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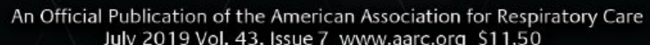
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AARC Strategic Plan

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

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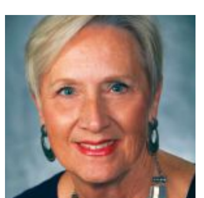

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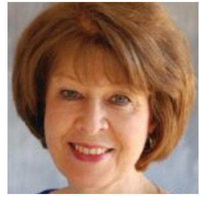

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Brotherly Love

by Anthony L. DeWitt, JD, RRT, FAARC

Recently a Bronx hospital made a mistake. It wasn't a medical error. No one gave the wrong medicine. No one cut off the wrong limb. But a ventilator was disconnected, and the patient died. The patient, however, was unsalvageable, and the ventilator disconnection was not wrongful. This doesn't make much sense, does it? What could be the problem that would involve a lawyer? Well, let's look at it from the family's perspective.

Suppose you're a loving sibling. You get a call that your brother is in the hospital and isn't expected to make it. He had a drug overdose. Bubba hasn't exactly led the kind of life that would make this unthinkable, seeing as how, just last night, he used his one phone call to tell you that he had been arrested and was being held in a jail cell in a neighboring borough. So, you rush off to the hospital to go see your very ill brother.

Of course, when you get there, his face, eyes, and neck are swollen. He has tubes everywhere. You're not a medical professional. The professionals tell you, "That's your brother." And you ask, "Is he going to get better?" The answer comes with a mournful shake of the head: "No." After waiting a week for improvement that never happens, with great regret you tell the hospital to let him go.

The bad news is that your brother has just spent a week in jail without hearing from you. The good news is that he's very much alive. But this means that you just made a life-and-death decision for someone totally unrelated to you. Obviously, as someone who has ordered life support taken away from someone, you are conflicted. You're glad Bubba is not sick, but what of the dead man? While it isn't likely he would have survived, you had no right to make the call to terminate life support, and you yourself might be the target of a wrongful death lawsuit. So, you ask for help locating the family and talking to them, but the hospital refuses, citing privacy laws.

This sad case is one that should concern everyone who works in a hospital. There is an aphorism that says we all have a twin somewhere. I had never ascribed to that notion until I joined the U.S. Army. In basic training, I kept getting mistaken for a different guy who supposedly looked just like me. He was apparently having some difficulties adjusting to military life, so it was very unsettling for me to be accused of something based on mistaken identity. It can be just as bad to be treated (or mistreated) as a result of mistaken identity. This is why surgical protocols now require multiple steps to assure that the right patient is in the right room for the right procedure.

Hospitals do not scan fingerprints and do not have a way to positively identify patients other than through personal effects (and those might be stolen or borrowed). A comatose patient without identification (perhaps the victim of a brutal mugging) might never be awake enough to provide identifying information. Next of kin can be difficult to locate. And even if they can be located, there may be no practical way, with swelling, bruising, and life support equipment, to make an identification based on facial recognition.

Some people have birthmarks or scars that can be used to identify them, while others have tattoos. Even these are not foolproof. Mistakes in identification can happen, and it's easy to imagine the kinds of medical errors that might result (allergies, disease conditions, etc.).

Sometimes a person brought in by police may be unwilling to provide his name. He may refuse and the

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hospital staff may not have any idea whom they are treating. Generally speaking, a hospital must be able to identify its patients, both for billing purposes and record keeping. When it cannot do so, mistakes of this variety can happen. In this case, the issue was the same first and last name, and same middle initial (although not the same middle name). The man who was sitting in jail had been previously treated at the hospital, while the decedent had not. In the end, no one noticed the discrepancy.

Will the hospital be liable? That's a question of New York law, but the answer is maybe. The only person who might sue is the sibling who ordered the life support terminated, and the suit would likely be only for negligent infliction of emotional distress. In New York, a person can sue for negligently inflicted emotional distress, provided that there is either real physical danger, real physical injury, or what is called a "an assurance of genuineness, as in cases involving the…transmission of false information that a parent or child had died."[1] Here the hospital transmitted false information about the status of a sibling, and New York may well recognize the right to recover in this circumstance.

Hospitals should not only take pains to identify patients, but they should take care to identify relatives. Several years ago, a nurse contacted me to tell me that an ex-wife had appeared at the hospital claiming to be the patient's *current* wife and was telling the hospital that he didn't want extraordinary measures. Fortunately, the current wife showed up and disputed the ex-wife's claims before anything bad happened. For this reason, hospitals should not accept out-of-hand the representation that parties are married or that one has the right to make decisions for the other.

Clinicians should use their powers of observation to study the interactions between patients and visitors, both when they are aware they're being observed as well as when they are not, and remember that the duty to protect the patient extends to every person against any who may have a reason to harm him. ■

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Forward March!

by Debbie Bunch

A core part of the AARC mission is to advance the respiratory care profession, and *AARC Times* has documented that mission every step of the way over its 42+ years of publication. We chronicled the drive to license respiratory therapists (now achieved in all but one state in the union), we kept members informed as the profession moved to a two-year degree entry level, and we followed the work of the 2015 and Beyond Conferences that were convened to lead the profession deeper into the 21st century.

We also made sure *AARC Times* readers were well informed about global changes taking place in health care. When serious efforts were made to reform our nation's health care system, *AARC Times* presented the latest developments. When the diagnostic-related groups — more famously known as the DRGs — came into being, we educated readers on what they would mean for what were then respiratory therapy procedure-driven departments. When hospitals began bringing in consultants to redesign the care process, *AARC Times* outlined the various initiatives underway and how they were affecting respiratory care.

Two somewhat intertwining concepts, however, stand out as shining examples of our magazine's coverage of issues destined to change the way respiratory therapists deliver patient care.

Enter the CPGs

The AARC realized as early as the 1970s that health care was slowly but surely moving to an evidence-based model of care, and as the 1980s gave way to the 1990s, the need for official clinical practice guidelines (CPGs) based on solid scientific evidence became crystal clear on two fronts. First, the Joint Commission on the Accreditation of Healthcare Organizations — today known simply as The Joint Commission — implemented its Agenda for Change, which called for accreditation to move from a process-oriented system to one that was based on outcomes. In other words, the Joint Commission was no longer going to obsess over how many ICU beds a hospital had or the training level of practitioners. It was going to look at the results of the patient care being delivered, based on clinical indicators.

Second, Congress mandated the formation of the Agency for Health Care Policy and Research to write practice guidelines and fund research into areas that were not currently well defined. Although the objectives of this initiative weren't completely clear at the time, everyone assumed the resulting guidelines would at some point figure into the reimbursement of care.

The Association decided that the best course of action would be to tackle the monumental job of writing practice guidelines for the profession of respiratory care itself, believing it not only had the expertise to do so but also the responsibility. In our February 1992 article on the publication of the first set of CPGs to come out of the AARC, 1991 AARC President Patrick Dunne, MEd, RRT, FAARC, noted, "When we realized that the Joint Commission was going to implement its Agenda for Change, we proposed that the AARC get involved in developing our own practice guidelines because we wanted to have control over our own destiny."

The AARC's CPG Steering Committee Chair Dean Hess, PhD, RRT, FAARC, echoed those sentiments. "We went into this project with the noblest of interests — to improve the quality and consistency of patient care," said Dr. Hess. "But it has important sidelines as well."

The first CPGs centered on oxygen therapy, aerosol therapy, mechanical ventilation, and bronchial hygiene and set the stage for a decades-long CPG-development process that continues to this day. Back in 1992, Lana Hilling, CRT, chair of the AARC Bronchial Hygiene Focus Group, explained how these guidelines would trickle down to the individual RT at the bedside. "Basically, the guidelines will make their jobs more interesting and challenging, because it will give them a new tool to use in helping to improve quality of care," she said in our story.

Promoting therapist-driven protocols

The development of CPGs fits well with another trend that was starting to take hold in more hospitals in the early 1990s. To cut costs associated with unnecessary

care, facilities were turning to therapist-driven protocols (TDPs) based on the same kind of scientific evidence contained in the CPGs. We first covered these new care-delivery tools in a series of articles in our January 1993 issue.

The introductory article in the series took a closer look at what really constituted a TDP. Citing the most recent AARC survey of hospital practices, which was the first to include a question related to TDPs, the article noted that fully 75% of hospitals said they were either using protocols now or were planning to implement them. Judy Tietsort, RRT, RN, FAARC, then director of respiratory care at Lutheran Medical Center in Wheat Ridge, CO, and an early adopter of these tools, was quick to point out the problem with that finding. "But are what people are calling protocols really just standing orders?" she asked.

Tietsort went on to more clearly define these tools for our readers. "TDPs are patient care plans initiated and implemented by credentialed respiratory care practitioners," she said. "TDPs differ from place to place, but the dynamic nature that they all share is that they can be regulated up or down or discontinued by the therapist."

That was an important distinction, and her definition has stood the test of time. Today, true TDPs are those that allow the therapist, within careful parameters set out by the medical team, to not just deliver care, but to change the way care is delivered and even discontinue care that the RT deems to be no longer necessary.

George G. Burton, MD, FAARC, who had been studying the TDP concept for the American College of Chest Physicians, shared his vision for a future in which these care tools would be the norm in our story. "In the old days, we had operated under the notion that physicians gave the order and therapists carried it out. But times are changing, and there is too much going on to work under that paradigm," said the physician. "Now we have one, which is that physicians give orders, but therapists may, too."

The place to keep up

We went on to cover the AARC CPGs and the development of TDPs — which increasingly came to rely on the CPGs as their starting point — in many other editions of the magazine over the years. The profession we all know today would not have been possible without either of these initiatives, and we believe that, for many people in our profession, *AARC Times* has been the place to keep up with their progress. ■

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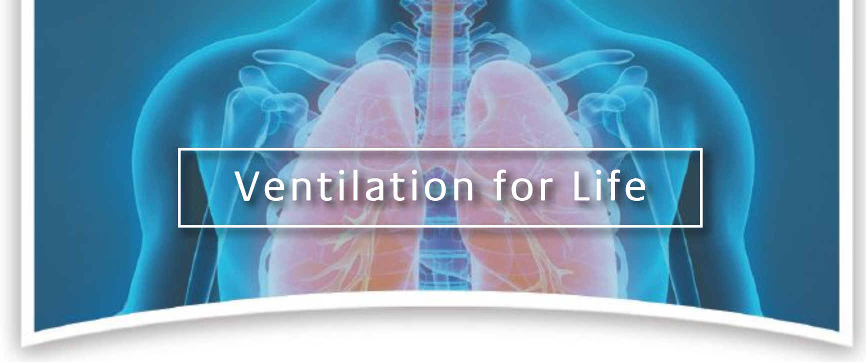

Mechanical Power and the Dangerous Threshold Index

by Bill LeTourneau, MA, RRT, RRT-ACCS

At the time of the original description and proposed treatment for acute respiratory distress syndrome (ARDS), the prospect of identifying dangerous thresholds for the application of mechanical ventilation was decades in the future.[1] Only recently has the concept of safe mechanical ventilation thresholds been investigated in an attempt to assign a quantifiable value of potential for injury to ventilator settings and parameters. Identifying these thresholds would also aid in determining the physiologic limits of the respiratory system and subsequently result in more informed clinical decision making.

Current clinical threshold indexes

The identification of dangerous mechanical ventilation thresholds is valuable to determine whether continued attempts to adjust and maintain ventilatory support are safe and will contribute to patient survival, or alternative therapies such as the use of extracorporeal support should be considered. While the identification of these dangerous thresholds has been elusive, and there is a lack of convincing evidence to support their use as predictors of outcomes, a few index thresholds have been associated with survival.[1-3] Recent investigation of driving pressure (ΔP) in patients with ARDS reported that ventilator setting changes that decreased ΔP were strongly associated with increased survival. The ΔP value can be assessed quickly by the bedside provider by noting the difference between plateau pressure and PEEP; maintaining ΔP below 15 cm H_2O has been suggested to be lung-protective.[2] Another index that has received attention as a potential bedside predictor of survival is the oxygen index (OI). The OI is calculated by multiplying the mean airway pressure (mP_{aw}) by F_iO_2% and dividing that by P_aO_2. Clinical reasoning may suggest that a patient with a mP_{aw} of 20 cm H_2O on a F_iO_2% of 100% and resulting in a P_aO_2 of 50 mm Hg (for a calculated OI of 40) may be at a threshold at which continued or increased mechanical ventilatory support is no longer safe. OI has been more frequently used in the neonatal and pediatric environment, although a definitive dangerous threshold has not yet been identified. Evidence for the correlation of OI and mortality in adults is limited, but a recent study of adults with acute respiratory failure demonstrated that sequential OI monitoring was an independent predictor of hospital mortality.[3]

Other indexes may suggest an increased potential for ventilator-induced lung injury (VILI), representing a point at which mechanical ventilation support is no longer safe and alternative options should be considered.[4,5] The measurement of lung mechanics offers the opportunity to determine strain and stress levels applied to the lungs and potentially identify injurious thresholds. Using the ratio between tidal volume and functional residual capacity (FRC) shows promise in identifying strain levels. Protti et al conducted an animal study to determine whether an injurious strain level could be identified.[4] Their conclusion was that lung damage developed with a strain value >2. An example of this concept is a tidal volume delivery of 400 mL and a FRC of only 200 mL (400/200 = 2). This physiological measurement supports the "baby lung" concept but has clinical limitations secondary to the lack of availability on current ventilators.[6] However, the use of ΔP may be an acceptable surrogate to assess the lungs' ability to accept a given volume.[2] Lung stress is another physiologic parameter that may identify a point

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when applied pressure to the lung may exceed the lung's ability to repair.[5] Assessing transpulmonary pressure with the use of esophageal manometry provides the ability to monitor inspiratory transpulmonary pressure (Insp P_L, where $P_L = P_{ao} - P_{pl}$), as well as calculate the true ΔP required to ventilate the lungs as opposed to the whole respiratory system (ie, including the chest wall). It has been suggested that keeping Insp P_L below 25 cm H_2O and true ΔP below 12 cm H_2O may be lung protective.[7] Keep in mind that these are suggested safe thresholds. The point at which mechanical ventilation escalation should yield to alternative therapies has yet to be determined.

Added value of mechanical power

A novel index concept, called mechanical power, suggests that the energy transferred from the mechanical ventilator to the lungs may have a sufficient number of variables to more accurately predict VILI and possibly yield a dangerous threshold index.[8,9] Mechanical power uses the equation of motion to derive work per breath as the integral of transrespiratory pressure with respect to volume and then multiplies this by ventilatory frequency to obtain power (ie, work per unit of time, or Joules/min) (Fig. 1). Previous indexes have limitations because they rely on static airway pressures to determine potential for injury. The mechanical power concept introduces a dynamic component (ie, kinetic energy) to an equation that is used to determine the potential for VILI. This equation also demonstrates the degree of influence that frequency and volume have when changes are made in concert or independently.[8,9] To date, only proof-of-concept and animal studies have been conducted to validate the use of mechanical power to estimate the contribution of the different ventilator-related variables that cause lung injury. Consequently, the absolute dangerous threshold for humans remains unclear.[8-10] Further study may also be required to determine whether it is simply calculated mechanical power that yields a damaging threshold, or whether the manner in which the breath is delivered (eg, flow profile or repetition) has a greater influence on VILI.[3]

Bedside application

Although current ventilator software does not include the calculation and display of mechanical power, the simplified equation shown in Fig. 1 allows for a bedside assessment using available parameters. The question of which variable, volume or pressure, has the most significant contribution to VILI may never be convincingly answered, but the concept of mechanical power allows for each variable to be independently evaluated along with the added value of including repetition of the respiratory cycle. A limitation to the mathematical model of mechanical power is that it only includes the mechanical properties of linear compliance and resistance, which are gross approximations at best, and it does not consider other physiological aspects of the lung, such as stress raisers, resistance to expiratory flow, or other intangible intrinsic lung properties. Even considering the limitations, mechanical power may have the potential to bring us closer to the dangerous threshold index we have been searching for in combating VILI. The initial animal studies conducted in an attempt to yield clinical value on the use mechanical power revealed that a transpulmonary mechanical power above approximately 12 J/min demonstrated development of whole-lung edema and that mechanical power and tidal volume can independently contribute to VILI.[9,10] This preliminary data may not give us the final word on VILI, but it may give us a starting point to evaluate the usefulness of mechanical power and how it might represent a more global observation of the complex interactions between the lung and the demands of positive pressure mechanical ventilation, as well as provide significant benefit to clinical practice.[11]

Figure 1.

$$Power_{rs} = (0.098 \cdot RR \cdot V_t) \cdot (PIP - [\Delta P/2])$$

Abbreviations: RR= respiratory rate, V_t= tidal volume, PIP= peak inspiratory pressure, ΔP= driving pressure. *Equation from reference 8 (supplemental material).*

Conclusion

Estimating clinical severity and predicting patient outcomes is an important component to clinical decision making. Threshold indexes, when monitored in proper context, can help in the identification of dangerous mechanical ventilation settings and produce valuable trending data to guide an appropriate clinical pathway. Indexes such as ΔP and the OI have been associated with survival, but it is unclear whether specifically managing the index will improve survival. Monitoring lung strain and stress has been beneficial in identifying the potential for VILI, but this approach is unproven in predicting outcomes. The introduction of mechanical power may bring us closer to an index that can identify dangerous thresholds of mechanical ventilation with a potential byproduct of predicting mortality. ■

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The Need for Standardized Respiratory Care Process and Language

by Jacob R. Burd, MSc, RRT, RRT-NPS and Dr. Constance C. Mussa, PhD, RRT

Physicians, nurses, and other allied health care professionals in the United States have recognized the value of a standardized model of care to guide the care they provide, as well as the need for a standardized language to effectively describe and efficiently document that unique care. For more than four decades, these professions have actively addressed this challenging topic by creating standardized care process models and developing standardized terminologies for describing and documenting the individual care needs of their patients.[1-6] The patient care process for respiratory therapy has not yet been clearly defined, and the profession lacks a standardized terminology for describing and documenting the unique, patient-centered care provided by respiratory therapists (RTs).

The need for a respiratory care process model

As integral members of the health care team, RTs possess highly specialized clinical knowledge and technical expertise, and they perform diagnostic and therapeutic procedures to optimize the care of patients with cardiopulmonary dysfunction. While the value of RTs may be evident to patients, physicians, and other members of the health care team with whom they work, greater amounts of information are now required from RTs and other clinicians by accrediting agencies, third-party payers, researchers, and others involved in the evaluation of care processes and outcomes. Specifically, these key stakeholders require information relating to patient education, the relationship between RT interventions and patient outcomes, and patient safety information.

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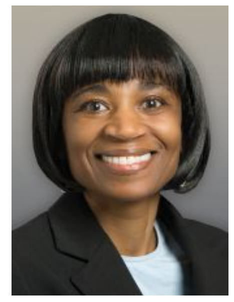

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A care process consists of the value-added activities involved in delivering care and is usually captured in a care process model that is coherent, concise, and easy to use, delineating repeatable steps to provide evidence-based care. Care process models are beneficial to clinicians because they illustrate how to deliver the best care in an efficient way. A respiratory care process model would serve as an organizing framework to standardize and guide RTs clinical judgments or critical thinking processes and document information linking respiratory care to patient outcomes. In addition, it would serve to ensure that individualized care is provided to patients within the scope of best practices, regardless of the care setting or the patient's health issues. In short, such a model would serve as a roadmap to guide the care provided by RTs. Figure 1 (page 15) illustrates an example of a care process model adopted by the pharmacy profession. With numerous well-studied exemplar models available, the respiratory therapy profession is in a very strong position to create a care process of its own. The creation and use of a respiratory care process model would support the efforts of the AARC in developing and implementing clinical practice guidelines (CPGs) and the study of their effect on patient outcomes. This initiative is of critical importance because unbiased evaluation of the impact of CPGs on patient outcomes is difficult to achieve when there is a high degree of variability in practice. Without a well-defined patient care process that is used by RTs consistently and collaboratively across practice settings, it will be exceedingly difficult to

demonstrate reliably how the delivery of evidence-based care by the RT contributes to improved patient outcomes.

The need for a standardized respiratory care language

A standardized respiratory care language would make it easier to identify diagnoses, interventions, and outcomes that are specific to the practice of respiratory care. It will help bridge the gap between research and practice by providing researchers with data needed to identify "best" practices, design decision-support systems, and determine efficient and effective utilization of respiratory care services. The World Health Organization developed the International Classification of Functioning, Disability, and Health (ICF), a standardized language and framework that goes beyond a medical diagnosis.[7] This framework acknowledges that an individual's level of function and disability is predicted not only by a diagnosis, but by the complex interplay of multiple factors. Because the ICF emphasizes an individual's level of function based on body functions and structures as well as contextual and personal factors, it may be useful in helping RTs describe and document their care using a standardized language that can be mapped to the Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT). A recent pilot study demonstrated the feasibility of creating standardized terminology for frequently encountered problems specific to cardiopulmonary dysfunction.[8] In addition, the potential value of a formal language and taxonomy specific to the respiratory therapy profession has been previously described.[9]

Consensus about terms used in respiratory care would facilitate accountability for processes and outcomes of care through standardized documentation of respiratory impairments, interventions made by the RT, and resultant patient outcomes. An existing example of standardization of language in respiratory care is the taxonomy and standardized vocabulary derived for classifying modes of ventilation.[10] This work addresses the mechanical ventilation competencies that were identified as needed by RTs in 2015 and beyond.[11] Further standardization of the language specific to mechanical ventilation would serve to define specific patient impairments, such as the different types of patient-ventilator asynchrony that the RT is uniquely qualified to address.

A major contributing factor to the difficulty that RTs encounter in implementing CPGs and protocols is the lack of a standardized respiratory care language. This hinders RTs from clearly and concisely defining each patient's unique respiratory care needs. The nursing literature provides ample evidence of why and how it has been imperative to address these issues with a discipline-specific standardized language.[12] It is important for RTs to use a standardized language to maximize the opportunity to provide evidence-based care using both CPGs and protocols. The plethora of terms currently used throughout health care to describe cardiopulmonary problems that can be resolved or improved by RTs, inhibit consistent description and documentation of how RTs uniquely address those needs using evidence-based CPGs and protocols.

Why it all matters

There are several substantial examples of how it has become unfavorable for the respiratory care profession to lack a standardized care process and language to help illustrate the RTs value to the patient care process.

In response to the Prospective Payment System and Consolidated Billing for Skilled Nursing Facilities (SNF) Proposed Rule for FY 2019, the AARC offered perceptive feedback regarding the proposed Patient-Driven Payment Model (PDPM) of RT services, specifically.[13] As noted in the timely response by the AARC, "respiratory services such as ventilator management, tracheostomy care, and suctioning, among other services, are considered non-therapy ancillary (NTA) services in the SNF setting, yet they are a vital and costly part of the care furnished by RTs." Of note, in the FY 2019 update, the PDPM will tie payment to patients' conditions and care needs rather than to the volume of services they receive. The AARC voiced its concern over the point values given to some respiratory services, in particular ventilator care. In accordance with the new point-based system proposed by the Centers for Medicare and Medicaid Services (CMS), the AARC recommended a designation of "very high" (i.e., 7 points) for ventilator care services "based on the need for the 24-hour presence of a RT and advanced monitoring equipment," as well as the intensity of care provided in the period during which the patient is liberated from mechanical ventilation, which often occurs in the SNF setting. However, a point value of 5 (i.e., "high") was assigned to these services by the CMS, despite the AARC's recommendations. An additional disappointment is the elimination of certain NTA services such as oxygen therapy and noninvasive ventilation (e.g., continuous or bi-level positive airway pressure). As the AARC noted, "These modalities are more complex in nature and require the expertise of qualified RTs who are best educated and competency tested to provide complex respiratory care." Improving the ability to describe and document the extent to which RTs are involved in these vital services and care processes and their impact on patient outcomes

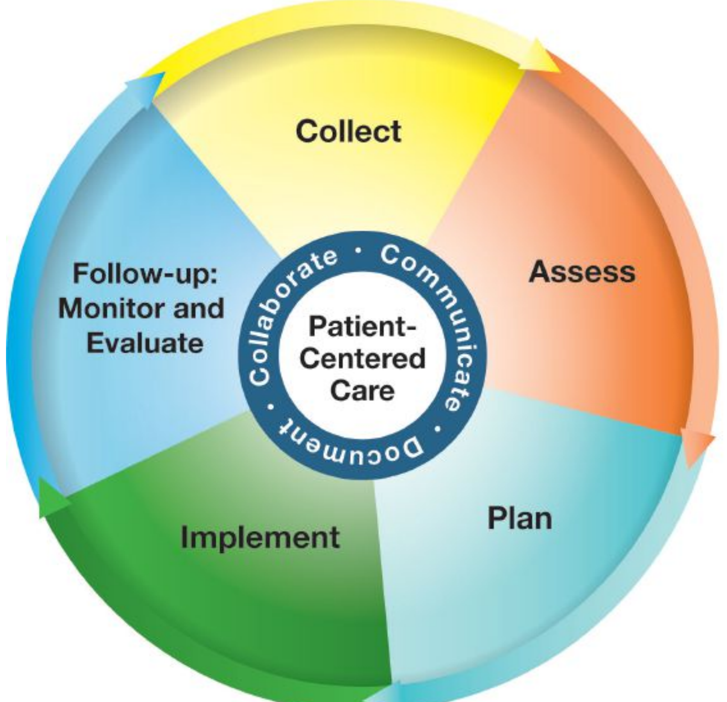
would provide support to the continual advocacy efforts of the AARC.

Although the majority of RTs work in acute care, there is ample opportunity for RTs to provide care beyond the hospital walls. As outlined in a white paper from the Respiratory Therapy Access Working Group, patients with chronic respiratory diseases would benefit from having access to the unique skills, knowledge, and attributes of a respiratory therapist outside the hospital.[14] As the authors explained, the switch from volume-based to value-based care has the potential to threaten the individualized care that is essential to patients with respiratory care needs. It is clear that the profession of respiratory therapy must better advocate for itself to better advocate for its patients. We must be able to describe the methodology by which we improve the functional capacity of individuals with chronic respiratory disease and document the skilled therapies we provide and their impact on outcomes, otherwise our value will remain marginalized and patients' access to our care will remain limited.

In response to House Report 109-89, a report submitted on whether RTs should serve as commissioned officers, all three concerned branches of the armed services recommended against the commissioning of RTs.[15] According to the report, since RTs are not credentialed as licensed independent practitioners (LIPs), like Occupational Therapists or Physical Therapists, and must be supervised by a physician, this inhibits the development of an appropriate life-cycle model for RTs to serve as commissioned officers. Interestingly, registered nurses with a bachelor's degree are afforded the opportunity to become commissioned officers despite not being LIPs. The nursing profession has an established nursing process as well as standardized terminologies that describe nursing diagnoses, interventions, and outcomes that enable nurses to demonstrate their unique value in resolving or improving the health disturbances of their fellow service man or woman. The report goes on to recognize that the increasingly technical nature of some RT duties may justify a small number of advanced RTs and concluded that more convincing evidence is needed to support RT warrant officers. It is important to

Figure 1: Pharmacists' Patient Care Process

Joint Commission of Pharmacy Practitioners. Pharmacists' patient care process. Available at: http://www.pharmacist.com/sites/default/files/files/PatientCareProcess.pdf. *Accessed Feb 18, 2019.*



Pharmacists' Patient Care Process

Pharmacists use a patient-centered approach in collaboration with other providers on the health care team to optimize patient health and medication outcomes.

Using principles of evidence-based practice, pharmacists:

Collect
The pharmacist assures the collection of the necessary subjective and objective information about the patient in order to understand relevent medical/medication history and clinical status of the patient.

Assess
The pharmacist assesses the information collected and analyzes the clinical effects of the patient's therapy in the context of the patient's overall health goals in order to identify and prioritize problems and achieve optimal care.

Plan
The pharmacist develops an individualized patient-centered care plan, in collaboration with other health care professionals and the patient or caregiver that is evidence-based and cost-effective.

Implement
The pharmacist implements the care plan in collaboration with other health care professionals and the patient or caregiver.

Follow-up: Monitor and Evaluate
The pharmacist monitors and evaluates the effectiveness of the care plan and modifies the plan in collaboration with other health care professionals and the patient or caregiver as needed.

note that warrant officers rank between non-commissioned and commissioned officers. In other words, even advanced RTs would not be commissioned. It is likely that the so-called "increasingly technical nature" of the duties fulfilled by RTs are misrepresented given the lack of a standardized method of describing and documenting their vital role in the care process of their fellow service men and women.

A standardized process model and standardized language specific to respiratory care would improve RTs' documentation, which would provide evidence regarding their involvement in patient care, and the recognition of the value of their contributions. Research has supported the added value of the RT through use of mechanical ventilation protocols, and the RT as a COPD case manager has improved outcomes. Research studies on the value of the RT are vitally important, yet they do not always lead to practice change, nor are they enough to justify reimbursement for services provided exclusively by RTs. If these changes are to be expected, RTs must be able to describe systematically and document clearly the quantity, complexity, and quality of the specialized medical care they provide.

Future imperatives

The respiratory care profession is indeed at a crossroads.[16] The central question is this: Are we technicians trained to do repetitive tasks, or are we health care professionals? If we are health care professionals, we must understand the need for specific interventions and make decisions grounded in a scientific framework that describes the respiratory care needs of individuals with varying levels of cardiopulmonary function. Perhaps most significant is the current inability to clearly document the care patients receive from RTs, which creates an opportunity to incorrectly assess the role of the RT in meeting patients' needs.

Now is the time for the respiratory therapy profession to adopt a standardized respiratory care process model and pursue the development of a standardized language and framework for describing and documenting our patients' respiratory care needs. The care we provide to patients and the value of our unique contributions is at stake. ■

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Making the Decision To Withdraw Life Support

by Sally Macke, MAPS, BCC

When a critically ill patient has run out of treatment options and is not getting better despite the best efforts of the medical team, the decision to compassionately withdraw ventilator support in the ICU often falls to that patient's family or surrogate decision maker. As a chaplain, I provide emotional and spiritual support to the families of these patients, but it is respiratory therapists who are tasked with removing ventilator support of patients who have transitioned to "Comfort Measures Only." I enjoy collegial relationships with the RTs with whom I work, and I value their role on the health care team.

Because respiratory therapists truly are an integral part of the health care team, their perspectives can be very helpful in family meetings at which end-of-life discussions take place, especially when they have been a patient's primary RT. In those situations, they have had the opportunity to really get to know the patient, and they offer an important perspective that no one else on the health care team can provide. During a family's end-of-life discussion, it can be helpful if the RT explains what might happen to the patient after ventilatory support is withdrawn (eg, changes in skin color, coughing or gagging, slowing down of breathing, etc.). When a family is prepared for what could happen, it reduces the fear and anxiety in the experience of transitioning their loved one to Comfort Measures Only.

RTs and end-of-life rituals

I welcome respiratory therapists who wish to be a part of the end-of-life rituals at a patient's bedside. When this happens (sometimes after a patient has been with us a long time and we know that patient and family well), it can be a rich and rewarding experience for the whole team. We are presenting a united front for the family, which speaks to the fact that we have ALL cared for their loved one, and we have the opportunity to say goodbye to the patient and pay our respects. It is a hard thing to do, but it can be very healing for us. It's a way we can honor not only the patient and the family, but also honor ourselves and all that we have done to help that patient.

As health care providers, I believe our primary purpose at a patient's end of life is to be a peaceful presence for the patient and the family, and I believe that, to be peaceful, we need to have done our own grief work. If we have losses in our own lives for which we haven't grieved, we will bring our sorrow into our patient's room. Likewise, it's important for us to recognize whether there is something about this patient or family that serves as an emotional trigger for us.

about the author...

Sally Macke, MAPS, BCC, has a master's degree in pastoral studies and is board certified by the Association of Professional Chaplains. She serves as the primary chaplain for the intensive care units at Mercy Hospital St. Louis in St. Louis, MO.

My interviews with RTs

I spoke to a number of respiratory therapists with whom I work in the ICU to get their feedback on how they handle having to withdraw ventilator support on a patient at the end of life. I tried to get a sense of any common themes in their attitudes or behaviors when this happens. Most of them say that the act of removing vent support is not sad for them because they know that every treatment option has been tried, but the sadness of the family does get to them.

Some of our RTs will say a prayer by themselves prior to going into a patient's room to withdraw vent support; this speaks to the importance of being a peaceful presence for our patients and their families. Our RTs usually introduce themselves to families prior to taking

out a patient's breathing tube, and they explain what they're going to do. A couple of them offer to say a prayer with the family if they know them well. A few of the RTs with whom I spoke said they reassure the family that they are doing the right thing by deciding to have vent support removed. Most of them said that they try to be quiet and stay out of the way of family members to allow them private time with the patient. One RT said she stays with the family if she knows the patient well, and several RTs said they will stay and hold the patient's hand if no family members are present. One RT mentioned that it is sad for her when a patient dies with no family; another RT said, "We (the caregivers) become a patient's family when they have no one."

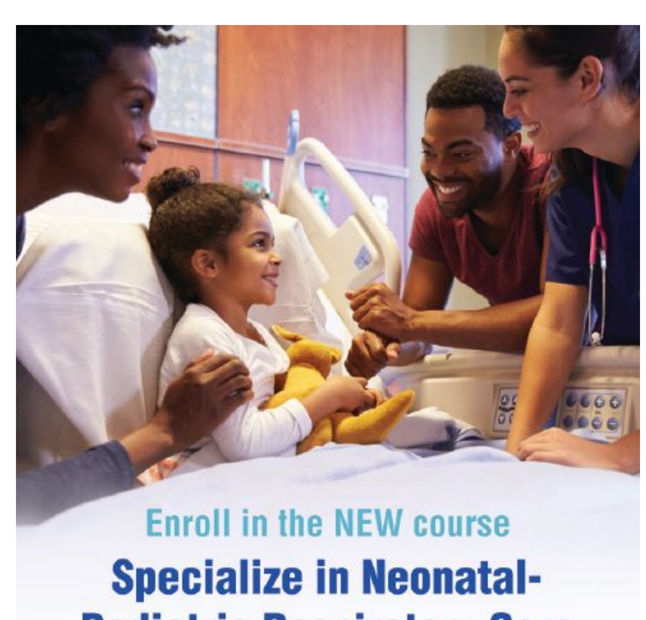
Most of the RTs I interviewed said that they ask the family to step out of the room prior to removing the patient's breathing tube, but a few said that they give the family the option to stay. Everyone with whom I spoke removes the ventilator equipment from the room after withdrawing support, both because it serves as a visual reminder to the family of what is missing, and because it gets in the way of family members' ability to be close to their loved one. One person said it helps the family's grief process if the patient is awake, but another RT said it was harder for her to remove the vent when the patient is awake. A couple of RTs acknowledged that the most stressful thing about their jobs is when patients are receiving what health care providers believe to be futile care.

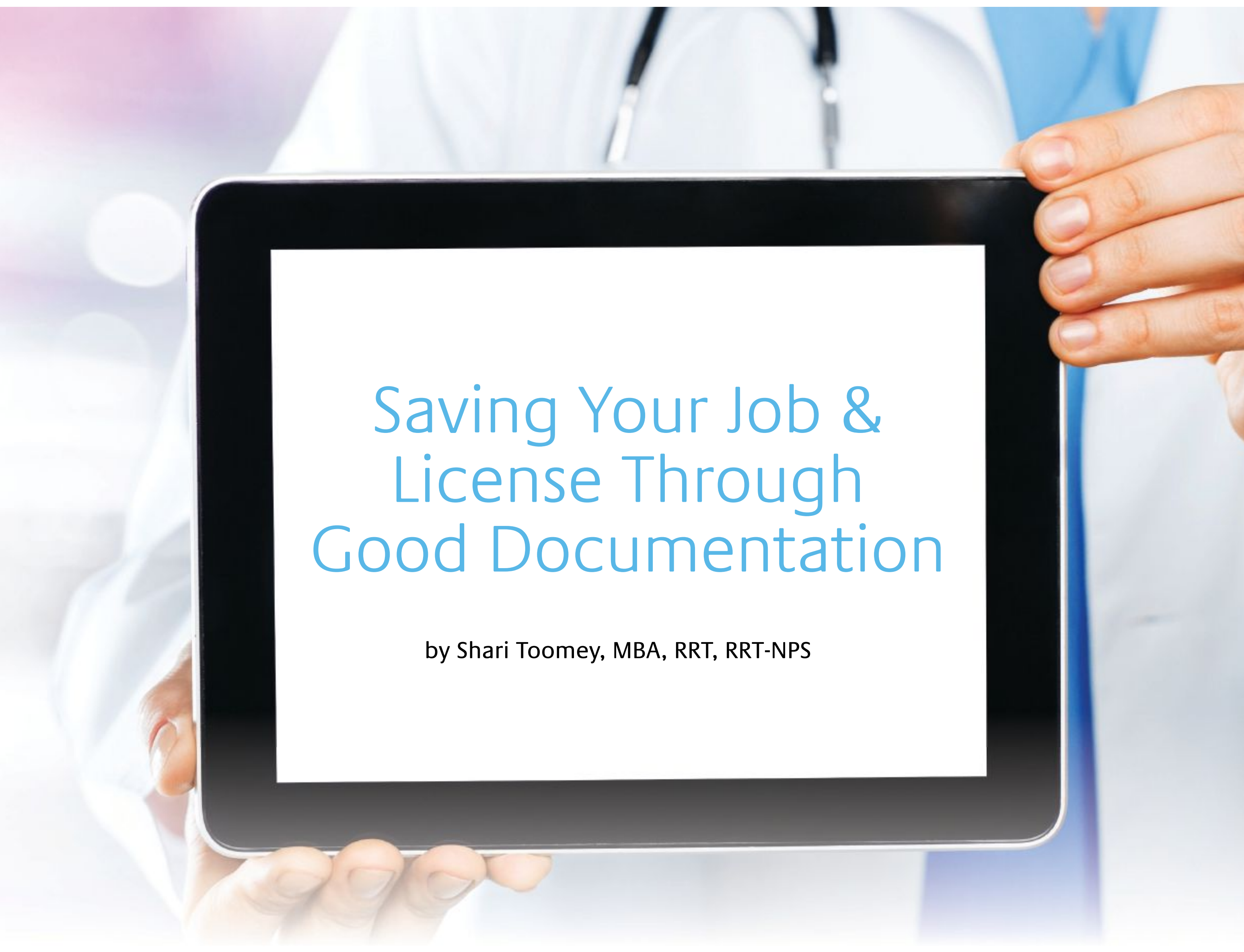
Through my conversations with our RTs, I have learned that it is hard on them when they are called upon to withdraw vent support from patients who are Comfort Measures Only. Here are some of the self-care techniques the RTs shared with me. "J" said, "RTs may talk to other RTs about taking [a patient] off the vent and how it makes us feel in a break room, or a few times may say something to a close friend/relative." Another respiratory therapist said, "Some of these deaths are harder than others, but I take comfort in knowing that they are going to a better place, pain-free, and will be meeting God face to face soon."

"In terms of taking care of myself, working out is a good stress relief or walking the dog. It is hard to separate oneself from a family's pain in this job," said another RT. "A" said, "We RTs do a lot of debriefing with one another. If I feel something wasn't handled well, I go to my supervisor. If things get rough, I go to the chapel and pray." "H" said, "Rotating to different areas of the hospital helps." Several RTs mentioned that they cry afterwards, and sometimes they debrief with the nurse. Self-care techniques for RTs include prayer, nature, hobbies, saying "no" to some things, and setting limits on their work hours.

When we are called upon to be with dying patients and their families, I think it's important to take several moments before we rush off to the next task. I have often said to the nurse, or to the RT, or both, "Wow, that was really sad," and we take some time to process the experience together.

No matter what self-care techniques we use, we need to acknowledge to ourselves that sometimes our jobs are really hard — when we do that, we can then hopefully let the sadness go. Debriefing sessions after critical incidents can also be very helpful. When we don't take the time to recognize our own sadness, we can become like robots, and that's when we dehumanize not only ourselves but the patients for whom we care. And they're the reason we do what we do. ■





Saving Your Job & License Through Good Documentation

by Shari Toomey, MBA, RRT, RRT-NPS

Why do we need to document patient care? Documentation in some form, whether written or electronic, is a requirement in just about every job. However, in health care, it has become a vital part of every caregiver's role. Unfortunately, many health care workers fail to recognize the importance of documentation until it is too late and they find themselves either in a superior's office trying to defend their actions or in a court of law without the support of proper documentation to protect their job and/or their license. From documenting what time therapies are given by the respiratory therapist, to nurses checking the patient's vitals, documentation helps establish stable routines and regular communication among staff within and across disciplines. Documentation has many intended uses such as communication, adherence to standards of care, a record of history, and billing. All of these are essential for the safe and efficient delivery of care.[1]

Understanding the foundation of good documentation is essential; the first rule is, "if it is not documented, it did not happen." Clinical documentation should always contain factual information, not personal opinions. The

documentation in the patient's chart is the official record of that patient's visit, and it must be accurate and detailed. Clear and concise clinical documentation will demonstrate that standards of care were met and provided. This ensures that patients are receiving quality health care and decreases malpractice risks. Documentation should also include details about interactions with the patient or family members. Consider the following scenario:

One day, you enter a patient's room to find a family member loosening the patient's tracheostomy ties. You will naturally advise them against doing this, educating them about the negative impact of a loose tracheostomy tube and the benefits of properly tightening the ties. You then fix the tracheostomy ties and continue with your normal activities. Later in the patient's hospital stay, the tracheostomy inadvertently comes out and the patient is harmed in some way in the process. The patient or the family blames the health care team and the hospital.

If you documented the incident in the patient's chart and communicated with the care team, including details about what the family member was doing, how you corrected the tracheostomy, and the information that you provided to the patient and family member, then there is a record that the patient's family did, on at least one occasion, loosen the ties, and this may have contributed to the tracheostomy coming out.

On the other hand, if you did not properly document the incident, the scenario can take a very different turn. Without a note in the record stating that the family was loosening the ties or that any education was given to the family, the responsibility for an accidental decannulation rests with the RT and the hospital. When you are questioned about the events, whether that is by your supervisor, by the hospital board, or at a legal deposition, your statement that you observed a family member loosening the ties and that you fixed the ties and educated them as to why they shouldn't touch the ties will be met with these questions: Where is your documentation? If there was a problem why didn't you do something about it? Did you educate anyone? Did you communicate this to anyone? Without this documentation, you could be found to have violated the documentation policy and could carry a greater share of the responsibility for the adverse event. This could lead to discipline, termination, or even a lawsuit against you.

Electronic medical records

Electronic medical records (EMRs) have changed health care improving patient care, safety, and the ability to measure quality. The use of EMRs has helped reduce errors due to misinterpretation of handwriting, especially with medications. The use of barcode scanning requires a two-step identification process before medications can be delivered and a warning system if orders are not completed. Access to test results is much more efficient, which improves patient care and outcomes and reduces delays. Patient information in the EMR system is generally easier and faster to retrieve than in a paper record, and access is restricted to personnel who are involved in the patient's care. The increased ability to extract data from the EMR is a highly valuable aspect of the system. Researchers with appropriate access to the EMR system can extract data from a larger study population via the EMR than would be reasonable or possible if they enrolled subjects on a day-to-day basis. Studies that have examined what is viewed in patient charts indicate that diagnostic results and physician comments are viewed most frequently. Health care workers reported that they spend an average of 1–2 hours a day reviewing patient information and 2–4 hours a shift documenting actions, results, and interactions in patient charts.[1]

The use of EMRs has allowed the streamlining of flowsheet charting for respiratory therapists and many other professions, but it has also decreased the health care worker's tendency to write detailed objective progress notes. For the average patient who is within

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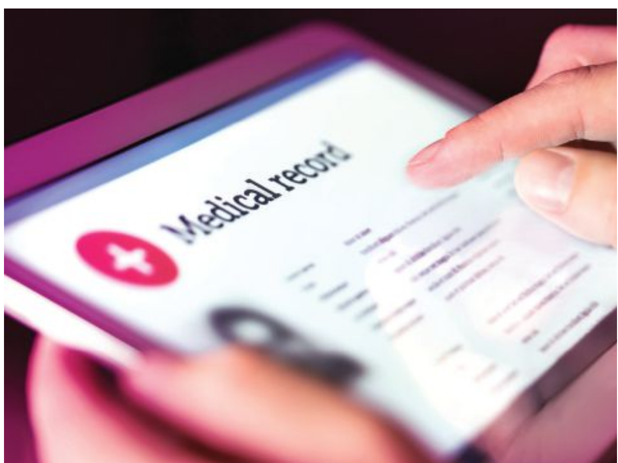
the normal assessment ranges, charting with drop down menus or check boxes may be adequate, but the patient who requires more intensive care or falls outside normal assessment ranges will require more detailed charting. The provider needs to ensure that all care is recorded and communicated to the entire team for each shift and that the details are accurate. The information that is placed in the EMR is a concise record of the patient's care received to date and all outcomes; this information is utilized not only for daily communication within the health care team but to support billing and to protect all parties in any legal proceedings.

Final thoughts

While the EMR has many benefits and has changed the way health care providers interact and communicate with patients and each other, no one should be led to believe that all information entered into the EMR is immediately communicated. The use of EMRs has led to the "illusion of communication . . . a belief that simply entering an order ensures that others will see it and act upon it."[2] To ensure quality care and good communication, providers need to speak directly with each other.



Respiratory therapists are an integral part of the health care team and must develop excellent documentation skills. Frequent education on clinical documentation skills will improve patient documentation. Some EMR systems have allowed the use of "smart notes" within the system that can be standardized for a given procedure, providing specific fields that can be changed for each individual patient. These notes can be shareable among staff members and may serve as effective educational tools for developing documentation skills. Reviewing the patient's chart and reading over the details that other RTs and providers have documented is just one step in improving documentation skills. It is essential that RTs take the time to write progress notes in patient charts; the few minutes it takes to record effective notes could make all the difference if an RT has to defend their actions before a state licensing board or in a court of law. The chart may be the only way to show that the RT provided quality care; one has no idea what case will end up in court or when — it could be years after the event.

As respiratory therapists, we do our utmost to provide quality care for our patients. We have to remember to document what we do, not only for our patients' safety but for our own safety as well. In the process, remember these key points: a) be factual and as complete as possible; b) be as timely as possible; c) if you are late in recording your entries, then mark the date and time; d) don't assess blame or give opinions; and e) don't argue with others in the notes. In addition, discussing events in your social media has no place in patient care. It does not matter if the post does not identify the patient — all comments about patients are inappropriate. In our ever more connected world, somebody will know somebody who will recognize that unidentified patient. ■

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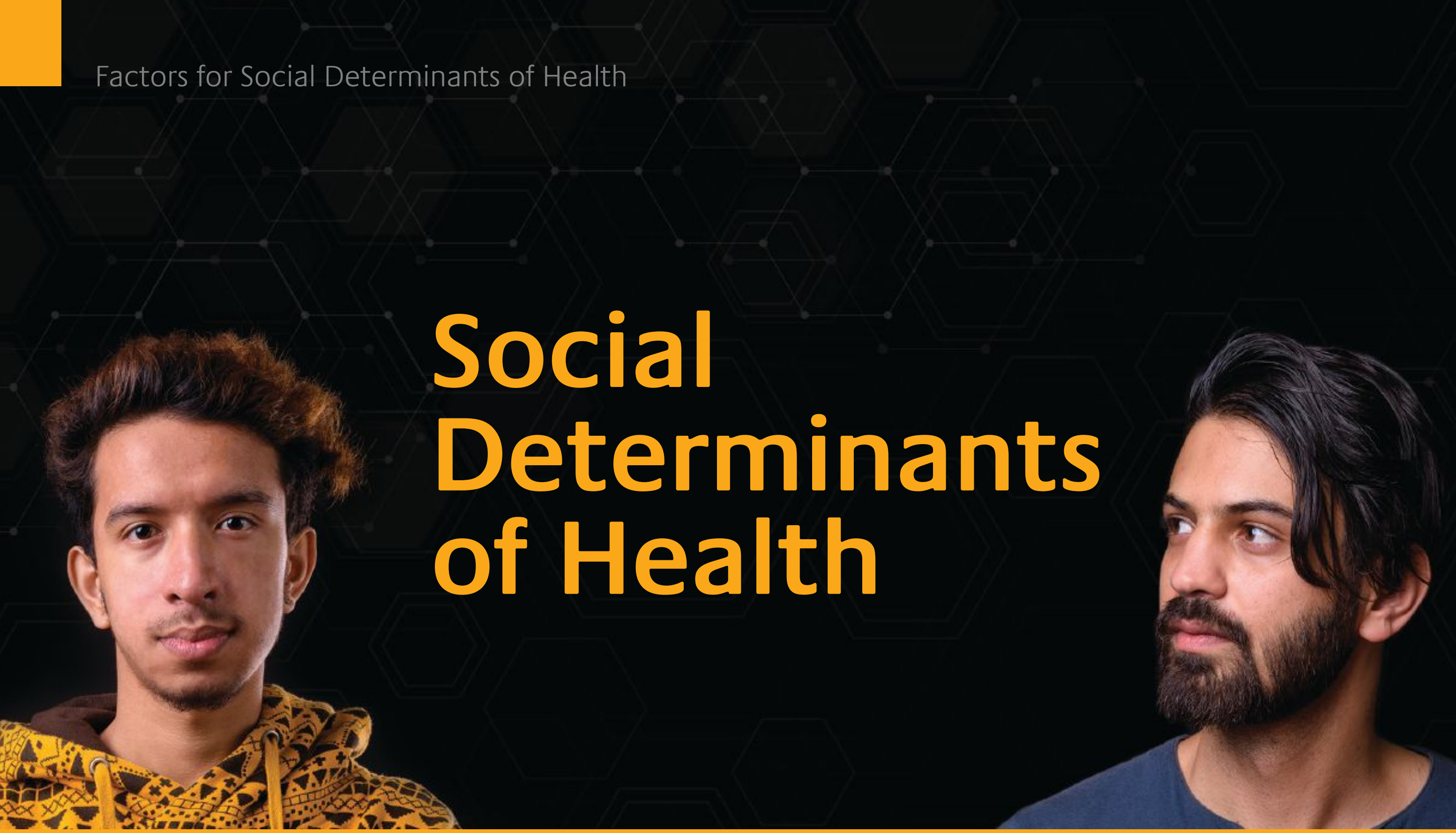

Social Determinants of Health

by Joel M. Brown II, RRT, FAARC

When I completed respiratory care school, I had the basic building blocks that were required for me to learn more about the profession I love. I focused on perfecting my clinical and technical skills and made a personal goal to become the best respiratory therapist I could be. I soon realized, however, that I was missing the bigger picture. In the current environment of Lean Processing and the concept of Standard Work in the health care setting, we are driven toward managing our patients in a similar manner to be more efficient.[1] Experience tells us that patients who have the same diagnosis and who have been managed in the same way can have different outcomes. Why don't these patients have the same outcomes? Why is it that one patient is discharged and never returns, while another returns in less than a week and earns the "frequent flyer" label? Influences like socioeconomic status, education level, family support level, ethnic background, and health care access are just a few of the factors that are considered the Social Determinants of Health (SDOH).

According to the World Health Organization, the SDOH are defined as "the conditions in which people are born, grow, work, live, age, and the wider set of forces and systems shaping the conditions of daily life."[2] All of these items impact the outcomes of our patients and can supersede the quality of the care the patient receives from a health care provider when considering overall outcomes. The impact of the SDOH increases after our patients are discharged and go home. After discharge, follow-up care is dependent on the patient's ability to pay for medications, transportation options, cultural norms, level of engagement of the family or caregiver, and retention of discharge instruction. The American College of Physicians have recognized the importance of SDOH and released a position statement after reviewing the literature and receiving feedback.[3] Their statement included recommendations for public policy reform, education curriculum changes for medical schools, and a multidisciplinary approach to managing patients with SDOH that negatively affect patient outcomes.

Socioeconomic status plays a significant role in the health of our patients. In 2015, a survey looking at the income level of Americans, revealed a direct correlation

between income level and self-reported "good" or "very good" health. In fact, 96% of Americans in the highest income level reported being in excellent health, whereas only 74% of those in the lowest income level provided the same report.[4] This gap is the consequence of access to quality health care systems, foods, and other resources that are essential to good health. People in lower income brackets are also more likely to be exposed to violence, social stress, and unhealthy living conditions. Finally, patients with a lower socioeconomic status are more likely to be uninsured or underinsured. Nearly 50% of uninsured patients do not have a usual source of care, compared to only 12% of privately or publicly insured patients that report the same access gap.[5] People in this situation are more likely to be unable to afford medications, not to seek or postpone medical assistance due to cost when needed, and have no personal care physician to handle maintenance visits after discharge.

When I think about how the SDOH affects a respiratory therapist, I need not look further than my own home. My 18-year-old daughter has mild persistent asthma. Her battle with bronchospasms started after two incidents of respiratory syncytial virus before the age of one. When you combine her viral infections with our family history of chronic obstructive pulmonary disease, a diagnosis of asthma was almost inevitable. Statistically, as an African-American child, she is three times more likely to be admitted to the hospital than Caucasian, Asian, and Pacific Islander children,[5] although we were fortunate in that she never was admitted to the hospital. She only had two sick visits in over 18 years. Although I believe my child is unique, I recognize that these unusually positive

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outcomes are a result of her inherited socioeconomic advantages or privilege. Having two college-educated and financially stable parents and living in a relatively safe neighborhood has had an impact on her outcomes. The facts that her father is an RT and her mother works for the pharmaceutical industry only adds to her privilege. I continuously educated her on triggers, peak flow norms, proper medication selection, and proper medication delivery method. Her mother provided her with insurance access that made most of her asthma-specific medications very affordable or free of charge. My daughter knew how to assemble a nebulizer by the age of two, just in case her babysitter could not. It is possible that her statistics-defying outcomes had more to do with overcoming some of the SDOH and less to do with her genetics.[6]

Imagine this situation without the same caregiver dynamics and socioeconomic stability. Imagine this child without college-educated parents, financial means, and access to information. Would her outcomes be the same? Would she be as clinically stable? Possibly not. Increased dependency on the home caregiver can make the impact of SDOH for children more dramatic than what is typically seen in the adult care population. Multiple studies have reported that the socioeconomic level of the parent or caregiver of a child is a significant indicator for readmission rates. Dr. Cano-Garcinuno et al. used a survey to assess the impact that quality of life and emotional stability of the parent could have on their child's readmission rate.[7] The authors concluded that parents with self-reported low quality of life and emotional instability were directly related to poor and moderate asthma control in children.

Although there have been attempts to close the gap caused by the SDOH, many of these have fallen short. The integration of the Internet into our patient-education processes is an excellent example of this phenomenon. We use the Internet and smartphones to assist with education and discharge planning for our patients. This basic level of information access is only available to the financially or geographically privileged. How often have we said, "You can find it online," when we are educating our patients before discharge? In our technologically advanced society, we assume that everyone has access to a computer, smartphone, or public library, but that is not the case. According to the Pew Research Center, access to the Internet should not be assumed because 10% of Americans do not have such access. When you add the SDOH to the equation, the numbers increase to 15% for African Americans and residents of rural areas, 18% for people who make less than $30,000 a year, 27% for people who are 65+ years old, and 29% for people who do not have a high school diploma.[8] While Internet-based programs are great tools, we have to consider the disadvantage they may cause for more than one out of 10 of our patients.

So far, we have only scratched the surface of understanding the impact that SDOH have on the outcomes of our patients. The development of screening tools and large-scale research efforts are helping us understand the impact of social determinants. The Centers for Disease Control and Prevention has dedicated an entire web site to address the SDOH. They provide several tools that can assist in knowledge sharing for health care providers, and they have developed a groundbreaking campaign called "Healthy People 2020." Using the web site dedicated to this initiative, you can search validated health care disparity literature and review statistics related to SDOH. They are currently working on "Healthy People 2030." These campaigns offer health care providers and patients several resources that can be used to better understand the impact of the SDOH.

The Social Determinants of Health are very complex, and we are still unraveling the layers of their complexity. As we fine-tune our knowledge of the care we provide, we must, at the same time, develop our understanding of the influence that our patients' home environments will have on their outcomes. The profession of respiratory care is not exempt from the impact. ■

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Cast Your Vote Online for the

31st Annual AARC Zenith Awards

The AARC presents the Zenith Award each year to the top corporations in the respiratory care industry during our annual International Respiratory Convention & Exhibition at AARC Congress. Considered the "people's choice" award of the respiratory care profession, the Zenith Award is highly prized by the recipients, who proudly display it on their company websites and in their AARC Exhibit Hall booths.

Now it is up to you to choose the Zenith winners for 2019. This is your opportunity to say "thank you" to your favorite industry team members and the companies that research and develop new products and enhancements to make life better for patients, whose representatives are just a phone call away when you need them, who stand behind their products and their promises.

The AARC will present the Zenith Awards to executives representing the winning companies when the Association convenes AARC Congress 2019 in New Orleans, LA, beginning Saturday, November 9. Your vote could place your favorite company in the spotlight during this year's Awards Ceremony.

When making your choice, evaluate the manufacturers, service organizations, and supply companies that have done the most outstanding job for you over the past year according to these criteria:

- Quality of equipment and/or supplies
- Accessibility and helpfulness of sales personnel
- Responsiveness
- Service record
- Truth in advertising

Industry Watch

FDA approves atezolizumab

The FDA has approved Genentech Inc.'s Tecentriq (atezolizumab) in combination with carboplatin and etoposide for the first-line treatment of adult patients with extensive-stage small cell lung cancer (ES-SCLC). Approval was based on a randomized, multicenter, double-blind, placebo-controlled trial in 403 patients with ES-SCLC who received no prior chemotherapy for extensive-stage disease and had ECOG performance status 0 or 1. Median overall survival was 12.3 months for patients receiving atezolizumab with chemotherapy and 10.3 months for those receiving placebo with chemotherapy. Median progression-free survival was 5.2 months vs. 4.3 months, respectively.

Study finds positive results for Hi-VNI Technology

According to Vapotherm, Inc., a paper published in the American Journal of Emergency Medicine titled "HVNI vs NIPPV in the Treatment of Acute Decompensated Heart Failure" showed equivalent outcomes between Hi-VNI Technology (high-velocity nasal insufflation) and noninvasive positive-pressure ventilation (NiPPV) in the treatment of respiratory distress in a subgroup of patients suffering from acute decompensated heart failure. "These results represent another proof point that Vapotherm Hi-VNI Technology is a viable alternative to relieve undifferentiated respiratory distress across a wide variety of patient populations," said Joe Army, Vapotherm president and CEO.

RejuvenAir receives FDA Breakthrough Device designation

According to CSA Medical, its RejuvenAir® System has been designated as a Breakthrough Device by the FDA. The company has also received unconditional Investigational Device Exemption approval to initiate a pivotal clinical study using the system to treat patients with moderate to severe COPD with chronic bronchitis. The RejuvenAir® System utilizes a metered cryospray of liquid nitrogen at –196°C to target areas within the lungs. CSA Medical plans to initiate the study as a prospective, multi-center, blinded randomized, sham, controlled trial using the RejuvenAir® System across 30 sites in the United States, Europe, and Canada with up to 330 subjects. The study's lead principal investigator will be Gerard J. Criner, MD, FACP, FACCP, from Temple University.

ATS Foundation announces fellowships

Paul Andrew Reyfman, MD, MS, of Northwestern University, has been awarded the American Thoracic Society Foundation/Boehringer Ingelheim Pharmaceuticals, Inc., Research Fellowship in Idiopathic Pulmonary Fibrosis. The $100,000 award will help fund Dr. Reyfman's research, "Single-Cell Transcriptomic Analysis of Pulmonary Fibrosis." The ATS Foundation/Mallinckrodt Pharmaceuticals Research Fellowship in Sarcoidosis has been awarded to Landon W. Locke, PhD, of Ohio State University. Dr. Locke will conduct a study titled "Abnormally Sustained M2-like Macrophage Polarization Drives Sarcoidosis Granulomas" with support from the $80,000 award.

Scientists receive NIH grant to study inhaled clofazimine

Two Creighton University scientists are reviving an old drug in the fight against tuberculosis. Justin Tolman, PharmD, PhD, and Jeffery North, PhD, are participating in a two-year, $600,000 grant from the National Institutes of Health to determine the potential for the antibiotic clofazimine — synthesized 65 years ago and currently only used for the treatment of leprosy — to be used in the treatment of the disease. The grant will allow the scientists to study delivery of the drug via an inhaler. Preliminary studies have shown inhaled clofazimine is effective in combating TB in mice.

NIAID awards grant to battle lethal viruses

The National Institute of Allergy and Infectious Diseases (NIAID) has awarded a five-year, $22 million grant to an international consortium led by Albert Einstein College of Medicine to develop antibody-based therapies against four highly lethal viruses for which there are no approved vaccines or treatments: the tick-borne Crimean-Congo hemorrhagic fever virus and three hantaviruses (Andes virus, Sin Nombre virus,

and Puumala virus). The NIAID has designated all but the Puumala virus as Category A agents, which are emerging infectious diseases or pathogens that pose the highest risk to national security and public health. The project, called the Prometheus Center for Excellence in Translational Research, is focusing specifically on viruses that spread from animals to people.

Duaklir approved by the FDA

The Circassia Pharmaceuticals/AstraZeneca drug Duaklir has been approved by the FDA. The fixed-dose combination aclidinium bromide/formoterol fumarate for the maintenance treatment of COPD was approved for twice-daily administration via the breath-actuated Pressair inhaler to help reduce COPD exacerbations. Approval was based on results from three Phase 3 studies, along with the Phase 4 ASCENT COPD trial, which reported a 22% reduction in moderate to severe exacerbations for people on the drug when compared to placebo and a 35% reduction in hospitalizations due to COPD exacerbations over one year.

Pulmatrix and Cipla to co-develop Pulmazole

Pulmatrix has developed a pact with Cipla Technologies for the co-development and commercialization of its asthma treatment, Pulmazole. The deal is expected to allow Pulmatrix to finish a Phase 2 study on the drug, which is specifically designed to treat allergic bronchopulmonary aspergillosis in people with asthma. The condition is characterized by an allergic reaction to the fungus aspergillus colonizing and growing in the airways.

NIH awards grants to study pulmonary fibrosis

The NIH has awarded a $3.5 million grant to the Translational Genomics Research Institute (TGen), Vanderbilt University Medical Center (VUMC), and the Norton Thoracic Institute at St. Joseph's Hospital and Medical Center in Arizona for the study of idiopathic pulmonary fibrosis (IPF). "With the latest in technology, this work will generate the most comprehensive molecular characterization of healthy and IPF lungs to date, and promises to answer fundamental questions about cell types, genetic variants, and gene expression changes driving the disease," said study team leader Nicholas Banovich, PhD, from TGen and VUMC. TGen and VUMC have also received a $2.6 million federal grant from the Department of Defense to study a variety of other genomic factors associated with non-IPF forms of pulmonary fibrosis.

Johns Hopkins researcher receives lung cancer grant

Swim Across America has awarded a two-year, $150,000 grant to Johns Hopkins researcher Kellie Smith, PhD, and her team to continue study on a lab test they developed called MANAFEST that identifies which cancer-specific proteins can be recognized by T cells. The new study will link tumor-specific proteins with the genetic activity of the T cells that respond to them to test the blood of patients with non-small cell lung cancer whose tumors were surgically removed, with the goal being to better understand how their T cells fight tumors. Full gene-expression profiles of the T cells that respond to cancer-specific proteins will be developed to further understanding of the genetic program that activates the immune response.

Arizona researcher looks at novel asthma treatment

Thanks to a $100,000 grant from the Flinn Foundation, Emily Cope, PhD, from Northern Arizona University, is working on a novel therapeutic for asthma. Her two-year clinical study is aimed at determining whether the addition of low-cost prebiotic soluble fiber supplements to a patient's diet can help improve asthma symptoms. The theory is that, as a patient's gut microbes metabolize the supplements, the resulting increase in short-chain fatty acids will reduce airway inflammation, alleviating symptoms and improving quality of life. "Emerging evidence indicates that there is great potential in manipulating the gut microbiome-lung axis to treat airway diseases," said Cope.

Organizations tackle Medicaid coverage for lung cancer screening

According to a new report from the American Lung Association (ALA) titled "Lung Cancer Screening Coverage in State Medicaid Programs," 31 Medicaid fee-for-service programs cover lung cancer screening, 12 programs do not provide coverage, and 7 states did not have information available on their coverage policy. The analysis also found that Medicaid programs varied in the eligibility criteria they used for screening as well as whether they required prior authorization. The ALA has now partnered with the University of Texas MD Anderson Cancer Center on educational initiatives to improve coverage for recommended low-dose computed tomography lung cancer screenings in state Medicaid programs. The two organizations have released a new online toolkit with resources to educate state-level decision makers and to build awareness among health care professionals about gaps in Medicaid's coverage of lung cancer screening. ■

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

RC Currents

IN THE NEWS

TRANSITIONS

AARC Mourns the Loss of Former President Robert Weilacher

The AARC was saddened to learn of the death of Robert Weilacher, BHA, RRT, FAARC, who passed away in Tucson, AZ, in April at the age of 82. A member of the AARC since 1960, Weilacher played an instrumental role in the growth of the Association during its early years, serving as president in 1971 before taking on the role of executive director, a position he held till the late '70s.

Sam Giordano, MBA, RRT, FAARC, who became executive director in the early 1980s, credits Weilacher for opening new doors for the Association during the years he spent at the helm of the AARC. "He helped us become independent as an organization and chart our own course for our profession to better serve our patients and increase our value to the health care system, especially our physician partners," he says.

He also remembers Weilacher as the AARC leader who took him under his wing when he was first elected to the AARC Board of Directors and says he continued to serve as a mentor throughout his career. "I have no doubt he influenced the trajectory of many careers, including mine."

One of the most significant contributions Weilacher made to the Association came in 1977 when he spearheaded the development of a new magazine called *AARC Times* to provide members with news and information about clinical and managerial issues in the profession, along with feature stories about RTs and how they were impacting patient care and the hospitals where they worked.

In his introduction to the first issue of *AARC Times* in July of 1977, he likened the launch of the new publication to flying an airplane for the first time, writing, "The analogy may be exaggerated, but we also feel a tenseness and a joy as we publish *AARC Times* and wait to see if it will 'fly' and if we can fly it."

He revisited that analogy in *AARC Times* he wrote in honor of the publication's 15th anniversary in 1992: "Obviously, I'm delighted that *AARC Times* is still 'flying' and that the magazine has developed into such a vibrant periodical for the respiratory care profession."

Ray Masferrer, RRT, FAARC, who served as managing editor of the magazine for many years, recalls Weilacher's determination to see the new publication to fruition. "He was instrumental in the creation of *AARC Times*," says Masferrer. "I was there at the time, and it was his idea. He ran it by me, we talked about it, and we had different ideas of what it should be. To his credit, his idea was better than mine." Specifically, Masferrer was thinking of a newspaper type publication. Weilacher saw a full blown magazine. The latter won out and Masferrer says the Association was better off for it. "He had a vision for the profession and even more of a vision for the Association," he says.

Weilacher was an early proponent of preserving the history of the Association as well, and for many years after leaving the Executive Office served as AARC historian. Current AARC historian Trudy Watson, BS, RRT, FAARC, says Weilacher's early work in this area, some of which is still available on the AARC website today, inspired her to advocate for the AARC Virtual Museum that now houses a plethora of memorabilia and other resources pertaining to the respiratory care profession. "In his role as AARC historian, Bob conducted interviews with many past presidents and key members involved

First issue of AARC Times in July of 1977

with critical issues the Association faced over the years," says Watson. "When I initially proposed the concept of a virtual museum, Bob was one of the strongest advocates for the project."

She says he served as a key member of the team that developed the criteria for the Legends of Respiratory Care program and offered other support as she brought the project to fruition. "I am honored to follow in his footsteps as AARC historian," she says.

Bob Weilacher was a Life Member of the AARC and a recipient of the Association's highest honor, the Jimmy A. Young Medal, in 1994. He became a Fellow of the AARC in 2001 and continued to work in the profession long after leaving the Executive Office, spreading his passion for the role RTs could play in patient care. In a 2007 interview that appeared in *AARC Times* for the Association's 60th anniversary, he shared that passion with readers.

"The ever-expanding employment opportunities and practice challenges have kept me devoted to the profession these past 48 years," said Weilacher. "This very day I reviewed a shift in some long-standing practice strategies that will change the way we do things in a sleep lab I manage. I still work and live in as exciting times as I did in 1959." ■

CONTRIBUTE TO THE AARC "TRANSITIONS" COLUMN

The AARC "Transitions" column is devoted to sharing news about the passing of AARC members. You can submit news about your colleagues' recent passing by going to http:c.AARC.org/transitions.

Please provide any information about the recent death, such as an obituary, so that we can share it with our members and pay tribute to the member who passed. ■

Students and Seniors Get Price Breaks on AARC Dues

AARC members who are just starting out in their careers and those who are getting ready to wrap things up can both benefit from exclusive membership offers developed just for them.

The Early Professional Membership Program is available to entry-to-practice RT students. The first two years of the Early Professional Membership cost only $25 annually. The program gradually increases in price for years three and four at $40 and $60, respectively, while the new RT gets acclimated to life as a professional. To enroll as an Early Professional Member, the student should visit the AARC website and click the join/renew link.

Members age 65 and older who have been AARC members for at least 20 years are eligible to maintain their membership in the Association for just $25 per year. Alternatively, they can pay $200 and become members for life. This digital membership gives these loyal members the chance to stay in touch with everything going on in the respiratory care industry while they're planning for or entering retirement. Members eligible for this senior status can call AARC Customer Service at (972) 243-2272 to learn more about signing up. ■

AARC Times Is Looking for Medical Mission Stories

We know many AARC members have reached beyond American borders to help people in other countries who need health care. Now we're hoping you will share your stories with the rest of us through an article in the upcoming international issue of the *AARC Times*. We are beginning to collect medical mission stories, and the submission deadline is August 1. AARC members who have a medical mission story to share with their colleagues can send an email to cathcart@aarc.org and place "Medical Mission" in the subject line. ■

Virtual Reality in the PICU

Children who are in the ICU yet still alert often pass the time watching TV. A new study out of Ann & Robert H. Lurie Children's Hospital of Chicago suggests virtual reality might be one way to help them "get out" of their hospital beds and do something more interesting.

They tested virtual reality devices on 32 kids ages 3–17, and then asked their parents about the value it added to their care. More than 80% of the parents said that playing the virtual reality games — which allowed the children to do everything from scuba diving and snowboarding to taking part in safaris and other adventures — calmed their child.

The researchers are now planning a larger study to gauge the impact of virtual reality use in the PICU on pain, anxiety, and physical factors like blood pressure and heart rate. The study was published in a recent edition of *Pediatric Critical Care Medicine*. ■

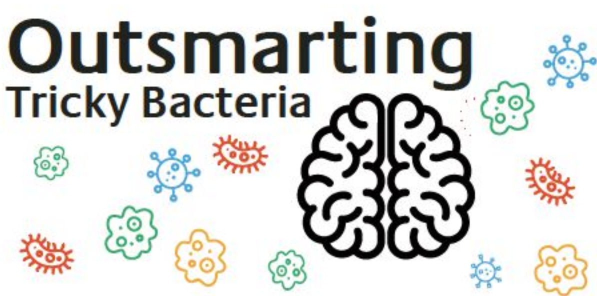
Culprit & Cure?

Yale University researchers are shedding new light on the biological mechanisms involved in asthmatic bronchial spasms, according to a recent story on online news site *Yale Daily News*.

Using a microdevice called a "bronchi on a chip" they discovered that muscle contractions triggered by an allergen in people without asthma initially respond to positive feedback, resulting in more contractions. But eventually the smooth muscle relaxes and the contractions stop. When the microdevice was engineered with cells from people with asthma, the smooth muscle took much longer to relax.

Most interestingly, introducing a second asthmatic trigger at just the right time in the process actually led the smooth muscle to relax. The investigators believe that this finding could open the door to new treatments for the condition. ■

Outsmarting
Tricky Bacteria



Pseudomonas aeruginosa can be deadly for people with cystic fibrosis, but researchers from Stanford University School of Medicine are working on a new vaccine that could help people avoid infection. The interesting thing is, the vaccine isn't designed to fight the bacteria itself, but it does fight certain viruses called phages that enter the bacteria and throw the immune system off track in fighting it.

The researchers explain that normally the immune system mounts a defense against bacteria. But when it senses the involvement of a phage virus, it stops what it's doing and turns its attention to the phage. That allows the bacteria to develop freely.

In this study, the investigators found that the presence of a phage in *P. aeruginosa* reduced the activity of phagocytes — immune cells responsible for fighting bacteria — tenfold. When they tested a vaccine using part of the phage's coat protein in mice, they found bacteria-infected wounds were reduced by half, leading them to conclude that administering antibodies against the same phage protein could be equally effective in reducing the level of *P. aeruginosa*. The study was published in a recent edition of *Science*. ■

Please **Do** Blame the **Mucus**

A new study suggests that abnormally thick mucus and associated inflammation are more to blame for lung damage seen in children with cystic fibrosis (CF) than bacterial infections. The good news is, initiating mucus-thinning therapies in young kids could help avoid the damage.

The findings come from a collaboration between investigators from the University of North Carolina (UNC) and Australia who analyzed lavage fluids from 46 children with CF and compared the results with those from an analysis of lavage fluids from children with asthma and other non-CF conditions.

They found little evidence of bacteria in the young CF patients' lavage fluids — less, in fact, than they found in the non-CF samples — but the CF samples contained more evidence of mucus. The CF mucus was also much more likely to be a more solid "flake" form with a high concentration of proteins called mucins. Areas of the CF lungs where serious damage had not yet occurred still featured an abnormally high concentration of mucins and signs of inflammation, even without strong evidence of infection.

The investigators speculate that mucus secreted by the lungs of kids with CF is never fully cleared due to its abnormal thickness and thus builds up in the airway, creating a low-oxygen condition in airway-lining cells that triggers inflammation, which stimulates more mucus secretion and more inflammation. Scarring and progressive loss of lung function eventually result, and while recurrent infections with dangerous bacteria begin at some point during this process and worsen the disease course, those infections are likely not the earliest drivers of lung damage.

Now the work begins to find a treatment that will effectively dissolve the mucins at the heart of the problem. Two FDA-approved drugs, DNase and N-acetylcysteine, which are used as mucus thinners in CF patients, did not work well in dissolving the flakes. A third compound, dithiothreitol, did work but is too toxic for human use. The UNC researchers are working on an experimental compound called P2062 that can dissolve mucins but it has yet to be tested in humans. The study was published in *Science Translational Medicine*. ■

When **Filters Don't Help**

You would think filtering diesel exhaust using HEPA filters or other methods would produce healthier air to breathe, right? Not so, report researchers publishing in a recent edition of the *American Journal of Respiratory and Critical Care Medicine*. They found out it is just the opposite.

In this cross-over study conducted in the laboratory setting, Canadian investigators exposed 14 participants to air with an allergen alone, air with the allergen plus diesel exhaust, air with the allergen plus filtered diesel exhaust, and air without either diesel exhaust or the allergen. After each exposure, subjects underwent a methacholine challenge, and the researchers also measured their white blood cells. Among the findings:

- The particle-depleted diesel exhaust produced by HEPA filtration and electrostatic precipitation generated higher NO_2 levels than unfiltered diesel exhaust.
- Exposure to filtered diesel exhaust plus the allergen impaired the amount of air the participants could forcibly exhale in one second (FEV_1) more than exposure to the allergen alone and more than exposure to the unfiltered diesel exhaust plus the allergen.
- Increasing levels of white blood cells were associated with declining FEV_1 scores, suggesting that white blood cells play a meaningful role in reducing lung function in the context of these exposures.
- The effects of filtered diesel exhaust on lung function and on white blood cells were more pronounced in those participants who were genetically susceptible to oxidative stress, which occurs when there is an imbalance of free radicals and antioxidants in the body.

"The take-home message," said senior study author Chris Carlsten, MD, MPH, from the University of British Columbia, "is that technologies that remove particulate matter from diesel exhaust cannot be simply assumed to be beneficial to health, especially in susceptible populations."■

Understanding the Cilia

As respiratory therapists know, cilia help protect the lungs and other bodily passages by sweeping out fluids, cells, and microbes. But when they don't work as they should, diseases like primary ciliary dyskinesia can occur. Researchers from Washington University in St. Louis used high-speed video microscopy to analyze a cilia model to determine their mechanical metrics.

After looking at nearly 400 videos, the team found that the most efficient beating of cilia was at its natural length of 10-12 microns, or about one-fifth the width of a human hair. They also found that each individual cilium's beating takes place via a series of bends that begin at its base and extend to the tip. Periodic beating begins when cilia become longer than two to four microns, which means that a critical length is necessary for the cilia to beat.

Another new observation was that the beat frequency in periodically beating cilia is quite consistent over the normal range of cilium length, although it decreases slightly as length increases from four microns to 12 microns.

The investigators believe their work may lead to a better understanding of human mutations that make cilia short and how short cilia affect outcomes for the patient. *Biophysical Journal* recently published the study. ■

Common Virus May Spur CF Progression

In most people, the common herpes virus known as cytomegalovirus is contracted during adolescence and early adulthood and causes no symptoms. However, it can reactivate later in life, and it spreads more quickly when the person is also infected by other bacteria.

New research suggests it is a particularly big problem for people with cystic fibrosis. Canadian investigators who looked at 56 patients with CF referred for a lung transplant found that 30 of them were infected with cytomegalovirus, and those people were referred for lung transplants about eight years earlier than other patients. They also died on average ten years sooner.

Scientists are working on a vaccine for the virus. The study was published in the *European Respiratory Journal*. ■

Caregiving Not as Hard on the Body as Thought

People with chronic respiratory conditions like COPD rely on a system of informal caregivers — most often spouses or children — to maintain their health and quality of life. For years, research has indicated that the stress and strain of serving as an informal caregiver boost levels of inflammation and weakens the immune system, thus putting the caregivers themselves at risk for disease. Johns Hopkins researchers who conducted a meta-analysis of the existing literature on this topic say that's a big exaggeration.

After noticing statistical weaknesses in a handful of recent papers on caregiving and immunity, they reviewed 132 full texts, narrowing them down to 30 original papers for their study. When the team combined the data into a meta-analysis, they found an overall effect size of caregiving on biomarkers of 0.164 standard deviation units.

While the effect was statistically significant, the researchers reported that the association was generally weak and of questionable clinical significance. A standard deviation unit of less than 0.20, noted study author David Roth, MA, PhD, is generally thought to indicate a small effect size. "It's not that we didn't find anything, but it's a whisper of an effect, not nearly as large as what people have been led to believe," he said. *The Gerontologist* published the study earlier this year. ■

Omega-3s May Protect Against Pollution-Triggered Asthma

Could omega-3 fatty acids help kids with asthma triggered by indoor air pollution? According to Johns Hopkins researchers who looked at the topic, the answer may be yes. But omega-6 fatty acids may have the opposite effect.

The study was conducted among 135 children, 97% of whom were African-American and 47% were female. About a third had mild asthma, another third had moderate asthma, and the final third had severe asthma. Diet, daily asthma symptoms, and daily inhaler use were reported via a survey for a week at enrollment and then again for a week at three and six months. Blood samples were collected to assess for changes in markers of inflammation.

During each of the assessment weeks, equipment placed in the participants' homes measured two size ranges of air pollution: particles with diameters of 10 micrometers and smaller and particles with diameters of 2.5 micrometers and smaller. Children who ate foods with more omega-6 fatty acids were more likely to have symptoms, even at the same level of pollution exposure. Conversely, children who ate foods with more omega-3 fatty acids were less likely to have symptoms, even at the same level of air pollution exposure.

The USDA recommends omega-3 levels of 0.9–1.6 grams per day (equivalent to that which is in about a 3-ounce serving of salmon) and omega-6 levels of 10–16 grams per day (equivalent to that in around 3 grams or half a tablespoon of soybean oil, which many fast-food restaurants use to fry their food).

The study appeared in a recent edition of the *American Journal of Respiratory and Critical Care Medicine*.

NICU Ventilation Strategy Falls Short

In a large multi-center trial, researchers led by investigators from Children's Hospital of Pennsylvania have found that the strategy of delivering two sustained inflations to extremely premature infants at birth does not reduce the risk of bronchopulmonary dysplasia (BPD) at 36 weeks postmenstrual age when compared with the standard treatment of intermittent positive pressure ventilation.

The study was spurred by limited research on the topic and conflicting findings from the few studies that have been conducted. The CHP investigators compared the two methods in 18 NICUs in nine countries. Subjects were infants 23–26 weeks gestational age who required resuscitation with inadequate respiratory effort or bradycardia.

Among 460 infant subjects who were randomized, 426 completed the trial. In the sustained inflation group, 137 infants (63.7%) died or survived with BPD, compared to 125 infants (59.2%) in the standard resuscitation group. Death at less than 48 hours of age occurred in 16 infants (7.4%) in the sustained inflation group compared with three infants (1.0%) in the standard resuscitation group. Of 27 secondary efficacy outcomes assessed by 36 weeks' postmenstrual age, 26 showed no significant difference between the groups.

"Unfortunately, this promising therapy seemed to have higher mortality, especially in the smallest, most vulnerable infants," said lead author Haresh Kirpalani, MD, MSc. "Additional research is needed to address how best to treat these infants at delivery, to reduce their risk of extreme side effects of a very early birth." The study was published in *JAMA* earlier this year.

The Downside of Vilifying E-Cigarettes

E-cigarettes have been getting increasingly bad press over the past few years, but most physicians agree that they are still less risky than combustible cigarettes for people who smoke. A new study from U.S. researchers took a closer look at the changing perceptions around e-cigarettes and speculates on how they might be affecting the decision to use them among people who want to quit smoking traditional cigarettes.

Using data from the Tobacco Products and Risk Perceptions Surveys and the Health Information National Trends Surveys to assess perceived harm of e-cigarettes relative to cigarettes among U.S. adults in 2012, 2014, 2015, 2016, and 2017, they found the perception that e-cigarettes were as harmful or more harmful than traditional cigarettes increased markedly from 2012 to 2017.

"Given the demonstration by previous studies that perception of risk plays a critical role in decisions to use tobacco, our results imply that at least some smokers may have been deterred from using or switching to e-cigarettes due to the growing perception that e-cigarettes are equally harmful or more harmful than cigarettes," write the authors in a recent edition of *JAMA Network Open*. "Our results underscore the urgent need for accurate communication of the scientific evidence on the health risks of e-cigarettes and the importance of clearly differentiating the absolute harm from the relative harm of e-cigarettes."

JAMA Network Open is a new online-only open-access general medical journal from the *JAMA Network*. ■

Hormone from Fat Tissue Implicated in Obesity-Related Asthma

A hormone that's released from fat tissue may be behind many cases of obesity-related asthma, report Boston researchers who presented their findings at the Endocrine Society (ENDO) 2019 conference last spring.

Their study measured adipose hormone aP2 levels in the blood and lung fluid of people with and without asthma. When compared to aP2 blood levels in people without asthma, blood levels were 25.4% higher among those who had asthma and met the criteria for obesity or overweight. No significant difference in aP2 levels were seen in normal-weight people with and without asthma.

When the investigators looked at aP2 lung-fluid levels, they found 23% higher levels in those who were obese versus the other study participants.

"These data suggest that aP2 may be an independent risk factor for obesity-related asthma," said co-investigator Gurol Tuncman, MD, PhD, of the Harvard T.H. Chan School of Public Health. "Our studies present an exciting opportunity for clinical translation of anti-aP2 drugs to treat obesity-related asthma." ■

Food Additive tBHQ Linked to Poor Flu Outcomes, Vaccine Response

Common food products like frozen meat, crackers, and fried food contain an additive that's now been linked to poor flu outcomes and a poorer response to the influenza vaccine.

Researchers from Michigan State University have found that *tert*-butylhydroquinone (tBHQ) suppresses the immune response the body mounts when fighting the flu and could reduce the effectiveness of the flu vaccine through its effects on T cells.

"Our studies showed that mice on a tBHQ diet had a weakened immune response to influenza infection," said Robert Freeborn, a fourth-year PhD candidate at the university. "In our mouse model, tBHQ suppressed the function of two types of T cells, helper and killer T cells. Ultimately, this led to more severe symptoms during a subsequent influenza infection." The findings of the study were presented at the 2019 Experimental Biology Meeting in Orlando. ■

OH

HO

tert-butylhydroquinone

Targeting Protein Might Offer Treatment for IPF

Researchers from Cedars-Sinai who studied lung tissue samples from patients with idiopathic pulmonary fibrosis (IPF) have found that invasive fibroblasts secrete high levels of PD-L1, a protein found on normal cells that prevents immune cells from attacking them. This is the same protein that has been associated with cancer growth, and the investigators believe existing anti-cancer therapies that inhibit PD-L1 might have implications for IPF treatment too. In laboratory studies conducted in mice, they found that the severity of the disease could be reduced by using genetic and antibody techniques to inhibit PD-L1.

"Cumulatively, these results identify PD-L1 as a driver of fibroblast invasion in idiopathic pulmonary fibrosis and support PD-L1 as a potential therapeutic target for the condition," said study author Dianhua Jiang, MD, PhD, professor of medicine at Cedars-Sinai. The team is currently working on a Phase 1 clinical trial on a PD-L1 inhibiting drug for IPF. The study was published in a recent edition of *JCI Insight*. ■

Listen Up

ICU clinicians are understandably focused on treating their patients' immediate problems. But if they take more time to actually listen to patients and family members about the issues that landed the patient in the ICU in the first place, they may help patients and families avoid another admission down the road.

That's the key philosophy behind a new model implemented by the ICU team at Rutgers and RWJBarnabas Health System in New Jersey. Clinicians, including all members of the ICU team, are now being instructed to keep their ears open for any information that may impact the patient's case going forward — such as a lack of understanding on how and why to take medications for their chronic health conditions or financial difficulties in affording their drugs. Problems are then referred to a social worker for resolution.

The investigators reported on their success with the program in a recent edition of *Creative Nursing*. ■

CPAP Treatment for OSA = Weight Loss

Here's another good reason to stick with CPAP treatment to give your overweight or obese patients with obstructive sleep apnea (OSA): it might help them lose weight.

To test the effect of CPAP therapy on weight loss, researchers from the University of Arkansas for Medical Sciences evaluated the medical records of 501 obese adults who were treated in a weight loss clinic from January 2014 to August 2017. All patients underwent an intensive 16-week program that included eating a very-low-calorie diet of 800 calories a day, exercise programs, weekly individual counseling, and cognitive behavioral therapy.

Three hundred patients were eligible for the study and were divided into three groups based on their self-reported OSA symptoms: 89 reported no symptoms of OSA and therefore had no OSA treatment; 164 had OSA symptoms but did not receive a CPAP machine; and 47 had OSA symptoms and received treatment with CPAP.

Among patients with self-reported OSA symptoms, those who received concurrent CPAP treatment lost an average of 5.7 pounds more in four months than patients who did not treat their sleep apnea. Overall, the CPAP-treated group lost more than 26.7 pounds on average vs. about 21 pounds for patients who did not treat their OSA symptoms using CPAP. The group without OSA symptoms lost approximately 19 pounds over 16 weeks. The correlation between CPAP treatment and absolute weight loss remained even after the researchers adjusted the findings for beginning weight, age, and sex.

The study was presented at ENDO 19 last March. ■

Pathway Leads to Better Outcomes

An enhanced recovery pathway implemented at Thomas Jefferson University for patients undergoing noninvasive lung surgery has led to more patients going home sooner and with better outcomes.

The pathway calls for education on the benefits of smoking cessation prior to surgery, close monitoring of fluids during surgery, close monitoring of changes after surgery, minimizing the use of opioids and other narcotic drugs, and encouraging patients to resume eating normal food and get back on their feet.

When the investigators analyzed readmission rates for nearly 300 patients who had undergone lung resection surgery at Jefferson between January 2010 and July 2017, they found that patients stayed in the hospital for an average of three to five days after surgery. However, half of the patients went home in just one or two days. When the investigators matched the “average” and “early” groups by symptoms, stage of disease, and other factors they found that patients who were discharged later had 2.3 times higher readmissions rates and more complications, ie, 30% vs. 7%.

The study was published in *Innovations: Technology and Techniques in Cardiothoracic and Vascular Surgery* last spring. ■

Strange But True…

Smart PJs: Researchers have developed pajamas embedded with self-powered sensors that provide unobtrusive and continuous monitoring of heartbeat, breathing, and sleep posture. They believe the garments could one day provide people and clinicians alike with useful information to help improve sleep. The project is being supported by the U.S. Air Force Office of Scientific Research and the David and Lucile Packard Foundation. ■

Spice it up! A natural compound found in chili peppers might help slow the progression of lung cancer, report researchers from Marshall University. In a study of human non-small-cell lung cancer cells, they found capsaicin inhibited invasion, the first step of the metastatic process. What’s more, mice with metastatic cancer who consumed capsaicin showed smaller areas of metastatic cancer cells in the lung compared to mice not receiving the treatment. ■

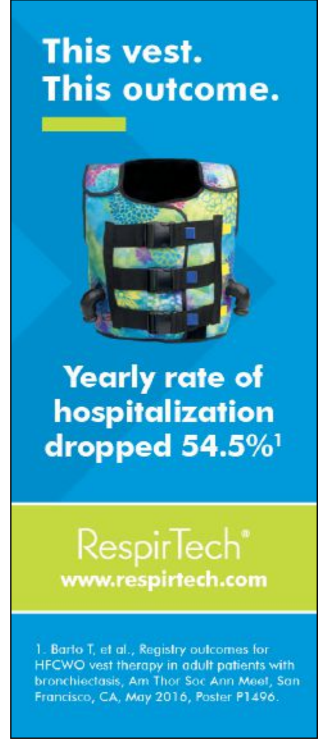
Test prep? A new study out of the Weizmann Institute of Science has found that people who take a deep breath before tackling a visuospatial task are better at completing the task than people who exhale in the same circumstance. The investigators believe their findings might lead to methods to help children and adults with attention and learning disorders. ■

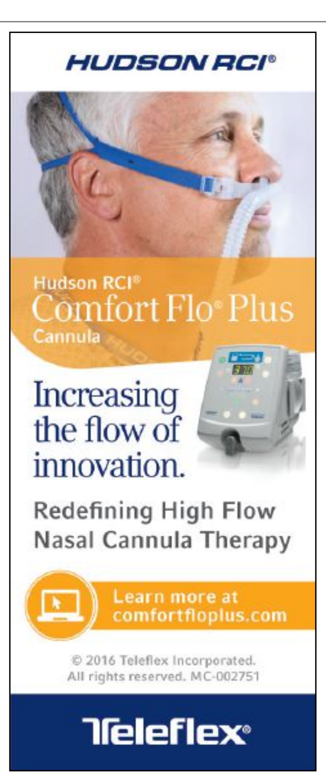
New smoking cessation aide? Sniffing pleasant odors might be a good way to supplement traditional smoking cessation programs. University of Pittsburgh researchers found that smokers who were given pleasant odors to smell while they were denied the ability to smoke a cigarette had significantly fewer tobacco cravings than those who smelled tobacco or were presented with a “no odor” option. ■

Gas detectors: Researchers from Tufts University have developed a special type of thread that can detect different gases. The threads can be woven into clothing used by medical personnel, first responders, the military, and others who need to quickly know the identity of complex gas mixtures. ■

Industry Update

Featuring information on products and equipment from manufacturers





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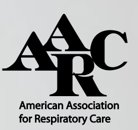

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Calendar of Events

AARC & State Society Programs

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48th Annual Convention and Exhibition
Contact: danielschorrerrt@gmail.com or www.tsrc.org

July 20–22, 2019
Ft. Lauderdale, FL
AARC Summer Forum
Harbor Beach Marriott Resort & Spa
Visit: https://www.aarc.org/aarc-meetings/summer-forum-2019/
Contact: info@aarc.org

July 31–August 2, 2019
Biloxi, MS
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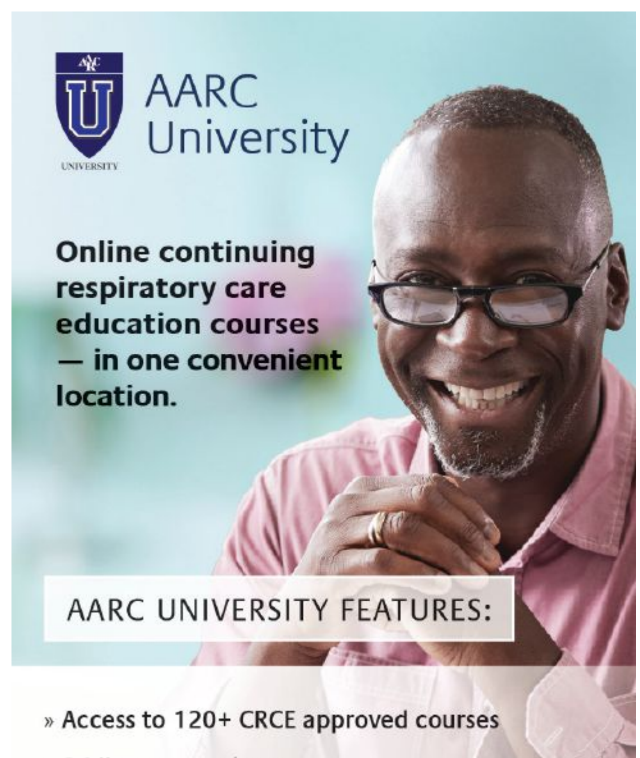

SPUTUM BOWL BOB

by Robert Lamme, RRT, RRT-NPS

The secret to longevity is to keep breathing.
— Sophie Tucker

In the beginning...

Like many others who have reflected on their careers in this column, I too got into the field of inhalation therapy accidentally. I had just finished my first year of college where I was majoring in biology (pre-med), because I had always had a desire to be a doctor. My father told me, if I was going to be a doctor, I should get some practical experience in the hospital, and that he had seen an ad in the newspaper for inhalation therapists at Miami Valley Hospital in Dayton, OH. The only prerequisite was to be a high school graduate, and the ad said training would occur on the job.

The year was 1968. I applied and the rest is history. I absolutely loved what I did. I felt that what I did was very important (i.e., save lives) and a bonus was that the majority of the therapists were around 19 years old, which made it a fun environment. The person who hired me was Robert Dittmar, RRT, who became the AARC president in 1970. He was the first to motivate me to be the best professional that I could be and to be involved with our professional association both at the state and national level.

Of course, this motivation was tempered somewhat by my hourly wage of $1.50 per hour, which was just a little higher than minimum wage in Ohio at that time. That made life in general a challenge. That first year, though, was one of the most rewarding of my life.

about the author...

Bob Lamme currently works for Kettering National Seminars, performing reviews all over the country, and he welcomes his friends and former students to contact him at, naturally, sputumbowlbob@aol.com.

Respiratory care possibly saved my life

After working that first year in inhalation therapy, the Vietnam War called. Because I was no longer a full-time student — I had dropped out of college because I was having so much fun at work — I knew I was about to be drafted into the military.

I chose to enlist in the Navy instead so that I would have some choice over what I was to do. I opted to be a hospital corpsman. I figured that instead of toting a gun and killing people, I might wind up working in a nice, safe hospital helping save people. As it turned out, that was not a sure thing! I found out later on that the Marines had no medical personnel of their own and thus used hospital corpsmen from the Navy on the front lines to help the injured. Those corpsmen had a high mortality rate because, since they were essential in helping soldiers survive, the enemy prized their deaths.

Luckily, I was assigned to a stateside naval hospital, where I quickly observed that the respiratory care being performed (mostly intermittent positive pressure breathing) was being done incorrectly and the cleaning of the equipment was ineffective. After voicing my concerns about it, my superiors realized I was the only one in the hospital who really knew anything about these new treatments. They put me in charge of all respiratory care and educating both nurses and corpsmen about that care. This responsibility started my educational career, which has lasted more than 35 years.

Because the hospital was small, any patient needing mechanical ventilation was transferred to a larger naval hospital. The commanding officer of the hospital asked me if I knew how to manage ventilators and I said “yes”.

A new MA-1 was obtained, and I was able to manage ventilator patients in our hospital. Things went well, and I was content in what I was doing.

Three months later, I got orders from Washington, DC, that I was to go with the Marines to Vietnam. Given everything I had heard about serving as a hospital corpsman with the Marines, and it goes without saying this was not good news. I had not been able to train anyone else to fully manage the ventilator yet, and the commanding officer felt uncomfortable turning this responsibility over to someone else. So he had my orders to Vietnam cancelled. Bless those individuals who lost their lives in battle but, selfishly, I was glad that I did not have to go.

Teaching and my love for the Sputum Bowl

After my four years in the Navy, I returned to Ohio to Miami Valley Hospital and practiced for about 11 years before I was asked to teach in a respiratory program. The year was 1980. I have taught continuously since then — for 39 years. I have been blessed to teach many students who are excellent therapists today.

In that same year, I was also introduced to the AARC Sputum Bowl, which has been a major influence in my life. I was very good at it and won at the state and regional level competitions many times. I won at the national competition in 2000 and 2016. There may be some Sputum Bowlers who were better at it than me, but none loved the game more than I did or played in more games than I have. As of now, I have played for four different states — Ohio, Pennsylvania, Arizona, and Florida.

Bob proudly displays his Sputum Bowl trophies.

I have had many great teammates over the years, and I have developed many friendships with opposing team members as well. I am happy that the Student Sputum Bowl is still going strong!

The big change

After being elected president of the Ohio Society for Respiratory Care in 1994, I was then elected to represent Ohio in the AARC House of Delegates (HOD). My first HOD meeting was in Phoenix in July 1997. I met a young lady on the first day who was representing Pennsylvania as their delegate, and I knew she was The One.

Exactly one year later at the meeting in Naples, FL, I stood and addressed the HOD during the open microphone time period. I was crying like Niagara Falls as I proposed to my wife Yvonne, and she said "yes." I often tell young therapists that if you are looking for that perfect spouse, volunteer in your state or local respiratory society. Who knows what might happen?

Still loving it

After 51 years, I am still teaching and loving it, and I plan on doing so for as long as my health permits. I thank everyone who has crossed my path over my career who has been supportive and has lent me a hand. You know who you are. For those therapists I have never met, all I can say is: Be the best you can be. ■

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