-referenced Evidence



so created a bridge to the past, according to Dr. Shaw. If stakeholders have generally trusted the credentials achieved in the past, then observing that credentialed persons do better on a new test can help reinforce acceptance of the test.

Therapists from the sample who had already achieved a credential showed a mean TMC predictor score of 101.1 while their counterparts without a credential showed a mean of 87.4. The credentialed therapists showed a mean criterion score of 192.4 while their counterparts without a credential showed a mean of 148.7. The t-test results showed that the difference in predictor scores was significant and the difference in criterion scores was significant. Both differences were linked to large effect sizes.

The same types of comparisons were made within the study involving the CS examination. Volunteers with a credential (CRT or RRT) had a mean score of 282.4 while those without a credential had a mean score of 260.0. Criterion score means for these two groups were respectively 192.7 and 151.7. Both sets of comparisons were statistically significant and associated with large effect sizes.

The proportion of therapists who had already achieved the CRT or RRT credential was 81.1% in passing the TMC Examination, which was compared to the 53.9% who passed the TMC but had not yet achieved the CRT or RRT credential. The same type of comparison found that 55.2% of therapists with a CRT or RRT credential had passed the CS Examination compared to 28.9% who had not. Both sets of comparisons of passing proportions were statistically significant.

Triangulation

As of January 2015, candidates who first earned a sufficiently high score on the TMC Examination and then passed the CS Examination have achieved RRT credentials. Most (449) volunteers participated in both studies, which opened new lines of study based on the (1) criterion scores, (2) TMC scores, and the (3) CS scores. Dr. Shaw explained that the RRT credentialing system would be supported if TMC scores and CS scores shared an underlying construct, while each set of scores revealed unique information about the abilities of respiratory therapists.

A principal-components analysis found one primary factor explaining 89% of the variability in both sets of test scores. Results from trying to predict clinical performance scores of respiratory therapists from TMC and CS scores revealed that 17.1% of variability in the performance scores was explained by TMC scores, which was a statistically significant amount. The important phase of the procedure came next when CS scores were added to the model. An additional 4.6% of variability was explained, which was a statistically significant change. If TMC and CS scores had been redundant measures of abilities, then the second step would not have changed the strength of the prediction. These results show that removing one examination or the other from the RRT credentialing system would remove valuable information about the abilities of respiratory therapists.

Summary

The NBRC has typically done a criterion validation study each time the NBRC has restructured the content of an examination that has contributed to achieve-

ment of the CRT or RRT credential since the early 1980s. The most recent iteration of these studies was done in 2013 while involving information from the TMC and CS Examinations.

The number of therapists who volunteered to participate in each study was approximately 500, with about 450 choosing to participate in both the TMC and CS studies. Critical to persuading such a large number of therapists to participate was a monetary incentive that the NBRC trustees had approved in its budget.

As predictors of clinical performances, scores from TMC and CS examinations explained a statistically significant, moderately strong degree of variability. A prediction of performances based on both sets of test scores was stronger than either test explained alone, which reinforces the NBRC's continued policy requiring those who will achieve the RRT credential to pass both a multiple-choice type and a simulation type of examination.

A bridge to past credentialing outcomes was created when mean TMC scores and pass rates among credentialed study volunteers was significantly higher than observed from volunteers who were not yet credentialed. Likewise, mean CS scores and pass rates were significantly higher than observed from volunteers who were not yet credentialed.

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

The RT as Lung Cancer Navigator

by Rita Edwards, BS, RRT, RPFT

Cigarette smoking-related diseases are well known and cost about 480,000 lives annually in the United States.[1-3] Smoking damages almost every organ in the body and causes many absences from work and increased health care utilization. It is the most preventable cause of death in the United States.[1]

The death rate from lung cancer is the highest among all the cancers in the United States, as well as worldwide.[4-7] It kills more people than colon, breast, and prostate cancer combined.[3] In 2014 alone, 224,210 new cases were diagnosed and 159,260 deaths were reported.[8] Lung cancer survival largely depends on the stage it is in when it is diagnosed.[8]

Until recently there was no national screening program aimed at preventing these deaths. In 2011, however, the National Comprehensive Cancer Network (NCCN) published guidelines for lung cancer screening that called for the use of low-dose computed tomography (LDCT) in patients deemed at high risk for lung cancer based on their age and smoking history. They also recommended that the program include a smoking-cessation program and be multidisciplinary in nature, utilizing radiology, pulmonary medicine, and thoracic surgery.[9]

Is there an opportunity here for respiratory therapists? My experience shows that there is. Several years ago, I was prompted by an oncologist and an oncology nurse manager to begin attending the hospital's monthly multidisciplinary lung conferences to discuss individual lung cancer cases — many of which I saw in the pulmonary lab prior to their surgery, chemo, and/or radiation therapy. It was my chance to chime in with input for their treatment plan if I saw a need or benefit for pulmonary pharmacotherapy, oxygen, or pulmonary rehabilitation. Given that experience, plus my committed work with chronic lung disease patients in our Pulmonary Diagnostic & Wellness Center, as well as my rapport with administration, physicians, and nurses, I was recommended for my current position as lung cancer navigator.

about the author...

Rita Edwards, BS, RRT, RPFT, is a respiratory therapist and lung cancer navigator at Paoli Hospital in Paoli, PA.

Learning something new

It was another (hard) hat to wear, as our hospital was to be the trailblazer for this program for the Main Line Health system, which consists of three other acute care hospitals. Much work was required to market the LDCT screening program to the primary care physicians and educate them about its value, as they would drive the program via their referrals for the screening for their patients. We had a great team headed by Dr. Alicia McKelvey, who is our physician champion for the program. After many meetings, we hurdled the challenges of patient scheduling, marketing materials, physician education, and creating a tracking system. We also had to deal with a service that, at the time, insurances were not covering. Since there was no uniform registry for these patients, we had to develop one of our own as well.

Luckily, Medicare has now agreed to reimburse for the screening and is working with the American College of Radiology (ACR) to set up the Lung Cancer Screening Registry "to enable providers to meet quality reporting requirements to receive Medicare CT lung cancer screening payment."[10] In the meantime, however, I've learned a great deal about the background of the screening, the recommendations from the NCCN and the U.S. Preventive Task Force, as well as the ACR reporting system that is used for "assessment and management recommendations."

Our radiologists are currently using the Lung CT Screening Reporting and Data System (Lung-RADS™) to

standardize the lung screening. The Lung-RADS system was developed by the ACR Lung Cancer Screening Committee subgroup on Lung-RAD and, according to the ACR, is a "quality assurance tool designed to standardize lung cancer screening CT reporting and management recommendations, reduce confusion in lung cancer screening CT interpretations, and facilitate outcome monitoring."[11]

I use this system to keep track of my patients and send out letters prompting them to call their physician for results (as I do not give results), as well as send out reminder letters for repeat screening. This is currently a manual process for me, but we are looking into some software to help us ease the workflow and become more automated. This software may even encompass other cancer-screening programs as well.

It's all about improving outcomes

We began as a self-pay program in January 2014, and I had 42 screened patients in my database by the end of the year. Statistics suggest it takes about 300 screenings to find one cancer, but we quickly found one in the first year with just 42 patients screened. Dr. McKelvey called the patient's primary care physician to thank him for saving the man's life. I have added another 44 patients to my database so far this year and have recently had another positive screening. We've also had a few incidental findings of esophageal nodes and a lymphoma. The word is spreading, and we're making a difference!

Catching lung cancer at the earliest possible moment is, of course, the overall goal of the screening program. As a respiratory therapist navigator, I also take advantage of the "golden moment" I have with these patients to speak to them not only about their concern for lung cancer but also any other smoking-related pulmonary diseases they are worried about. I refer them to tobacco-cessation programs as well.

When I'm in the pulmonary function lab, I can also talk to my patients about their risks for lung cancer and let them know about the availability of the screening and refer them to their physician to get a prescription for the test. The latter no longer poses a roadblock to the patient, as Medicare now requires physicians to have a "shared decision" visit with patients to discuss the aspects of lung cancer screening, such as eligibility, smoking history, the risks and benefits, the importance of follow-up screenings, and tobacco counseling, among other topics.[12]

Recommendations and tips

The referrals for our other pulmonary programs have also been flourishing since the beginning of the year, mostly due to Medicare's Readmissions Reduction Program.[13] We are currently experiencing some growing pains and have just hired an additional person for our department. We also see inpatients for pulmonary rehabilitation consults if they have a COPD diagnosis. For several of my patients, this has been a continuance of care because I have already spoken to them on the phone to navigate their lung cancer screening, I have seen them in the pulmonary lab for testing, and for a few I have been their case manager throughout their pulmonary rehabilitation program.

Now that there is (finally) a driving force to manage the COPD population (the Readmissions Reduction Program), many RTs are becoming COPD navigators. I believe RT departments also have the opportunity to develop a program such as ours to include lung cancer navigation. This is such a unique position because it encompasses the entire realm of smoking-related pulmonary diseases. We can address symptoms that may be related to lung cancer and make referrals to the PFT lab and help patients get diagnosed.

Depending on the culture of the department and rapport with administration, it shouldn't be too hard to convince hospital leaders that a respiratory therapist is the best candidate for the position due to the smoking-related diseases for which we already provide treatment and education. Another very important aspect to consider is that this type of cancer is the only one with a stigma attached to it; and the navigator should be able to provide unbiased guidance, along with empathy and encouragement such as that seen in the pulmonary rehabilitation programs where we already provide such care.

Here are some tips for anyone thinking of developing an RT lung cancer navigator position:

- The candidate should have a strong understanding of patient education techniques and the desire to educate patients who have smoking-related diseases. There will be a lot more to learn about lung cancer.

- There should be a good rapport with the radiology, oncology, and pathology departments, as well as the physicians who are involved and the administrative staff. This rapport can be gained by attending lung tumor board or similar oncology meetings.

- Since these programs are still being developed and insurance companies are still in the working phase of reimbursement, this is great timing for RT departments to create this type of position. It can be combined with other positions as well.

On the way to a better life

Of the 86 patients in my files, two have been successfully cured of lung cancer; and I'm very proud to be a part of the program that helped facilitate those cures through early screening. I have an additional three high-risk patients who we are following with short-term LDCT, so there possibly may be others who can say they have beaten a cancer with one of the lowest survival rates today.

To me, becoming a lung cancer navigator is just one more thing that validates what many of us have been doing for years — guiding patients through the process of obtaining the care they need to help them succeed in living a better life. ■

REFERENCES

1. Centers for Disease Control and Prevention website. The health consequences of smoking — 50 years of progress. A report of the surgeon general. Available at: www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf *Accessed Aug. 27, 2015*
2. Centers for Disease Control and Prevention website. A report of the surgeon general: how tobacco smoke causes disease … what it means to you. Available at: www.cdc.gov/tobacco/data_statistics/sgr/2010/consumer_booklet/pdfs/consumer.pdf *Accessed Aug. 27, 2015*
3. Centers for Disease Control and Prevention website. QuickStats: number of deaths from 10 leading causes — National Vital Statistics System, United States, 2010. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/mm6208a8.htm?s_cid=mm6208a8_w *Accessed Aug. 27, 2015*
4. U.S. Department of Health and Human Services. The health consequences of smoking: a report of the surgeon general. Atlanta GA, 2010.
5. Thun MJ, Henley SJ, Burns D, et al. Lung cancer death rates in lifelong nonsmokers. J Natl Cancer Inst 2006; 98(10):691–699.
6. Jernal A, Bray F, Center MM, et al. Global cancer statistics. CA Cancer J Clin 2011; 61(2):69–90.
7. Siegel R, Naishadham D, Jernal A. Cancer statistics, 2012. CA Cancer J Clin 2012; 62(1):10–29.
8. American Cancer Society website. What are the key statistics about lung cancer? Available at: www.cancer.org/cancer/lungcancer-non-smallcell/detailedguide/non-small-cell-lung-cancer-key-statistics *Accessed July 16, 2015*
9. Field JK, Smith RA, Aberle DR, et al. International Association for the Study of Lung Cancer Computed Tomography Screening Workshop 2011 report. J Thorac Oncol 2012; 7(1):10–19.
10. American College of Radiology website. Lung cancer screening registry. Available at: www.acr.org/Quality-Safety/National-Radiology-Data-Registry/Lung-Cancer-Screening-Registry *Accessed July 28, 2015*
11. American College of Radiology website. Lung CT Screening Reporting and Data System (Lung-RADS™). Available at: www.acr.org/Quality-Safety/Resources/LungRADS *Accessed Aug. 12, 2015*
12. Centers for Medicare and Medicaid Services website. Decision memo for screening for lung cancer with low dose computed tomography (LDCT) (CAG-00439N) Available at: www.cms.gov/medicare-coverage-database/details/nca-decision-memo.aspx?NCAId=274&NcaName=Screening+for+Lung+Cancer+with+Low+Dose+Computed+Tomography+(LDCT)&TimeFrame=7&DocType=All&bc=AQAAIAAAAgAAAA%3d%3d& *Accessed July 28, 2015*
13. Centers for Medicare and Medicaid Services website. Readmissions reduction program. Available at: www.cms.gov/Medicare/medicare-fee-for-service-payment/acuteinpatientPPS/readmissions-reduction-program.html *Accessed July 28, 2015*

AARC's Government Affairs — Working for RTs and the Respiratory Care Profession

by Cheryl West, MHA and Anne Marie Hummel

Through its government affairs staff, the AARC makes it a priority to keep RT members and supporters up to date on the various national policy issues impacting the respiratory care profession, whether it is regulations from federal agencies such as the Centers for Medicare and Medicaid Services (CMS) or key legislation moving through Congress. The most recent example, of course, is highlighting the importance of emailing members of Congress to co-sponsor H.R. 2948, the Medicare Telehealth Parity Act, and to ask for support to introduce a Senate companion bill. Among other provisions, this legislation would add respiratory services to those furnished via telehealth and respiratory therapists as Medicare telehealth providers. It would also cover remote patient monitoring for COPD patients. The AARC has spotlighted the Medicare Telehealth Parity bill as a major Association and Government Affairs endeavor, and we also ensure we provide lots of coverage for the annual Capitol Hill Advocacy Day and our Virtual Lobby Week.

However, telehealth and the various efforts we undertake are not the only regulatory and legislative issues that we are involved with in Washington, DC. This column provides a few brief recaps of the other issues the AARC has undertaken over the past six months to advance the profession, increase patient access to RTs, and keep respiratory therapy and therapists involved in and knowledgeable about policy changes.

about the authors...

Cheryl West, MHA, serves as director of government affairs for the AARC. Anne Marie Hummel is the AARC's director of regulatory affairs in Washington, DC.

Capitol Hill and congressional initiatives

The powerful Senate Finance Committee (which oversees the Medicare and Medicaid programs) has established a bipartisan workgroup to explore solutions that will improve outcomes for Medicare patients with chronic conditions. The committee asked for stakeholder input, and the AARC responded with detailed comments addressing access to telehealth services that include RTs as providers and the role respiratory therapists can play in the care and management of patients with COPD and other pulmonary conditions, especially with respect to self-management education and training.

The AARC also sent a letter to key members of the Senate asking for support for the introduction of Senate companion legislation to H.R. 1537, the Advancing Hope Act. A key provision of this bill is intended to reauthorize and make permanent a U.S. Food & Drug Administration (FDA) priority review program, the Pediatric Review Voucher Program, which encourages development of new treatments for rare pediatric diseases.

The AARC also signed on to a Coalition letter expressing strong support for S. 139, the Ensuring Access to Clinical Trials Act of 2015. This legislation will permanently remove a barrier to clinical research and allow recipients of Supplemental Security Income (SSI) to participate in and benefit from clinical trials without fear of losing vital benefits.

As a member of the Friends of the National Center for Health Statistics Coalition (NCHS), which is part of the Centers for Disease Control and Prevention (CDC), the AARC signed on to letters to the House and Senate committees on appropriations urging that the budget of the NCHS, which collects critical health data in the United States, continue to be fully funded.

The AARC also signed on to a Coalition letter that was delivered to all members of Congress urging that funding be maintained for the National Asthma Control Program at the CDC.

The AARC is a longtime member of the Tobacco Partners Coalition comprised of health care and patient advocacy groups committed to decreasing tobacco use in this country. The AARC has signed on to numerous letters sent by the Tobacco Partners to members of

Congress urging opposition to various bills that have been introduced that would weaken the authority of the FDA to regulate tobacco products and exempt certain tobacco products, such as premium cigars, from regulatory oversight.

Regulatory initiatives

The AARC submitted comments that strongly supported a CMS rule that proposes to add respiratory therapy as a specialized rehabilitation service under reforms to the Medicare requirements that long-term care facilities must meet.

CMS published another proposed rule designed to modernize the Medicaid managed care program to reflect changes in the use of managed care delivery systems. AARC submitted comments to CMS to emphasize the expertise of RTs in treating patients with chronic pulmonary disease and the benefit of increasing RT utilization within the managed care arena.

The AARC also submitted written comments as a follow-up to a forum discussion in which CMS asked for input on the feasibility of eliminating the Medicare Certificate of Medical Necessity (CMN) form in an effort to reduce provider burden. You may already be aware that for many years the CMN has been required when prescribing oxygen and oxygen equipment for Medicare patients. There is no word yet from CMS as to whether they will move forward in eliminating the form. However, most forum participants, including the AARC, agreed the information required on the form is duplicative of documentation requirements contained in local contractor policies and is no longer needed.

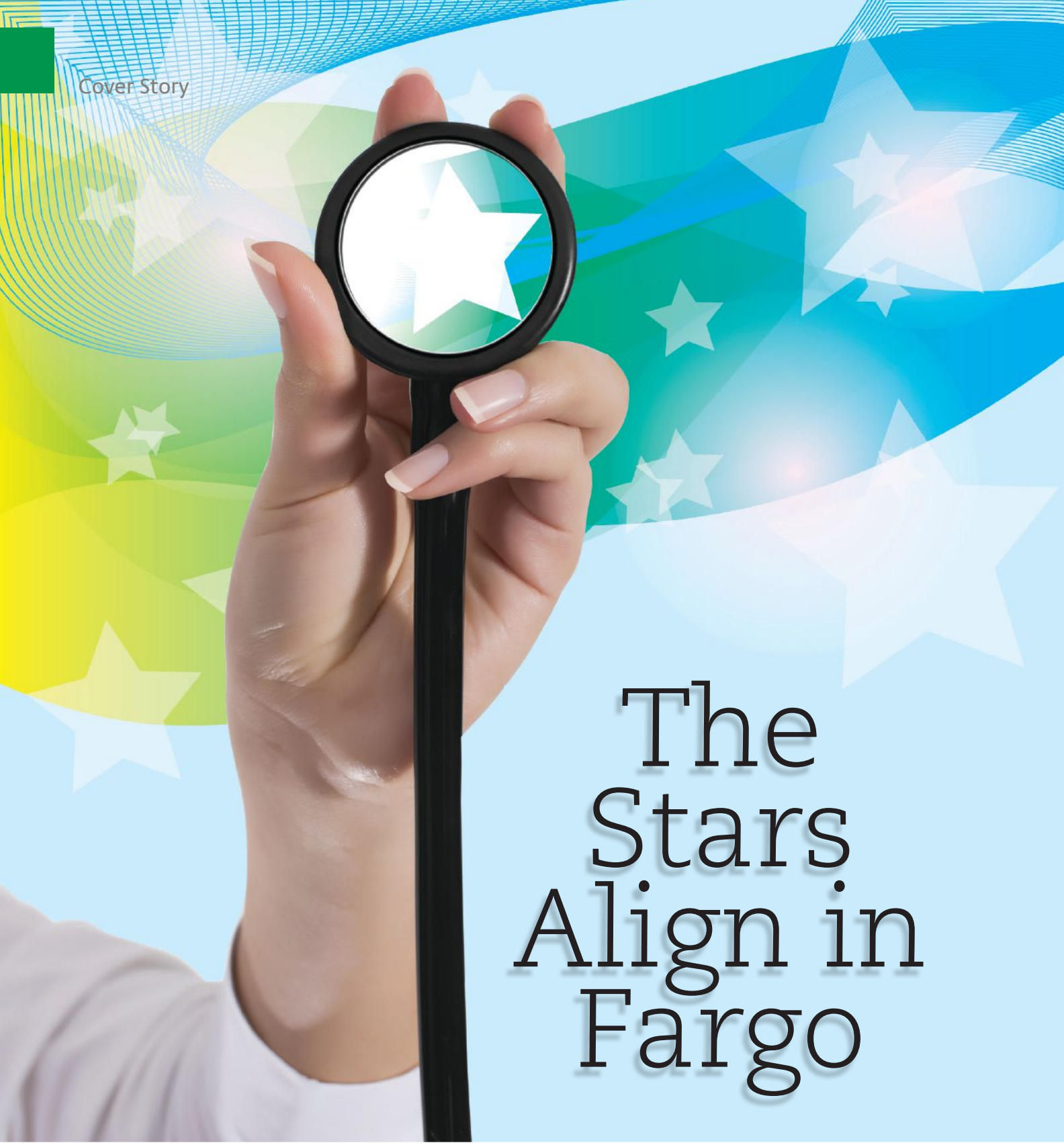
The AARC, together with other pulmonary organizations, recently met with CMS central office staff to discuss the need to update policies on home mechanical ventilation for noninvasive use. Current policies do not recognize the advancement in technologies that have taken place over the past five years. Another meeting is planned in the near future to present clinical evidence and to determine if a national coverage policy is feasible.

As part of the Tobacco Partners Coalition mentioned above, the AARC signed on to a letter to President Barack Obama urging his office to push the FDA to finalize their "deeming" regulations that would give them authority to regulate all tobacco products. Further, as part of the coalition, the AARC also signed on to comments urging the FDA to establish nicotine exposure warning labels and child-resistant packaging for liquid nicotine.

The AARC signed on to a set of comments from the Genetic Alliance to the secretary of the U.S. Department of Health & Human Services to offer suggestions on the proposed Draft Guidance on Disclosing Reasonably Foreseeable Risks in Research Evaluating Standards of Care.

The AARC was one of 68 health care organizations to sign on to a set of comments to a proposed rule from the Equal Employment Opportunity Commission voicing concerns that the revisions proposed by the commission would erode long-standing protections afforded to employees under the Americans with Disabilities Act and would allow employers to inquire about employees' private genetic information or medical information unrelated to their ability to do their jobs and penalize employees who choose to keep that information private.

The above list is not inclusive of all the various activities that the AARC's Government Affairs staff has been involved in; and by the time you read this we will have engaged in other letters, comments, and important meetings. To ensure you will be better informed about these activities, in the near future we will be expanding the government affairs information on the AARC website to include updates to ongoing activities. ■



The Stars Align in Fargo

Evidence-based COPD disease management program reduces costs and readmissions

by Debbie Bunch

You could say it was "in the cards," or chalk it up to "something in the air," or perhaps just give credit to "serendipity." But at Sanford Medical Center, they like to say the stars aligned about eight years ago when several factors combined forces to create a COPD disease management program that has saved money for the hospital and enhanced the quality of life for their patients.

It all started back in 2006 when researchers published a study in the *Annals of Internal Medicine* showing that only about 35% of COPD inpatients were receiving all of the care elements that were recommended by the American College of Chest Physicians — and none of those that were not.[1] That piqued the interest of Gary Brown, BA, RRT, FAARC, director of respiratory care at Sanford Medical Center in Fargo, ND. How would his hospital measure up under similar scrutiny? He had to find out. "As part of a capstone research project, we had our students from the North Dakota State University/Sanford Medical Center Fargo respiratory care program replicate the study retrospectively with a group of our COPD inpatients," says the AARC member. "We found similar concerning results and began a journey to improve our care."

Of course, "improving care" can mean many things; and Brown knew that getting the hospital and its physicians on board with the kind of full-blown program he was imagining could be a challenge. Around the same time, however, his hospital system also developed a five-year plan that actually included a call for chronic disease management strategies centered around evidence-based guidelines and clinical practice standards. Brown quickly included "improving COPD care" in his department's quality improvement plan.

A report on the hospital's cost per case for the Medicare Severity Diagnosis Related Groups (MS-DRG) clinched the deal. The report cited a negative net margin of $613 per COPD patient. Brown took that figure and dug deeper, looking at the total cost per case for these patients, including direct and indirect costs. Direct costs were then categorized by department, with the highest to lowest costs identified as nursing floor, lab, respiratory therapy, pharmacy, inhaled medications, emergency room, cardiovascular diagnostics, and radiology. Brown then took those results to his vice president and received approval to move forward with development of a COPD disease management program aimed at reducing respiratory therapy, pharmacy, and inhaled medication costs.

Building consensus

Gaining buy-in from physicians and other key players was step number one. "Our path was certainly made easier because our administrators came to us asking for help in reducing cost of care," says Brown. But he and his team knew they would still have to identify all the stakeholders and work with them to identify goals and objectives for the program.

"Physician involvement was certainly key; and we included physician leaders from the pulmonology, hospitalist, intensivist, cardiology, emergency medicine, internal medicine, and family medicine departments," he explains. "We also included the physician director of the internal medicine residency program, so we had connection to residents and medical students." The team came together to review

The respiratory therapy team at Sanford has worked hard to make the COPD disease management program a success.

the medical evidence on COPD disease management in both the inpatient and ambulatory settings. Soon a COPD medication protocol and COPD standing order set were being created.

Pharmacy and nursing were a big part of the mix as well. Brown says the clinical pharmacy manager was essential in providing information and direction for the protocols and orders set, and he also provided cost information for both systemic and inhaled medications that figured into the final treatment protocols. Nursing leadership from various units in the hospital provided invaluable insights into the implementation and impact of the protocols and orders set. Also, staff in the finance, quality improvement, and information technology departments weighed in on a variety of aspects.

Perhaps most significantly for RTs, the plan called for the development of a new category of respiratory therapist — the COPD clinical specialist — who would be charged with implementing the COPD standing orders set and COPD medication protocol. These therapists, all of whom have completed the AARC's COPD Educator Course and are certified as tobacco treatment specialists, essentially shepherd patients through their hospital admission to make sure they're getting all of the recommended care they need. They also reach past the hospital walls after discharge to ensure the ball isn't dropped on quality care once the patient goes home.

Aggressive program

The program kicked off in 2008 with a focus on standardizing inpatient care for COPD patients using the COPD admission orders set and COPD medications protocol. The overall goal is to come out of the gate swinging whenever a COPD patient arrives with an exacerbation. As the department's disease management manager, Becky Anderson, RRT, oversees the effort. "The admission orders set includes the recommended care for COPD exacerbation, which is oxygen therapy, chest radiograph, bronchodilators, systemic steroids, and antibiotics, as well as a PRN order for noninvasive ventilation," explains the AARC member. Staff therapists are instructed to initiate respiratory therapy protocols using the orders set, and nicotine replacement therapy is started for patients identified as tobacco users on admission. RTs also generate an order for tobacco-cessation education. A pulmonary rehabilitation order is placed at discharge for qualifying patients.

The COPD clinical specialists work closely with staff RTs to make sure patients are on track with the COPD medications protocol, and they also talk directly with patients to identify the underlying cause of the exacerbation and any barriers that may exist to a successful transition to home. The specialists consult with physicians on a regular basis and collaborate with them and the case managers to come up with an overall care plan.

Standardized discharge plans developed with the hospital's pulmonologists ensure nothing falls through the cracks. "For example," says Anderson, "if a patient's hospital diagnosis is COPD exacerbation without a pre-existing diagnosis of COPD, then discharge orders will include pulmonary function testing, a pulmonary medicine referral, and prescriptions for specific inhaled bronchodilators."

AARC member Lori Shoman, RRT-NPS, CPFT, gets ready to perform PFTs on COPD patient Merlin Lofgren.

Patients are educated on their home medication regimen and other topics important to maintaining a healthy lifestyle — including tobacco cessation — and the specialists also employ direct observation of inhaler technique to ensure patients really know how to take their medications properly. They work closely with primary care, DME providers, and other care facilities when necessary, and they follow up with their patients by phone using a standardized emergency medical record (EMR) template that's shared with the nursing staff.

Outcomes tell the story

Outcomes over the past eight years have come down squarely in favor of the program. The COPD MS-DRGs went from negative to positive margins soon after the program began and now run consistently on the upside at about $1,600 per patient stay. While readmissions weren't an initial focus for Anderson, Brown, and their colleagues when the program got underway in 2008, the program is working there, too. "Our readmission rates have trended downward from an initial 25% to nearly half of that at 12.5%," says Brown. "When reviewing the hospital readmissions reduction program data on the Medicare Hospital Compare website, Sanford Medical Center Fargo ranks third for lowest excess readmission ratio out of 228 hospitals in an eight-state surrounding area." That's certainly good news now that penalties for excessive readmissions are in place.

Overall hospitalizations and emergency department visits are also down, a fact Brown credits to increased enrollment in the pulmonary rehabilitation program.

AARC member Val Tomhave, BS, RRT, cheers Merlin on as he completes his exercise regimen.

"During the time period we have had the COPD program, attending pulmonary rehabilitation has resulted in an average reduction of 52% in ER visits and hospitalizations for the patients who have completed the program, when comparing six months prior to and six months after completion of the program."

Those initial outcomes targeted by Brown when he first started thinking about the program back in 2007 have improved markedly as well. According to the director, evidence-based care has increased from 57% — back when the RT students replicated the *Annals of Internal Medicine* study — to 95% over the past two years.

The team is continuing to monitor costs of care, particularly the inhaled medications used in the protocol, and is now taking a closer look at mortality rates in COPD patients as well. "Mortality is a potential future CMS outcome, so we are reviewing mortality rates in this group of patients," says Brown.

Lessons learned

With eight years under their belt, Brown and Anderson say they've learned some things over those years that they believe might help inform other programs in this

area. One component that's been particularly tricky to get right is the post-discharge telephone follow up that the clinical specialists conduct with patients.

"Several years ago, in anticipation of COPD being added to the readmissions reduction program, we sought to replicate the work of Dr. Kathryn Rice, et al, whose randomized controlled trial indicated that a simplified disease management program reduced hospital use due to COPD.[2] The program included monthly follow-up calls, which we instituted," says Anderson. Maintaining that level of calling, however, soon proved problematic. Rather than provide telephone support on an ongoing basis, the team regrouped and decided to focus on the critical first days following discharge instead, using the call to review the patient self-management plan, to remind the patient to keep the follow-up appointment with the primary care provider, and to ask about any questions or concerns the patient had.

The team has also learned to use cross training to a better advantage. Brown reorganized the department structure to place the pulmonary lab, pulmonary rehab, and the asthma, COPD, and tobacco educators under the disease management umbrella. Cross training of staff into these various areas became the norm, making it easier for these clinicians to share information on everything from admission criteria and documentation to DME requirements, insurance coverage, and community services. "This group of therapists possesses

Detective Work:

RT COPD Clinical Specialists Make the Difference

The COPD disease management program at Sanford Medical Center in Fargo, ND, was born out of Gary Brown's desire to ensure more of the COPD patients treated in his facility received the best care medical evidence had to offer. Along the way, he and his team have reduced both costs and readmissions as well.

But checking all the boxes on evidence-based care doesn't always mean the patient won't be back in the hospital or ED any time soon. Patients are real people with myriad real problems; and sometimes the best medicine is a real, live clinician who can dig into the case and find out what's going on. The respiratory therapy COPD clinical specialists at Sanford have proven they can go that extra mile. Becky Anderson cites a case in point.

"One of our biggest challenges was with a patient well known to us who had multiple comorbid conditions, including very severe COPD," says Anderson. "By the end of the year, the patient had experienced 12 hospitalizations and 31 ED visits."

Her clinical specialists began investigating the situation. Despite being severely deconditioned, they found out the woman was living in a walk-up apartment. While her family was supportive, they all worked during the day and no one was available to take her to her medical appointments. So she usually just didn't go. Poor comprehension of the English language figured into the problem as well, and lack of adherence to medical advice on the part of the patient was so egregious that two home care companies had refused to take her on as a patient. Money was also an issue, but she had been unable to qualify for medical assistance. To top things off, she had just switched primary care providers.

"A case manager and RT specialist combined forces to bring all care providers, the patient, and her family together to build a feasible care management plan," says Anderson. An individualized plan was developed for the patient's ED admissions, and Sanford agreed to admit her to a consistent hospital nursing unit and assign a physician. The team assisted her in reapplying for medical assistance, and they also acquired the long-overdue home care services. For her part, the patient agreed to adhere to her medication regimen and go to all of her ambulatory medical appointments. A family member agreed to consistently accompany her on the visits. Lastly, the woman agreed to attend pulmonary rehabilitation.

"Shortly after this care plan was implemented, the patient made the choice to move into a long-term care facility; and our COPD specialist and the case manager visited her there several times to strengthen their relationship with her," says Anderson. "The patient came to genuinely trust them and called them her 'other daughters.'"

It all paid off for patient and hospital alike: The woman was hospitalized just five times in 2012, down from a dozen times the previous year.

"Providing evidence-based care is paramount," says Anderson. "However, if the patient doesn't understand or can't access components of the prescribed self-management plan, then how can we make a difference? Respiratory therapists have opportunities across the care continuum to develop relationships with our patients that are built on respect and trust. When we use meaningful conversation and action to close the loops in health care, the patient's ability to self-manage is elevated." ■

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COPD Facts:

- COPD is the fourth leading cause of death in the U.S.
- Reducing readmissions will improve quality of care and reduce costs.[1]
- COPD is the third most frequent reason for hospital readmissions.[1]
- There is a quality deficit in routine care of COPD patients.[3]
- Teaching patients self-management can decrease the number of readmissions and emergency department visits.[4]

1. Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. N Engl J Med 2009;360:1418-28.
2. Brumley R, Enguidanos S, Jamison P, et al. Increased satisfaction with care and lower costs: results of a randomized trial of in-home palliative care. J Am Geriatri Soc 2007;55:993-1000.
3. Mularski RA, Asch SM, Shrank WH, Kerr EA, et al. The quality of obstructive lung disease care for adults in the United States as measured by adherence to recommended processes. Chest 2006; 130:1844-1850.
4. Rice KL, Dewan N, Bloomfield HE, Grill J, et al. Disease management program for chronic obstructive pulmonary disease: a randomized controlled trial. Am J Respir Crit Care Med. 2010 Jan 21.

AARC member Traci Leitheiser, BS, RRT, and Dr. Mohamed Sanaullah, head of the hospitalist department and an original member of the interdisciplinary work group that developed the program, go over key components of the program with Merlin.

Merlin listens intently as Leitheiser explains how to correctly use an inhaler with a spacer.

a wealth of knowledge about care management that undoubtedly has a positive impact on transitions of care for our patients living with COPD," explains Anderson.

Perhaps the biggest and most productive change has been a streamlining of the COPD medications protocol. "The process involves discontinuing the home inhaled medications on admission, initiating the COPD medications protocol, and completing medication reconciliation at discharge," says Anderson. She stresses that the workflow required vigilance and was quite laborious in the beginning. After the new hospital EMR went live in 2012, the COPD specialists suggested creating a workflow that would allow them to do the medication reconciliation in the discharge portion of the EMR and pend the medications selected for the patient going forward. Those orders are then simply reviewed and signed by the discharge physician. "This optimization has served to nearly eliminate errors in discharge orders for these patients," says Anderson.

If Fargo can do it...

Brown, Anderson, and their colleagues know the COPD disease management program works because they see the results it has had on the bottom line — and the positive impact it has made on their patients.

But the wider world is recognizing the program too. Last April, Sanford invited consultants from the Advisory Board Company into the facility to review the hospital's "Cost per Case Initiative," and when the consultants learned more about the COPD disease management program during interviews with respiratory therapy management, they deemed it a "best practice." Now other respiratory care departments within the Sanford health system are busy developing similar programs in their facilities, and the Advisory Board Company has recommended that other, non-COPD care management programs use the COPD program as an example.

Becky Anderson believes the program could be replicated nationwide as well. In fact, many places are probably in an even better position to make it happen than they were. "I often say, 'If Fargo can do it, anyone can do it,' and by that I am speaking to the fact that North Dakota's Medicare reimbursement rate was one of the lowest in the nation when we began our program in 2008," she says. If they could achieve a positive net margin for the COPD MS-DRGs within a year of implementing the program while improving adherence to evidence-based care and lowering readmissions, she can't see any reason why hospitals elsewhere couldn't do the same. "Our experience shows that we can improve the quality of care while reducing cost and readmissions," says the manager. "And who better to take on this challenge than respiratory therapists? We are the experts at caring for people with chronic pulmonary disease." ■

REFERENCES

1. Lindenauer PK, Pekow P, Gao S, et al. Quality of care for patients hospitalized for acute exacerbations of chronic obstructive pulmonary disease. Ann Intern Med 2006; 144(12):894–903.
2. Rice KL, Dewan N, Bloomfield HE, et al. Disease management program for chronic obstructive pulmonary disease: a randomized controlled trial. Am J Respir Crit Care Med 2010; 182(7):890-896.

Embracing Opportunity

Hospital partners with long-term care facilities to reduce readmissions

Schneck Medical Center decided RTs were the right clinicians to help keep COPD patients in their nursing home and out of the acute care hospital.

by Debbie Bunch

In this month's cover story, AARC members from Sanford Medical Center in Fargo, ND, have explained how they capitalized on several factors that came together at the same time to build a COPD disease management program for their patients. Health care providers at Schneck Medical Center in Seymour, IN, who were concerned about a growing number of readmissions from area nursing homes did much the same thing last year when they put together a program to reduce acute care transfers. Their chance came when the hospital was approached by a long-term care facility in need of a medical director and provider coverage.

"The hospital embraced that opportunity and established a nursing home program with all four facilities within the county," says Susan Wynn, MSM, RRT, director of respiratory and sleep services at the hospital. The INTERACT program — which stands for "Interventions to Reduce Acute Care Transfers" — was born, and it wasn't long before respiratory therapists were getting into the act.

Track record pays off

Wynn says the tools-based program is really an outgrowth of a transitional care team that has been in place at Schneck for about a decade. The team

Team members gather around COPD patient Mary Lois Wise. Back row, from left to right, Brittaney Haynes, RRT, patient care supervisor; Christine Brazier, MSW, disease management coordinator; Chris O'Brien, RRT, patient care supervisor; and Mistee Hedger, RRT, RPSGT, lead sleep tech. Front row, from left to right, Brandy Rumph, RRT; and Susan Wynn, MSM, RRT, director of respiratory and sleep services.

meets with the four nursing homes and other facilities associated with the hospital to share information and education and to coordinate processes between the hospital disciplines and the facilities. RTs regularly attend these quarterly meetings, but the department was officially added to the new program in November 2014 after an analysis of nursing home readmissions showed a significant number were due to COPD.

"We had already started seeing a few patients in August of that year at the request of the medical director," explains the AARC member. "We had four really good successes for preventing readmissions — two pneumonias, one obstructive sleep apnea with high CO_2, and a respiratory distress due to low Hb found with an ABG." That track record made it clear that RTs had a lot to offer INTERACT, and Wynn and her colleagues began seeing high-risk patients at each facility — first on a monthly basis, then twice a month, and finally, every week. Of the approximately 150 COPD patients residing in the four nursing homes, they now see an average of about 15–20 per week.

They also make PRN visits when providers call with specific concerns or when a patient needs more frequent visits to remain stable. Over the past year, they have seen three patients on a daily basis for awhile to ensure they have the care they need to remain at the nursing home and out of the acute care hospital.

> "The hospital embraced that opportunity and established a nursing home program with all four facilities within the county."
>
> – Susan Wynn

Big success

By last June the program was such a success that the department added a disease management coordinator, who now works two days a week to assist with call backs, prepare the list of patients who will be seen on the next visit, organize paperwork, and assist with inpatient discharge planning. The department is in the process of incorporating its nursing home charting into the hospital's EMR as well.

Wynn says four therapists are assigned to the nursing homes — AARC members Brittaney Haynes, RRT; Chris O'Brien, RRT; Mistee Hedger, RRT, RPSGT, and Brandy Rumph, RRT — and they generally spend about four hours there at a time. In addition to assessing patients and obtaining solid (rather than PRN) orders for care, they educate the nursing home staff on respiratory issues, ensure patients have the correct equipment and supplies,

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- Building a rescue plan with the doctor
- Understanding medication and medical devices
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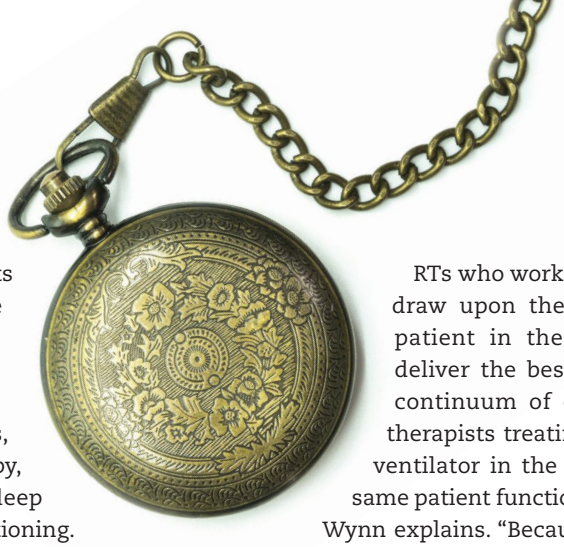

and acquire necessary testing. Treatments and modalities used by the RTs include end-tidal CO_2, spirometry, BODE scores, and CAT scores to bi-level positive airway pressure (PAP) and CPAP mask fittings and checks, oximetry studies, home sleep tests, ABGs, nebulizers, hyperinflation therapy, respiratory depression assessments, sleep assessments, tracheostomy care, and suctioning.

One tool that has been particularly effective in helping them assist COPD patients who become anxious due to shortness of breath is the "Life, One Breath at a Time" program developed by Schneck psychologist Aaron Banister, PhD, HSPP. Wynn says, "Dr. Banister stresses the importance of viewing the 'home' environment as the 'safe place' as opposed to racing to the emergency department every time the patient becomes anxious and teaches the patient how to cope in that setting."

"Dr. Banister stresses the importance of viewing the 'home' environment as the 'safe place' as opposed to racing to the emergency department every time the patient becomes anxious and teaches the patient how to cope in that setting."

– Susan Wynn

RTs who work in the nursing homes draw upon their knowledge of the patient in the hospital setting to deliver the best care possible. "The continuum of care exists with the therapists treating the patient on the ventilator in the ICU, then seeing the same patient functional in these settings," Wynn explains. "Because of the established relationships with the patients from the hospital, the RTs are able to catch subtle changes in the patient."

Patients find comfort in knowing they will see "their RT" from the hospital; and when time is of the essence, they can see them fairly quickly, too. "Flexibility and quick response to requests within the same day or the next day service has proven to be very beneficial," says Wynn. "The goal is to get the patients the care they need in the nursing home, allowing them to remain in their own environment."

Learning curve

Wynn admits there was a learning curve for the RTs who work in the nursing home setting — the more relaxed pace, for example, was a challenge at first — but she says they have adapted well, learning from their nursing home colleagues how to take things a bit slower while also helping those clinicians realize that certain situations really do call for more swift action. "It has been a learning experience for all involved," says Wynn. "Our nursing home colleagues have been so gracious, supportive, and appreciative of our presence."

"We have been able to apply our knowledge and skills to a variety of situations and found all types of issues that were problems to our COPD patients."

– Susan Wynn

Having RTs travel to these local nursing homes has made a difference in the lives of their patients, and it has also achieved the hospital's initial goal of reducing readmissions from these facilities as well. According to Wynn, 30-day readmissions went from 21.21% and 19.23% in 2014 Q3 and Q4, respectively, to 7.14% and 6.25% in 2015 Q1 and Q2 (to date). By the end of June, RTs were credited with assisting in preventing 20 readmissions among the nursing home patients who have COPD. The program played a big part in gaining national recognition for the hospital earlier this year as well, when it received a Citation of Merit in the AHA-McKesson Quest for Quality awards program. (The hospital won the Malcolm Baldrige Award in 2011.)

"We have been able to apply our knowledge and skills to a variety of situations and found all types of issues that were problems to our COPD patients," says Wynn — some of them not even respiratory in nature. In addition to identifying respiratory depression due to pain medication administration, mucous plugs in tracheostomy patients, less than optimal bi-level PAP mask fittings, and low O_2 saturations due to improperly functioning concentrators, they have uncovered fluid issues and low Hb levels that required blood administration in these patients.

Good catch

One particularly "good catch" occurred in a patient who had been in the nursing home for three days when the respiratory therapist came to visit. The patient was found to have an end-tidal CO_2 reading of 80. Since bi-level PAP would not be available until the next day, the RT borrowed a machine from the hospital and started the patient on the treatment, effectively reducing the CO_2 to the 60s and then to the 40s the following day. "The nursing home staff was involved and was able to see the positive results of bi-level PAP therapy," says Wynn. That, in turn, drove home the value in patient compliance for the nursing home providers.

Sometimes it isn't so much about the treatment involved as it is about helping patients cope with the fear created by COPD that really makes a difference. Wynn cites another case involving a patient with anxiety issues who was readmitted to the hospital three times in one week. The RT visited the patient in the nursing home every day for a week, cutting back to every four days before she was discharged to home. But the RT's involvement didn't stop there; she went out to the patient's home on the day of discharge to make sure all her equipment was working properly and to assure her that she would continue to receive the care she needed in her own home.

It is success stories like that, says Wynn, that keep the RTs motivated and their patients in their own familiar environment. ■

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The Leadership Institute is a real-world education course for respiratory therapists, developed by content experts in respiratory care education, management, and research. The course includes supplemental readings, activities, module quizzes and the unique opportunity to engage with the authors, experts in the field, and fellow Leadership Institute participants through AARConnect. Offered in three formats: as a web-based course, PDF documents for download, or as an ePub for electronic readers. Learn at your own pace, at the location and time that works best for you.

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5 Sessions You Won't Want To Miss

Cutting-edge topics take center stage in Tampa

In just a couple of weeks we will be converging on Tampa, FL, for AARC Congress 2015; and if you will be joining us, we know you are busy going over the program right now to choose the lectures and symposia you will want to attend. In this final edition of our "5 Sessions" series, presenters offer one last preview of talks that should make the cut.


AARC
CONGRESS 2015

1 Telehealth! A New Frontier, Good for the Patient, Good for Sleep Medicine — How To Make Technology Work for You

by Dara Vega, RN, RPSGT, CRTT

"Technology made large populations possible; large populations now make technology indispensable."
— Joseph Wood Krutch, 20th century American writer

The first overnight sleep study I performed was in 1991, just one patient and myself, with a 21-channel polysomnography machine about the size of a small dining table. With a small camera in hand, I was often peeping into the room to verify patient position and sound. Time, position changes, patient status, and treatment changes were documented on the paper as it scrolled through the machine. Though diagnostic and therapy equipment were limited and cumbersome, from the very beginning, technology was integral to the diagnosis and treatment of sleep disorders.

Fast forward to today. Technology remains crucial to our everyday life as sleep practitioners, and this includes the emergence of home sleep apnea testing and treatment devices that record masses of data. Since the population with obstructive sleep apnea and other sleep disorders is ever growing, it is a challenge for sleep medicine to effectively manage not only individuals but also the entire population with sleep disorders. Achieving that goal will require us to leverage the use of telehealth technologies that support long-distance clinical health care, enable self-direction of care, promote patient and professional health-related education, and facilitate public health initiatives. Given our inherent reliance on technology, sleep medicine is at the forefront of integrating telehealth and is in the unique position of leading the overall health system in developing a comprehensive health information technology ecosystem.

The Kaiser Permanente Fontana Medical Center's Sleep Disorders Center utilizes several telehealth technologies to promote effective end-to-end comprehensive care. This includes the use of Web-based education to promote patient engagement, automated therapy follow-up platforms that provide a system of accountability, online forums that facilitate self-directed care, and integration systems that can help tie everything together. At AARC Congress 2015, I will discuss our experience and outcomes related to our ever-evolving telehealth initiatives, the future of technology integration, and the role of electronic health records in effective population management. ■

Dara Vega is a project manager II in the Sleep Disorders Center at Fontana Medical Center in Fontana, CA.

2 Patient-centric Care: Defining the Patient, RT, and Physician Team

by Patrick J. Dunne, MEd, RRT, FAARC

Of relatively recent origin, the term patient-centric care denotes care that is respectful of and responsive to individual patient preferences and needs while ensuring that patient values guide clinical decisions. With increasing emphasis being placed on the need to improve chronic care outcomes, patient-centric collaborative care, when coupled with chronic disease management efforts, has proven to be an effective strategy for achieving significant clinical and economic gains.

However, while the concept of patient-centered collaborative care is now well accepted, it is not always well implemented. Some argue that one obstacle to successful collaborative care is a failure to clearly define the roles, responsibilities, and expectations of the various members of the care team.

This mini-symposium will address this shortcoming. Presentations will explore the roles, responsibilities, and expectations of individual members of a core, patient-centric care team for COPD — the patient, the respiratory therapist, and the physician.

Attendees will hear firsthand accounts from two patients, both of whom have extensive experiences (and candid observations) from time spent on the receiving end of chronic respiratory care. Attendees will learn what worked, what did not work, and why. As community-based chronic care programs proliferate, the perspective of seasoned patients will be quite helpful, if not essential.

The important role RTs play in helping implement the physician-recommended (and patient-endorsed) care plan will be discussed as well. Irrespective of care setting, respiratory therapists are key in helping secure active and sustained patient engagement. The challenges associated with achieving true patient-centric care when therapists practice in differing sites of care (i.e., acute care, home care) will be explored.

Lastly, the expectations of the physician with respect to activities of both the patient and the respiratory therapist will be discussed. As will be argued, successful collaborative care requires the individual empowerment of each team member, followed by a willingness to objectively assess processes and outcomes and adjust accordingly. ■

Patrick J. Dunne, MEd, RRT, FAARC, is president of HealthCare Productions, Inc. in Fullerton, CA.

3 Neonatal/Pediatric Airway Management: Drug Regimens, Techniques, and Controversies in the Transport Setting

by Bradley Kuch, MHA, RRT-NPS, FAARC

Advanced airway management during neonatal/pediatric critical care transport remains one of the most important procedures a respiratory therapist can perform. Tracheal intubation is often associated with adverse intubation-related events and long-term sequelae. It has been recently reported that intubation-related adverse events occur in 18% of intubations occurring in pediatric ICUs. Facilitating an uncomplicated successful intubation of a child requires firm comprehension of the neonatal and pediatric airway anatomy, the ability to identify and select the appropriate equipment, procedural expertise, and knowledge of pre-intubation pharmacologic regimens utilized during specific clinical situations.

Given the importance of airway management in this population, much controversy still remains regarding preferred technique, including specific pharmacologic regimens. This three-lecture symposium will take an evidence-based approach to discussing these controversies as they relate to outcomes and best practices in the transport environment.

The first lecture will introduce several different intubation techniques, with an emphasis on their benefits and risks. Success rate, hemodynamic effect, and neurologic complication risks will be discussed. The most recent consensus recommendations will be presented via a review of current peer-reviewed, best practice standards. The second lecture will focus on pharmacologic regimens and adjuncts used to promote optimal intubating conditions in children. The benefits and risks of these protocols will be discussed, focusing on specific clinical situations.

The lecture series will conclude with a pro/con debate regarding the controversial topic of medication-assisted neonatal intubation. The debate will provide evidence supporting both sides of the topic, allowing the audience to formulate a conclusion regarding the practice. The attendees will benefit from an interactive discussion following the debate.

The audience at this session will gain perspectives into the best practice standards regarding neonatal/pediatric intubation in the transport environment. Information provided during the symposium will help the transport professional better understand the techniques and challenges that surround advanced airway management in children. ■

Bradley Kuch, MHA, RRT-NPS, FAARC, is director of respiratory care services and the transport team and a clinical research associate in the department of pediatric critical care medicine at Children's Hospital of Pittsburgh of UPMC in Pittsburgh, PA.

4 Interpretation of Ventilator Graphics: Do We Really Understand What We See?

by Ruben Restrepo, MD, RRT, FAARC

Ventilator graphics have become an essential tool in managing patients undergoing mechanical ventilation. But things have changed dramatically from the days when respiratory therapists had to roll graphics-monitoring equipment into the patient's room and connect it to the "screenless" ventilator to visualize waveforms. These days, nearly every mechanical ventilator used in any ICU worldwide is equipped with a graphics package. The screen allows configurations where variables such as pressure, flow, and volume can be plotted over time (scalar graphics), or where pressure can be plotted against volume (pressure-volume loop), and flow can be plotted against volume (flow-volume loop). These graphics facilitate the assessment of the patient-ventilator interaction.

This seminar has been designed to cover foundational concepts to facilitate the interpretation of the most important scalar graphics and loops using an interactive approach with audience participation. Initiation of the breath (trigger) and selection of the preset volume or pressure (limit), as well as the determination of what ends inspiration (cycle) are all elements of the mechanical breath that can be identified in the waveform.

Patient-ventilator dyssynchrony (PVD) is known to affect the majority of patients connected to a mechanical ventilator. However, in most cases it goes unrecognized by the clinician. From the time the breath is triggered to the point where it is cycled, the patient can simply "fight" for what is perceived as not the right trigger, inspiratory flow, inspiratory time, or even expiratory time. PVD can result in agitation, an increased need for sedation, and prolonged length of stay in the ICU. Ventilator graphics have proven to be essential in recognizing these events.

The seminar will conclude with a very important approach to utilizing waveforms to optimize the management of challenging patients such as those with ARDS. From selection of ventilator mode and tidal volume to finding the right PEEP, waveforms can assist clinicians in improving outcomes for patients with this critical condition.

The take-home message from this seminar is that interpretation of the waveforms should be to the respiratory therapist what interpretation of the electrocardiogram is to the cardiologist — simply second nature. ■

Ruben Restrepo. MD, RRT, FAARC, is a professor in the respiratory care program at the University of Texas Health Science Center at San Antonio in San Antonio, TX.

5 COPD Management: Taking Care of the Entire Patient

by Brian Carlin, MD, FAARC

COPD is the third-leading cause of death in the United States and a significant cause of patient morbidity. Early (and correct) detection of a patient who has COPD is the first of many steps in the ongoing evaluation and management of these patients.

Once the diagnosis is confirmed, various types of pharmacologic and non-pharmacologic therapies are available for treatment. The various types of pharmacologic therapies center primarily around inhaled therapies that are administered via aerosol or dry powder, metered-dose, or soft mist inhalers. In addition, oral medications are a potential treatment option.

Non-pharmacologic therapies, including vaccinations, pulmonary rehabilitation, oxygen administration, and various types of surgical options (e.g., transplant, lung volume reduction, endobronchial valve/coil placement) are also important components of the management regimen. All of these have been shown to be effective treatment options for COPD patients.

COPD is associated with many types of comorbidities (e.g., depression, anxiety, osteoporosis, muscular deconditioning, sleep-disordered breathing). Patients with COPD often have an average of eight different comorbidities associated with their illness that may impact their prognosis. Thus it is vital to determine which comorbid conditions may be present. COPD affects not only the patient but the patient's family as well. Therapeutic intervention must, therefore, include consideration of the pertinent family members.

This session will focus on the evaluation and management of a patient throughout the continuum of life, beginning with the early and appropriate detection of the illness. The various types of therapies available, with an emphasis on the appropriate indications for each type of therapy, will then be covered. Finally, strategies to help manage "the entire patient" with this chronic disease, focusing on the evaluation and management of comorbid conditions, the impact of acute exacerbations and hospitalization, and family involvement in care will be provided. ■

Brian Carlin, MD, FAARC, is a pulmonologist in Pittsburgh, PA.

Tobacco Cessation and the Respiratory Therapist

by Shawna Strickland, PhD, RRT-NPS, FAARC

Carol, a respiratory therapist, is assessing Mr. Smith, a patient newly diagnosed with COPD. During the conversation, Carol asks Mr. Smith about his tobacco usage. Mr. Smith acknowledges that he smokes around a pack a day. When Carol asks him about whether he has considered quitting smoking, he says, "Why would I quit? I like to smoke. Besides, the damage is done now."

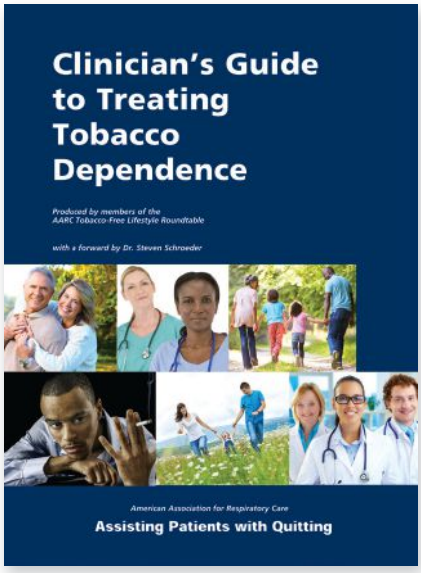
Unfortunately, tobacco use continues to be a health hazard in the United States. Since the first Surgeon General's report on smoking and health in 1965, over 20 million people have died from smoking-related diseases. Smoking has a negative health consequence on nearly every organ of the body, and smokers today have a higher risk of developing lung cancer and COPD than smokers in 1964.[1] In addition, an alarming number of young people continue to become regular tobacco users every day, and over 24% of high school students used a tobacco product in 2014. Newer forms of tobacco, such as electronic cigarettes, are also trending among young people around the world.[2]

About the Author

Shawna Strickland, PhD, RRT-NPS, FAARC, is the AARC's associate executive director of education.

Taking the conversation forward

Many RTs routinely find themselves in Carol's situation. Inquiring about patients' tobacco use and encouraging them to quit is second nature. However, many RTs feel uncomfortable with taking the conversation to the next level. What is the appropriate response when the patient admits to enjoying tobacco use or refuses to consider quitting? While the RT is skilled in a variety of diagnostic and therapeutic interventions, there is a practice gap when it comes to recommending pharmacotherapy and providing assistance to current tobacco users. Only about 14% of RTs are trained to initiate and conduct tobacco-cessation conversations.[3]



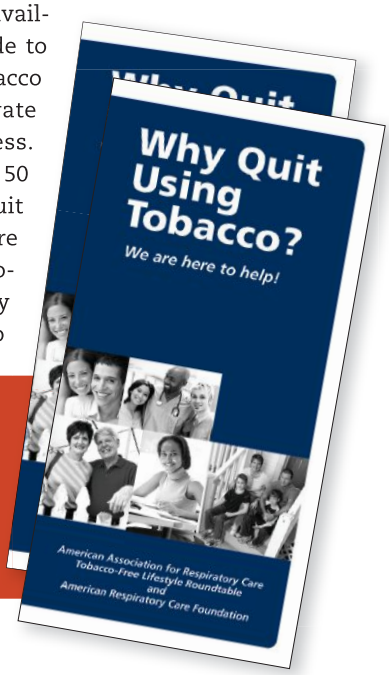
Entry-to-practice respiratory care educational programs devote an average of 165 minutes — just under three hours — of tobacco-related content throughout the entire program of study.[4] Just over 8,000 new RT graduates per year join the workforce,[5] which means there are fewer RTs prepared to initiate and conduct the tobacco-cessation conversation. Considering that patients who receive assistance from non-physician clinicians — including RTs — are 1.7 times more likely to quit successfully for five or more months,[6] the lack of RT training could impede positive patient outcomes.

Continuing education courses are a popular method of improving knowledge regarding tobacco cessation. This year the AARC received a grant from Pfizer Independent Grants for Learning & Change to develop a training program to improve the RT's ability to initiate and conduct the tobacco intervention conversation and refer patients to formal tobacco-cessation programs. "The Clinician Training on Tobacco Dependence for Respiratory Therapists" was launched this October and provides an opportunity for the RT to further develop skills in conducting tobacco-cessation conversations (http://aarc.peachnewmedia.com/store/seminar/seminar.php?seminar=39485). The overall goal of the project is to increase the proficiency of RTs for the 5A's and AAR model — a brief tobacco-cessation counseling intervention strategy — and in pharmacotherapy recommendations.

This online program uses the AARC's 2014 "Clinician's Guide to Treating Tobacco Dependence" and the Rx for Change program as a foundation. Building upon the guide and the RT's own experiences, the course fuses instruction with clinical situations to provide the RT with guidance on the epidemiology of tobacco use, nicotine pharmacology and principles of addiction, nicotine and non-nicotine pharmacotherapy, assisting patients with quitting, motivational interviewing, responding to difficult questions, reimbursement, and systems changes. The course also addresses special situations, such as tobacco use in pregnancy, cardiac disease, chronic lung disease, and the teen population. The RT can take a quiz at the end of each chapter to reinforce that chapter's key concepts and offer comfort and confidence with the materials. The course also includes examples of several patient-therapist interactions to demonstrate an effective tobacco-cessation conversation in difficult situations.

Resources available

The primary goal of the course is to ultimately reduce the number of tobacco users in the United States. The RT is instrumental in this process, and "The Clinician Training on Tobacco Dependence for Respiratory Therapists" can enhance the knowledge, attributes, and self-efficacy of the RT to provide tobacco-cessation interventions. There are also several resources available that the RT can provide to the patient to encourage tobacco cessation and help motivate the patient toward success. AARC members can obtain 50 free copies of the "Why Quit Using Tobacco? We are here to help!" brochure. This brochure is a great introductory brochure for patients to



AARC members can obtain 50 free copies of these brochures through the AARC store at www.aarc.org

RTs can direct smokers to the Centers for Disease Control and Prevention's website (www.cdc.gov/tobacco/campaign/tips/quit-smoking/) that provides cessation tips and resources to help them kick the habit.

learn more about the negative health consequences of tobacco use.

The Centers for Disease Control and Prevention has a smoking-cessation campaign called "Tips from Former Smokers" that showcases the real stories of people living with smoking-related diseases and disabilities. Launched in 2012, this tobacco education campaign features health issues caused by smoking or exposure to secondhand smoke. In its first year, the campaign motivated 1.6 million smokers to make a quit attempt and raised the average weekly number of calls to the national quitline (1-800-QUIT-NOW) by 75%.[7] Providing patients, families, and those in the community with the appropriate resources can significantly improve the number of referrals to formal tobacco-cessation programs and improve quit attempt success.

The respiratory therapist's knowledge of and participation in tobacco-cessation efforts can be beneficial to individual patients as well as the hospital and community. An optional Joint Commission measure set that hospitals can choose when undergoing their audit requires the screening of all inpatients for tobacco use and providing both counseling and pharmacotherapy to tobacco users aged 18 years or older.[8] The RT can be instrumental in improving health outcomes and reducing the impact of tobacco use on the health of the public by encouraging the hospital to select this Joint Commission measure set and then establishing a robust and effective tobacco-cessation program using respiratory therapists to educate patients.

1-800-QUIT-NOW National Quitline

If RTs don't do it, who will?

RTs have many opportunities to improve the health and wellness of the community by promoting tobacco cessation. Though many RTs may not have received formal tobacco-cessation training, many educational resources are available to enhance the RT's knowledge and provide support for the tobacco user who is considering quitting. It is important that RTs learn more about tobacco cessation so they can inform patients and the community that quitting is achievable and help is available. What's more, smoking cessation can improve overall quality of life and health outcomes. ■

References

1. U.S. Department of Health and Human Services. The health consequences of smoking – 50 years of progress. A report of the Surgeon General. Atlanta GA: Centers for Disease Control and Prevention; January 2014.
2. Centers for Disease Control and Prevention website. Youth and tobacco use. Available at: http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/index.htm *Accessed Aug. 13, 2015*
3. Tremblay M, O'Loughlin J, Comtois D. Respiratory therapists' smoking cessation counseling practices: a comparison between 2005 and 2010. Respir Care 2013; 58(8):1299-1306.
4. Hudmon KS, Mark M, Livin AL, et al. Tobacco education in U.S. respiratory care programs. Nicotine Tob Res 2014; 16(10):1394-1398.
5. Commission on Accreditation for Respiratory Care website. 2014 report on accreditation in respiratory care education. Available at: www.coarc.com *Accessed Aug. 13, 2015*
6. Fiore MC, Jaén CR, Baker TB, et al. Treating tobacco use and dependence: 2008 update. Clinical practice guideline. Executive summary. Rockville MD: U.S. Department of Health and Human Services, Public Health Service; May 2008.
7. Centers for Disease Control and Prevention website. Tips from former smokers. Campaign overview. Available at: http://www.cdc.gov/tobacco/campaign/tips/about/campaign-overview.html *Accessed Aug. 13, 2015*
8. American Association for Respiratory Care website. Clinician's guide to treating tobacco dependence. Available at: https://c.aarc.org/education/tobacco_dependency/tobacco_guide.pdf *Accessed Sept. 9, 2015*

RC Currents

Dressed for Success

They say clothes make the man — and Richard Prince, accounting coordinator at the AARC Executive Office in Irving, TX, would certainly agree. Over the past five years he's been working with employment agency Robert Half to collect nice quality used business attire to donate to low income people seeking to enter the job market — and he's gotten everyone on staff at the AARC involved as well.

Prince credits current AARC Executive Director Thomas J. Kallstrom, MBA, RRT, FAARC, and former Executive Director Sam Giordano, MBA, RRT, FAARC, for supporting the effort and says his colleagues at the Executive Office have been great about bringing in their used clothing. "I know from firsthand experience working with the poor and homeless how good clothes play an essential part in helping to build self-esteem to step into an interview with confidence and make a good impression," says Prince, who once headed up a local ministry to help the disadvantaged become productive members of society. He equipped them with nice clothing to go on job interviews back then, too, and remembers a comment made to him by a local TV reporter who came out to do a story on the program.

AARC Accounting Coordinator Richard Prince collects used business attire to help low-income job seekers make a good first impression.

"She said, 'These don't look like homeless people,' and I answered, that's correct," recalls Prince. "No one needs to look homeless. We can't go into the interview with them to get the job, but what we can do is help them make a good impression."

Prince says he's thankful to everyone at the AARC for their support and encouragement, and he believes their donations will be useful in making a very positive impact on a job interview for someone less fortunate. "I have a heart to do such things, and I am so thankful and honored for the AARC joining with me in this great mission that ultimately means struggling families and individuals have the means to at least meet their basic needs," says the AARC staff member. ■

Request for Proposals at AARC Congress 2016

AARC Congress is an international respiratory education meeting that attracts more than 6,000 attendees annually. Preparing for this annual event takes considerable effort with planning that begins more than one full year before the meeting. The AARC invites you to submit proposals for individual lectures or symposia at AARC Congress 2016.

Individuals may submit proposals with interest in the practice of cardiorespiratory care. This is your opportunity to present educational content to your peers. If you believe you're a content expert or possess unique knowledge on topics relevant to any specialty section or roundtable, then this is your opportunity to showcase your knowledge on a national stage.

Proposals are encouraged from new and experienced presenters alike. At AARC Congress 2015, nearly 25% of all speakers are first-time presenters. This year it is someone else… next year it could be you! The deadline to submit proposals for sessions at AARC Congress 2016 (Oct. 15–18) in San Antonio, TX, is **Jan. 8, 2016.**

Submit your proposals at https://secure.jotform.com/form/52526230882151. ■

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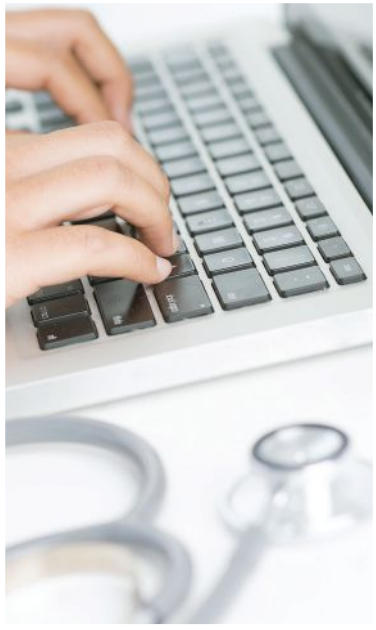
To learn more or to submit your idea, go to www.aarc.org/resources/programs-projects/edison-nation-medical-innovation-search/. ■

Respiratory Care Education Annual Call for Papers



The AARC will publish Volume 25 of the *Respiratory Care Education Annual* (ISSN 2372-0735) in the fall of 2016. This refereed journal is committed to providing a forum for research and theory in respiratory care education and is listed in the Cumulative Index to Nursing and Allied Health Literature, and in Ulrich's Periodical Database.

The AARC Education Section invites educators to submit papers for consideration. Preference will be given to papers that emphasize original research, applied research, or evaluation of an educational method. Other topics that may be considered include interpretive reviews of literature, educational case studies, and point-of-view essays. Submissions will be reviewed based on originality, significance and contribution, soundness of scholarship (design, instrumentation, data analysis), generalizability to the education community, and overall quality of the paper.

Papers should be approximately 6–10 pages in length and must follow the guidelines as established by Respiratory Care. Abstracts should not exceed 250 words. General guidelines for the manuscript as well as guidelines for preparing the manuscript, text formatting, and reference formatting may be found at http://rc.rcjournal.com/site/includefiles/author_information.xhtml.

For more information, contact Dr. Dennis Wissing, editor, at (318) 573-9788 or Dr. Shawna Strickland at (972) 243-2272. Please send all manuscripts to the Editorial Board via the Respiratory Care Education Annual Submission Form (http://form.jotformpro.com/form/52365807894973). Deadline is **Feb. 15, 2016**. ■

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. ■

AARC Leaders Attend Meetings

Throughout the year, AARC leaders and members of the Executive Office staff attend meetings of the Association's state societies as well as other special meetings. In addition to making AARC representatives available for speaking engagements at meetings, the Association funds a special program to help some state societies partially pay for the travel costs of the speakers. Below are some activities AARC representatives are involved in:

Thomas J. Kallstrom, AARC Executive Director

- Presenting the 2015 Edward Paul Didier Memorial Lecture in Rochester, MN, on COPD Management, Positioning the Clinician as Disease Manager, on Oct. 29.
- Speaking at the Conference on COPD Disease Management in Austin, TX, on Nov. 14.

Moving on Up

Steven Sittig, RRT-NPS, C-NPT, FAARC, has been reelected to serve as secretary on the executive committee of the Commission on Accreditation of Medical Transport Services. Sittig is a transport respiratory therapist at Sanford Medical Center in Sioux Falls, SD. In previous years, he served as chair of the AARC's Surface & Air Transport Section.

Joseph Lewarski, BS, RRT, FAARC, has joined Drive Medical's DeVilbiss Healthcare as vice president of the company's global respiratory and sleep categories. Lewarski comes to the position from Invacare, where he headed up the global respiratory group and served as corporate vice president of clinical affairs.

You can submit news about AARC members "moving on up" by sending to cathcart@aarc.org. ■

Transitions

Debra J. Fox, MBA, RRT-NPS, FAARC, passed away in September. An AARC member since 1974 who received Life Membership in the Association last year at the AARC Congress, she was known by all as a tireless volunteer for the Association and the profession. Over the years, she held nearly every office there was to hold with the Kansas Respiratory Care Society, and her work in the AARC House of Delegates and on the AARC Board of Directors helped to establish important directions for the profession. She was an active supporter of Association efforts on the legislative front as well, participating as a member of the AARC Political Advocacy Contact Team.

"Kansas has lost a dear friend and we will miss her… She was a wonderful friend, mentor, and inspiration to us," says Karen Schell, DHSc, RRT-NPS, RRT-SDS, RPFT. "We know that she has made a difference for us and our patients. The KRCS would not be what it is today without her leadership, companionship, and dedication." ■

As Seen on *AARConnect*

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

AARConnect...

maximizing your membership

Our county has a grant to care for COPD patients but can't get hospitals or doctors to refer them to us for care because they are afraid of HIPAA concerns, or just plain "that's not my job" problems. Has anybody else encountered this, and how do you overcome this issue? This is a very comprehensive program and a rare example of what to do right. How do we "advertise" ourselves, and involve all eight of our hospitals, and all the home care, rehab, DMEs, and specialists that we have on board? CMS has said that they cannot help by talking to all the payers because that is "not their job"; the hospitals do not refer, and doctors are hard to communicate with and rarely show up for meetings. The Board of Supervisors was suggested as our best shot at getting some action, as they may be persuaded to demand participation countywide. Any other ideas?

Suzanne Fischetti, RRT, AE-C
Simi Valley Adventist
Camarillo, CA

Inform the discharge planners/case managers at the hospitals. They can be your best connection with the hospitals and physicians.

Jorge Gallardo, RRT
HealthSouth
Tucson, AZ

Have a monthly meeting in town, like at the senior center, to inform people what you have to offer. Post flyers at the pharmacies, DMEs, library, etc., to get the word out. Once patients start talking about it, the doctors will get on board.

Marlyce Campbell, CRT
Trego County Lemke Memorial Hospital
Wakeeney, KS

Have you considered setting up "lunch & learn" sessions with the case managers and physicians at the local hospitals? You need to establish that relationship with your referral base in order to grow your business; and the more they see your face and become familiar with your product, the more likely they will be to refer patients to your service. Also, the whole HIPAA excuse they are trying to use with you does not apply if you are providing treatment to the patients.

Cheryl Hoerr, MBA, RRT, FAARC
Phelps County Regional Medical Center
Rolla, MO

National Health Observances

- **Great American Smokeout;** Nov. 19; American Cancer Society, (800) 227-2345; www.cancer.org
- **National Influenza Vaccination Week;** Dec. 6–12; National Center for Immunization and Respiratory Diseases; www.cdc.gov/flu/nivw/

Did YOU Celebrate Respiratory Care Week

We want to hear about what you did to celebrate National Respiratory Care Week this year. Send your high-resolution photos to Debbie Bunch (bunch@aarc.org) with a brief description identifying your organization before **Nov. 9.** You just might find your story on the AARC website or in an upcoming "RC Currents." ■

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! ■

Enzyme Gobbles Up Nicotine

Scientists at The Scripps Research Institute may have identified a new drug candidate to help people quit smoking. In studies conducted in the laboratory and in mice, they found an enzyme called NicA2 that occurs naturally in a bacterium that was isolated from soil in a tobacco field can consume nicotine, possibly even before it reaches the brain.

Early studies on the enzyme showed it reduced the half-life of nicotine in mice from two–three hours to just 9-15 minutes. Higher doses could reduce the half-life even further, making it impossible for nicotine to reach the brain and "reward" the smoker for continuing to smoke. The researchers now plan to alter the enzyme's bacterial makeup to help mitigate potential immune liabilities and maximize its therapeutic potential. Ultimately, they hope to come up with an injectable form of the enzyme that could protect smokers from nicotine for up to a month at a time.

The study was published in a recent issue of the *Journal of the American Chemical Society*. ■

Unraveling the Lung Microbiome

Much research has been published on the microbes that thrive in the digestive system. University of Michigan (U-M) researchers are finding similar (though less hardy) microbes in the lungs as well. Several recent U-M studies have uncovered new and intriguing information about the lung microbiome.

• Using 40 samples taken from lung transplant patients in various states of health, the team found that the community of bacteria in the lungs had collapsed in those with respiratory infections and that this collapse was strongly associated with levels of catecholamines in the lung. The most common bacteria found in these collapsed communities were the ones that responded to catecholamines in laboratory experiments. The study appeared in a recent edition of the *American Journal of Respiratory and Critical Care Medicine*.

• In another paper published in the *Annals of the American Thoracic Society*, the investigators studied specimens of lung bacterial communities from multiple sites in the lungs of 15 healthy volunteers using advanced genetic sequencing that makes it possible to see the relative numbers of different microbes in the population of a particular area. They found that healthy people have relatively uniform bacterial populations throughout their lungs, and the microbiome differs much more from person to person than within a single person's lungs. But in people with damaged lungs — such as those with cystic fibrosis (CF) or COPD — the ecosystem is much more hospitable for bacteria.

• In a paper published last year in the *Lancet*, the researchers reviewed what's known about exacerbations of diseases such as asthma, CF, COPD, and pulmonary fibrosis. They concluded that in many cases these events can be linked to a disruption in the microbiome of the patient's lungs — a state known as dysbiosis. The investigators argue that these exacerbations happen when the bacterial communities in a patient's airways are disordered, which creates inflammation and (in turn) further disorders the bacterial communities. They note this cycle of dysbiosis and inflammation is common across a number of chronic inflammatory lung diseases. ■

Flu Protection Without a Vaccine?

A new study out of The Ohio State University suggests it may be possible to protect people against influenza without a vaccine.

The research focused on a protein called interferon induced transmembrane protein 3 (IFITM3) that's known to be effective against all strains of influenza ever tested. However, under natural conditions, IFITM3 is produced in large quantities only after the flu virus is present. But the way it targets the virus (by trapping it and disabling its ability to make copies of itself) means that increasing the protein level before the flu ever arrives would prevent infection from occurring.

In order to boost production of IFITM3 before flu strikes, the investigators targeted an enzyme called NEDD4 that normally degrades IFITM3 by attaching a small chain of molecules to it — a common process of protein clearing called ubiquitination. In a series of experiments in mouse and human lung cells, they showed that inhibiting NEDD4 from doing this job led to an accumulation of IFITM3 in the cells and greater resistance to infection by flu viruses.

The researchers admit much more work will be needed before trials can be conducted in humans but believe this approach holds out hope for a new way to prevent influenza. They published their findings in a recent issue of *PLOS Pathogens.* ■

Strange But True...

Winds of change: Scientists have long believed a huge bump in the oxygen levels on earth triggered the development of more complicated lifeforms like whales, sharks, and squids. According to Virginia Tech researchers, a little bit was all that was needed. Their studies show an oxygen increase of just 10%–40% got the job done.

Side sleeping best: Stony Brook University researchers who looked at the effect of different sleeping positions on the elimination of brain waste found the lateral position was best. They believe side sleeping could even help ward off Alzheimer's, Parkinson's, and other neurological diseases linked to the buildup of beta amyloid and other substances included in brain waste.

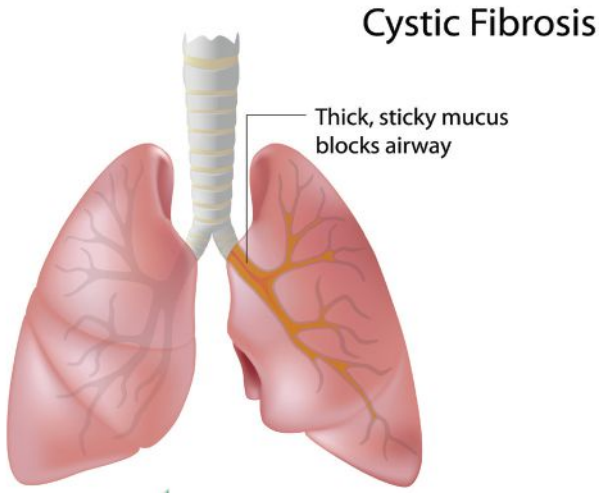
Another reason to clean up: A new study from researchers at Duke University suggests the dust bunnies under furniture may do more than provoke an allergy or asthma attack — they could be affecting a person's waistline, too. They found components of the dust signal the growth of human fat cells and may even alter metabolism.

Asthma-friendly carpet? A spiral-shaped rug equipped with a rubber tube running through the spirals may be a safer carpet for asthmatics. The manufacturer of the Fervent Carpet says pumping hot water through the coils kills dust mites. ■

Corticosteroids Significantly Improve CAP Prognosis

Treatment with corticosteroids may significantly benefit patients who are hospitalized with community-acquired pneumonia (CAP). That's the take-home message from an international group of researchers who summarized the evidence from 13 randomized trials involving more than 2,000 patients. Evidence showed CAP patients who received corticosteroids were discharged from the hospital one day sooner. The treatment also reduced the need for mechanical ventilation from 9% of patients to 5% and the likelihood of acute respiratory distress syndrome from 8%–2%. A reduction in the death rate was seen as well, from 9%–10% of patients to 5%–6%.

"Seldom do we see a major advance in treatment of a condition as common as community-acquired pneumonia," study author Dr. Gordon Guyatt was quoted as saying. "Corticosteroids over short periods are safe, and we now know that they achieve important benefits in a serious and common medical illness." The study appeared in a recent edition of the *Annals of Internal Medicine*. ■



Breaking Down the Mucus Barrier

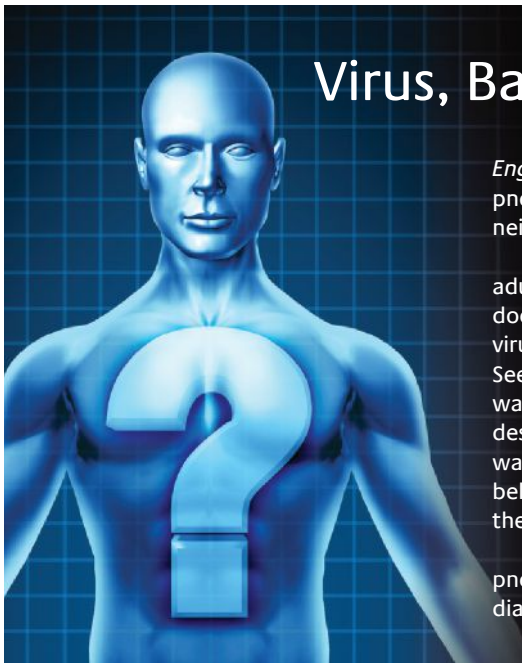
Working with researchers in Brazil, Johns Hopkins investigators have designed a DNA-loaded nanoparticle that can pass through the mucous barrier covering the conducting airways of lung tissue, a discovery they believe shows therapeutic genes may one day be delivered directly to the lungs in levels sufficient to treat cystic fibrosis (CF), COPD, asthma, and other lung conditions.

The team notes that previous research has shown that most of the nonviral, DNA-loaded nanoparticles tested in this setting possessed a positive charge that caused them to adhere to negatively charged biological environments. In this case, it was the mucus covering the lung airways. In other words, conventional nanoparticles are too sticky to avoid unwanted off-target interactions during their journey toward the target cells. Further, these particles tend to rapidly aggregate in physiological conditions, rendering them too large to penetrate the mesh of airway mucus.

In this study, the team developed a simple method to densely coat the nanoparticles with a nonsticky polymer called PEG. These nanoparticles retained their sizes at a physiological environment and proved capable of rapidly penetrating human airway mucus freshly collected from CF patients. The team also made the whole delivery system biodegradable so that it would not build up inside the body.

To test whether the system provides efficient gene transfer to the lungs of animals, the researchers packed them with a gene that makes light-generating proteins once delivered into the target cells. Inhaled delivery of the genes via the mucus-penetrating nanoparticles resulted in widespread production of the protein to levels superior to gold-standard nonviral platforms. The treated lungs lit up for up to four months after a single dosing. So far, the nanoparticles have not produced any adverse effects such as increased lung inflammation.

"To our knowledge, this is the first biodegradable gene delivery system that efficiently penetrates the human airway mucous barrier of lung tissue," study author Jung Soo Suk, PhD, was quoted as saying. The study was published in a recent issue of the *Proceedings of the National Academy of Sciences*. ■



Virus, Bacteria… or Something Else?

U.S. researchers publishing in a recent edition of the *New England Journal of Medicine* detected viruses in 27% of patients with pneumonia and bacteria in 14%; but in nearly two-thirds of patients, neither pathogen was evident.

"The frequency in which respiratory viruses were detected in adults hospitalized with pneumonia was higher than previously documented. This may be due to improved molecular diagnostics for viruses and also to the benefits of bacterial vaccines," study author Seema Jain, MD, from the Centers for Disease Control and Prevention, was quoted as saying. "However, what's most remarkable is that despite how hard we looked for pathogens, no discernible pathogen was detected in 62% of adults hospitalized with pneumonia." Dr. Jain believes more sensitive diagnostic methods are needed to uncover the cause of pneumonia in these cases.

The study was conducted among 2,488 adults, 93% of whom had pneumonia that was confirmed through chest x-rays and extensive diagnostic methods. ■

New Direction for Asthma Treatment

Could nerve endings in the lungs hold the key to a better treatment for asthma? Boston researchers believe the answer may be yes. In a study published in a recent online edition of *Neuron*, they found that specialized sensory neurons called nociceptors are not only activated by allergic inflammation but also exacerbate the allergic immune response. When these neurons were selectively silenced in mouse models of acute and chronic asthma, both inflammation and bronchial twitchiness were reduced.

"Current asthma treatments can help to control symptoms and dampen airway inflammation; however, therapies are not available to promote the resolution of asthma," co-senior investigator Bruce Levy, MD, from Brigham and Women's Hospital, was quoted as saying. "A treatment to interrupt the vicious cycle of neuro-immune signaling holds promise as a disease-modifying therapy and is mechanistically distinct from any of the currently available asthma therapies." ■

When in Doubt, Use It

A panel of experts convened by the American College of Allergy, Asthma and Immunology has come down in favor of administering epinephrine in all cases where an anaphylactic reaction is suspected, even if the patient doesn't meet all of the criteria for the injection.

"We want emergency medical personnel — as well as people who have had, or are at risk for having severe allergic reactions — to know there is no substitute for epinephrine as the most important tool for combatting anaphylaxis," panel member Paul Dowling, MD, was quoted as saying. "Antihistamines and corticosteroids should not be given instead of epinephrine because they don't work fast enough."

A report on the panel's recommendations was published in a recent issue of the *Annals of Allergy, Asthma and Immunology*. ■

Industry Update

Featuring information on products and equipment from manufacturers

Wearable Compliance

Braebon Medical Corporation's DentiTrac® is an integrated wearable micro-recorder embedded inside an oral appliance for the treatment of sleep apnea that can reliably and accurately gather detailed information to confirm a patient is following prescribed therapy. The information is then uploaded to the Braebon cloud portal where dental and medical specialists can conveniently and securely review patient information and assess sleep apnea therapy adherence. The battery lifespan is two years under normal use. www.braebon.com

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

— 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.

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SUNOVION
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Industry Watch

OxySure supports the Special Olympics

OxySure Systems Inc. served as a champion partner of the Special Olympics World Games held last summer in Los Angeles, CA. As a champion partner, the company provided support to the medical operations of the games by supplying emergency oxygen, automated external defibrillators, pulse oximeters, and other emergency medical equipment and services to the 27 venues, fields of play, spectator first-aid tents, and overnight nursing staff.

GSK, Theravance announce Canadian approval for asthma drug

GSK and Theravance Inc. have announced Canadian approval of Breo® Ellipta® (fluticasone furoate/vilanterol dry powder for oral inhalation) for the once-daily maintenance treatment of asthma in patients aged 18 years and older with reversible obstructive airways disease. Sally Taylor, country medical officer, Canada, was quoted as saying, "Breo Ellipta, a GSK asthma treatment approved in Canada, now provides physicians with a once-daily treatment option delivered via the Ellipta inhaler to meet the needs of appropriate adult patients."

Adherium enters partnership with AstraZeneca

Adherium Limited has entered into a long-term partnership with AstraZeneca in what the company believes is a world-first commercial arrangement combining digital health technology with major inhaler medications to improve health outcomes for patients with respiratory conditions. Under the agreement, New Zealand-based Adherium will supply innovative new devices and sensors that AstraZeneca will incorporate within global patient support programs for patients with COPD and asthma. Adherium Managing Director and CEO Garth Sutherland was quoted as saying, "These agreements represent a major advance in the treatment and management of respiratory disease and will make a fundamental difference to the quality of life for people with asthma and COPD."

Teva inhaler receives MDEA award

Teva Pharmaceuticals' DuoResp Spiromax® inhaler received a silver award in the 2015 Medical Design Excellence Awards (MDEA) program. The multi-dose dry powder inhaler is designed to treat both asthma and COPD. "Innovative, patient-focused design is extremely important at a time when real-world behaviors and outcomes are what count," Rob Koremans, CEO and president of Teva Global Specialty Medicines, was quoted as saying.

Helix BioPharma study presented at conference

An abstract on Helix BioPharma Corp.'s lead lung cancer candidate L-DOS47 was selected for oral presentation at the 16th World Conference on Lung Cancer held in Denver, CO, in September. The presentation included data from the ongoing Phase I/II open label, non-randomized dose escalation study of immunoconjugate L-DOS47 as a monotherapy in non-squamous non-small cell lung cancer patients. L-DOS47 is Helix's first immunoconjugate-based drug candidate based on the company's novel DOS47 technology, which is designed to use an innovative approach to modify the microenvironmental conditions of cancer cells in a manner that leads to their destruction.

ContraFect to continue study on staph infections drug

According to ContraFect Corporation, an independent Data and Safety Monitoring Board has recommended the continuation of a Phase I study on CF-301, a drug under development for the treatment of staph bloodstream infections, including MRSA. Two dose levels out of the currently planned four have now been completed, and the company expects to complete the entire study by the end of the year. If the results of the Phase I study in healthy volunteers are favorable, ContraFect plans to advance CF-301 into a Phase II study next year in patients with staph bloodstream infections, including MRSA.

Cortex Pharmaceuticals awarded grant from Canadian agency

Cortex Pharmaceuticals Inc. has received a research grant from the Canadian Institutes of Health Research for about C$145,000 to partially fund the development of CX1942 and related compounds for the alleviation of various forms of respiratory depression. Principal investigator John Greer, PhD, chair of the company's scientific advisory board and professor of physiology at the University of Alberta, will be leading the research and development effort. "This funding from the Canadian Institutes of Health Research is an important step in advancing our translational pre-clinical laboratory research," he was quoted as saying.

Indi announces results of chart review

According to Indi (Integrated Diagnostics®), CHEST has published a landmark chart review study on widespread overtreatment of benign lung nodules in the indeterminate range of 8 to 20 mm. The retrospective study of 377 patients found a relatively low overall rate of cancer among these nodules (25%) but a high rate of invasive procedures. Thirty-five percent of the patients who underwent surgery turned out to have benign nodules. A separate clinical validation study of the company's Xpresys Lung non-invasive, clinical laboratory-based molecular blood test service showed that when the test indicated a nodule was likely benign, the result was correct 84%–98% of the time.

Vertex CF drug receives FDA approval

According to Vertex Pharmaceuticals Incorporated, the FDA has approved Orkambi™ (lumacaftor/ivacaftor), the first medicine to treat the underlying cause of cystic fibrosis (CF) in people ages 12 and older with two copies of the F508del mutation. The approval of Orkambi represents a fundamental change in the treatment of the most common form of CF, marking significant progress. The approval was based on data from two Phase III studies involving more than 1,100 people with CF ages 12 and older with two copies of the F508del mutation. Patients treated with Orkambi experienced statistically significant improvements in lung function, reductions in pulmonary exacerbations, and improvements in body mass index.

Mayo, United Therapeutics team up to increase donor lungs

The Mayo Clinic in Jacksonville, FL, has teamed up with United Therapeutics Corporation to build and operate a lung restoration center on the Mayo campus. The goal is to significantly increase the volume of lungs for transplantation by preserving and restoring selected marginal donor lungs, making them viable for transplantation. The restored lungs will be made available to patients at the Mayo Clinic and other transplant centers throughout the United States. Construction of the center is expected to be completed in late 2017.

Moffitt to explore e-cigarette use over time

Moffitt Cancer Center has received a $3.6 million grant from the National Institutes of Health to study the use of e-cigarettes over the next five years. The goal will be to learn how e-cigarettes are used over time and whether users are eventually successful at quitting smoking. "Millions of smokers are using e-cigarettes to try to quit smoking; yet because there is a lack of data, we are not able to advise them whether that is an effective smoking-cessation strategy," lead investigator Thomas Brandon, PhD, was quoted as saying. The researchers believe the study should provide some answers that will be very useful to smokers as they consider ways to quit.

Threshold, ATOMIC join forces for lung cancer study

Threshold Pharmaceuticals Inc. is collaborating with the Academic Thoracic Oncology Medical Investigators Consortium (ATOMIC) on the first Phase II clinical trial of tarloxotinib bromide for the treatment of patients with mutant epidermal growth factor receptor (EGFR) non-small cell lung cancer. They had been previously treated with an EGFR tyrosine kinase inhibitor and are progressing on treatment but have not acquired the T790M resistance mutation.

"While there has been recent progress in treating EGFR-mutant patients with acquired resistance to first-generation drugs driven through T790M mutations, an urgent need exists to develop treatments for patients whose disease has progressed due to other mechanisms of resistance," says D. Ross Camidge, MD, PhD, professor of medicine/oncology at the University of Colorado School of Medicine and director of ATOMIC.

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

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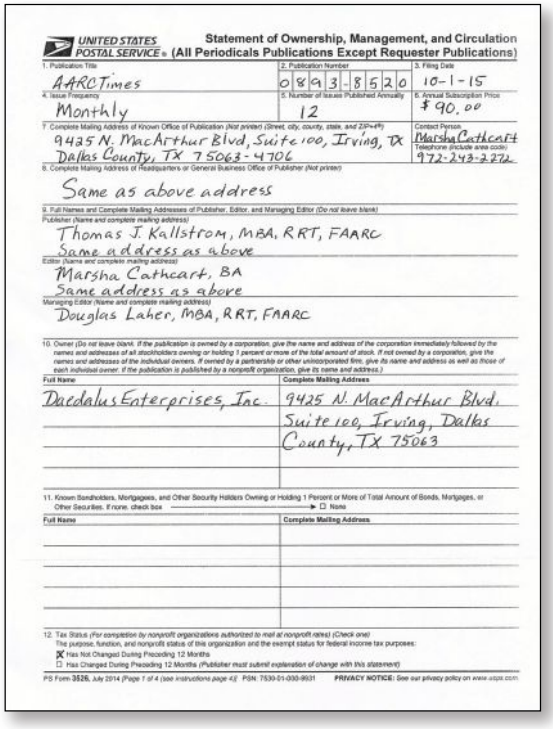

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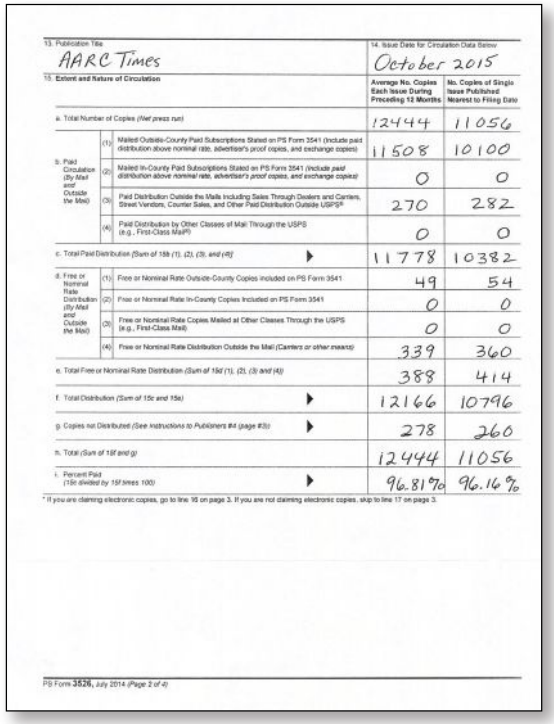

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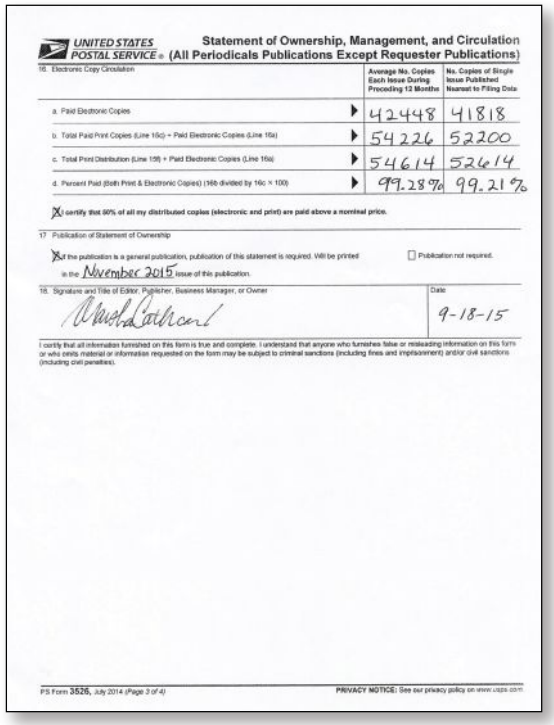

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☒ If the publication is a general publication, publication of this statement is required. Will be printed in the November 2015 issue of this publication. ☐ Publication not required.

18. Signature and Title of Editor, Publisher, Business Manager, or Owner: Marsha Cathcart — Date: 9-18-15

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

PS Form 3526, July 2014 (Page 3 of 4) **PRIVACY NOTICE:** See our privacy policy on www.usps.com

AARC Times Classified Advertising Information & Requirements:

Classified Word Advertisements

AARC Members: $50 for 50 words or less; each additional word, $1. Free Internet placement. Nonmembers: $60 for 50 words or less; each additional word, $1.20. Listings are categorized by state. Following the state listings are United States/International, For Sale/For Rent, Miscellaneous, and Situations Wanted. All copy should be typed double-spaced. All ads will be set in 8-point type. To calculate the cost per advertisement, a "word" is considered to be one or more letters, numbers, or special characters with a space before and after.

Ads are featured on the AARC website for one month after publication. Ad may only be placed on the website with an insertion order for placement in an AARC publication. Ad is noncancelable after placement on the website. NOTE: *AARC Times* reserves the right to refuse any advertisement not directly relevant to respiratory care. *AARC Times* does not endorse any advertiser, its positions, practices, services, or products.

We reserve the right to make editorial changes for reasons of clarity and consistency. Every effort is taken to avoid mistakes, but *AARC Times* cannot be responsible for clerical or printing errors. **Deadline for Ad Placement/Cancellation** Deadline for ad placement and written cancellations for the next available issue is October 28. Blind ads available. **For Recruitment Advertising Information, Contact AARC Respiratory Jobs** • Respiratory.Jobs@aarc.org (972) 243-2272 • Fax (972) 484-2720 4925 N. MacArthur Blvd., Ste. 100, Irving, TX 75063

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For Recruitment Display Ad Rates, go to www.aarc.org/marketplace/media_kit/media_planner_2015.pdf, or contact AARC Respiratory Jobs • Respiratory.Jobs@aarc.org • (972) 243-2272 • Fax (972) 484-2720 4925 N. MacArthur Blvd., Ste. 100, Irving, TX 75063

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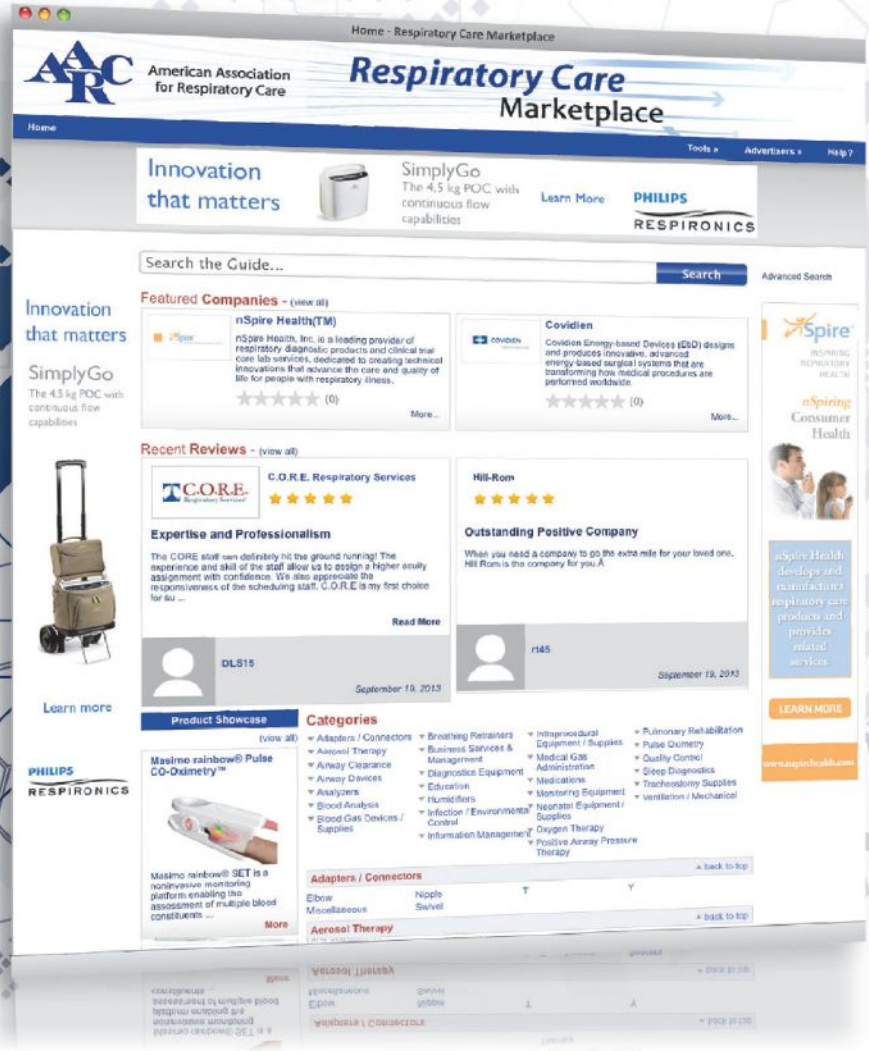

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American Association for Respiratory Care

Calendar of Events

AARC & State Society Programs

November 7–10
Tampa, Florida
AARC Congress 2015
Contact: AARC, info@aarc.org, (972) 243-2272.

Submissions for the next available issue are due October 22.

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

Advertiser Index

To advertise, contact: Phil Ganz, 48 Abbey Woods Ln., Ste.100, Dallas, TX 75248, Voice (972) 991-4994, Fax (888) 206-9006, phil.ganz@aarc.org. Or contact Beth Binkley, Advertising Assistant, Daedalus Enterprises, Inc., 9425 N. MacArthur Blvd., Ste. 100, Irving, TX 75063-4706, (972) 243-2272, Fax (972) 484-2720, binkley@aarc.org.

AARC Times

PHOTO CONTEST

Submit Your Photos for the *AARC Times* Cover Photo-of-the-Year Contest!

5 Tips for a Winning Photo

1. Photo must be vertical and not horizontal.
2. Set your camera to take the highest pixel photo.
3. Put yourself in the best position to get the shot, even if that means getting down on the floor or up on a chair.
4. Make the picture tell a story about the respiratory care profession. A picture that conveys some emotion about your patients is always preferable to one that does not.
5. Submit a brief story about your inspiration for taking the shot.

Finalists in the competition will receive a FREE one-year AARC membership renewal.

For contest guidelines visit:

www.AARC.org/resources/publications/aarc-times

The deadline to submit photos is May 1, 2016. Email your photo to chawdhury@aarc.org or send a CD to: Photo Contest, 9425 N. MacArthur Blvd., Irving, TX 75063.

All photos become the property of the AARC and everyone in the photo must sign a release form provided on the Photo Contest website.

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