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AARC ANNUAL REPORT

WE'VE GOT YOU COVERED

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Always ready to help, the AARC staff works hard to help provide a great membership experience for you. Let's meet a few staff members:

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Always ready to help, the AARC staff works hard to help provide a great membership experience for you. Let's meet a few staff members:

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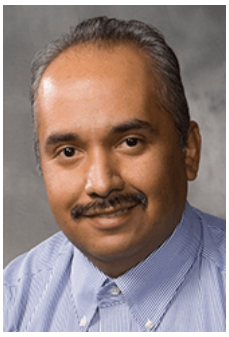

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AARC 2019 Annual Report

We've Got You Covered

by Debbie Bunch

When 2019 began, little did anyone dream that by the end of the year a new and extremely dangerous virus would be poised to change our world as we knew it. But come December, that is what was about to happen. The months since SARS-CoV-2 entered the national lexicon have been filled with challenges for everyone on the planet, and health care professionals have experienced more than their fair share. As key providers in the battle, respiratory therapists have been front and center, and the AARC is proud of your hard work and the sacrifices you have made to serve your patients during this unprecedented time.

But this Annual Report isn't about what's happened since COVID-19 came to our shores. It is about what the Association did in 2019 to advance the art and science of respiratory care. The initiatives outlined in this article may not address the pandemic directly, but taken as a whole they show how the AARC worked in 2019, as it does every year, to ensure respiratory therapists have the support and representation they need to make it through any crisis, big or small.

A solid framework

A key part of that support came in the form of our ongoing efforts to ensure government officials are aware of the vital role that respiratory therapists play in the health care system. The COVID-19 pandemic has certainly made that clear to a great many more people over the past few months, but the AARC's year-in, year-out mission to educate members of Congress about the profession has provided a solid framework upon which to grow.

Our annual trek up Capitol Hill took place on April 9 and saw participation from more than 122 members of the Association's Political Advocacy Contact Team (PACT). These volunteers represented 44 states and together took 326 meetings with their Senators, Representatives, and members of their legislative staffs. While these PACT members discussed a range of issues during these visits, a couple of topics took precedence.

First, they asked their members of Congress to support a three-year pilot project called the BREATHE Act that would test the value of using RTs to provide health education and other services via telehealth to patients with COPD.

Second, they spoke with their representatives about the need to ensure patient access to liquid oxygen during Medicare's 18–24-month suspension of the durable medical equipment competitive bidding program. PACT members asked them to go on record with their support by signing a letter to the Medicare administrator asking the Medicare program to monitor patient access to liquid oxygen for those whose lives depend on it and report its findings to Congress.

PACT members also voiced opposition to the inclusion of ventilators under competitive bidding, citing the ill effects it could have on patients. That opposition paid off in the fall when the Safeguarding Medicare Access to Respiratory Therapy (SMART) Act of 2019 was introduced into Congress. The bill called for a delay in the inclusion of ventilators in the Medicare competitive bidding program for five years, along with the establishment of a technical expert panel to update the national coverage policies for home mechanical ventilator devices so that they reflect technological advancements and peer-reviewed science. The Centers for Medicare and Medicaid Services acted on this issue in April 2020 by removing ventilators from the competitive bidding round scheduled to begin on January 1, 2021.

Clearly, the collective voice of our PACT was heard. But the in-person visits made by PACT members were greatly enhanced by the Virtual Lobby Campaign that preceded the April 9 trip. Over a two-week period leading up to Lobby Day, more than 11,000 RTs across the country sent in excess of 44,600 messages to their members of Congress in support of the issues the PACT members would present when they sat down with their representatives on April 9.

The virtual event in the spring was repeated in August with a Summer Lobby Blast that kicked off on the 14th. By then, the BREATHE Act had been introduced into the House of Representatives, and RTs were asked to write their members of Congress asking them to co-sponsor the bill in the House and add BREATHE Act provisions into another bill called the CONNECT for Health Act in the Senate. These efforts to include RTs in telehealth legislation helped lay the groundwork for what the Association hopes will eventually be the addition of therapists to laws governing telehealth, a new but now rapidly growing part of health care due to the COVID-19 pandemic.

Prioritizing patients

Patient care remained at the top of the AARC agenda in 2019 as well, with initiatives aimed at ensuring respiratory therapists would have access to quality information on best practices in the field through our ongoing webcast program, our online educational offerings, and our annual Congress and Summer Forum. Our list of clinical practice guidelines grew, too. In 2019, the Board of Directors approved funding for the development of guidelines on adult tracheostomy, pediatric tracheostomy, adult oxygen, pediatric oxygen, capillary blood gases in neonates, and endotracheal suctioning.

We also continued our long-standing mission of networking directly with patients and patient organizations. The Association worked closely with groups such as the COPD Foundation, the Alpha-1 Foundation, the Cystic Fibrosis Foundation, the Allergy & Asthma Network, the Pulmonary Fibrosis Foundation, the PHAware Global Association, the ALS Association, the Dorney-Koppel Foundation, and more to gain a better understanding of the needs and desires of patients afflicted with lung conditions. Our annual Respiratory Patient Advocacy Summit took place the day before the AARC Congress kicked off in New Orleans and drew attendance from leading patient advocates and others who gathered with RTs to discuss key issues of concern.

The Summit also saw the presentation of the third annual National Patient Advocacy Award, which is jointly sponsored by the AARC and the FACES Foundation to recognize a member of the respiratory care profession who has gone above and beyond in advocating for respiratory patients in their community. Our 2019 recipient was Kayelene Horne, RRT, RRT-NPS, who was honored for her work with pediatric asthma patients at the James Connie Maynard Children's Hospital at Vidant Medical Center in Greenville, NC. Other finalists were Jeff Cain, RRT, and Maureen Lintner, RRT.

The Association went to bat for issues important to patients and their caregivers on numerous additional fronts in 2019, too. These initiatives included —

- Our continuing partnership with the CDC Tips From Former Smokers campaign. The Tips campaign features a series of public service announcements featuring former smokers who share personal stories about the ways smoking has impacted their health, along with a wealth of resources health care professionals can use to counsel patients about tobacco cessation.
- Our involvement in the COPD National Action Plan sponsored by the National Heart, Lung, and Blood Institute (NHLBI). The AARC has been an active partner in the plan since its inception, and last year the Association participated in a meeting of key stakeholders convened by the NHLBI to discuss progress being made to implement measures in the plan throughout the country.
- Our support for Drew's Movement, a campaign started to honor the memory of Drew Hughes, who died at age 13 when his endotracheal tube was accidentally dislodged during transport to a level I trauma center following a skateboarding accident. The Society for Airway Management and the Patient Safety Movement Foundation are leading a multi-organization effort aimed at spreading the word about the best practices that are needed to make deaths like Drew's a thing of the past. The AARC is a key member of their Coalition for Unplanned Extubation Awareness & Prevention.
- Our support for the FDA's announcement calling for the removal of flavored e-cigarettes from the market. The Association urged the federal agency to act quickly to ensure the health of America's youth, particularly in light of recent reports linking vaping to serious respiratory illnesses and death.
- Our involvement in the O2VERLAP Project, in which we teamed up with the COPD Foundation and the American Sleep Apnea Association on a research grant to study outcomes among patients suffering from both COPD and sleep apnea who are being treated with supplemental oxygen. Each patient in the study was assigned an RT coach to provide educational assistance and guidance with their treatment. Publication of the study is pending.
- Our partnership with the Allergy & Asthma Network (AAN) on an online survey of their members designed to gauge their experiences with allergic reactions and asthma flares during air travel. Fifty-five percent of the respondents said they or a family member had experienced an allergic reaction or asthma flare during air travel, and 65% believed the problem was caused by exposure to an allergen in the aircraft. The AARC is now working with the AAN to share these findings with patients, families, and the airlines themselves.

Upping our game

Planning for the profession's future continued in 2019 with the publication of a new Position Statement titled "Entry to Respiratory Therapy Practice 2030." Months in the making, the statement calls for all RTs entering the field in 2030 and beyond to hold a bachelor's degree in respiratory therapy or a health sciences degree with a concentration in respiratory therapy, plus the RRT credential.

Evidence-based justifications for the statement, disseminated in an accompanying Issues Paper, centered around the need to improve critical thinking skills and decision-making abilities among the next generation of respiratory therapists.

"The complexity, volume, and depth of knowledge and skills needed to deliver high-quality, safe, and effective respiratory therapy has grown exponentially in the last two decades," notes the paper. "With the use of validated assessment tools such as the Watson-Glaser Critical Thinking Appraisal and the Health Sciences Reasoning Test, studies have shown that students with baccalaureate preparation have a higher level of critical thinking skills than their associate degree-prepared counterparts."

These skills will be critical to advancing the profession in a future driven by data and collaboration.

Says the paper, "With expanding expectations to serve as cardiopulmonary care managers, work as members of interprofessional clinical teams, make decisions based on changing data-driven evidence, and be competent across multiple health care venues, it is essential for respiratory therapists to enhance their critical thinking and problem solving aptitudes in order to safely and effectively provide patient care."

The paper says achievement of the RRT credential "will confirm that program graduates have attained the critical thinking and decision-making skills required of a respiratory therapist" and that, moving forward, "the option to enter practice based on achieving the NBRC's Certified Respiratory Therapist (CRT) credential will not be sufficient and therefore obsolete." The paper also encourages states to work toward an RRT entry for licensure and notes several that states have already achieved this goal.

Importantly for current RTs, the paper emphasizes that the AARC will support grandfather clauses for therapists who are already credentialed and hold an active license in good standing to practice prior to the implementation of the proposed requirements.

Other items of note

Recognizing the importance our members place on raising awareness of the profession, we also launched a new website called Be an RT in the fall. Aimed at recruiting new people into the field, the site offers a wealth of information for prospective students and RT educational programs alike in the form of downloadable flyers, handouts, presentations, and videos.

New and updated educational offerings included a revised version of the Leadership Institute, which offers tracks in management, education, and research. The program was re-released not only in the three specialty track bundles but also as individual courses for those who wish to focus on a specific concept.

The Association made changes to a couple of existing programs in 2019 as well. New and updated eligibility requirements for the Fellow of the American Association for Respiratory Care (FAARC) program, covering credentialing and licensure/registration for U.S. and international RTs, were implemented along with some other housekeeping changes, and the Association added Platinum, Gold, and Silver categories to the Corporate Partner program to recognize various levels of commitment among the partners.

The AARC activated its Disaster Relief Fund for members in nine states affected by severe weather events in April and another two that were affected by flooding and severe storms in May. The fund is aimed at helping members who suffer property damage during natural disasters get back on their feet and is funded by the AARC and through generous donations from the membership. In 2019, the AARC distributed $3,115.73 to AARC members requesting assistance (see Figure 1).

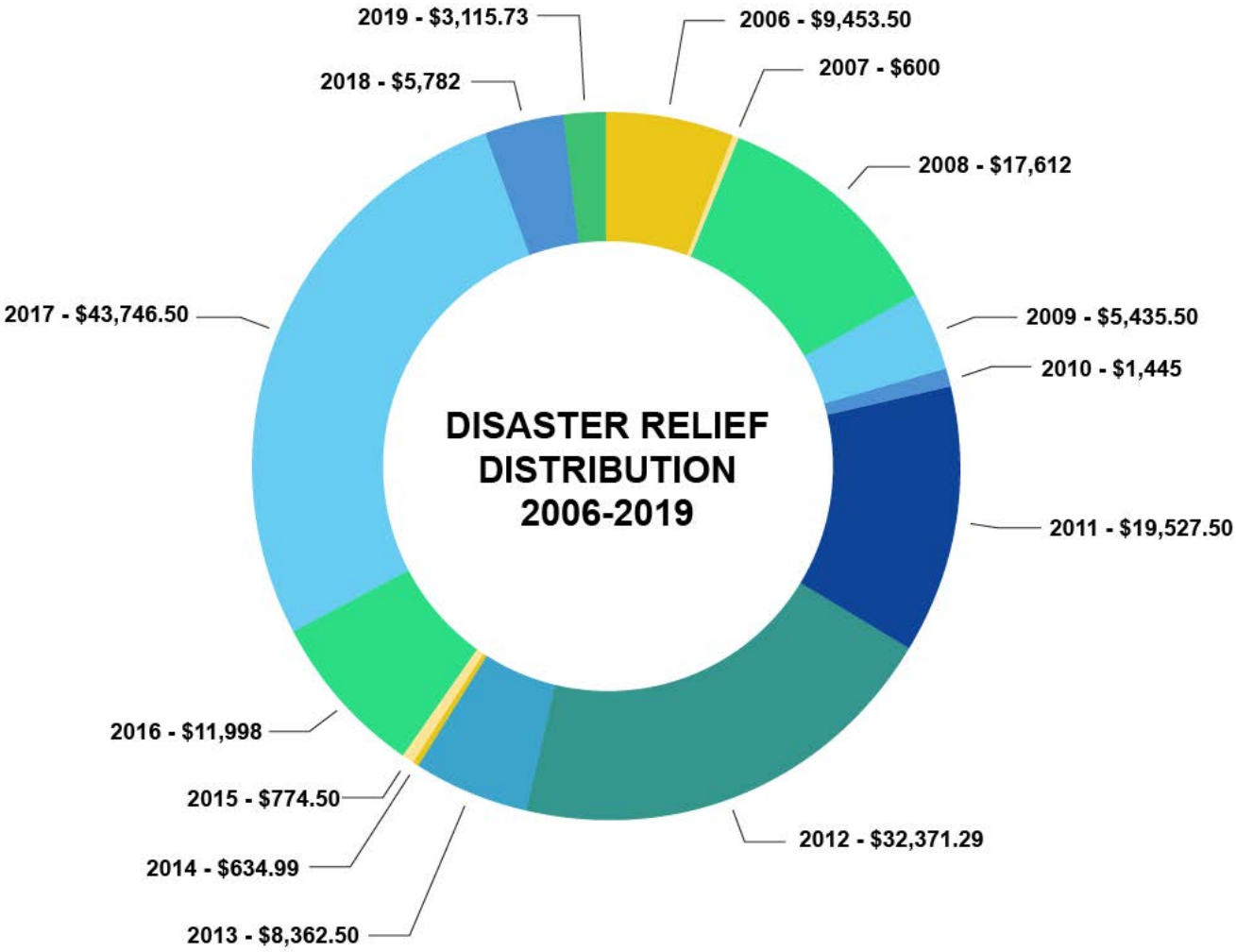


Figure 1. Disaster Relief Fund Distribution

And last but not least, 2019 marked the end of one era and the beginning of another for the AARC's news and features magazine. *AARC Times* published its final print edition in December, and the Association marked the milestone with a special "front and back" issue featuring both the December 2019 issue and the inaugural July 1977 issue. A Commemorative Issue printed on high-quality paper went on sale as well for members who wanted to have a coffee table version to preserve this piece of AARC history. It all segued nicely with the launch of our online-only magazine in January.

2019 AARC Annual Financial Report

In February 2020, the AARC engaged the public accounting firm Howard, LLP, to conduct an audit of its financial operations. It issued an unqualified opinion stating that the AARC's financial statements were presented fairly and conform to generally accepted accounting principles.

In 2019, the AARC's total revenues (excluding investments) were $9,821,246, and total expenses were $9,754,483. Figures 2 and 3 highlight the sources of last year's revenues and expenses. Net assets at the end of 2019 were $33,357,474.

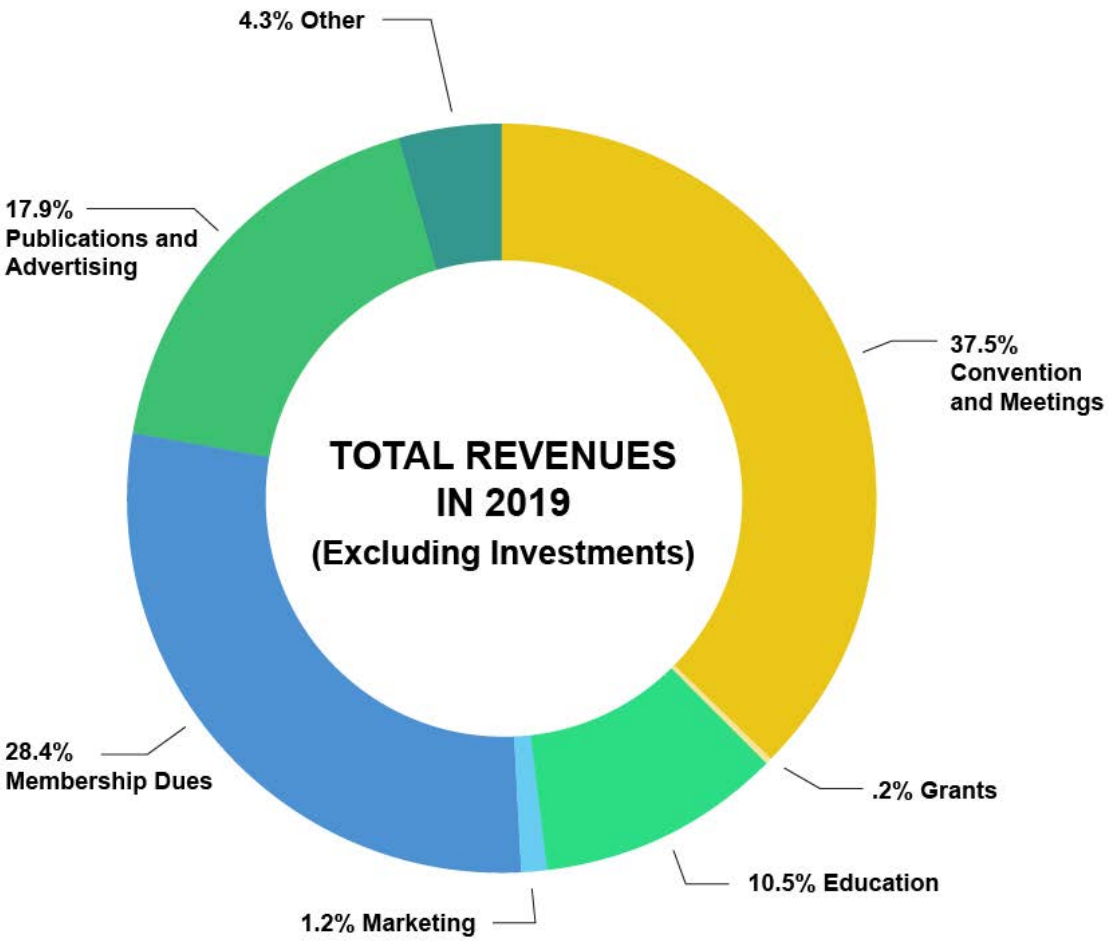


Figure 2. Total Revenues in 2019
Excluding Investments)

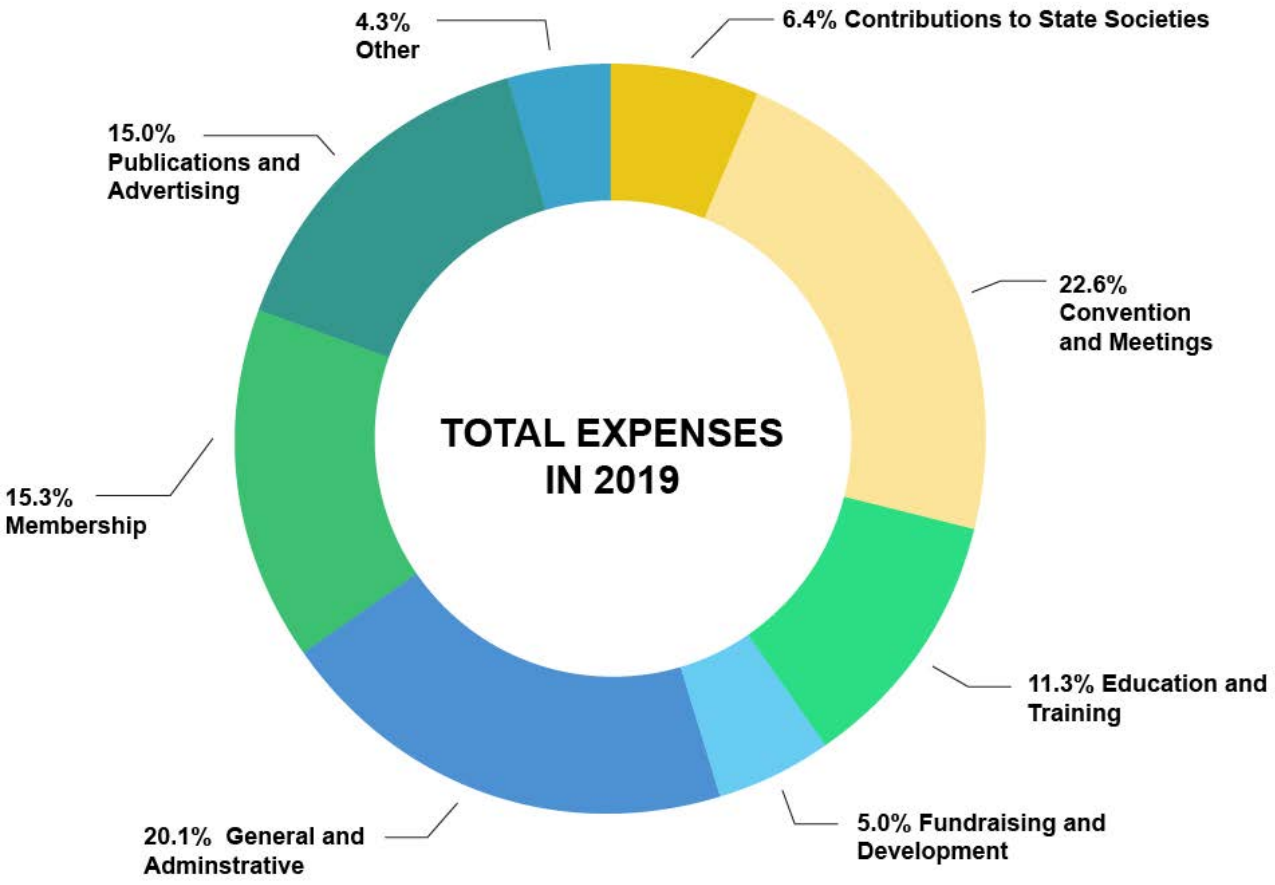


Figure 3. Total Expenses in 2019

In for the long haul

When we look back on 2019, we will likely remember it as the year that marked the very beginning of the biggest pandemic the world has seen since the 1918 Spanish flu. Depending on where COVID-19 takes us in the second half of 2020, we may also remember it as the last year of normalcy in the true sense of the word. But whatever happens, respiratory therapists can rest assured the AARC will have their backs. The Association has been working on your behalf since 1947, and not even a global pandemic will change that.

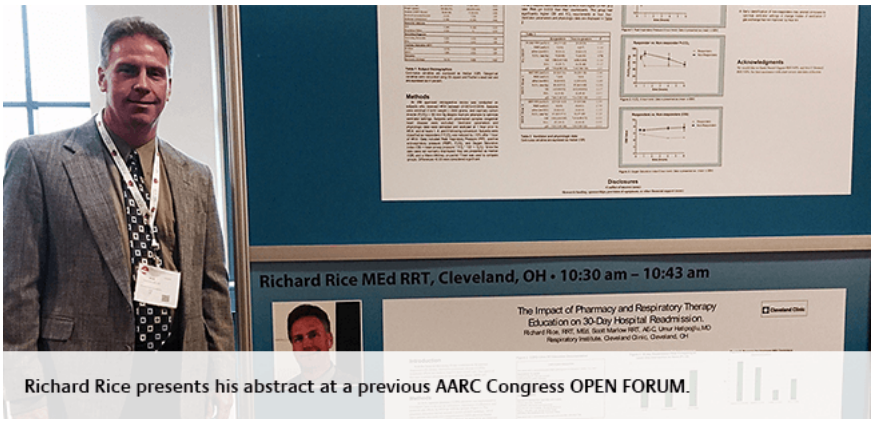
We Are AARC

Association members move the profession forward

by Debbie Bunch

AARC members work tirelessly for their patients every day of the week, and in these troubling times of COVID-19, their heroism on the job is even more remarkable. But people who belong to the Association stand out in many other ways as well, and the stories behind the 14 members in this month's "We Are AARC" article illustrate just how diverse their efforts are in advancing the profession. From public health to clinical research to education to military service and more, they move respiratory therapy forward, ensuring its vital role in caring for patients.

1. As part of a team at the Respiratory Institute at the Cleveland Clinic, **Richard Rice, MEd, RRT,** coauthored a paper in the *Journal of Telemedicine and Telecare* that outlined the benefit of electronic inhaler monitoring coupled with disease management for patients with COPD. "RTs take great care of the hospitalized patient but sometimes are not aware of the many issues these patients may face post-discharge," he said. "Electronic inhaler monitoring helps us gain insight into these issues, and we can play a valuable role in improving this continuum of care." **READ THE STORY**



Richard Rice presents his abstract at a previous AARC Congress OPEN FORUM.

2. **Gabrielle Davis, MPH, RRT, RRT-ACCS, RRT-NPS, CTTS, CHES**, was the go-to person for an interview on her local TV station about an alarming trend in serious illness in young people who vape,

telling the reporter, “What’s really sad is that Idaho went down in the rate of people who use tobacco and went up in vaping.” She went on to show how vaping devices that look like an ordinary wrist watch or inhaler or even sweatshirt can be used by teens to vape without their elders knowing. Her best advice: “If you have a child or if you know someone who uses, don’t stigmatize them . . . get them some help.” **WATCH THE VIDEO**

3. Medical missions around the world bring much-needed care and education to people in need. In many places, that means introducing the profession of respiratory care. **Becky Byrd, RRT, RRT-NPS**, traveled to Addis Ababa in Ethiopia to support neonatal ICU education and the respiratory care program at St. Paul’s Hospital Millennium Medical College. “The biggest takeaway of my trip to Addis Ababa was the amazement — and for some, joy — of the nurses after they learned what a respiratory therapist was and all the RT job entails,” Byrd said. “I am absolutely honored to be able to help introduce the practice of respiratory care into the country of Ethiopia.” **READ THE STORY**

L to R: Becky Byrd, RRT, RRT-NPS, Karen Sawyer, RRT, RRT-NPS, Gashaw Tekele, RRT, and Phillip Platt, NNP-BC at St. Paul’s Hospital Millennium Medical College (SPHMMC).

4. “Being in health care is something that allows you to take care of others,” said **Pablo Bracho, MPA, RRT**, in a new “Be An RT” video. To help grow the profession, Pablo, along with **Daniel Bloedorn, BS, RRT, Diane Baltzell, BA, RRT, Esther Castilleja, BSRT, RRT, Anthony Ammendola, BSRT, RRT, Matt Nolan, MBA, RRT, Araceli Solis, BS, RRT, Kyle Koenig, RRT, Kristen Hood, BSRC, RRT,** and **Jenna Mazanec, MBA, RRT,** stepped up to share their experiences and educate potential RTs through our **Be An RT website**. Their video discussions range from what RTs do, why they do it, and what the profession can offer for your personal career journey. Check out the site and watch the videos from your fellow AARC members. **SEE THE VIDEOS**

5. Ensuring that RT students are truly prepared for practice has lead the AARC and other RT organizations to call for a greater number of bachelor degree programs, and educators are doing their part to make that happen. **Joy Hughes, MS, RRT, RRT-ACCS, RRT-NPS**, is one of them. She recently became the founding director of the new bachelor of science in respiratory therapy program at Marywood University in Pennsylvania. "Health professions are growing and in demand more than ever," said Hughes. "Respiratory therapy is a fast-growing, fast-paced, and diverse profession." **READ THE STORY**

6. **Kevin McQueen, MHA, RRT, RRT-ACCS, CPPS, CM**, provided a lecture on vaping during Grand Rounds at his hospital, and the house was packed. His marketing department took notice and asked him if he'd be willing to be interviewed for a segment on vaping to be aired on a local TV station. That one interview mushroomed into additional interviews with all the local channels and then segued into presentations at local schools. "RTs have extensive training in respiratory care and are seen as

experts in this area," said McQueen. "When an RT gets up in front of people about the known and unknown long-term effects of vaping, people trust what we are saying." **READ THE STORY**

Kevin McQueen speaking to firefighters at the Manitou Springs, CO Community presentation.

7. CPR is a vital skill for any RT, but few have had to put it into operation out in the community as soon as RT student Sam Vang did. When his dad stopped breathing one night at about 11 p.m. and his mom started screaming for help, it was time for him to jump into action. "After finding out he didn't have a pulse I remember thinking that the only thing I could do for my dad in that moment was to stay calm and do what I had to do," said the first-year student at Saint Paul College in Minnesota. His dad survived. "The doctors said that his brain didn't suffer any damage because I had immediately started CPR," said Vang. "I'm thankful to my professor, Dr. Joseph Buhain, for teaching us the correct CPR technique!" **READ THE STORY**

RT Student Sam Vang, left, put his new RT skills to work saving his dad's life earlier this year.

8. **Diamond Tildon, RRT**, learned about the Student Mentorship Program offered by the AARC House of Delegates from her respiratory care professor in Washington State<<QUERY: is this meant to be a university or college, or just the state?>> and decided to apply. According to Tildon, it was a defining moment in her journey as an RT. "This opportunity opened the door, igniting so much excitement for my career," she said. "I had the chance to network with legends in our field, meet students from around the U.S., and build relationships that are still strong today." **READ THE STORY**

Diamond Tildon at the AARC Congress

9. As just one of two respiratory therapists on a deployment to Kandahar, Afghanistan, **U.S. Navy Corpsman HM2 Aaron Hamblin** assisted with more than 150 emergency cases, including 30 requiring emergency intubation and 15 involving bronchoscopies. He also took part in transports and transfers to flight teams. "Being a military RT out in the field, we fall under different codes, and with the assistance of our doctors we are exposed to things that we get to practice and learn that we may never get a chance to as a civilian," he said. "We saw everything from traumatic amputations and severe burns to skin degloving and much more." **READ THE STORY**

Serving as an RT in the Navy has exposed Aaron Hamblin (far left) to many different areas of care.

10. **Kayelene Horne, RRT, RRT-NPS**, received the third annual National Patient Advocacy Award, presented by the AARC and The FACES Foundation at the National Respiratory Patient Advocacy Summit, for her work with pediatric asthma patients in Greenville, NC. The award recognizes those RTs who go above and beyond to ensure their patients receive not just the care they need, but the additional services that often play a significant role in improving their quality of life. According to FACES Foundation founder Sharman Lamka, "The respiratory therapist is with us from the day we're born to the day we die and all of our breathing challenges in between. They are champions of patient/family-centered respiratory care." **READ THE STORY**

The National Respiratory Patient Advocacy Award went to Kayelene Horne, RRT, RRT-NPS (on right), of James Connie Maynard Children's Hospital at Vidant Medical Center in Greenville, NC.

11. When the AARC Education Section decided to sponsor a video contest for respiratory therapy students, students from Laurel Technical Institute rose to the challenge and won first place for their efforts. In their video, "What Do You Make?", **Megan May, Allison Pitts, Jaclyn Busin, Katelynn Caldwell, Rebecca Ewing, Teirra Ferris, Bailie Pago, Breanna Schlatter, and Amber Tolnar** zeroed in on all the ways RTs make a difference, from educating and consoling the new mom fearful for the fate of her newborn in the neonatal ICU to always being there for the older patient and his family who need caring reassurance during a serious illness. **WATCH THE VIDEO**


Student Video Winners (From Left to Right) Back row: Teirra Ferris, Rebecca Ewing, Katelyn Caldwell, Allison Pitts; Middle row: Jaclyn Busin, Amber Tolnar, Bailie Pago; Front row: Megan May and Breanna Schlatter

12. **Jessica Overgoner, RRT**, is using the CoARC research grant she received at the AARC Summer Forum to study a high-flow nasal cannula (HFNC) titration protocol implemented by RTs and nurses at Dell Children's Medical Center of Central Texas. The masters of respiratory care student at Texas State University is comparing the HFNC titration protocol to usual care. "The pediatric population requires specialized care, and it is important to have evidence to support the care given to this vulnerable group," said Overgoner. **READ THE STORY**

13. **Wade Veneman, RRT**, took part in a 17-month project at his hospital in California aimed at improving the implementation of the ABCDEF bundle in the ICU. The study looked at outcomes for an ICU liberation team called SMART (Sedation, Mobilization, Assessment Rounding Team), finding significant improvements following its implementation. Veneman, who presented the study at the Critical Care Congress, emphasizes the importance of perseverance when implementing new programs. "It can be particularly difficult in the face of critical care providers who may be skeptical of new initiatives," he said. "But this is something we feel we're going to keep for a long time." **READ THE STORY**

14. Respiratory care needs a constant influx of new students, and career days like the one **Matt McNally, RRT**, attended in New Hampshire can help draw in prospective students. It was his second year volunteering for the career day, and he brought in a mannequin, a breathing monitor, and a set of pig lungs to help him show the students what respiratory therapists do on the job. "Unlike nursing, people don't generally hear about respiratory therapists until they need one," said McNally. **READ THE STORY**

Matthew McNally, RRT, leads a demonstration at a local middle/high school career week event.

These AARC members are to be congratulated for adding value to their profession. But we know they are mirrored by thousands of other members across the country and around the world who rise to the occasion every day at work. AARC members and RTs all over dedicate themselves to provide the best possible care to their patients. They also serve as the lung health experts that their hospitals and their communities need to meet current and future challenges related to respiratory care. With the AARC behind them all the way, they have the wind at their backs, and we can't wait to see where it takes them next.

The Learning Lifestyle

AARC members share their take on lifelong learning and why it matters in their careers

by Debbie Bunch

For most health care professionals — respiratory therapists included — continuing education is a must. They must engage in continuing education to meet their state licensure requirements. But for a significant number of clinicians, the need to meet licensure requirements evolved into something more. These professionals have made a commitment to lifelong learning that not only exceeds expectations but became a way of life that they would find hard to abandon.

What makes RTs decide to forge ahead, even after they've checked off the number of Continuing Education Units they must earn to keep working in their states? Most say it goes far beyond the desire to advance their careers.

Above and beyond

Kim Bennion, MsHS, RRT, CHC, defines lifelong learning as the acquisition of knowledge through experience, self-study, and research that goes beyond the learning that is required.

"It isn't always recognized by specific degree attainment either," said the administrative director of respiratory care and compliance senior consultant at Intermountain Healthcare in Salt Lake City, UT. "It's an internal drive to do more, to experience more, and to share what you have learned with others."

While lifelong learners certainly put themselves on the fast track to promotion, she sees the practice more as something that is fundamental to the behavior of health care professionals who genuinely want to enhance the care their patients receive. In this era of rapid-fire changes, she believes that's essential.

"When I consider some of the health care practices we thought were 'best practice' when I entered the field, I sometimes shudder," said Bennion, who also serves as chair of the AARC's Management Section. "Only by questioning the norm, and studying and analyzing outcomes as well as published studies, do we really find what current best practice is."

She believes changes in technology, new medications, and creative innovations demand lifelong learning so that clinicians can remain at the top of their game.

“If we are not continually learning and sharing, how will we ever be considered experts in our field?” she asked.

Learn something new every day

To Georgianna Sergakis, PhD, RRT, FAARC, an associate professor of respiratory care at The Ohio State University in Columbus, OH, and chair of the AARC’s Education Section, lifelong learning and the respiratory therapist are joined at the hip.

“Lifelong learning is essential in order to be a professional in respiratory therapy,” she said. “The field is constantly evolving, and the evidence-base that drives what we do — or should do — is always producing content for the lifelong learner.”

Indeed, she considers lifelong learning to be something that should occur daily, as therapists go about their typical activities on the job.

“I try to learn something new every day, whether that is something related to respiratory therapy or to becoming a better human,” Dr. Sergakis said. “We should always thirst to learn more.”

It begins with the realization that there really is more out there to learn and is furthered by the ability to dig in to discover it.

“Lifelong learners are those who readily admit that they do not know it all,” she said. “They know how to find the answer and have a drive to continue to add to their current knowledge.”

Pursue best practices

As the educational coordinator and wellness champion in the respiratory care services department at Lehigh Valley Health Network in Allentown, PA, Kenneth Miller, MEd, MSRT, RRT, RRT-ACCS, RRT-NPS, AE-C, FAARC, has a vested interest in promoting the concept of lifelong learning, and he does his best to make sure the RTs in his department have ample opportunity to engage in it.

“I have always attempted to utilize evidence-base interventions for my patients and have strived to educate all staff in the best practice of caring for our patients,” Miller said. “The best example of this is the implementation of lung-protective ventilator strategies for all our mechanically ventilated patients and daily liberation assessment.”

He believes best practice evolves most readily when every answer generates another question aimed at fostering the ongoing development of clinical management technology and the ideology to optimize patient care and minimize the risks of iatrogenic induced injury. Attending conferences, reading peer-reviewed journals, and participating in professional chat forums are all good ways to keep the momentum going.

"Moving from the ranks of staff therapist, clinical coordinator, and the past 25 years as educational coordinator, it's been a critical theme throughout my career," Miller said. "The stagnation of learning is very detrimental both to one's career and to patient care."

Keep up and stay current

David Wolfe, RRT, RRT-SDS, RPSGT, is another hospital-based educator who firmly believes lifelong learning is essential to the well-being of RTs and their patients.

"There are endless opportunities for lifelong learning," said Wolfe, who works at Crouse Health in Syracuse, NY. "The information I teach to staff is brought to patients by them."

Wolfe starts by making sure he is keeping up with the literature himself.

"Whether it's a new article on ventilator-induced lung injury, pediatric advanced life support guidelines, or obstructive sleep apnea therapy, this material is distributed to staff the next time the subject is taught," Wolfe said.

Wolfe credits lifelong learning with helping him to get where he is today.

"If it wasn't for continuing education, I would be stuck in the 1990s, educating with outdated material," he said. "I believe lifelong learning has helped to advance my career as an educator."

Maintain interest

Learning is at the heart of everything Terry Forrette, MHS, RRT, FAARC, values in his career. An adjunct associate professor in the department of cardiopulmonary science at the Louisiana State University Health Science Center in New Orleans, he contributes his expertise to rounds in the trauma ICU and says it's a rare day when he doesn't come away with a bit of information he didn't have before.

"It could be about a surgical procedure, a new drug, or a new method to assess my patients," Forrette said. "My learning allows me to participate in discussions, and also order new and appropriate therapies for our patients."

He believes his quest for knowledge helps him maintain a high level of interest in the profession and stimulates him to consider new and possibly better options for the patients who fall under his care.

Enhance patient care

In a career that has spanned more than three decades now, Marlyce Campbell, CRT, has found multiple ways to engage in lifelong learning, from reading journal articles, to working with willing physicians, to serving on committees dealing with everything from hospice to ethics to emergency medical services. While she is now director of respiratory care and the sleep lab at Trego County Lemke Memorial Hospital in Wakeeney, KS, she believes her quest for lifelong learning has made the biggest impact on her patient care abilities.

"Over the years I have learned how to approach the patient and family in a caring way. I let them know the choices and the consequences of those choices," Campbell said.

She is a strong believer in empowering patients and helping them understand their conditions — even if that means accepting that the end of life is approaching.

"I have been told by several families that I was a big help in the dying process of a loved one," Campbell said. "You learn over time that a lot of the patients and family are afraid of the unknown. Once they are given the information and get questions answered, they are better prepared — it really doesn't take much time to do the little things that make a big, and even a huge, difference in someone's life."

Appreciate lifelong learning

Madison Fratzke, BSRT, RRT, RRT-ACCS, has been in the profession for about a decade now, and during that time she has come to appreciate the value of lifelong learning, too. To her, it's the commitment all RTs make to ensuring their patients receive world-class care.

"I continue to engage in lifelong learning through attending conferences, reading publications, writing articles, lecturing, and by having earned the specialty credential in adult critical care," says the RT at the University of Virginia Medical Center in Charlottesville.

Fratzke believes these activities prepared her to take better care of her patients and to take on new opportunities in her career.

"I carefully evaluate and question the information I receive so that I can fully understand the reasoning, the clinical application, and the relevant patient population," she said. "New knowledge helps improve the care my patients receive because it ensures my practice is up to date."

Worldwide network

Clearly, lifelong learning can take many forms. But most RTs will admit that it can't all happen on the job. At some point, therapists must try to read journal articles, attend educational programs, and reach beyond their local community of interest to find the kind of information they'll need to remain on the cutting edge of the profession.

AARC President Karen Schell, DHSC, RRT, RRT-NPS, RRT-SDS, RPSGT, RPFT, CTTS, AE-C, and President-elect Sheri Tooley, BSRT, RRT, RRT-NPS, CPFT, AE-C, FAARC, believe the AARC is a good place to find those resources.

"The AARC provides many lifelong learning opportunities for respiratory therapists," said Dr. Schell. "Take advantage of them. Share them with others."

She believes these resources — which range from the **AARC International Congress** to **free monthly webcasts** on the hottest topics in the profession — can help therapists learn more about the best practices that will allow them to pursue excellence in their day to day practice.

Tooley agrees, noting the learning goes well beyond formal educational programs as well.

"If one thinks about relationship building through attending Congress and Summer Forum, joining a Specialty Section, or becoming a House of Delegates or Board of Directors member, the entire world of

respiratory care is yours to learn from," she said. "Colleagues from all over the world will answer your questions, you will answer theirs for your areas of expertise, and together we have thousands of years of practice and experience, research and development, and literally experts in any area that an RT may touch."

Both leaders believe RTs who take their lifelong learning to these levels set themselves apart from the crowd.

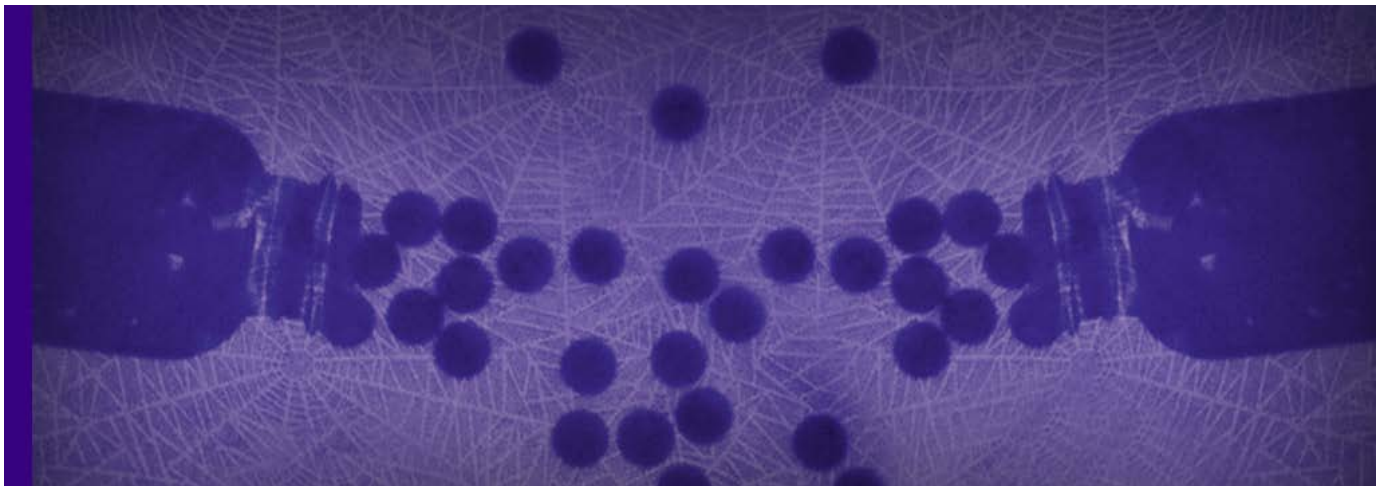
"Our ultimate goal is to do the very best for every patient that we touch, and we can only do that through our expertise and continued learning," Tooley said. "Lifelong learners are typically competitive and curious in their quest for knowledge and highly sought out by employers as the 'thought leaders' of the profession."

Dr. Schell believes these therapists are easy to spot. They are the ones who advance their role, are willing to learn more, seek out opportunities, and surround themselves with likeminded individuals. They take on challenges when asked, and they step up to mentor others in the profession. When changes are made in their departments, they jump on board, and they recognize the need to keep growing in their knowledge and expertise.

"Our surroundings, our patients, and our colleagues all have expertise to share to make us better at what we do," Dr. Schell said. "The key is recognizing the opportunity and acting on it."

Getting Patients Excited About Pulmonary Rehabilitation

by Debbie Koehl, MS, RRT, RRT-NPS, AE-C, FAARC



Those of us who work in pulmonary rehabilitation on a daily basis know it works. We see firsthand that our patients' quality of life improves. We see it in the quantitative data we collect, such as six-minute walk distances, shortness-of-breath questionnaires, quality-of-life assessments, and depression indexes.[1] We see it in the improvements in qualitative data as well, when we talk to our patients, see the smiles on their faces, hear from their families, and observe their overall day-to-day improvement. We also know we need to be reaching out to more potential patients. They need us, and we need them in pulmonary rehabilitation. We need to reach those living with lung disease, but how?

One way is to ask for order sets to be created that add automatic referrals to pulmonary rehabilitation (PR). In addition, we can speak with our colleagues at the bedside to make sure they inform patients about PR when they are administering other therapy. We can work with pulmonologists and primary care provides to encourage their discussions with patients or to leave referral information in their offices. Medical directors can help engage their colleagues to encourage referrals. You can promote your program during respiratory care week, pulmonary rehabilitation week, or COPD month. These are not difficult actions; I would bet everyone reading this article has used at least one of these tactics with some degree of success.

The GOLD recommendations[2] clearly endorse pulmonary rehabilitation for patients, and many other strategy documents contain well-researched and valid recommendations for PR. [3,4,5] Unfortunately, pulmonary rehabilitation is not as easy to do as other common therapies like taking a pill or using an inhaler. Frankly, a lot of time and effort goes into engaging a patient to attend a pulmonary rehabilitation program, including contacting the patient, verifying insurance coverage, overcoming transportation issues, and just convincing the patient that PR is good for them in the first place.

Generating referrals to pulmonary rehab can also be a challenge on the provider side. Our academic health center developed a COPD Population Health program to look at our high-risk COPD population to better manage their care. As part of this program, primary care practitioners were surveyed to determine barriers to getting their patients to pulmonary rehabilitation, with the top three being:

- Pulmonary rehabilitation was not on their radar. 46.81%
- I don't know how to send someone to pulmonary rehab. 30.85%

- My patients are unwilling or unable to travel to pulmonary rehab. 19.15%

A survey of pulmonary physicians indicated the biggest reason patients did not attend was difficulty traveling to the program (52.63%). Other comments from both surveys validated other known issues with obtaining referrals, including not knowing who qualifies for PR, awareness of system-wide locations of PR programs, care coordination issues between pulmonologists and primary care providers, and the fact that only a physician can order PR (and not a non-physician provider, like a nurse practitioner or physician's assistant). Also mentioned was that PR might be ordered, but patients did not follow up for various reasons, including cost.

Based on this information, our medical director (an integral member of the COPD Population Health program) wrote a wonderful letter that was emailed to all of his pulmonary and primary care colleagues, extolling the benefits of pulmonary rehabilitation and asking them to refer their patients. Contact information for our program was also included in his letter. Our director later followed up with direct contact with physician practices during their monthly team meetings. A pulmonary rehabilitation FAQ sheet was developed (with our department's help), and this was also distributed to practices.

What did all of this do? It helped substantially increase our referrals to pulmonary rehabilitation substantially, which in turn increased our program participants. Unfortunately, we found that that not every referral translated to a participant, and we were still missing quite a few people who could benefit from the program. Like most programs, we still encountered problems with insurance co-pays, transportation, and patients who did not feel that they could commit to the length of the program. Our Population Health program tackled the transportation issue; if the patient was part of our managed care population, we utilized ride-share services (eg, Lyft) and covered the patient's expense, although this was a relatively small group compared to all referrals

The Population Health program also developed winterization clinics, which intimately involved our PR staff. These clinics were designed to bring together everyone who could help make a person with COPD healthier, including nurses, social workers, pharmacists, pulmonary rehab staff, pulmonary function testing staff, and population health care managers. The clinics were held in various practice locations, with physicians being encouraged to send their patients. Clinic goals included patient education on COPD and prevention strategies for healthy lungs, correct inhaler use, spirometry testing if needed, referral to and immediate discussion with pulmonary rehabilitation staff, immunizations, and medication assistance. This outreach gleaned numerous new patients for the program and for our system programs in general, but more importantly, it got the word out to many other practitioners about pulmonary rehabilitation.

One of the most important encounters we have with our patients is often the initial contact, whether in person or by phone. Your pulmonary rehabilitation staff must be able to sell the program to the patients. They must be enthusiastic about what the program will do for the patient, and they must have the ability to answer the patients' questions, including concerns about insurance and co-pays. We provide written information about the program, including the schedule, start date, and of course our phone number. Our goal is to contact the patient within 72 hours of receiving a referral, or with a same-day visit if they are hospitalized. If we attempt to call the patient and there is no answer, we will mail information to them, which includes the link to our educational video.

Our pulmonary rehabilitation video[6] was produced by our hospital's internal production crew, and it was designed to attract and educate patients about pulmonary rehabilitation. It is available to our entire statewide hospital system and includes contact numbers for all of our system pulmonary rehabilitation program locations. Importantly, the majority of the content in the video comes from patients who were actively participating in pulmonary rehab. We could not get to every program, but we engaged patients from three different geographic areas. Each patient had a different diagnosis and had different goals for

their participation to demonstrate the range of benefits. Our video production crew did a great job of capturing patients in their own environments, as well as showcasing each person's own experience in pulmonary rehabilitation. Programs can use the video in a manner that works best for them, and we have sent the link to different groups to encourage them to use it for patient information eg, our bedside clinicians and referring practice sites). For our program, we use it as an initial reference for patients, and we use it as part of our program orientation for all new patients. Our team feels it gives patients an understanding of what they can do, what to expect, and hopefully motivates them to participate. When we ask our patients, they tell us that the video gave them a better understanding of what pulmonary rehabilitation is, and that hearing other patients' testimonials encouraged them to engage fully in the program.

Lastly, we have utilized our hospital's social media platforms (ie, Facebook and Instagram) to highlight our pulmonary rehabilitation program using our patients' own testimonials on their positive experiences in pulmonary rehab. We have done this during Pulmonary Rehabilitation Week, COPD Month, and "just because." Our patients are our best marketers!

I believe any efforts you can make to engage patients, caregivers, health care practitioners, and colleagues to the benefit of pulmonary rehabilitation are all worthwhile. Use the resources at your institutions to assist you.

References

1. American Association of Cardiovascular and Pulmonary Rehabilitation. Guidelines for Pulmonary Rehabilitation Programs, 5th ed. Chicago: Human Kinetics; 2020.

2. Global Initiative for Chronic Obstructive Lung Disease. 2020 Global Strategy for Prevention, Diagnosis and Management of COPD. Available at: https://goldcopd.org/wp-content/uploads/2019/12/GOLD-2020-FINAL-ver1.2-03Dec19_WMV.pdf. Accessed March 21, 2020.

3. Learn from the past and create the future: the 2013 ATS/ERS statement on pulmonary rehabilitation
Sally J. Singh, Richard L. ZuWallack, Chris Garvey, Martijn A. Spruit on behalf of the American Thoracic Society/European Respiratory Society task force on pulmonary rehabilitation
European Respiratory Journal 2013 42: 1169-1174; DOI: 10.1183/09031936.00207912

4. Management of COPD exacerbations: a European Respiratory Society/American Thoracic Society guideline
Jadwiga A. Wedzicha (ERS co-chair), Marc Miravitlles, John R. Hurst, Peter M.A. Calverley, Richard K. Albert, Antonio Anzueto, Gerard J. Criner, Alberto Papi, Klaus F. Rabe, David Rigau, Pawel Sliwinski, Thomy Tonia, Jørgen Vestbo, Kevin C. Wilson, Jerry A. Krishnan (ATS co-chair)
European Respiratory Journal 2017 49: 1600791; DOI: 10.1183/13993003.00791-2016

5. Pulmonary Rehabilitation: Summary of an Evidence-Based Guideline
Andrew L Ries
Respiratory Care September 2008, 53 (9) 1203-1207

6. Indiana University Health. What to Expect: Pulmonary Rehabilitation (video). Available at: https://iuhealth.org/find-medical-services/respiratory-support. Accessed March 21, 2020.

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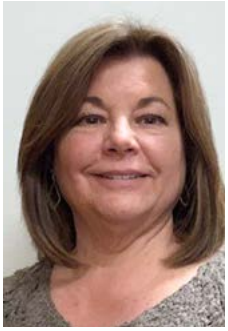

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HOME SLEEP TESTING AND WHAT IT MEANS FOR PATIENTS

by Ashley Mayall, BS, RRT

There are many different types of sleep testing options available today. These include traditional in-lab sleep studies or polysomnograms, simple overnight oximetry studies, and home sleep studies. For years, traditional in-lab sleep studies have been the gold standard in sleep testing. This is changing as home sleep studies are becoming the first-line diagnostic test for sleep disorders.

A home sleep test allows the patient to undergo a diagnostic test for obstructive sleep apnea at home. Most home sleep tests use a type III diagnostic sleep test device. Type III devices must record a minimum of four channels of data: respiratory effort, oxygenation levels, electrocardiogram or heart rate and air flow through the nose. There are many brands of type III devices on the market today for home sleep testing. Traditional polysomnograms and home sleep tests are similar in that both include the four channels noted above, but polysomnograms are considered a type I diagnostic test because they also include recordings of brain, eye, and muscle activity while being attended by a sleep technician in a clinical setting.[1]

There are a few steps to make sure the device works properly. First, the patient picks up a home sleep study device. They are educated on the workings of the device including how to wear, when to wear, and how to start and stop the recording on the device. The patient returns home and wears the device for one night. Depending on the device's capabilities and the sleep lab's procedures, the data may be transmitted via the internet or the device might be turned in at the sleep lab to download the data. Sleep technicians will review and score the information, and then a sleep-certified physician reads and interprets the report to determine whether the patient has sleep apnea. If the patient does have sleep apnea, the physician will make a recommendation on whether the patient needs to have a traditional sleep study for further diagnostic testing or if the patient can move on to treatment of their sleep apnea. Reasons for needing an in-lab polysomnogram after doing a home sleep test could include suspected central apnea, or the home sleep test data was inconclusive.

Benefits of a home sleep testing program

Advantages of home sleep testing are apparent if you look at it from a patient's perspective. Patients are more open to home sleep testing because of the ease of doing it in the home and minimal invasiveness. In

addition, home sleep tests are more comfortable because patients sleep better in their normal sleeping environment and within their normal sleep schedule. This is especially convenient for those who are shift workers or do not sleep at night. With the home sleep test, the equipment can be picked up any time of day, or it can even be delivered to the patient. This eliminates issues with keeping an appointment at the sleep lab or forcing the patient to take time off work. Next, home sleep testing is often more affordable for patients and are more frequently covered by insurance companies than traditional sleep studies. This is because insurance companies consider home sleep testing to have high enough quality that if a patient has a high risk factors for sleep apnea a home sleep test is more cost effective and efficient than the traditional study. The patients need to be the top priority, and in-lab sleep studies aren't always convenient. Some private insurance companies deny prior authorizations for in-lab studies due to the more cost-efficient home sleep testing available today when the patient has high risk factors of suspected sleep apnea. This forces the patient to pay for the in-lab study out of pocket or to find a sleep lab that offers home sleep tests. Traditional studies can take longer to schedule and if the patient needs to come back for continuous positive airway pressure (CPAP) titration that adds time for the patient. With home sleep studies the patient can move from the results of the HST to CPAP therapy much quicker without returning for further testing.

Advantages for the sleep lab also become apparent when you see the cost benefits and staffing needs, regardless of whether the sleep lab is in a hospital or is an independent facility. Home sleep testing can be performed on multiple people each night, depending on the equipment the lab has available. The equipment can be mailed to the patient or picked up. You do not need staff to monitor the home sleep testing at night as you do with traditional in-lab testing, which requires staffing ratios of 2 patients to 1 sleep tech. Also, home sleep testing equipment is relatively inexpensive compared to in-lab sleep testing equipment.

Limitations of home sleep testing are apparent as well. Sensor error is a large issue that is limited by patient placement and knowledge. Also, Home sleep testing runs by recording time versus sleep time in traditional studies. For example, if the patient does not sleep while wearing the test this will not show the patient has sleep apnea. This can happen and does happen, some patients requiring testing may try to fake out the test results. This can have effect on the Apnea Hypopnea index (AHI) for the overall night's study. If there are errors in the recording a patient may have to repeat the home sleep test a few times to get a satisfactory recording. This may be discouraging for patients who will not return to redo the study. If the patient has attempted to complete the home sleep study a few times it should be looked at the patient moving on to a traditional in-lab sleep study.[4] Home sleep testing has a false negative rate of 17%.[5] This is especially the case when the patient has a high probability of obstructive sleep apnea due to multiple risk factors. A satisfactory test needs to include all channels reading through the night, long enough wear time and reliable scoring by a certified scoring technologist. Another limitation is device return in a timely matter. Some patients for whatever reason do not return the device or are delayed in returning the device. If there is a delay, the batteries storing the recording may die or the device may not store the recording properly. One way to ensure the quick return is a contract stating the patient will return the equipment as soon as possible via mail or in person and if they do not return the device that the patient could be charged for the device itself.

Developing a home sleep testing program

Starting your own home sleep test program may seem daunting, but if the department follows these steps, it can be easier than it looks. First, sleep labs must identify the type III home sleep testing device and software that meet the needs of the program but are cost efficient when it comes to single-patient-use supplies. Once the equipment needed for home sleep testing is available, your sleep lab should start looking for an accrediting body, unless the program is part of a hospital that already has an accredited sleep lab. Two of the most popular sleep lab accrediting bodies are the American Academy of Sleep

Medicine (AASM) and the Accreditation Commission for Healthcare (ACHC).[2,3] Accreditation is important for home sleep testing because it is required for Medicare reimbursement. It also helps the patient know they are participating in a program that is held to high standards they can trust. Most accrediting bodies have easy-to-follow guidelines and objectives to use when applying for accreditation. Using these guidelines, the program leadership can create policies for every aspect of the home sleep test program, including the pick-up and return of the device, how the sleep patient file will be provided to the interpreting physician, emergency situations, emergency after-hours phone numbers, and so much more. After putting these policies and procedures in place, you can apply for accreditation and start seeing patients.

When you get to the patient-testing phase, a few things are important to note. Every insurance company is different, so you will need to check insurance coverage and obtain prior authorization as needed before scheduling the patient. When the patient is arrives to pick up the device, you will need to make sure the patient understands how to use the equipment. An alternative is that the patient can have the device mailed to them. Limitations of mailing is that some patients have difficulty understanding the written instructions. If the patient does not understand the device after educating or reading the printed instructions, a home sleep test is not appropriate for the patient. When the patient returns the device either in person or by mail, the data will need to be downloaded and scored as soon as possible to ensure that the test was successful. In addition, the equipment must be adequately cleaned and its functionality must be checked. If the test was not successful you will have to evaluate whether the patient can try the home sleep test again or if the patient needs to schedule an in-lab study due to possible central sleep apnea or inconclusive testing. Once the report has been interpreted, the sleep lab will send the results back to the ordering provider for the patient to receive appropriate treatment.

Overall, starting a home sleep testing program is beneficial for patients and sleep labs. The sleep lab (or its parent facility) will create revenue. The patient receives quality care that they need but will also be more comfortable in their own home, save money and save time. It really is a positive experience for everyone involved.

References

1. American College of Cardiology. Home sleep testing. Available at: https://www.acc.org/latest-in-cardiology/articles/2014/07/18/15/42/home-sleep-testing. Accessed February 25, 2020.

2. American Academy of Sleep Medicine. Available at: https://aasm.org. Accessed February 25, 2020.

3. Accreditation Commission for Healthcare. Sleep accreditation. Available at: https://www.achc.org/sleep.html. Accessed February 25, 2020.

4. Journal of Clinical Sleep Medicine. Clinical Practice Guideline for Diagnostic Testing for Adult Obstructive Sleep Apnea: An American Academy of Sleep Medicine Clinical Practice Guideline. Available at: https://jcsm.aasm.org/doi/10.5664/jcsm.6506. Accessed April 24, 2020.

5. Journal of Clinical Sleep Medicine. Clinical Guidelines for the Use of Unattended Portable Monitors in the Diagnosis of Obstructive Sleep Apnea in Adult Patients. Available at: https://aasm.org/resources/clinicalguidelines/030713.pdf. Accessed April 24, 2020.

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Around the Clock Vigilance for Liberation

by John Emberger, RRT, RRT-ACCS, FAARC CPHQ

Endotracheal intubation was initially performed in the 1870s and 1880s and was fairly routine by the 1940s.[1] It was not until 2001 that we had evidence-based guidelines for removing the endotracheal tube and achieving ventilator liberation.[2] This also included using a spontaneous breathing trial (SBT) as the standardized method to confirm readiness for liberation. Liberation from mechanical ventilation introduces many considerations for the safety of the patient.

Side effects considered

When it comes to liberation from mechanical ventilation, it is important to consider and balance the potential side effects, both those of liberation and those of delaying extubation. Simply being on a ventilator with an endotracheal tube carries risk. Adverse events associated with ventilators include circuit issues, disconnects, malfunctions, alarms without response, and human error.[3] Moreover, extended time on a ventilator causes some degree of ventilator-induced lung injury (VILI)[4]. Incidence of VILI is difficult to quantify, but it must be acknowledged as a significant factor during mechanical ventilation when a survey of Medline produces nearly 700 journal articles on VILI published within the last five years. Remaining on mechanical ventilation increases the cost of health care, the length of stay in the ICU, and the length of stay in the hospital. The risks of remaining on ventilation must be balanced against the risks of a failed extubation, including reintubation, more time on the ventilator, and increased chance of death.[5,6]

Optimal duration of ventilation

Most modern articles on the topic of ventilator liberation mention that patients should be liberated as soon as is safely possible. The key to the safest and shortest time on the ventilator is constant vigilance. Patients are placed on mechanical ventilation around the clock as needed based on when ventilatory failure occurs. Each patient progresses toward recovery and meets criteria for an SBT at his or her unique pace. Thus, it stands to reason that patients will meet criteria for liberation attempts at any time of the day, during any shift. If a patient is made to wait until the health care team is ready, the patient will be on the ventilator longer, which means he or she will incur extra health care costs, will have a longer hospital stay, and will be further subjected to the potential side effects of mechanical ventilation. Optimal duration

of ventilation is achieved by initiating ventilation at the appropriate time, starting SBTs once criteria have been met, and liberating the patient from the ventilator as soon as their condition warrants. There certainly may be logical reasons to wait until the institution's preferred time, such as allowing the entire health care team to discuss and assess the complicated patient who may have only questionably passed the SBT. Patients who need a spontaneous awakening trial may also need to wait for the designated time before the SBT attempt. Uncomplicated patients who are targeted with light sedation or are otherwise not sedated can undergo liberation trials any time of the day if they are noted to meet SBT criteria, and there may be no benefit of a spontaneous awakening trial in those patients.[7]

Challenges

If a health care facility is not already performing liberation trials around the clock as needed by patients, there are many challenges to initiate this culture change. Care providers will need to be confident in identifying potential candidates who can safely be liberated during off-shifts. The nursing staff and physicians may be uncomfortable with liberation trials occurring at times of the day that are not the usual at their facility. In general, there may be a perception that the right resources for liberation trials are not available during off-shifts. There is a false sense of security that we can control when emergent intubations will occur, as well as a feeling that extubating patients during an off-shift may cause emergent airway situations. Epstein et al[5] reported that only 33% of patients requiring reintubation will occur in the first 12 hours after extubation, and 50% will occur between 12 and 48 hours. Another study reported a low chance of reintubation on the same shift of extubation and a median reintubation time of 15 hours for patients who required reintubation.[6] Considering these studies on reintubation, it is not possible to prevent an off-shift reintubation by picking a certain time to perform the extubation.

Optimal off-shift liberation population

If patients will be liberated during off-shifts, one key strategy to ensure patient safety is to identify patients with a low likelihood of reintubation and to avoid extubating patients at high risk for reintubation. Criteria for low likelihood of reintubation[6] include younger patients, shorter time on the ventilator, no history of difficult airway, and no history of reintubation. Choosing the best candidates is essential to liberation vigilance around the clock.

There are two important things to consider about off-shift extubation potentially causing emergent reintubation. First, it is unlikely that off-shift extubations will specifically increase emergent reintubation within the same shift because of the reported delay in time for patients who need to be reintubated[5,6]. Second, it is possible to further reduce the chances of an off-shift extubation causing a safety concern by selecting only those patients with a high likelihood of success and thus low likelihood for failure.

Summary

To minimize ventilator length of stay, health care costs, and resources in critical care as well as to reduce the chances of adverse effects for the mechanically ventilated patient, around-the-clock vigilance for liberation readiness is necessary. The resources needed to perform liberation trials on off-shifts need to be considered, as does the culture change that is necessary to allow liberation trials to occur at times when care providers might not be most comfortable.

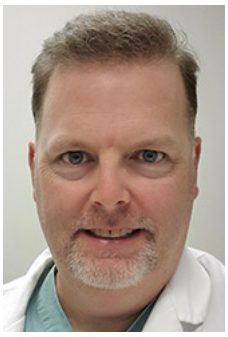
References

1. Szmuk, Peter, Ezri T, Evron S, Roth Y, Katz J. A brief history of tracheostomy and tracheal intubation, from the Bronze Age to the Space Age. Intensive Care Med 2008;34(2):222–228.

2. MacIntyre N, Cook DJ, Ely EW Jr, Epstein SK, Fink JB, Heffner JE, et al. Evidence-based guidelines for weaning and discontinuing ventilatory support: a collective task force facilitated by the American College of Chest Physicians; the American Association for Respiratory Care; and the American College of Critical Care Medicine. Chest 2001;120(6 Suppl):375S–395S.

3. Pham JC, Williams TL, Sparnon EM, Cillie TK, Scharen HF, Marella WM. Ventilator-related adverse events: a taxonomy and findings from 3 incident reporting systems. Respir Care 2016;61(5):621–631.
4. Fuller, B. M., Mohr, N. M., Dettmer, M., Kennedy, S., Cullison, K., Bavolek, R., ... & McCammon, C. (2013). Mechanical ventilation and acute lung injury in emergency department patients with severe sepsis and septic shock: an observational study. Academic Emergency Medicine, 20(7), 659-669.
5. Epstein SK, Ciubotaru RL. Independent effects of etiology of failure and time to reintubation on outcome for patients failing extubation. Am J Respir Crit Care Med 1998;158(2):489–493.
6. Miltiades AN, Gershengorn HB, Hua M, Kramer AA, Li G, Wunsch H. Cumulative probability and time to reintubation in United States intensive care units. Crit Care Med 2017;45(5):835–842.
7. Mehta S, Burry L, Cook D, et al. Daily sedation interruption in mechanically ventilated critically ill patients cared for with a sedation protocol: a randomized controlled trial. JAMA 2012;308(19):1985–1992

about the author…



John Emberger, RRT, RRT-ACCS, FAARC CPHQ is the director of the Respiratory Care Department at ChristianaCare in Newark Delaware.

My Degree Journey

by Amy Ryder-Smith Lovenguth, BS-RRT, AE-c

My journey to earn a bachelor's degree began at age 50. I obtained my associate degree in respiratory therapy in 1985, and I started work right away — I had my whole life ahead of me and a bachelor's degree was in my future. I got married, and I moved four times cross-country and ended up in Ridley, PA, a suburb of Philadelphia. I was always able to secure a job as a registered respiratory therapist. I became a soccer mom and I sang in the church choir. I lost sight of that bachelor's degree during that time. However, eventually I realized that I needed to pursue my dream of going back to school for my bachelor's degree. In the fall of 2014, I enrolled at Wilmington University in New Castle, DE.

During my first semester, I was diagnosed with breast cancer: invasive ductal carcinoma, ER/PR+, HER2+. I had a partial mastectomy and sentinel node biopsy on October 8, 2014. I finished that first class as I was preparing to start chemotherapy. I was trying to figure out how I would be able to undergo surgery, chemotherapy, and radiation as well as attend classes. With the uncertainty of what the future held for me, the only goal I had was to get my degree.

I met with Angela Herman, DNP, RN, who was chair of Health Sciences, College of Health Professions, at Wilmington University to discuss how to proceed with my degree completion in light of my cancer diagnosis. We were able to come up with a plan that allowed me to freeze my admission while I underwent chemo and radiation. If all went well, I would be back in class in the fall of 2015. I had my goal; I now was ready to meet this cancer head-on and beat it.

I had my port-insertion surgery on November 12, 2014. My first chemotherapy session was on November 13, 2014. I was to have chemo once a week for three weeks, then once a week for four months. My last day of chemo was February 26, 2015, though I continued with trastuzumab infusions every three weeks until November 2015. Daily radiation started April 9, 2015, and continued until May 29, 2015.

As I was sitting in the chemo lounge, attached to my diphenhydramine, steroid, and ondansetron pre-dosing and awaiting my chemotherapy cocktail of carboplatin, docetaxel anhydrous, and trastuzumab, I went over the list in my mind of what I needed to accomplish. Getting my bachelor's degree was top on my list. This goal became my mantra. Every week became one week closer to going back to school.

I was tired. I was sick. I lost my hair. Every bone in my body ached. I had to keep moving so I could overcome all of the side effects. I had to keep working when I could. I was able to take a partial leave of absence, and my co-workers were able to donate their paid time off for me to use. My world became one of chemo, radiation, lethargy, and work. When the main chemo was over, I started radiation, which occurred daily. When I was on that cold radiation table, with my right arm over my head in my very own casting, the beams coming at me in those precisely measured areas, I continued going over my list. At the top of my list was that bachelor's degree. I was getting closer and closer to the day when I would be well. *I will be well; I will get my bachelor's.*

In the fall of 2015, with most of the chemo and radiation behind me, I was able to start return to Wilmington University. I was still having trouble with "chemo brain," and I needed to relearn how to study effectively. But I took that first step again. I was moving toward my goal of a bachelor's degree. My timeline was not as I imagined it would be: I tired very easily, and I had to take the summers off to rest. Even with all the obstacles along my journey, I never lost sight on my goal to earn that bachelor's degree.

I am very proud to say that, on May 20, 2018, I took that walk to accept my bachelor's degree. I graduated summa cum laude with a 4.0 GPA, and I was the recipient of The Trustees' Award for Scholarship in Health Profession. I was able to go forward after my illness and achieve my goal. Every time I sign my credentials (BS-RRT), I am reminded of what I have overcome and how grateful I am to use my experience to help others

about the author…

Amy Ryder-Smith Lovenguth, BS-RRT, AE-c works as a Respiratory Therapist and Educator for United Methodist Communities at Collingswood, in Collingswood New Jersey. She lives in Ridley Park, PA.

Only Together Can We Build the Profession

by Thomas Kallstrom, MBA, RRT, FAARC

I have been a respiratory therapist my entire working life. I have had the privilege to know and to work side by side with some of the greatest minds in our profession, and as a result I have learned much that has helped me as I journeyed through my career. There have been many changes in the field over the years, most of which were positive for RTs and patients, although some perhaps not so much. The fundamental truth as I see it is that our profession is only as strong as our practicing therapists and leadership.

This brings us to the COVID-19 pandemic.

We are seeing more exposure of our profession right now and in a very positive light. Networks and newspapers have contacted the AARC and many of you for our particular and unique expertise on the topic of respiratory care. Many of you have volunteered to travel to the nation's hot spots, and of course we have many on the front lines in the battle to save lives in ICUs across the nation.

To see our profession exposed to the public and in such a powerful way is something that many never dreamed would happen.

Sadly, it was due to a pandemic.

Someday we hope that this will be behind us and we can get back to the business of providing patient care as we did before. One of the most important things we need to prepare for is to increase our workforce.

The average age of a respiratory therapist today is 46 years, according to our most recent human resources survey. Many baby boomers have already retired (or are in the process of retiring), and that is happening in large numbers. Interestingly, the last survey done five years ago predicted that we would see a peak in retirements in 2020.

We must attract newcomers into the profession.

Again, with the exposure we have received in the media, this should work to our advantage. I see it as happening in two ways. One is the high school graduate who will enter the field as many of us did at a young age. The other will be the displaced workers who lost employment as a result of the pandemic. And if the economy deteriorates more, we may see an even larger number of potential RT applicants. In the end, we hope

to welcome an eager and talented workforce even though their situation or reasons for entering may be different.

You may ask what the AARC is doing about this.

Last year we decided to change the messaging and format of our RT profession promotional video titled “Life and Breath” to a more contemporary vehicle called “Be an RT.” The former was a DVD/electronic format, and the new one is a website https://be-an-rt.org/.

“Be an RT” will continue to have modules added to it over time. This will allow us to tailor the message to viewers based upon their demographic, personal professional goals, and areas of interest.
Times are changing, and we need to be able to flex with these changes.

Your elected leadership and the executive office work closely to be ready to address needed change and, if possible, to be proactive in what we do for you and your patients. My hope is that we can all work together to make this profession stronger and more robust in the coming years. And that is something we all can be a part of.

about the author…

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Article and Feature Contribution: AARC Tımes welcomes AARC member contributions of feature articles and information for the regular columns. Send an outline and objectives of your article idea to Communications Manager Heather Willden at heather.willden@aarc.org.

Reading Comprehension

by Anthony L. DeWitt, JD, RRT, FAARC

People often ask me how to protect themselves and their families against litigation risk. I routinely advise that they purchase insurance that will cover them for the risks they have. Sadly, the main thing that is important when purchasing any insurance coverage of any kind is an ability and willingness to read the policy language.

Several years ago, insurance companies began using "plain English" policies that are supposed to make it easier to understand what is covered and what is not covered in an insurance policy. In spite of this, people still often do not read the policy document that tells them exactly what the policy covers.

Policy anatomy

Insurance policies are drafted in a particular way. First, the document defines terms like "insured," "insurer," and, in the case of a homeowner's policy, "insured premises." Then the policy states what is covered. For example, in a medical negligence policy, which is a liability policy, after defining terms, the policy document might declare what types of conduct or what types of claims the policy covers. In a business insurance policy, it might specify what kinds of claims or what types of business conduct are covered. Insurance policies have different coverage descriptions for different portions of a policy. For example, your coverage for liability (eg, someone falling on your property and being hurt) is different from your damage coverage (eg, a tree falling on your house).

Some states, like Florida, use the fiction that insurance policies are contracts that are "bargained for." If you have ever contacted your insurance company and "bargained" for a policy provision, and actually received it, it probably cost you a great deal of money. Because you supposedly bargained for this coverage, you are bound by that coverage.

But right after the coverage portion of the policy comes the Exclusions to Coverage that apply. Here is where the insurance company protects itself against claims that are expensive or, perhaps, intentional. Finally, any exceptions to the exclusions are noted.

Read and understand

I cannot stress how important it is to read a policy and understand what is covered and, more importantly, what is excluded from coverage. You may be amazed by what is not covered in your policy. Recently I handled an appeal in a case where the insurance contract included this exclusion for property damage:

We do not insure for loss caused by any of the following:

(A) Acts or decisions, including the failure to act or decide, of any person, group, organization, or governing body.

Now, imagine any situation where your property becomes damaged — consider, for example, a windstorm uproots a tree and it falls on your house. Your act of leaving the tree in place prior to the storm or your failure to remove the tree prior to the storm is either an act or a failure to act.

Similarly, any outcome could be due to a decision or a failure to decide. In *Jussim v. Massachusetts Bay Insurance Co.*, a 1992 case from Massachusetts, the insurer tried to rely on such a clause. The court disagreed, saying that the acts or decisions exclusion could not be taken literally because, if it were, "it would exclude coverage for all acts and decisions of any character of all persons, groups, or entities." That interpretation would have made the policy worthless. In my case, we argued that, in essence, the homeowner had been paying premiums for 35 years for a policy that covered nothing!

The insurance company, to its credit, did not rely on the above exclusion to deny coverage ; instead they relied on a provision governing faulty construction to deny coverage. But the insured had read his policy and knew there was an exception to the exclusion that covered “resulting losses.” The insurance company denied that, and the trial court agreed. The Missouri Court of Appeals did not. It reversed the judgment and awarded damages to the insured in that case.

If you have not read your malpractice insurance policy, you may be unaware of some of the additional coverages you have (including, in some cases, licensure defense). If you haven’t read your homeowners insurance, you may not be aware of exclusions that might render your hobbies or your home-based business uncovered.

Identify the vagueness

Not only is reading your policy document important because it sheds light on what is covered, it is equally important because sometimes the insurance company uses inadequate language. In many states, when an insurer uses vague language or creates an ambiguity in the policy, it is construed against that insurer.

In a 2010 case from Missouri, an insurance company had a business exclusion that precluded coverage for acts or omissions arising out of a business on the premises.

The plaintiff had been injured on the business premises of his employer, but not on the premises covered by the homeowner’s policy. The plaintiff sued for negligence and recovered a judgment against the insured homeowner, but the insurer refused to pay. It relied on the exclusion for business pursuits on the residence premises. But in defining “business,” the insurance company used this definition:

A trade, profession, or occupation, excluding farming, and the use of any premises or portion of residence premises for any such purposes.

This definition required both that the business be a trade or profession and use a portion of the premises for those purposes.

The insurance company argued instead that “and” really meant “or,” and that interpreting the “and” led to an “absurd” result.

Judge Laura Denver Stith had a quick answer for that assertion: “There are logical reasons why an insured may wish to have a policy that covers the occasional business pursuit that is not conducted on the premises and that otherwise might not be covered by a business policy or workers’ compensation. Clearly [Insurer] did not find it absurd to offer such coverage and accept Mr. Smith’s premiums for it.”

Get the most from your policy

Reading your insurance policy can have numerous benefits, not the least of which is understanding what you are and are not covered for before you need to use that insurance.

about the author…

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

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RC Currents

IN THE NEWS

COVID-19 ICU Guidelines

The Surviving Sepsis Campaign COVID-19 panel has released 54 recommendations that health care workers should follow when caring for COVID-19 patients in the ICU, including these four best practice statements —

- Health care workers performing aerosol-generating procedures, such as intubation, bronchoscopy, [and] open suctioning, on patients with COVID-19 should wear fitted respirator masks, such as N95, FFP2, or equivalent — instead of surgical masks — in addition to other personal protective equipment, such as gloves, gown, and eye protection.
- Aerosol-generating procedures should be performed on ICU patients with COVID-19 in a negative-pressure room, if available. Negative-pressure rooms are engineered to prevent the spread of contagious pathogens from room to room.
- Endotracheal intubation of patients with COVID-19 should be performed by health care workers with experience in airway management to minimize the number of attempts and risk of transmission.
- Adults with COVID-19 who are being treated with noninvasive positive pressure ventilation or a high-flow nasal cannula should be closely monitored for worsening respiratory status and intubated early if needed.

Other topics covered by the guidelines include infection control, laboratory diagnosis and specimens, the dynamics of blood flow support, ventilation support, and COVID-19 therapy. The guidelines were published jointly by *Critical Care Medicine* and *Intensive Care Medicine* in April.

Remdesivir Studies Show Early Positive Results

Research published by *The New England Journal of Medicine* on April 18 suggests the antiviral drug remdesivir may help patients with COVID-19. In the first study of its kind, investigators from Cedars-Sinai reported results for 53 patients in the United States, Europe, Canada, and Japan who had received at least one dose of the drug by March 7. Sixty-eight percent demonstrated an improvement in the level of oxygen support they needed over a median follow-up of 18 days from the first dose. Of the 34 patients who had been intubated and required mechanical ventilation, 57% had been extubated. Overall, 47% of the patients who had received the drug had been discharged from the hospital.

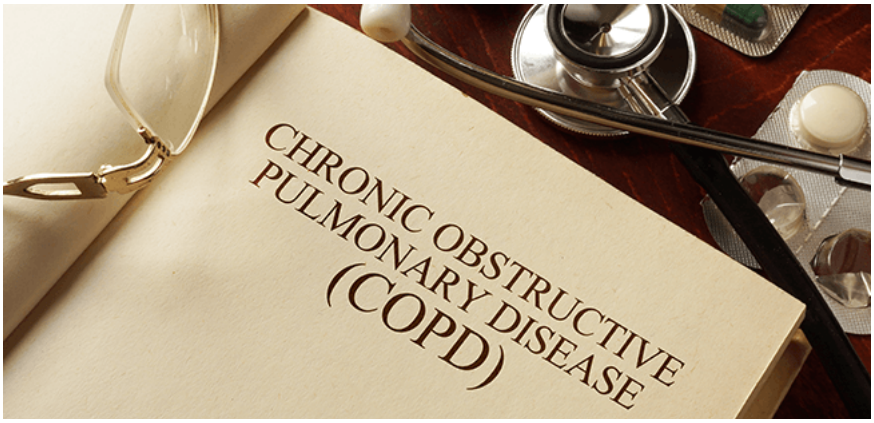
"We cannot draw definitive conclusions from these data, but the observations from this group of hospitalized patients who received remdesivir are hopeful," said study author Jonathan Grein, MD. "We look forward to the results of controlled clinical trials to potentially validate these findings."

Canadian investigators publishing in the *Journal of Biological Chemistry* believe they may know how the drug works. In a laboratory study built on their previous research on MERS, they reported that remdesivir is highly effective in stopping the replication mechanism of SARS-CoV-2. The paper specifically outlined how the drug inhibits the coronavirus polymerases — the part of the virus responsible for synthesizing the virus' genome — by mimicking its building blocks.

"These coronavirus polymerases are sloppy, and they get fooled, so the inhibitor gets incorporated many times and the virus can no longer replicate," explained study author Matthias Götte, from the University of Alberta.

The authors caution that lab results do not necessarily predict how the drug will work in people, but they do believe these findings show that remdesivir can be classified as a "direct-acting antiviral" against SARS-CoV-2.

"If you target the polymerase, the virus cannot spread, so it's a very logical target for treatment," said Götte.



New Practice Guideline on COPD Therapy

The American Thoracic Society has published a new clinical practice guideline strongly recommending long-acting β agonist/long-acting muscarinic antagonist (LABA/LAMA) combination therapy over LABA or LAMA alone in patients with COPD. The updated guideline addresses six emerging questions around COPD management that were not covered in the previous guideline published in 2011. They include —

1. Among patients with COPD who complain of dyspnea or exercise intolerance, LABA/LAMA combination therapy is recommended over LABA or LAMA monotherapy.
2. Among patients with COPD who complain of dyspnea or exercise intolerance despite dual therapy with a LABA/LAMA, the use of triple therapy with inhaled corticosteroids (ICS)/LABA/LAMA is preferred over dual therapy with a LABA/ LAMA in those patients with a history of one or more exacerbations in the past year requiring antibiotics or oral steroids or hospitalization.
3. In patients with COPD who are taking triple therapy (ICS/LABA/LAMA), the ICS can be withdrawn if the patient has had no exacerbations in the past year.
4. No recommendation was made for or against ICS as an additive therapy to long-acting bronchodilators in patients with COPD and blood eosinophilia, except for those patients with a history of blood eosinophilia and one or more exacerbations in the past year. In those patients, ICS is suggested as an additive therapy.
5. In patients with COPD with a history of severe and frequent exacerbations despite otherwise optimal therapy, the authors recommend against using maintenance oral corticosteroid therapy.
6. In individuals with COPD who experience advanced refractory dyspnea despite otherwise optimal therapy, opioid-based therapy should be considered for dyspnea management, within a personalized shared decision-making approach.

The guideline was published online ahead of print by the *American Journal of Respiratory and Critical Care Medicine* in mid-April.

Vaping in Pregnancy

Study after study has shown a link between smoking during pregnancy and poorer outcomes for offspring. Now researchers from Louisiana State University have found a similar association between vaping during pregnancy and negative effects on children. The study, which was conducted in mice, specifically examined whether the aerosols produced by vaping compromised lung development. Results showed that e-cigarette use during pregnancy alters fetal lung structure and disrupts the *Wnt* signaling process, which allows proteins to send signals through a group of pathways to cells. The investigators believe these findings suggest that vaping during pregnancy could lead to pulmonary immaturity and may predispose infants, children, and even adults to lung diseases. The research appeared in a recent edition of the *American Journal of Physiology-Lung Cellular and Molecular Physiology*.

Common Coronaviruses Are Largely Seasonal

University of Michigan researchers believe data from the ongoing Household Influenza Vaccine Evaluation study being conducted in their state offer some insight for other researchers trying to figure out how SARS-CoV-2 is transmitted and whether it might be seasonal in nature. The ongoing trial has examined respiratory illnesses in households with children in the Ann Arbor area for the past 10 years and has included both influenza and common coronaviruses that cause the common cold. Results have shown —

- Overall, 9% of adult cases and 20% of cases in children were associated with doctor visits. On average, 30% of influenza cases required a doctor visit.
- When year-round surveillance occurred, most coronavirus cases were detected between December and April/May, and peaked in January/February. Only 2.5% of the cases occurred between June and September.
- The highest infection frequency was in children under age five.
- Of the 993 infections, 260 were acquired from an infected household contact.
- The serial interval between index and household-acquired cases ranged from 3.2 to 3.6 days; secondary infection risk ranged from 7.2% to 12.6% by type.
- Cases in children under age five and adults over age 50 were more likely to be classified as severe.

The investigators are now tracking the occurrence of SARS-CoV-2 and its potential presence in Michigan households as well. The current study was published in a recent edition of the *Journal of Infectious Disease*.

Reducing Pulmonary Complications
Surgical patients often develop pulmonary complications following their operations in part because they suffer from residual muscle weakness due to the drugs they are given to anesthetize them during the operation. While patients are given a drug called neostigmine to reverse the muscle relaxants, it doesn't always get the job done. A new drug designed to do the same thing may be a game changer, report Michigan Medicine researchers publishing in *Anesthesiology* earlier this year.

The observational study was conducted in 12 hospitals across the United States and compared the medical records of 22,856 patients receiving the new drug sugammadex to 22,856 patients receiving neostigmine. Because sugammadex is currently more expensive than neostigmine and is typically reserved for sicker patients or patients who may have increased risks, the team matched people who were the same age, had the same medical conditions, and who were having the same type of surgery before and after sugammadex became available in 2017.

"When we looked at documentation of respiratory failure or pneumonia, we saw a 37% decrease across all pulmonary complications and a 55% decrease in respiratory failure," said study author Sachin Kheterpal, MD, MBA. "This is a dramatic decrease in rates of complications."

The authors believe these results may be due to the different ways in which these drugs work to reverse the muscle relaxants patients are given during surgery.

Drug Shows Promise in Lung Cancer Patients

The checkpoint inhibitor pembrolizumab can extend life with very few side effects in patients with lung cancer that has spread to the brain, report Yale University researchers who tested the drug in 42 patients with small brain tumors that had not been treated previously or progressed after radiation treatment. Patient response depended on the level of the biomarker PD-L1 expressed by the tumor. Among those

who did respond, however, overall survival was 40% at one year and 34% at two years. “In general, we found that the benefit offered by pembrolizumab to the lungs in patients with advanced lung cancer was mirrored in control of their brain tumors,” said study author Sarah B. Goldberg, MD, MPH. “The brain and body response were the same.”

Link Between Air Pollution and COVID-19

Italian investigators may be adding another piece to the puzzle that is COVID-19 with a study that compared air-pollution rates between various regions of their country and how they might be linked to mortality rates from the disease. The study was spurred by data from the NASA Aura satellite, which has documented very high levels of air pollution across two northern regions in Italy, Lombardy and Emilia Romagna. The researchers compared these data with the Air Quality Index that was developed by the European Environment Agency and gathers data from several thousand measuring stations all over Europe.

Results confirmed that residents of the northern Italian regions live in an environment with a higher level of air pollution that those in the southern regions of the country. This, they believe, might help explain why the mortality rate for COVID-19 has been as high as 12% in the northern regions vs. approximately 4.5% in the rest of the country. The researchers speculate that high levels of air pollution may lead to a number of complications for patients with COVID-19 because their bodies may have already been weakened by the accumulated exposure to pollutants they had when they contract the disease. The study appeared in *Environmental Pollution* earlier this year.

Speed and Convenience Top List of Patient Preferences for Lung Cancer Screening

Want to increase uptake of lung cancer screening in your facility? According to Australian investigators, the key is to make it fast and convenient for patients. Their online survey indicated that the average respondent placed emphasis on the type of screen, distance from home, speed of results, radiation exposure, and cost. Survey respondents considered at higher risk for lung cancer were less likely to want to travel significant distances for testing or spend more time at the location. Opting out of screening was predicted by respondent characteristics, particularly sex, age, education, smoking history, and whether the respondent had a previous cancer diagnosis. The study was published in a recent edition of *Value in Health*.

Sleep Guide for Kids and Teens

A new resource guide from Regis College may be a good addition to your patient education materials for parents and other caregivers who want to improve sleep in children and teens. "7 Tips for Improving Sleep in Children and Teens" covers these topics —

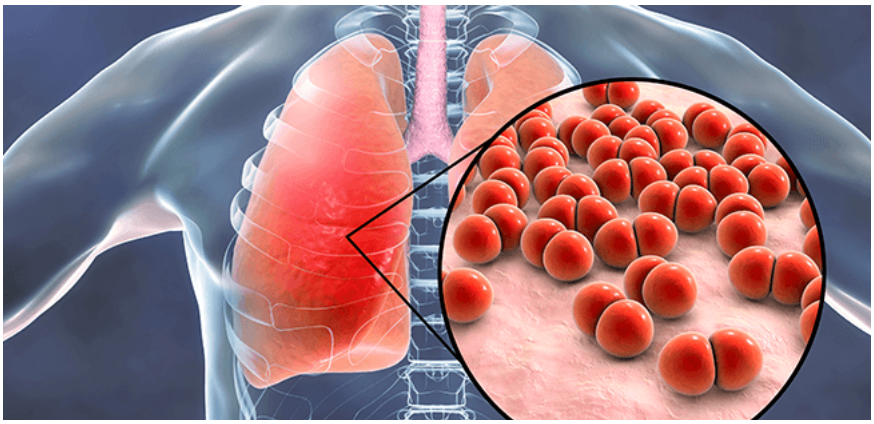
- Impact of poor sleep in teens and children
- Amount of sleep required per age group
- Resources for parents to help with sleep issues in teens and children
- Signs of sleep deprivation
- Effect of sleep disorders on overall health
- How to develop better sleep routines
- Strategies to resolve physiological issues and improve sleep

Is Vaping Linked to Bladder Cancer?

U.S. researchers who compiled the results of 22 previous studies that analyzed the urine of people who used e-cigarettes or other tobacco products found six substances that are linked to bladder cancer in the urine of these people. Some of the studies showed that e-cigarette users had significantly higher levels of several carcinogens that can be metabolized into substances linked to bladder cancer in their urine compared to people who had never used e-cigarettes. The authors emphasize that more research is needed but believe these initial findings suggest people who vape may be putting their bladders at risk.

"Although there is no definitive case yet linking bladder cancer to vaping, it may be reasonable to suspect that, decades down the road after exposure to these byproducts, people who vape may be at risk of

developing bladder cancer," said study author Marc Bjurlin, DO, MSc, from the University of North Carolina Lineberger Comprehensive Cancer Center.
The study appeared in a recent edition of *European Urology Oncology*.



Clinical Characteristics of COVID-19 Pneumonia Patients Who Died

A new study out of China has outlined the most common clinical characteristics seen in 109 patients who succumbed to COVID-19–related pneumonia during the early phase of the pandemic in Wuhan. Among the findings —

- Average age was 70.7 years.
- There were twice as many men in the group as women.
- 85 suffered from comorbidities.
- The most common conditions were hypertension, cardiovascular or cerebrovascular diseases, and diabetes.
- All 109 patients were critically ill at hospital admission, and their most common condition was progressive dyspnea.
- Although all needed ICU care, only 46.8% were admitted to the ICU because of a bed shortage.
- All patients received antibiotics to treat secondary infections, and nearly all received antivirals.
- All ICU patients also received antifungal drugs.
- Some patients also received other medicines, including glucocorticoids and intravenous immuoglobulin.
- Oxygen therapy of various types was given to all patients.
- Patients who were in the ICU group lived an average of 15.9 days following hospitalization vs. 12.5 days for those in the non-ICU group.

"Mortality due to COVID-19 pneumonia was concentrated in patients above 65 years of age, especially those with major comorbidities," said study author Huan-Zong Shi, MD, PhD. "We also found that patients who were admitted to the ICU lived longer than those who didn't. Our findings should aid in the recognition and clinical management of such infections, especially in ICU resource allocation."

The study was published by the *Annals of the American Thoracic Society* in April.

MERS Vaccine Study May Have Implications for COVID-19 Vaccine

A MERS vaccine being studied by researchers from the University of Iowa and University of Georgia might hold promise for COVID-19 as well. In a recent study conducted in a mouse model, they reported

that all of the mice who received the experimental vaccine were able to survive infection with MERS virus four weeks later. The intranasal vaccine is delivered via parainfluenza virus 5, an RNA virus that is believed to cause a condition known as kennel cough in dogs but appears harmless to people. The researchers added an extra gene to the virus so that infected cells would produce the S, or spike, glycoprotein known to be involved in MERS infections. The researchers, who published these results in a recent edition of *mBio*, are now working with mouse models to test the approach for SARS-CoV-2.

NYC Cases Linked to Europe and the United States

According to investigators from the Icahn School of Medicine at Mount Sinai, SARS-CoV-2 came to New York City, not from China, but mainly from Europe and other places in the United States. The researchers sequenced 90 SARS-CoV-2 genomes from 84 of more than 800 confirmed COVID-19 cases identified within the Mount Sinai Health System by March 18. Then they analyzed these sequences together with all 2,363 publicly available SARS-CoV-2 genomes from around the world to determine the most likely origin of the SARS-CoV-2 strains infecting the metro New York City residents who sought care at Mount Sinai.

"Phylogenetic analysis of 84 distinct SARS-CoV2 genomes indicates multiple independent but isolated introductions mainly from Europe and other parts of the United States," said study author Harm van Bakel, PhD.

Only one patient was infected with a virus that was a clear candidate for introduction from Asia, and that virus is most closely related to viral isolates from Seattle, WA. The study also suggests SARS-CoV-2 was occurring in the city as early as late January. The study was published on medRxiv in April. << *medRxiv* is an internet site for otherwise unpublished papers. Should it carry a hyperlink? Should it appear as medRxiv.org?>>

New App Finds Emergency Departments Near You

The Emergency Medicine Network (EMNet) out of Massachusetts General Hospital in Boston has released a free smartphone app called EMNet findERnow based on their national database of U.S. emergency departments. The app is aimed at helping people find the closest emergency department to their current location anywhere in the country. An optional pediatric version of the app is available as well by subscription. The app, which is available for both **iPhone** and **Android** phones, may bring peace of mind to your patients who may be at risk for a sudden medical emergency.

Comorbidities, Characteristics, and Outcomes for 5,700 COVID-19 Patients in NYC
According to researchers from New York, the most common comorbidities among COVID-19 patients are hypertension, obesity, and diabetes. They reached that conclusion after conducting a case series that included 5,700 patients who were hospitalized with the disease in the New York City area. Among the specific findings —

- The median age of the patients was 63 years, and 39.7% were female.
- Hypertension was seen in 56.6%, obesity in 41.7%, and diabetes in 33.8%.
- At triage, 30.7% of patients were febrile, 17.3% had a respiratory rate above 24 breaths/minute, and 27.8% received supplemental oxygen.
- The rate of respiratory virus co-infection was 2.1%.

An analysis of outcomes among the 2,634 patients who had been discharged from the hospital or who died by the end of the study found —

- 373 patients (14.2%) were treated in the ICU, and the median age of these patients was 68 years.
- 320 patients (12.2%) received invasive mechanical ventilation, 81 (3.2%) were treated with kidney replacement therapy, and 553 (21%) died.
- Mortality for those requiring mechanical ventilation was 88.1%.
- The median post-discharge follow-up time was 4.4 days.
- 45 patients (2.2%) were readmitted during the study period, with the median time to readmission coming in at three days.

Among the 3,066 patients who remained hospitalized at the final study follow-up date, the median age was 65 years and the median follow-up at time of censoring was 4.5 days. The study was published in *JAMA* on April 22.

Continuous Pulse Oximetry Overused in Infants with Bronchiolitis

National recommendations argue against the use of continuous pulse oximetry in infants with bronchiolitis who do not require supplemental oxygen, but researchers from the Children's Hospital of Philadelphia find the practice is widespread anyway.

The observational study was conducted in 56 U.S. and Canadian hospitals in the Pediatric Research in Inpatient Settings Network and included freestanding children's hospitals, children's hospitals within hospitals, and community hospitals. Data were gathered on 3,612 patients between the ages of 8 weeks and 23 months who were hospitalized during 2018 and 2019. Forty-six percent of patients who did not receive supplemental oxygen were monitored via continuous pulse oximetry. After standardizing the results to account for differences in variables across hospitals that could have influenced monitoring, researchers found the percentage of patients being unnecessarily monitored ranged from 6% to 82%.

"We were surprised by the huge amount of variation we saw across the hospitals in this study, which shows many institutions are using monitoring unnecessarily as a safety net," said study author Christopher P. Bonafide, MD, MSCE. "This study represents an essential first step in phasing out an overused, low-value care practice that does not improve outcomes, raises health care costs, and leads to alarm fatigue among health care workers."

The study appeared in a recent edition of *JAMA*.

COVID-19 Studies in the Works

The COVID-19 pandemic has sparked a flurry of research activity in the United States and around the world. Here's a quick look at a small number of the studies getting underway —

- Engineers from Johns Hopkins are developing and prototyping a 3D-printed splitter that will allow a single ventilator to treat multiple patients while safeguarding against risks such as cross-contamination and poor patient outcomes due to the inability to deliver effective oxygen levels for both patients. The new design includes an air-flow controller and flow meters, allowing clinicians to monitor and adjust air flow for each patient and a filter designed to prevent cross-contamination between patients.
- Cornell University researchers are drilling down into the intricate procedure of membrane fusion — a critical part of the mechanism by which coronaviruses spread — in the hopes of finding an antibody that could block the virus's entry by interacting with the fusion peptide.

- Investigators from Thomas Jefferson University are working on a vaccine called CORAVAX that will combine part of SARS-CoV-2 with another already proven vaccine that can serve as a carrier. If successful, they believe they can leverage the fact that manufacturing plants around the world already have the know-how to produce large quantities of the proven vaccine.
- A team from Stony Brook University is developing computer models to better understand how the "spike" protein on the surface of SARS-CoV-2 interacts with the cells it infects, with the hope of speeding the discovery of new drugs to fight the infection.
- Scientists at Dana-Farber Cancer Institute are using their library of 27 billion human antibodies against viruses, bacteria, and other invaders to create an antibody therapy for COVID-19. The researchers have been down this road before. They created an antibody therapy for MERS in 2012 that proved successful in laboratory experiments.
- An international group of researchers, including those from the University of Alabama at Birmingham, has launched a clinical trial to see if inhaled nitric oxide (iNO) can improve outcomes for COVID-19 patients with severely damaged lungs. The work builds on the discovery of an antiviral effect for iNO during the 2002–2003 SARS pandemic.
- The University of Tokyo plans to launch a study aimed at evaluating the effectiveness of two drugs already being used to treat other conditions like acute pancreatitis. The study grew out of the discovery that the drugs, nafamostat mesylate and camostat mesylate, can inhibit the viral entry process used by SARS-CoV-2.
- Developers of a research tool called VirScan, which identifies the viruses that have infected a person in the past from a single drop of blood, have added SARS-CoV-2 to the more than 1,000 strains of virus already in the library. The updated tool will be delivered to academic research labs already using the tool and is expected to help in the development of a vaccine or find previously undetected cases.
- A Michigan State University laboratory that specializes in the use of artificial intelligence and big data to discover therapeutics for cancers has developed a computational process for identifying existing drugs that may be repurposed to fight SARS-CoV-2. The team is releasing its results to other labs around the world so a collaborative effort can be mounted to find a drug that will work.
- Researchers at Beth Israel Deaconess Medical Center are enrolling patients in a clinical trial that will examine the role that the anti-clogging drug tPA may play in reducing deaths among COVID-19 patients who develop ARDS. The study was spurred in part by anecdotal reports that a subset of patients with COVID-19-induced ARDS were clotting abnormally around their catheters and IV lines.
- A study getting underway at Rutgers University in New Jersey will enroll around 550 health care providers and 300 non-health care workers to explore new drug treatments, antibody testing, and long-term health tracking for COVID-19. Initial results show women are being infected at a rate 13 times that of men, a disparity the investigators believe may reflect the fact that women make up a greater proportion of the nursing workforce.
- Researchers from South Dakota State University, Cornell University, and the University of Illinois Urbana-Champaign are working on a reusable respirator that can capture and kill SARS-CoV-2. In contrast to the N95 respirator, which uses passive filters to prevent wearers from inhaling airborne particles, the new respirator will actively capture virus-carrying aerosol droplets using a combination of copper-based filters and temperature changes that help the droplets adhere to the respirator walls. A combination of raising the temperature of the walls and the effect of ions generated from copper wires in the filter will help inactivate the virus. The research is being funded by a grant from the National Science Foundation.

Contribute to the AARC "Transitions" Column

The AARC "Transitions" column is devoted to sharing news about the passing of AARC members. Submit news about your colleagues' recent passing using our Transitions online form. Please provide any

information about the member's recent death, such as an obituary, so that we can share it with our members and pay tribute.

Tell Your Story

Every therapist has a story to tell about a favorite or most memorable patient that would interest others in the profession. Maybe it was an "aha moment" when you knew you had made the right professional decision for that patient. Maybe it was when you first realized how much difference you were making in the lives of that patient and his family. Or maybe it was just something the patient said or did that made you laugh or cry or just be inspired to be a better RT. Our "Storytellers" column is the place to share them. Send your story to heather.willden@aarc.org.

Industry Watch

VIDA Diagnostics announces additional funding

VIDA Diagnostics, Inc., has received $2 million from OSF Ventures as a second close of its C round funding. The investment augments an $11 million investment round earlier this year led by First Analysis Corporation. The company's LungPrint is a suite of products and services powered by artificial intelligence that provides clinically validated imaging analysis to health care providers and clinical trial partners to obtain a more precise, personalized profile of lung health. LungPrint is clinically cleared in the United States, the European Union, Australia, and Canada.

Exhalation filter aims at mitigating caregiver exposure

The Circulaire II Aerosol Drug Delivery System from Westmed, Inc., is a quasi-closed device that features an integral exhalation filter with bacterial (> 99.99%) and viral (> 99.98) efficiencies that reduce health care worker exposure to exhaled droplets and medication during nebulizer therapy. While not a complete solution, the Circulaire II from Westmed is the only aerosol delivery system currently available that includes an integral exhalation filter as a standard feature. The company believes the device may mitigate caregiver exposure to contagions like COVID-19 during the administration of aerosol therapy to patients.

Home sleep apnea testing device reenters the market

Cadwell Industries, Inc., has re-introduced the ApneaTrak home sleep apnea testing (HSAT) device, with three models to meet multiple levels of clinical need to help diagnose sleep apnea and to test the efficacy of treatments. According to the company, ApneaTrak offers a customizable experience with non-proprietary inputs, so care providers can use the accessories they and their patients prefer. Patient video guides, color-coded connectors, and automatic study start times help improve study success rates. Reviewing polysomnography and HSAT studies on one integrated software platform provides efficiency in training and ongoing use.

Theravance advances drug for treatment of COVID-19

Theravance Biopharma, Inc., has announced that it is advancing TD-0903, a lung-selective nebulized Janus kinase inhibitor, into clinical development to assess its utility in preventing the cytokine storm associated with acute lung injury in patients hospitalized due to COVID-19, with the ultimate goal of preventing progression to ARDS.

“In response to the unprecedented health care challenges presented by the emergence of COVID-19, we have combined our immunology and respiratory medicine expertise to accelerate development of our nebulized lung-selective JAK inhibitor, TD-0903,” said CEO Rick E. Winningham. “TD-0903 could provide benefit to hospitalized patients by preventing the progression of lung hyperinflammation and reducing the requirement for, or the duration of, assisted ventilation.”

Trial begins to test RSV drug against COVID-19

Bausch Health Companies, Inc., has initiated a clinical trial program in Canada to evaluate an investigational use of VIRAZOLE (Ribavirin for Inhalation Solution, USP) in combination with standard of care therapy to treat hospitalized adult patients with respiratory distress due to COVID-19. Because ribavirin is a synthetic nucleoside that works to stop viral replication, VIRAZOLE may be effective in reducing the severity of COVID-19 infection. The drug is currently used to treat hospitalized infants and young children with severe lower respiratory tract infections due to respiratory syncytial virus.

Online education addresses craniofacial sleep medicine

Vivos Therapeutics, Inc., has launched an online education and training program to inform dentists and other health care providers around the United States about the emerging field of craniofacial sleep medicine. The company sponsored its first online education and training summit on March 26–27, and additional two-day events were scheduled twice a week thereafter to accommodate the demand for the training. More than 4,300 health care professionals concerned about sleep, breathing, and wellness have registered for the program.

Somnetics repurposing CPAP machines for COVID-19

Minneapolis-based Somnetics International, Inc., is working to repurpose its inventory of Transcend CPAP machines for use in the fight against COVID-19.
"We know we have a part to play in fighting this pandemic,” said CEO Clarence Johnson. “As a medical device manufacturer, we understand the importance these devices can play in helping COVID-19 patients with breathing insufficiency. We are working as fast as possible to boost production and convert our CPAP machines to help prevent a nationwide shortage of ventilators in health care settings.”

Agreement reached on furthering iNO delivery system

Third Pole Therapeutics has entered into a global license, development, and commercialization agreement with Chiesi Farmaceutici that will grant the Chiesi Group the right to commercialize Third Pole’s investigational tankless inhaled nitric oxide (iNO) delivery system for the proposed treatment of babies born with hypoxic respiratory failure in the neonatal ICU setting. The partnership provides significant strategic advantages for both companies in anticipation of FDA submission and approval of Third Pole’s product.

"Chiesi's essential, high-quality products, and its sales and marketing team's respected presence in nearly every neonatal ICU will facilitate rapid early adoption of Third Pole's device," said Third Pole CEO Bill Athenson. "The combination of tankless portable technology and Chiesi Group's global reach could dramatically expand access to life-sustaining iNO and fulfill a very large and long-standing unmet worldwide need."

FDA approves saliva test for SARS-CoV-2

The FDA has granted emergency use authorization to Rutgers' RUCDR Infinite Biologics and its collaborators for a new collection approach that utilizes saliva as the primary test biomaterial for the SARS-CoV-2 coronavirus, the first such approval granted by the federal agency. The new saliva-collection method, which RUCDR developed in partnership with Spectrum Solutions and Accurate Diagnostic Labs, will allow for broader population screening than the current method of nose and throat swabs.

"The impact of this approval is significant," said Andrew Brooks, COO and director of technology development at RUCDR. "It means we no longer have to put health care professionals at risk for infection by performing nasopharyngeal or oropharyngeal collections. We can preserve precious personal protective equipment for use in patient care instead of testing."

Home sleep testing from Lunella

Lunella, LLC, is providing consumers with an at-home alternative to the traditional in-lab sleep study as a first-line diagnostic tool. In collaboration with Itamar Medical and telemedicine doctors across the country, the Lunella service enables consumers to undergo the entire process for a sleep apnea diagnosis, from testing to a prescription for therapy, if needed, all from the comfort and convenience of their own homes. Lunella features the new, disposable, FDA-cleared WatchPAT ONE sleep apnea test, which is easy to use and provides accurate results. An independent board-certified sleep physician interprets the confidential test data and prescribes any necessary therapy.

Companies team up to study nitric oxide in COVID-19 patients

According to Mallinckrodt, plc, and Novoteris, LLC, the Therapeutic Products Directorate of Health Canada has cleared the companies' joint pilot clinical trial, entitled "Inhaled Gaseous Nitric Oxide (gNO) Antimicrobial Treatment of Difficult Bacterial and Viral Lung (COVID-19) Infections," to investigate the use of Thiolanox, a high-dose inhaled nitric oxide therapy for the treatment of patients at Vancouver Coastal Health Authority facilities who are infected with SARS-CoV-2. The investigative therapy employs Novoteris' Inhaled Nitric Oxide Delivery Device and Mallinckrodt's high-concentration, 5000 PPM nitric oxide gas for inhalation canisters. The study will investigate the therapy's safety and effectiveness in treating COVID-19 and its associated lung complications.

Global registry for intubation providers

The U.S. component of a global registry that aims to help protect health care providers who intubate patients with COVID-19 and better quantify their risk of developing the disease has been launched by the University of Pennsylvania. The intubateCOVID registry tracks exposures and outcomes among providers

who perform intubations, with the ultimate goal of reducing the transmission of COVID-19 to these providers.

“Our goal is to rapidly capture and analyze large-scale data to identify whether these providers are at an elevated risk and, if so, whether the use of specific techniques or [personal protective equipment] helps to reduce that risk,” said Mark Neuman, MD, the national lead for intubateCOVID.