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CHEST Physician®

THE NEWSPAPER OF THE AMERICAN COLLEGE OF CHEST PHYSICIANS

Dana Neely / Stone / Getty Images

NYU Langone performs first US robotic lung transplant

BY JIM KLING

For the first time in the United States, surgeons at NYU Langone Health performed a fully robotic lung transplant. One lung was transplanted robotically, while the other was conducted using open surgery, according to Stephanie Chang, MD, who led the surgical team.

"It was just because it was the first one" she had done robotically that she chose to perform the second lung as an open surgery," said Dr. Chang, associate professor of cardiothoracic surgery at the NYU Grossman School of Medicine in New York and surgical director for the Lung Transplant Program.

"Everyone thought I was crazy. They [said] 'just do a single lung transplant and be done [with the operation] and do a couple of single transplants fully robotically," Dr. Chang said.

"But my thing is I refuse to give a patient a worse outcome. I think almost everyone does better with double lungs. So I'm not going to be like, 'Oh, you just get one lung.' I will do the other side open if I have to for you to get the right operation," she said.

First in US, third robotic lung transplant worldwide

The operation is the third lung transplant worldwide to use robotic surgery, following the first

ROBOTIC // *continued on page 6*

Digital twin model predicts sepsis mortality

BY JIM KLING

FROM CHEST 2024 ▪ A "digital twin" model successfully predicted adverse outcomes in intensive care unit (ICU) patients with sepsis. The research used an adaptive approach and has potential as a decision-making and educational tool.

The digital twin could reduce the risk for some interventions, according to Amos Lal, MD, who presented the study at the CHEST Annual Meeting. That's because the model can predict the outcome.

Virtual modeling outcome

"You don't actually have to make an intervention to the patient, which might be risky. By doing that, you can actually prevent a lot of harm," said Dr. Lal, assistant professor of medicine at Mayo Clinic in Rochester, Minnesota.

The researchers used a one-dimensional convolutional neural network (CNN), similar to two-dimensional CNNs used to classify images, substituting the color channels used in imaging with 38 time-dependent variables.

They applied it to predicting outcomes in the ICU, focusing on data within the first 24 hours of admission. The team added time-sensitive

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INSIDE HIGHLIGHT

NEWS FROM CHEST

Meet the 2025 *CHEST* president

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fully robotic lung transplant performed at Vall d'Hebron Barcelona Hospital in 2023.

In 2022, Cedars Sinai in Los Angeles was the first worldwide to use robot-assisted lung transplant, but robotics was restricted to the final implantation stage, and so the surgery was not considered fully robotic, according to Dr. Chang.

Experienced surgeon suggests criteria for patients best suited to robotic surgery

Dr. Chang is quite experienced at lung transplants, having performed over 300 open surgeries.

The minimally-invasive procedure used the da Vinci Xi robotic system to transplant the male patient's right lung, to remove the lung, prepare the surgical site for implantation, and implant the new lung.

Robotic surgery isn't for every patient, Dr. Chang said. It is best suited to patients who are likely to do well after transplant and go home within a week or 2.

"Their recovery is just limited by getting stronger, taking deep breaths, and pain is part of it. So for them, the robotic approach is helpful," she said.

On the other hand, "for someone who is really sick it's limited a lot by how are the lungs recovering? How is their heart recovering? How are their organs doing? Do they have rejection? And so for anyone that's going to have anything more complex, the risk-benefit ratio is not there to justify robotic surgery," Dr. Chang added.

Small incision and less recovery pain with robotic option

The Vall d'Hebron Barcelona Hospital team noted in a press release that robotic surgery allows the traditional 30-cm incision to be replaced by small incisions just a few centimeters in size.

"This novel surgical technique allows us to cut a small section of skin, fat, and muscle, leaving a wound that closes easily. Not only is this much safer than the traditional method, but for this first patient it has been virtually painless," Albert Jauregui, MD, PhD, who heads the Thoracic Surgery and Lung Transplants Department at Vall d'Hebron University Hospital, said in the press release.

The robotic surgery field is steadily growing, according to Richard J. Bransford, MD, who performs robotic orthopedic surgery.

"I believe that robots are sort of in kindergarten or first grade but have the capacity with technology to grow year by year. I believe it is important for us to get on board early to grow and learn with the robots," he said.

"And also to allow for our next generation of [surgeons] to become familiar with our enabling technologies to learn along the way with the whole process," said Dr. Bransford, an orthopedic surgeon specializing in the spine at UW Medicine in Seattle, Washington.

Robotic surgery still requires surgical precision

He also stressed the need for physicians to remain vigilant when using robotic technology.

"A lot can go wrong if one is not still meticulous to detail and double checking. We cannot assume that the robot and the technology is fail-proof. I have seen some significant complications happen from robotics and all other enabling technologies as attention to detail was not maintained," Dr. Bransford said.

"This is certainly not common and a result of the user and not the technology. We still must go back to the basic principles and understand anatomy and the principles of what we need to accomplish," Dr. Bransford said.

Dr. Bransford's department receives fellowship support from AO Spine and Globus Medical and a grant from Propio. Dr. Chang has no relevant financial disclosures. The press release did not include a disclosure statement for Dr. Jauregui. ■

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Social adversity ups mortality risk in patients with pulmonary hypertension

BY JIM KLING

FROM CHEST 2024 ▪ BOSTON — Social adversity is associated with worse survival among patients with PH, according to a retrospective study of a New York City population. Among HIV+ patients with heart failure, PH was associated with about a threefold increase in all-cause mortality, but that risk increased to about sevenfold when social adversity, identified by a licensed social worker, was also present. A sub-analysis of both HIV+ and HIV– patients showed worse mortality outcomes with social adversity in both groups.

"Almost the majority of patients that we treat have either some social adversity or no insurance or are undocumented, so as a group of residents, we decided to study the impact of these factors on their health and the care that can be provided. We started using the two cohorts and now we keep it going with every new resident," said Luca Biavati, MD, who presented the study at the CHEST Annual Meeting. "The presence of any form of socioeconomic disadvantage is negatively impacting care and for a large part of the population, there are some factors that could probably be addressed by either an institutional or hospital policy," said Dr. Biavati, who is an internal medicine resident at Jacobi Medical Center, New York.

Other factors are more difficult to address, such as lack of education. "[Some patients] don't understand the gravity of their issue and medical condition until it's too late, and then they're not fit enough for the treatment, or just because of the social situation, they cannot qualify for advanced therapies," Dr. Biavati said.

The researchers established two cohorts: one consisting of patients with HIV and heart failure who may or may not have had PH and one comprising patients with PH with or without HIV and heart failure. In the HIV/heart failure group, PH without social adversity was associated with a nearly threefold increase in all-cause mortality (hazard ratio [HR], 2.83; $P = .004$), whereas PH with social adversity was linked to a more than sevenfold increase in all-cause mortality (HR, 7.14; $P < .001$). Social adversity without PH was associated with a more than fourfold increase (HR, 4.47; $P < .001$).

Within the PH cohort, social adversity was associated with lower survival ($P < .001$). When the researchers broke down the results by types of social adversity, they found statistically significant relationships between greater mortality risk and economic instability within the HIV+ population (HR, 2.59; $P = .040$), transportation issues within the HIV– population (HR, 12.8; $P < .001$), and lack of social or family support within both the HIV– (HR, 5.49; $P < .001$) and the HIV+ population (HR, 2.03; $P = .028$).

The research has prompted interventions, which are now being studied at the institution, Dr. Biavati said. "We have a policy of giving medications in bags when we discharge a patient with a social adversity. We go to the pharmacy, bring up the bag of medication, and we [put it] in their hands before they leave the hospital. They get a 1- or 3-month supply, depending on the medication, and then we usually discharge them with a clinical appointment already scheduled with either a pulmonary or primary care provider, and we usually call them before every appointment to confirm that they're coming. That increases the chances of success, but there's still a very long way to go," said Dr. Biavati.

Dr. Biavati was blinded to the results of the intervention, so he could not report on whether it was working. "But I can tell you that I've had busier clinics, so hopefully that means they're showing up more," he said.

The problem is complex, according to Sandeep Jain, MD, who moderated the session. "Social adversity means lack of education. Lack of education means lack of compliance. Lack of compliance means what can you do if people are not taking medications? So it's all matched together. It's all lack of education and lack of money, lack of family support. And these drugs they have to take every single day. It's not that easy. It's very easy for us to say I had antiretroviral treatment for 6 months. It is almost impossible to continue regular treatment for that long [for a patient with social adversity]. You can't blame them if they aren't taking treatments. It's very difficult for them," said Dr. Jain, an associate professor of pulmonary care medicine at Broward Health, Plantation, Florida.

That underscores the need for interventions to address the barriers of social adversity. "We have to [practice] medicine considering the social situation of the patient and not just the medicine that we study in books," Dr. Biavati said.

Dr. Biavati and Dr. Jain reported no relevant financial relationships. ■

TWIN

// continued from page 1

data like vitals, laboratory values, and interventions every 15 minutes. That contrasts with existing models that are usually static, relying on values at admission or at 24 hours. It also takes into account time-insensitive data like age, gender, and comorbidities. "Combining these two and coming up with the prediction model in real time can give you a more informed decision about how these patients are going to perform over a period of 2 weeks or 4 weeks of their stay within the ICU. And of course, as we get more and more data within the first 24 hours, the performance of the model improves as well," Dr. Lal said.

The researchers created a virtual model of the patient and then performed an intervention on the patient and a simulated intervention on the virtual patient. "Then we advance the clock and the patient either improved or deteriorated, and we compared how the digital twin performed, whether the changes were concordant or discordant [between the virtual and real-world patients]," Dr. Lal said.

The model was designed to predict which patients with sepsis would be at greater risk for death or ICU stays longer than 14 days. It was created using data from 28,617 patients with critical care sepsis who were treated between 2011 and 2018, with 70% used as a training set, 20% as a test set, and 10% as a validation set. The researchers conducted an external validation using MIMIC-IV data on 30,903 patients from the Beth Israel Deaconess Medical Center in Boston. The model included 31 time-independent variables and 38 time-dependent variables that were collected every 15 minutes at the Mayo Clinic and every 60 minutes at Beth Israel Deaconess. Surgical patients represented 24% of the Mayo dataset and 58% of the MIMIC-IV dataset, but otherwise the two groups were demographically similar. At 24 hours, the area under the receiver operating characteristic curve for predicting 14-day mortality was −0.82 in the Mayo validation cohort and −0.78 in the MIMIC validation cohort. The model improved in accuracy over time as more data were accumulated.

Dr. Cable called for institutions to develop such models rather than relying on companies that might develop software solutions.

The session's co-moderators, Sandeep Jain, MD, and Casey A. Cable, MD, MSc, FCCP, praised the work. Dr. Cable, associate professor of pulmonary care medicine at VCU Health, Richmond, Virginia, noted that the model used both surgical patients and medical patients with sepsis, and the two groups can present quite differently. Another variable was the COVID pandemic, where some patients presented at the hospital when they were quite sick. "I'm curious how different starting points would play into it," she said. She called for institutions to develop such models rather than relying on companies that might develop software solutions. "I think that this needs to be clinician-led," Dr. Cable said.

Dr. Jain, an associate professor of pulmonary care medicine at Broward Health, Plantation, Florida, suggested such models might need to be tailored to each institution, but "my fear is it could become too expensive, so I think a group like CHEST could [create] an open-source system to have their researchers jumpstart the research on this," he said.

Dr. Lal, Dr. Jain, and Dr. Cable reported no relevant financial relationships. ■

Chronic cough benefit with semen strychni?

BY NEIL OSTERWEIL

FROM CHEST 2024 ▪ If standard therapies don't give relief to patients with refractory cough associated with interstitial lung disease, maybe a little poison could do the trick. Among 41 patients with IPAFs who had intractable cough, treatment with semen strychni was associated with improvement in patient-reported outcomes, said Mingwan Su, MD, at Guang'anmen Hospital and the China Academy of Chinese Medical Sciences in Beijing, China. "Semen strychni is associated with reduction in cough and can be an effective drug therapy for refractory cough in association with IPAFs," she said in an abstract session at the CHEST Annual Meeting.

Semen strychni is derived from the dried seeds of the plant *Strychnos nux-vomica L*. Its main toxic component is strychnine. Semen strychni is a central nervous system agonist that has reported efficacy in the treatment of musculoskeletal and autoimmune conditions. The medication also has immunomodulatory properties, Dr. Su said, and is thought to have beneficial effects against cough associated with IPAFs by reducing hypersensitivity.

To test this, Dr. Su and colleagues conducted a single-center retrospective study of the effects of semen strychni on 41 patients with IPAF-associated cough who were treated with oral semen strychni 300 mg/d for 2 weeks.

These patients were paired with 41 control individuals matched for age, sex, and disease course. Control individuals received standard-of-care therapies.

The investigators found that for the primary endpoint of change in the visual analog scale (VAS) at 2 weeks, there was a significantly greater reduction from baseline among those treated with semen strychni compared with controls (mean VAS score at baseline was 4.9 and 2.1 at the end of treatment, vs 4.6 pre- to 3.3 post-treatment in controls). This difference represents an odds ratio (OR) of 0.75 ($P <$ .001). The toxic compound also was associated with greater patient-reported improvement in quality of life, measured with the Leicester Cough Questionnaire.

Patients in the experimental arm had mean scores of 11.9 before treatment and 19 at the end of therapy vs 12 and 15.1 points, respectively, among those in the control arm (OR of 3.8, $P <$ .001).

There were no reported cases of pain, fainting, or bleeding in either study group, although there was one case of muscle twitching in the semen strychni group, Dr. Su reported.

There is evidence to suggest that semen strychni may have a calming effect through action in the STAT3 pathway, considered to be a promising therapeutic target for musculoskeletal conditions, Dr. Su noted.

"My feeling is that these kinds of abstracts are welcome, but this is far from reality at this point," said Vijay Balasubramanian, MD, a pulmonologist in Fresno, California.

"We need some kind of a regulated way of understanding dose characteristics and pharmacokinetics, and so it should be followed by more systematic studies," he said.

Both Dr. Balasubramanian and his co-moderator Andrew R. Berman, MD, director of the Division of Pulmonary and Critical Care Medicine and Allergy and Rheumatology at Rutgers Health New Jersey Medical School in Newark, New Jersey, said that they sympathize with clinicians and their patients who seek out unusual therapies.

"It's very frustrating to treat chronic cough, especially associated with fibrotic lung disease, and the extent to which researchers will go to find that one product that perhaps can make a difference is understandable," Dr. Berman said.

Dr. Su did not report a study funding source. Drs. Su, Balasubramanian, and Berman reported no relevant financial relationships. ▪

Hospitalized patients with COPD and GERD have better short-term outcomes

BY JIM KLING

FROM CHEST 2024 ▪ BOSTON — Gastroesophageal reflux disease (GERD) is associated with better in-hospital outcomes for patients hospitalized with COPD. The finding is a surprise, considering that GERD has been associated with more COPD exacerbations. GERD is also more common among patients with COPD than in the general population.

"It was a very surprising result. We double-checked the analysis once we got it the first time because the whole expectation was that the outcomes will be worse. But because it's a retrospective study and it's based on a national database, there are some limitations," said ABM Nasibul Alam, MD, who presented the study at the CHEST Annual Meeting. Dr. Alam is an internal medicine resident at Northwestern Medicine McHenry Hospital, McHenry, Illinois.

One possible conclusion is that acid reflux therapies received in hospital may be benefitting COPD. The retrospective nature of the study precludes establishing a causal relationship, but there are possible mechanisms that could account for a benefit, Dr. Alam said. "They might prevent micro-aspirations or silent aspirations in COPD patients. Sometimes you may not have a clinical diagnosis of GERD, but the patient might have silent micro-aspirations, so it might contribute to decreasing that," Dr. Alam said.

The study was conducted to fill a gap in the literature. "Some studies have shown that the lung function in COPD patients gets moderately decreased if they have coexisting GERD, but there aren't any studies that have looked into how it impacts COPD patients when they're hospitalized, and especially acute complications," Dr. Alam said.

The researchers retrospectively analyzed data from the Nationwide Readmissions Database from 2017 to 2020, utilizing ICD-10 codes to identify 3,798,952 hospitalized adults with a primary diagnosis of COPD, of which 26.97% also had GERD. Individuals without GERD were more likely to be male (47.72% vs 39.88%).

After multivariate adjustment, the presence of GERD was associated with a lower mortality rate (adjusted odds ratio [aOR], 0.717; $P <$ .001) and reduced risks for acute respiratory failure (aOR, 0.915; $P <$ .001), need for noninvasive mechanical ventilation (aOR, 0.907; $P <$ .001), need for invasive ventilation for 24 hours or more (aOR, 0.727; $P <$ .001), acute kidney injury (aOR, 0.877; $P <$ .001), septic shock (aOR, 0.731; $P <$ .001), and acute heart failure (aOR, 0.762; $P <$ .001).

Despite these improved in-hospital outcomes, the researchers found that patients with GERD were at a higher risk for 30-day readmission (aOR, 1.08; $P <$ .001). They also had slightly longer lengths of stay (+0.09 day; $P <$ .001) and lower total charges (–$2824.5996; $P <$ .001).

There have also been studies suggesting that GERD can directly lead to worse lung function among patients with COPD. "So it will be interesting to see if these medications have some kind of impact on the lung function as well. We need more robust studies [to determine that]," Dr. Alam said.

It is also important to keep in mind the long-term risk of proton pump inhibitors, especially in older patients. "We have to have good data before we start recommending this," Dr. Alam said. He suggested that physicians should begin to think more holistically about COPD management and consider the comorbidities. Dr. Alam has studied vitamin B12 deficiency in patients with COPD and found an association with cardiovascular comorbidities. "There are so many comorbidities with COPD. COPD itself puts patients at risk of cardiovascular comorbidity, for example. So when we have patients with COPD, we have to think about all those comorbidities and have to manage the patients comprehensively rather than just focusing on the specific targeted interventions," Dr. Alam said.

The study should encourage further research, according to Kunal Deokar, MD, who moderated the session where the study was presented. "It does give us a signal that probably we should have more studies to look into whether patients hospitalized for COPD with GERD really have lower mortality rates, and what will be the effect of treatment on these patients," said Dr. Deokar, who is an assistant professor of pulmonary medicine at the All India Institute of Medical Sciences, Delhi, India.

Drs. Alam and Deokar disclosed no relevant financial relationships. ▪

AFib burden increases with COPD hospitalization

BY NEIL OSTERWEIL

FROM CHEST 2024 ▪ BOSTON — Patients with COPD who have exacerbations requiring hospitalization should be monitored for cardiac arrhythmias, investigators said.

This recommendation is based on results of a study of medical records showing that among more than 20,000 hospitalizations for patients with COPD without concurrent heart failure (HF), 40% patients had at least 6 minutes of daily atrial fibrillation (AFib) burden, and nearly half of these patients had at least an hour of daily AFib burden; patients with COPD and concurrent HF had similar daily AFib burdens, reported Trent Fischer, MD, MS, senior principal scientist at Medtronic in Minneapolis.

"We can conclude that AFib burden increases in the weeks after a hospitalization for COPD if they don't have a concurrent diagnosis of heart failure. Also, having concurrent heart failure increases the risk of atrial fibrillation and increases the atrial fibrillation burden around the time of COPD hospitalization," he said in a rapid-fire oral abstract session at the CHEST Annual Meeting.

The findings indicated a need for increased vigilance for AFib around the time of a serious COPD exacerbation and may explain at least some of the increased risks for stroke observed in patients who are hospitalized for COPD exacerbations, he said.

Retrospective study

Dr. Fischer and colleagues conducted the study to characterize the AFib burden among patients both with and without HF who were hospitalized for acute COPD exacerbation and to determine the temporal relationship between AFib and hospitalization.

They drew data from 2007 through 2021 on patients with implantable cardioverter defibrillators, cardiac resynchronization therapy devices, pacemakers, and implantable cardiac monitors, using the Optum de-identified electronic health record dataset linked with Medtronic's CareLink database to conduct a retrospective analysis. They looked at admissions for COPD linked to available device diagnostic parameters between 30 days prior to and 60 days after admission for COPD.

They identified a total of 20,056 COPD hospitalizations for patients with concurrent HF and 3877 for those without HF.

Among patients with HF, 43% had a daily AFib burden of at least 6 minutes, and 22% had at least 1 hour of irregular rhythms. Among patients without HF, 40% had at least 6 minutes of irregular rhythms daily, and 18% had at least 1 hour.

Among patients with HF, the daily average AFib burden increased from a baseline of 158 min/d 30 days before an admission to 170 min/d at admission, returning to baseline by 20 days after hospitalization.

For patients without HF, the AFib burden increased from 107 min/d at baseline to 113 min/d during hospitalization and returned to baseline by 20 days after hospitalization.

Confounding factor?

In the Q&A, session moderator Krishna Sundar, MBBS, MD, FCCP, a pulmonary, sleep medicine, and critical care medicine specialist at St. John's Medical Center in Jackson, Wyoming, said that when patients with HF get admitted for COPD exacerbations, their HF typically worsens and asked Dr. Fischer how he could tell the difference.

"I know there's a lot of interaction between heart failure and COPD. They're well-known comorbidities, and the exacerbation of one can bring on worsening of the other. At least with this database, we can't really tease out any sort of differences," Dr. Fischer replied.

"I think that a diagnosis of COPD exacerbation is pretty well laid out, but it's sometimes difficult to separate worsening of heart failure in these patients, and often these patients get treated for both problems. It's clear that it's the heart failure patients who are having more atrial fibrillation episodes, which is not surprising, but the question is how much is the COPD exacerbation contributing to the atrial fibrillation?" Dr. Sundar said.

The study was supported by Medtronic. Dr. Fischer is employed by the company. Dr. Sundar reported no relevant financial relationships. ■

ACIP amends PCV recommendations for older adults

BY HEIDI SPLETE

The US Centers for Disease Control and Prevention's (CDC's) Advisory Committee on Immunization Practices (ACIP) now recommends a pneumococcal conjugate vaccine (PCV) for all PCV-naive adults aged 50 years or older. The new recommendation, which passed with an ACIP member vote of 14 for and 1 against, expands the current age-based recommendations, which include children younger than 5 years and adults older than 65 years, as well as adults aged 19-64 years with underlying conditions or risk factors who have not received a PCV and certain adults who have received PCV13 but not PCV20.

The recommendation would leave the choice of PCV up to the clinician. The updated language calls for a single dose of PCV (which could be PCV15, PCV20, or PCV21) for all adults aged 50 years or older; adults aged 19-64 years with underlying conditions (for whom PCV is already recommended) could receive the newly approved PCV21 as an option.

The decision was based in part on economic analyses of the use of PCV in adults aged 50-64 years in the United States. Miwako Kobayashi, MD, presented the summary of the Pneumococcal Vaccines Work Group's interpretation of the evidence and the proposed recommendation in October 2024, when the ACIP voting occurred.

Data from the CDC show an increase in the relative burden of pneumococcal disease in adults aged 50-64 years based in part on the success of the pediatric PCV program, she said. Health equity was another main factor in the Work Group's decision to recommend vaccination for adults aged 50 years or older.

"Disparities in pneumococcal vaccine coverage by race and ethnicity exist for both age-based and risk-based indications," Dr. Kobayashi noted.

The Work Group acknowledged that the overall effect of a vaccine recommendation on health equity is complex, but the majority agreed the update would improve health equity by increasing vaccine coverage for those with known or unknown risk factors and providing protection at an earlier age when some populations already experience elevated disease rates. As for safety, the Work Group concluded that the undesirable anticipated effects of PCVs are minimal, despite the potential signal for Guillain-Barré Syndrome, and the CDC and US Food and Drug Administration (FDA) will continue to monitor post-licensure safety of PCVs. A majority of the ACIP Pneumococcal Vaccines Work Group supported the approved option, but agreed that a future booster dose may be needed, Work Group Chair James Loehr, MD, said in his presentation. Overall, key uncertainties remain, including indirect effects of new pediatric pneumococcal vaccines on adults, data on the duration of protection with adult vaccinations, and the impact new higher-valency vaccines have on adults, several of which are in development, Dr. Loehr said.

A new 21-valent PCV, known as PCV 21, was approved by the FDA for adults aged 18 years or older in June 2024, Dr. Loehr said. "PCV21 is not PCV20 with one additional serotype" and provides additional protection, he emphasized. The Work Group examined models involving PCV21 and the existing PCV20. However, a majority of the Work Group agreed that having age-based recommendations based on vaccine product would be more challenging to implement and that insurance coverage may be a factor given the recent approval of PCV21. Therefore, the proposal submitted to the full ACIP was not for a specific PCV.

Dr. Loehr said although as Work Group Chair he was tasked with making the motion in favor of the recommendation, he voted against it as a voting member because of his strong opinion that only the PCV21 vaccine is needed for vaccine-naive adults aged 50 or older. "I think that PCV21 is a better vaccine that targets more serotypes," he said. Data presented at the February 2024 ACIP meeting showed more than 80% coverage vs less than 60% coverage for invasive pneumococcal disease with PCV21 vs PCV20 among adults aged 65 or older and those aged 19-64 years with a risk-based indication, Dr. Loehr said. ■

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INNOVATIVE MEDICINE

Best Practices

Integrated Artificial Intelligence Screening to Optimize Patient Identification for Bronchoscopic Lung Volume Reduction Therapy: Redefining Patient Selection with SeleCT™ Screening

Executive summary

Chronic obstructive pulmonary disease (COPD) is the third leading cause of mortality globally, with ~70% of cases undiagnosed. Patients with advanced emphysema, a severe form of COPD, have historically been undertreated due to inadequate patient identification and lack of access to specialist treatment. Treatments, such as bronchoscopic lung volume reduction (BLVR) with the Spiration™ Valve System (SVS), have demonstrated significant improvements in patient outcomes.[7] To streamline patient selection, Olympus' artificial intelligence (AI)-powered SeleCT™ Screening tool identifies eligible candidates for BLVR by analyzing chest computed tomography (CT) scans. Pilot programs show increased patient identification rates and faster treatment times, enhancing access to care for underdiagnosed COPD.

COPD remains the most significant pulmonary condition globally, and most people with COPD go undiagnosed

COPD is widely considered the most significant pulmonary condition globally, ranking fifth in terms of overall disease burden and third with respect to mortality worldwide.[1] Emphysema, a severe form of COPD, affects 4.7 million individuals in the United States;[2] however, significantly more people are thought to have undiagnosed COPD.[3] Community-based population studies conducted in North and South America, Europe, Australia, and Asia collectively suggest that approximately 70% of patients with COPD globally may be underdiagnosed.[4] Despite existing treatments, patients with emphysema often experience a negative impact on their quality of life.

Advancements in treatments are safe and effective for patients with advanced emphysema

In recent years, several advancements in treatments have become available, and these have been shown to improve symptoms in patients with emphysema. One such breakthrough treatment is the use of endobronchial valves (EBV) such as the Spiration™ Valve System (SVS) (Olympus Corp.) in BLVR procedures.[5] BLVR is recommended as a treatment approach in the Global Initiative for Chronic Obstructive Lung Disease guidelines for patients with advanced emphysema.[6] Clinical trials,[2, 7, 8, 9] such as EMPROVE, have demonstrated marked improvement in lung function, health-related quality of life, and dyspnea in patients receiving SVS treatment. Treatment effect is maintained for at least 24 months, with an acceptable safety profile, and with minimal device-related issues during the follow-up period. [7]

Historically, identifying appropriate patients for BLVR treatment has been ineffective and time-consuming

Patient selection for BLVR treatment is challenging due to low diagnosis rates,[3, 4] reliance on referrals, and the high number of patients who are ultimately found ineligible[10]. The conventional diagnostic workflow to identify patients for BLVR treatment typically involves pulmonary function tests, clinical tests, and a medical workup, and concludes with radiographic assessment. This resource-intensive process results in many patients undergoing medical workup but ultimately being disqualified due to radiographic findings (e.g., fissure completeness, lack of emphysema severity). For example, of the patients who did not meet eligibility for the EMPROVE clinical trial, 51% were disqualified due to radiographic assessment via CT.[2]

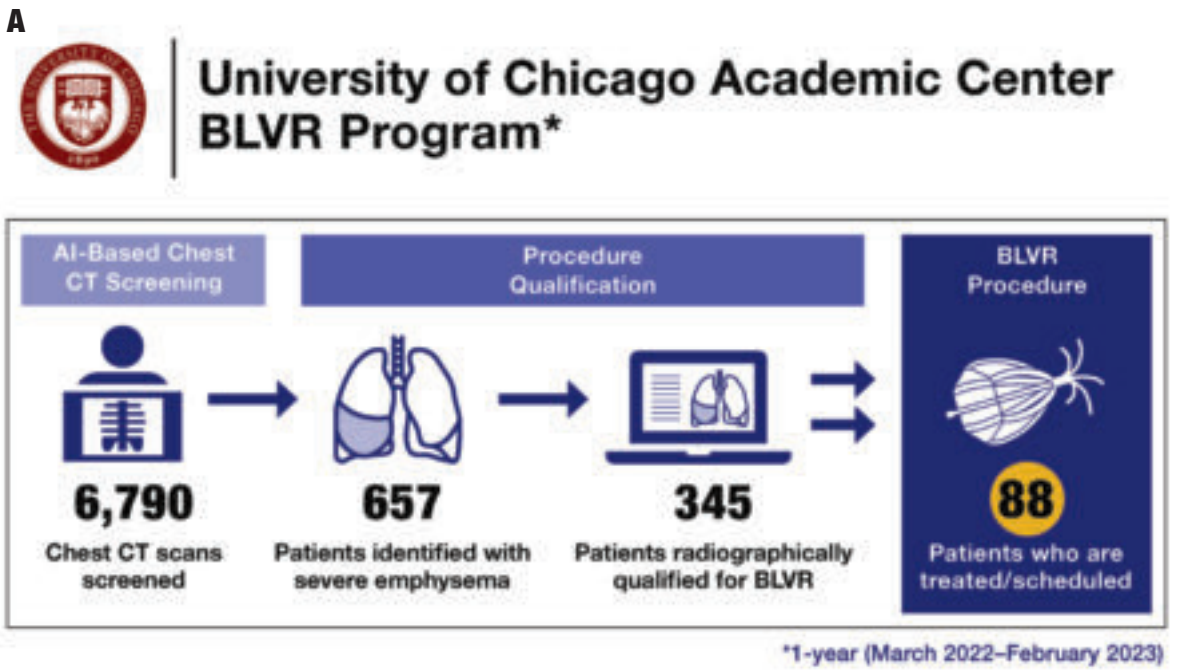
Additionally, the current identification pathways do not capture candidates who may have entered the healthcare system for other reasons or may be suffering from undiagnosed/underdiagnosed COPD. Even after diagnosis, only a fraction of patients with severe emphysema have access to interventional care, with ~82% treated by their primary care physician or non-procedural pulmonologist.[11] Consequently, these limitations often mean a complicated and inefficient selection process, restricting scalability and creating a burden for healthcare providers and patients alike.

Harnessing AI to transform patient identification and increase access to BLVR treatment

Leveraging AI to streamline BLVR patient selection and enhance access to treatment is the goal of Olympus' new screening tool, SeleCT™ Screening, powered by Imbio™. Utilizing proprietary AI technology, SeleCT™ Screening redefines the approach to emphysema diagnosis and patient selection for BLVR treatment by automatically accessing any non-contrast chest CT scans within a hospital, irrespective of the specialty. Scans of potential candidates are automatically sent for quantitative CT (QCT) analysis, and the tool identifies patients with emphysema who may be eligible for EBV treatment by evaluating emphysema severity (i.e., target lobe with ≥40% emphysema involvement at –720 Hounsfield unit) and fissure integrity (i.e., ≥90% completeness of the fissure separating the target lobe).

Results from SeleCT™ Screening are provided in an easy-to-read report to help physicians identify target lobes and fissure integrity scores to facilitate clinical decision-making[12]. SeleCT™ Screening addresses unmet needs with respect to patient selection by prioritizing

Figure 1. Key metrics from pilot studies conducted at (A) the University of Chicago and (B) Memorial Hospital Gulfport



the most common disqualifier, radiographic assessment as the initial step. This reduces burden on the patient, preventing unnecessary clinical workup, as well as alleviating the physician's workload (both radiology and pulmonary). Furthermore, by proactively scanning each qualifying chest CT in the health system, additional patients are flagged for follow-up and treatment discussion.

Implementing AI-based patient screening in two real-world BLVR programs

A BLVR program established at the University of Chicago (an academic center) successfully embedded SeleCT™ Screening within their health system. In a BLVR SeleCT™ Screening pilot study conducted from March 2022 to February 2023, 6,790 chest CT scans were screened, of which 657 met the selection criteria and were selected for further QCT analysis. Of these 657 patients with severe emphysema, 345 radiologically qualified for BLVR, with a fissure integrity of ≥90% and sufficient emphysema severity. Overall, 88 patients had valves implanted or were in the final stages for workup **(Figure 1A)**.

Similarly, a BLVR SeleCT™ Screening pilot study was conducted at Memorial Hospital Gulfport (a community practice) from March 2023 to June 2023. Data have been extrapolated to an annualized basis and are therefore estimates. In total, 3,500 chest CT scans were screened, of which 450 met the selection criteria and were identified for QCT analysis. Of these 450 patients with severe emphysema, 300 radiologically qualified for BLVR, with a fissure integrity of ≥90% and sufficient emphysema severity, and we estimate that they could have had approximately 110 patient candidates for valve treatment **(Figure 1B)**.

Notably, in both the academic center and community practice settings, the traditional workup approach yielded approximately 1–2 cases/month versus 4–8 cases/month with SeleCT™ screening. Corresponding time to valve implantation was 30–90 days versus <30 days, respectively.

Conclusion

The Olympus SeleCT™ Screening tool addresses critical gaps in diagnosing and treating severe emphysema. The tool significantly enhances the identification of patients within the ~70% of the underdiagnosed COPD population by screening all non-contrast chest CT scans across the healthcare system. This proactive approach helps identify potential candidates who might otherwise go undetected. In addition, the SeleCT™ Screening tool may reach COPD patients who are not currently under the care of a specialist, broadening access to advanced interventional treatments such as BLVR with the SVS. Finally, the tool streamlines the patient workup process by prioritizing radiographic assessments as the initial step, reducing unnecessary tests, and improving overall efficiency for healthcare providers and patients. The success of SeleCT™ Screening in both academic and community practice settings highlights its potential to improve patient outcomes, theoretically improving quality of life and ability to perform activities of daily living, by increasing access to life-changing treatments for severe emphysema, while alleviating burden on the healthcare system and accelerating time to intervention. Additionally, it may have a positive impact on COPD readmission rates through more effective COPD management and related benefits, while also solidifying network referrals and enhancing the overall care provided to patients with COPD within the health system.

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Older patients with COPD at risk for PE-linked death

BY NEIL OSTERWEIL

FROM CHEST 2024 ▪ BOSTON — Patients with COPD are at an increased risk for fatal pulmonary embolism (PE) and may require personalized, targeted thromboprophylaxis. Those are the conclusions of investigators who analyzed public health data and found that patients with COPD have a markedly increased risk for PE-related death, particularly among those aged 65-85 years.

The data suggest that "maybe we should start thinking about if we are admitting a patient with COPD in that specific age group, higher thromboprophylaxis for PE," said Marwa Oudah, MD, a pulmonary hypertension fellow at the University of Pennsylvania, Philadelphia. She presented her group's findings in a rapid-fire oral abstract session at the CHEST Annual Meeting.

Known risk factor

COPD is a known risk factor for PE. To estimate how the obstructive lung disease may contribute to PE-related deaths among patients of varying ages, Dr. Oudah and colleagues drew data on deaths due to an underlying cause of PE from 1999 to 2020 from the Centers for Disease Control and Prevention's WONDER database.

They stratified the patients into two groups — those with or without COPD — whose data were included in the Multiple Causes of Death dataset, according to age groups ranging from 35 years to over 100 years. The investigators calculated proportional mortality ratios in the non-COPD group and applied these to the COPD-positive group among different age ranges to estimate the observed vs expected number of deaths.

A total of 10,434 persons who died from PE and had COPD listed among causes of death were identified. The sample was evenly divided by sex. The peak range of deaths was among those aged 75-84 years.

The authors saw an increase in PE-related mortality among patients with COPD aged 65-85 years ($P < .001$).

The ratios of observed-to-expected deaths among patients in this age range were "substantially greater than 1" said Dr. Oudah, with patients aged 75-79 years at highest risk for PE-related death, with an observed-to-expected ratio of 1.443.

In contrast, the rate of observed deaths among patients aged 85-89 years was similar to the expected rate, suggesting that the COPD-PE interaction may wane among older patients, she said.

Among patients aged 35-64 years, the risk for death from PE was not significantly higher for any of the 5-year age categories.

The investigators emphasized that "given the observed trend, individualized patient assessments are imperative to optimize preventable measures against PE in the aging COPD population."

Confounding comorbidities

In an interview, a pulmonary specialist who was not involved in the study commented that older persons with COPD tend to have multiple comorbidities that may contribute to the risk for PE.

"Older patients have so many comorbidities, and their risk for pulmonary embolism and thromboembolic disease is pretty high, so I'm not surprised that 75-79 years olds are having a higher mortality from PE, but it's a little difficult to say whether that's due to COPD," said Krishna Sundar, MBBS, MD, FCCP, a pulmonary, sleep medicine, and critical care medicine specialist at St. John's Medical Center in Jackson, Wyoming, who moderated the session.

The authors did not report a study funding source. Drs. Oudah and Sundar reported no relevant financial relationships. ■

Treatment may reduce long COVID in nondiabetic patients

BY MARCIA FRELLICK

Metformin prescribed within a week of SARS-CoV-2 infection was associated with a 53% reduction in long COVID or death over 6 months in people without diabetes or prediabetes, according to a recent study. Long COVID was determined by using the diagnostic code U09.9 or a computable phenotype based on symptoms and conditions. Most participants in this study were infected with the Omicron variant.

Researchers, led by Carolyn Bramante, MD, MPH, an internist, pediatrician, and obesity medicine specialist at the University of Minnesota Medical School in Minneapolis, simulated a randomized controlled trial (RCT) of metformin vs control using the National COVID Cohort Collaborative (N3C) Electronic Health Record Database. The intervention was a prescription for metformin within 6 days of SARS-CoV-2 infection. Those in the control group, which was designed to mimic placebo, had a prescription for fluvoxamine, fluticasone, ivermectin, or montelukast (all drugs that have been used off-label for COVID but have shown no effect on acute COVID outcomes in clinical trials). Exclusions included anyone with a previous metformin prescription or a comparator prescription; any indication for chronic metformin use; or a contraindication for metformin.

Dr. Bramante led a previous RCT, COVID-OUT, with 1323 people that indicated metformin showed possible benefit for preventing the more severe components of COVID-19. She also led a 2020 review, in which she examined electronic health records from adults with type 2 diabetes or obesity. The researchers found that women taking metformin before they developed COVID-19 were significantly less likely to die after being hospitalized — although men didn't see the same protective effect. Another randomized trial of 20 people found that 60% of those taking metformin vs 100% of those given a placebo had detectable SARS-CoV-2 viral load by day 4. Other trials have highlighted the anti-inflammatory and antiviral properties of metformin. The existing evidence coupled with metformin's well-established safety profile, led Dr. Bramante's team to conduct the current simulated trial in people without diabetes or prediabetes. Dr. Bramante noted that metformin's only US Food and Drug Administration (FDA)–approved indication is for diabetes.

The current study featured a similar racial/ethnic makeup in the metformin and control groups: 16% and 17% were Black and 16% and 13% were Hispanic, respectively. Within 6 months, 4.0% in the metformin group developed long COVID or died compared with 8.5% in the control group (relative risk [RR], 0.47; 95% CI, 0.25-0.89). For prescriptions on days 0-1 relative to infection, the RR was 0.39 (95% CI, 0.12-1.24). When metformin was prescribed on days 0-14, the RR was 0.75 (95% CI, 0.52-1.08).

Emily Erbelding, MD, MPH, director of the Division of Microbiology and Infectious Diseases at the National Institute of Allergy and Infectious Diseases, Rockville, Maryland, who was not part of the study, noted the potential implications of the findings. "We don't have therapies for long COVID, and we don't know how to prevent it in people who have SARS-CoV-2 infections," Dr. Erbelding said. "This analysis points to metformin, a drug that millions of people have taken safely for their diabetes or their borderline diabetes. It's licensed, it's out there, and it's inexpensive. The fact that we have data that point to this potentially being a therapy is important."

Dr. Erbelding said a strength of the study is the size of the N3C Electronic Health Record Database (with data on nearly 9 million COVID cases) the researchers used to simulate the RCT. "[These results] give us a reason to think about doing a large randomized controlled study with metformin," she said. However, there are some limitations, she noted. "The definition of long COVID may not have been applied exactly the same way across all the patients and you don't know what led the prescribers to prescribe metformin. There might have been confounders that couldn't be controlled for or weren't evident in the way they approached the data."

This study has "relatively rigorous methodology for an observational study," Dr. Erbelding said. "It's novel to try to simulate a [RCT] through a large, observational, electronic record–based cohort. Maybe we should be doing more of this because these bioinformatic systems exist now. And we need to get all the public health use out of them that we can."

Drs. Bramante and Erbelding disclosed no relevant financial relationships. This research received support from the intramural/extramural research program of the National Center for Advancing Translational Science, National Institutes of Health. ■

RBC transfusion guidelines in critical care: Making the case for a restrictive approach

BY ANGEL O. COZ, MD, FCCP
Editor in Chief, CHEST Physician

In the high-stakes environment of the intensive care unit (ICU), red blood cell (RBC) transfusions are a common intervention. With approximately 25% of critically ill patients in the US receiving RBC transfusions, optimizing the approach to transfusion is vital not only for patient safety but also for resource management. A recent guideline from CHEST emphasizes the importance of a restrictive RBC transfusion approach in critically ill adults, aligning with growing evidence that restrictive transfusion thresholds do not compromise survival or recovery and may reduce adverse events in many cases. For the bedside clinician and health care systems, this presents both an opportunity and a challenge: to recalibrate transfusion practices while maintaining the highest standards of patient care.


Dr. Coz

Why a restrictive strategy?

Historically, transfusions were administered to optimize oxygen delivery to organs in the presence of anemia. However, studies have highlighted the risks associated with transfusions, such as transfusion-related lung injury, circulatory overload, and increased nosocomial infections. These risks are particularly pronounced in critically ill patients, who are often more vulnerable to complications from any additional physiological burden.

The restrictive approach—typically recommended at a hemoglobin threshold of 7 to 8 g/dL—has been shown to be the safer alternative for most ICU patients, as highlighted in recently published clinical guidelines. The data supporting this approach suggest that a restrictive transfusion strategy not only spares patients unnecessary transfusions but also aligns with cost-effective and resource-efficient health care practices.

Key recommendations

For ICU providers, this guideline presents specific recommendations based on a patient's condition:

For a health care system already strained by limited blood supply and rising demand, a 40% reduction in transfusions across ICUs could alleviate supply pressures and contribute to more equitable resource distribution.

- *General critical illness*: The restrictive approach is preferred over a permissive one, with no adverse effect on ICU mortality, one-year survival, or adverse events. In other words, lower Hgb thresholds do not correlate with poorer outcomes in most critically ill patients.
- *Acute gastrointestinal bleeding*: Evidence favors a restrictive approach, associated with reduced rebleeding risk and short-term mortality. Studies show a significantly lower incidence of transfusion reactions and costs without compromising patient safety.
- *Acute coronary syndrome (ACS)*: A more cautious approach is advised here. In cases of ACS, a restrictive RBC transfusion strategy could potentially increase the risk of cardiac death. It is recommended to avoid a restrictive approach, as it remains unclear whether there is a gradient effect—where risk progressively increases below a hemoglobin level of 10 g/dL—or a threshold effect at 10 g/dL. In other words, the data does not clarify if a hemoglobin level of 9 g/dL is as safe as 10 g/dL. An individualized transfusion approach, considering patient symptoms and other physiological markers, is recommended.
- *Post-cardiac surgery*: For postoperative patients, a restrictive strategy is suggested, as it conserves RBCs without impacting outcomes such as mortality or length of hospital stay.
- *Isolated troponin elevation*: In cases of elevated troponin without evidence of cardiac ischemia, transfusion decisions should consider additional patient-specific variables, with a restrictive approach as the baseline.
- *Septic shock*: RBC transfusions as part of a resuscitation bundle were not analyzed, as isolating the impact of RBC transfusions from other bundle elements was not feasible. However, with no clear benefit and similar adverse effects, neither strategy proved clinically superior. Nonetheless, a restrictive approach conserves RBC units, thereby saving resources and reducing costs.

The economics of restriction

Beyond clinical benefits, a restrictive approach conserves precious health care resources. With the cost of a single RBC unit hovering around $200—and significantly higher once administrative and logistic expenses are accounted for—reducing unnecessary transfusions translates into substantial savings. For a health care system already strained by limited blood supply and rising demand, a 40% reduction in transfusions across ICUs could alleviate supply pressures and contribute to more equitable resource distribution.

Easier said than done

Adopting a restrictive transfusion policy is not without challenges. Clinicians are trained to act decisively in critical situations, and, often, the

GUIDELINES *continued on following page*

FROM THE *CHEST PHYSICIAN* EDITORIAL BOARD

REMINDER: Improved *CHEST Physician*® coming in 2025

Some exciting changes are underway for the *CHEST Physician* publication in 2025. Building on nearly three decades as a leading source for news and clinical commentary in pulmonary and critical care medicine, *CHEST Physician* will roll out several notable improvements, including a digital-forward release of content for increased access and timeliness.

First, the *CHEST Physician* website, chestphysician.org, will undergo a complete transformation. With an improved user experience, you'll be able to find content relevant to your interests and specialties more easily. In addition, *CHEST Daily News*, which features the best of the annual meeting, will be delivered alongside expanded *CHEST Physician* content.

Second, a brand-new email newsletter will hit your inbox twice a month starting in January 2025. The email will feature a quick look into a cross-section of content covering research and clinical practice. This digital-first approach will also get you the news and research you rely on sooner.

Lastly, the redesigned *CHEST Physician* print issue will be produced and delivered quarterly. The first issue will arrive in March 2025. These special issues will feature print-exclusive content and infographics, as well as offer a deeper dive into the most relevant news stories from recent months.

Notably, the editorial team will tailor content to the interests of our readership and will address the issues and topics most relevant to pulmonary and critical care clinicians.

We want to hear from you as the *CHEST Physician* publication undergoes this transformation. What topics do you want more of? How can *CHEST* continue to serve the chest medicine community best? Email chestphysiciannews@chestnet.org to share your ideas.

Thank you for being a loyal *CHEST Physician* reader. We look forward to bringing you elevated content and an enhanced reader experience in the new year. ■

Get to know Incoming CHEST President, John A. Howington, MD, MBA, FCCP

Starting January 1, 2025, current President-Elect, John A. Howington, MD, MBA, FCCP, will become the new President of CHEST. Dr. Howington is a general thoracic surgeon and has been involved with the CHEST organization since first attending a CHEST Annual Meeting in 1997.

Before Dr. Howington steps into the role of President, he spoke with CHEST for a glimpse into his aspirations for 2025.

What would you like to accomplish as President of CHEST?

First, I want to express my gratitude for the honor and privilege of serving as the 87th President of CHEST. The organization is well-served by a high functioning Board of Regents and an incredible staff. My primary goal is to build on the success and momentum of the presidential years of Dr. Buckley and Dr. Addrizzo-Harris. Their annual meetings were a huge success, and the energy and enthusiasm of our members are palpable.

I feel very strongly that great things are ahead of us in the fields of pulmonary medicine and critical care. The CHEST organization will continue to focus on our mission to crush lung disease and stay true to our values of community, inclusivity, innovation, advocacy, and integrity. With 2025 marking the 90th anniversary of the college, I very much look forward to sharing the impact of the organization and showcasing what is yet to come.

We will continue to collaborate with sister societies and like-minded industry partners to improve the quality of patient care and support clinicians in our field. Specifically, I look forward to continuing the momentum we've seen in early identification of lung cancer and increasing cure rates. Working as a team of interventional pulmonologists, respiratory therapists, advanced practice providers, thoracic surgeons, and more, we can make a real impact on what it means to be diagnosed with lung cancer.

Dr. John A. Howington

What do you consider to be CHEST's greatest strength, and how will you build upon this during your presidency?

CHEST's greatest strength is the people involved with the organization. There is such a wonderful culture of inclusivity and innovation cultivated by the outstanding staff, committed volunteers, and expert faculty leaders. We have focused on continuous board development for the last eight years and are seeing the benefits in the strategic and innovative steps the Board of Regents have taken to better serve our members and patients. It's an honor to step into the role of leading such an extraordinary group.

What are some of the challenges facing CHEST, and how will you address them?

While not unique to CHEST, stress and burnout remain an issue in the field of health care. Clinicians are asked to do more with limited resources to provide high-quality care to an increasing number of patients with widely varying needs. We will continue to focus on providing guidance on best practices in the field of chest medicine and sharing innovations that reduce the burdens of health care delivery. To help alleviate the stress put on clinicians, we want to do our part to help remove anything that stands between a clinician and their ability to provide the best care for patients.

What do you ask of members to support you during your presidency?

What I would ask of our members is that they reach out to connect. I want to both celebrate your wins in the field and work with your suggestions to improve CHEST. Making the organization stronger is a collaborative effort, and every voice matters. My email starting January 1 is president@chestnet.org, and if you need some writing inspiration, I've got some suggested prompts:

- Share with me a recent personal success or that of a colleague; we want to help spread the word.
- What do you find most rewarding in your practice?
- What's a recurring challenge you face in practice?
- What is CHEST getting right? Where can we improve?

I look forward to hearing from you.

Warmest regards,

John A. Howington, MD, MBA, FCCP

GUIDELINES *continued from previous page*

instinct is to do more rather than less. However, studies indicate that with proper education, awareness, and decision-support systems, a restrictive policy is both feasible and effective. Institutions may consider behavior modification strategies, such as standardized transfusion order sets and decision-support tools within electronic medical records, to aid in adjusting transfusion practices.

Call to action

The message is clear: For most critically ill patients, a restrictive RBC transfusion strategy is not only safe but optimal. For ICU teams, this calls for a proactive shift in approach. It is a call to scrutinize transfusion triggers and lean toward a judicious, evidence-based approach.

While cases like ACS may require a different approach, the evidence strongly supports that, under most circumstances, less is more. Embracing this approach requires careful consideration, yet the potential benefits for patient safety and health care sustainability are compelling.

As critical care professionals, let us lead the way in refining transfusion practices to uphold patient safety, optimize resources, and adapt to evidence-based guidelines. Visit **www.chestnet.org/RBC-guideline** to learn more. ■

Top reads from the *CHEST* journal portfolio

Nocturnal cardiac arrhythmias, spontaneous breathing trial protocols, and indeterminate lung nodules diagnosis

Journal CHEST®

Nocturnal Cardiac Arrhythmias in Heart Failure With Obstructive and Central Sleep Apnea

By Christian M. Horvath, MD, and colleagues

Dr. Subramanian

Horvath et al's ancillary analysis to the ADVENT-HF trial highlights a significant association between sleep apnea (OSA and CSA) and increased nocturnal cardiac arrhythmias in heart failure patients with reduced ejection fraction (HFrEF). While ADVENT-HF showed no impact of adaptive servo-ventilation on survival and hospitalization, this subanalysis reveals a higher prevalence of arrhythmias, such as excessive supraventricular ectopic activity and atrial fibrillation/flutter (AFib), in these patients. Notably, OSA severity was linked to increased atrial ectopy, though not to persistent arrhythmias like AFib, contrasting with prior studies, notably from the Sleep Heart Health Study (Mehra et al, AJRCCM. 2006;173(8)). This suggests a complex interplay between OSA/CSA and AFib, perhaps mediated by factors such as sympathetic tone and cardiac remodeling. Clinically, these findings underscore the value of targeted sleep apnea screening in patients with HFrEF and suggest the need for individualized arrhythmia risk profiles. Future research should investigate how additional factors mediate sleep apnea's arrhythmic impact.

– Commentary by Shyam Subramanian, MD, FCCP, Member of the *CHEST Physician* Editorial Board

CHEST® Critical Care

Improving Spontaneous Breathing Trials With a Respiratory Therapist-Driven Protocol

By Christopher A. Linke, RN, MHI, CSSBB, and colleagues

Use of respiratory therapist (RT)-driven spontaneous breathing trial (SBT) protocols are known to improve patient outcomes related to extubation from mechanical ventilation. The authors of this study asked whether an RT-driven SBT protocol could be consistently implemented and sustained to improve outcomes. This single-site quality improvement (QI) project aimed to standardize and re-establish an RT-driven protocol for screening patients for SBT readiness and administering SBTs to appropriate patients in an academic ICU. One hundred twenty-eight patients representing 759 safety screen weaning assessment opportunities were included over a baseline sample and three plan-do-study-act (PDSA) cycles. A key takeaway from this QI project is that consistent use of an RT-driven SBT protocol results in improved use and documentation of an SBT safety screening and completion of an SBT earlier in the day. Despite multiple obstacles, including staffing and communication challenges and poor understanding of terminology, standardization of an RT-driven SBT protocol is achievable.

Dr. Farmer

Dr. Faiz

– Commentary by Mary Jo S. Farmer, MD, PhD, FCCP, Member of the *CHEST Physician* Editorial Board

CHEST® Pulmonary

Navigational Bronchoscopy vs CT Scan-Guided Transthoracic Needle Biopsy for the Diagnosis of Indeterminate Lung Nodules

By Robert J. Lentz, MD, and colleagues

In this article, the Interventional Pulmonary Outcomes Group described the VERITAS trial, which will evaluate navigational bronchoscopy (NB) and CT-guided

JOURNAL *continued on following page*

PULMONARY PERSPECTIVES®

Navigating new ACR/CHEST guidelines for screening, monitoring, and treatment of SARD-ILD

BY JOSE R. CASTELLANOS, MD, CAROLINE ZHAO, MD, AND ANTHONY J. ESPOSITO, MD

Interstitial lung disease (ILD) is a frequent complication of systemic autoimmune rheumatic diseases (SARDs) associated with considerable morbidity and mortality. The risk of ILD, however, is higher in a subset of SARDs—rheumatoid arthritis (RA), systemic sclerosis (SSc), idiopathic inflammatory myopathies (IIMs), mixed connective tissue disease (MCTD), and Sjögren's disease (SjD). Prior to this year, guidelines for ILD screening, monitoring, and treatment in this high-risk population did not exist. Accordingly, the American College of Rheumatology (ACR) and American College of Chest Physicians (CHEST) jointly endorsed the recent publication of two separate guidelines detailing recommendations for (1) screening and monitoring and (2) treatment of ILD in adults with SARDs. These guidelines mark the first of their kind, aiming to promote multidisciplinary collaboration and comprehensive, standardized care. Below, we summarize the major highlights from these guidelines.

Screening and monitoring

For patients with SARD, who should be screened for ILD and how?

The prevalence of ILD is not equally distributed amongst those with SARDs, and the heterogeneity poses a challenge when creating guidelines applicable to all. The ACR/CHEST guidelines focus on recommendations for those with SARDs at highest risk of ILD (RA, SSc, IIM, MCTD, and SjD), while excluding pediatric SARDs, sarcoidosis, interstitial pneumonia with autoimmune features, vasculitides, systemic lupus erythematosus, and unclassifiable ILD. As the guidelines' recommendations are all conditional and based on low-quality evidence, an individualized ILD screening approach should be implemented for patients with SARDs with regard to risk.

For patients with these high-risk SARDs, screening for ILD with pulmonary function testing (PFT) and high-resolution chest tomography (HRCT) is conditionally recommended at the time of diagnosis. This recommendation was founded on observational studies showing PFTs have low sensitivity and high specificity while HRCT has high sensitivity and low specificity for detection of ILD. The combination was also favored, as it provides complementary information on functional impact (PFTs) and radiologic pattern (HRCT).

The guideline committee conditionally recommended against several routine tests due to poor performance—chest radiography, six-minute walk distance, ambulatory desaturation testing, and bronchoscopy. There was a strong recommendation against pursuing surgical lung biopsy due to high-quality evidence for harm and low-quality evidence for benefit. If initial screening is negative, repeat screening is left to the discretion of the treating physician; nevertheless, for patients with high-risk features, yearly rescreening should be considered through shared decision-making.

How should patients with SARD-ILD be monitored?

Disease monitoring following a SARD-ILD diagnosis is important. PFTs and HRCT were conditionally recommended over PFTs alone; however, the consensus was that HRCT should be less frequent than PFTs. Ambulatory desaturation monitoring was also conditionally recommended. The committee conditionally recommended against chest radiography, six-minute walk distance, and bronchoscopy for screening.

The frequency of monitoring should be guided by patient symptoms, risk profile, and treatment response due to substantial clinical variation. For this reason, the committee made suggestions only to steer clinicians. For patients with IIM-ILD and SSc-ILD, more frequent PFT monitoring was suggested given the high risk of early, aggressive disease. For all SARD-ILDs, more frequent PFT monitoring was suggested early after diagnosis; less frequent testing should be considered for those with stable disease. No suggestion regarding the frequency of monitoring with HRCT was made; however, HRCT may be useful as a complementary test to PFTs in situations of uncertainty.

Treatment

First-line treatment

What are considerations when using glucocorticoids in patients with SARD-ILD?

The decision to treat SARD-ILD should incorporate patient symptoms, disease activity, risk of progression, and goals of care. For almost all SARD-ILDs, short-term glucocorticoids (ie, <3 months) are considered first-line treatment. The exception is SSc-ILD, for which there is a strong recommendation against glucocorticoids as first-line therapy due to concern for precipitating scleroderma renal crisis. Similarly, glucocorticoids should be used cautiously in those patients with MCTD and SSc features or IIM-ILD with SSc antibodies, though they are not strictly contraindicated.

What are the recommended options for a steroid-sparing approach?

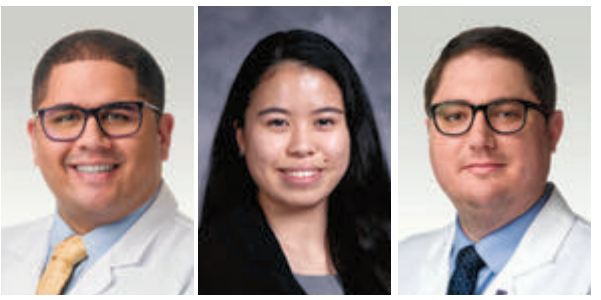
An important goal in the treatment of SARD-ILD is tapering off glucocorticoids to avoid toxicity. Steroid-sparing is used for those requiring long-term immunosuppression. Considerations when choosing steroid-sparing agents include contraindications, side-effect profile, and effect on active extrapulmonary symptoms.

The committee conditionally recommended a hierarchy of first-line steroid-sparing agents via a voting consensus. Mycophenolate was conditionally recommended as the preferred agent in all SARD-ILDs for several reasons: (1) positive outcomes in trials of SSc-ILD, (2) additional limited data in other SARDs, (3) favorable side-effect profile, and (4) physicians' familiarity. Multiple other first-line agents were recommended by disease type. These are summarized in Figure 1.

Progression on first-line treatment

What are considerations for patients with progression despite first-line ILD treatment?

The goal of first-line treatment is to improve or stabilize lung function and symptoms. Unfortunately, some patients with SARD-ILD will progress despite appropriate first-line therapy. Progression of ILD was defined using criteria from the INBUILD trial—a decline in FVC >10% predicted or a FVC decline between 5% and 10% accompanied by worsening respiratory symptoms



Dr. Castellanos Dr. Zhao Dr. Esposito

Dr. Castellanos and Dr. Esposito are with the Division of Pulmonary and Critical Care, Department of Medicine, Feinberg School of Medicine, Northwestern University, Chicago, IL. Dr. Zhao is with the Department of Medicine, Feinberg School of Medicine, Northwestern University, Chicago, IL.

JOURNAL *continued from previous page*

transthoracic needle biopsy (CT-TTNB) for diagnosing indeterminate pulmonary nodules. Although the results are not yet available, this group's work highlights an emphasis to develop multicenter randomized controlled trials with multidisciplinary teams and clinical impactful data with a primary outcome of diagnostic accuracy (diagnostic results that remain accurate through 12 months of clinical follow-up). If NB proves to be a noninferior alternative to CT-TTNB, then it may be a safer option with a lower complication rate (particularly for pneumothorax). We look forward to the final results from the trial, and future studies incorporating newer technologies, including robotic bronchoscopy, will be a welcome adjunct as well.

– Commentary by Saadia A. Faiz, MD, FCCP, Member of the *CHEST Physician* Editorial Board

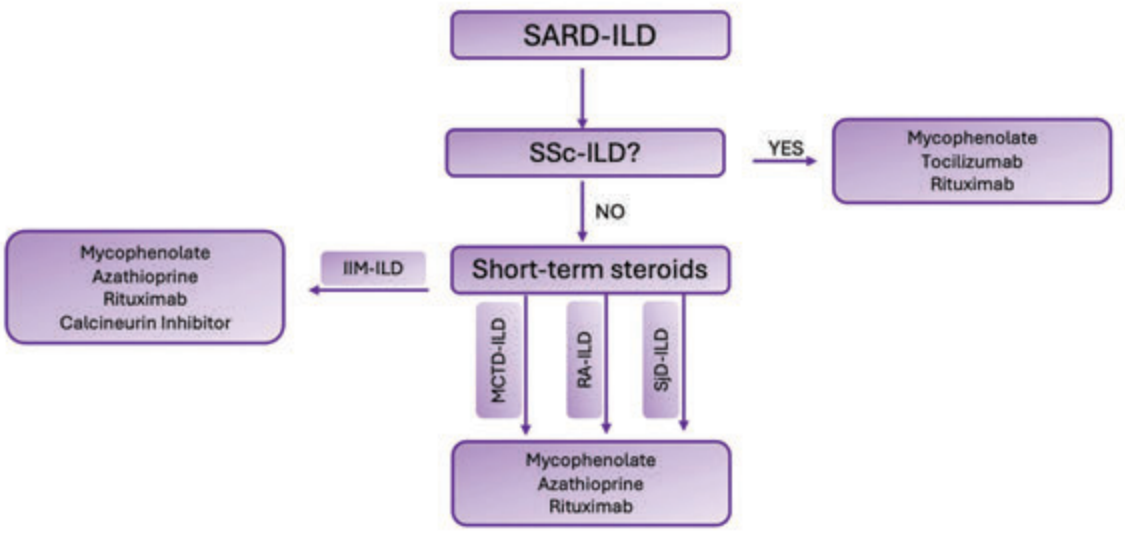


Figure 1. First-line options for the treatment of SARD-ILD. Refer to the full text of the guidelines for additional options beyond those listed above.

or radiologic fibrosis within a 24-month period. When progression is diagnosed, the goal is to add on or switch to an agent based on patient-specific factors or preferences.

Short-term steroids may have a role, particularly if a patient is experiencing an acute exacerbation; however, long-term steroid therapy (at least three to six months) is not recommended. For those who are on full-dose, first-line therapy but still progressing, addition of an alternative agent should be considered. In some instances, addition of an antifibrotic agent is recommended. If progression continues despite multiple agents, referral for lung transplantation should be discussed.

What are some of the management options for patients with rapidly progressive ILD?

Rapidly progressive (RP)-ILD is considered when a patient exhibits rapid progression in supplemental oxygen needs within days to weeks without an alternative cause. First-line treatment is typically pulse IV methylprednisolone in addition to one to two other immunosuppressive medications; nonsteroidal immunosuppressive options include rituximab, cyclophosphamide, IV immunoglobulin, tacrolimus, mycophenolate, or Janus kinase inhibitors. The guidelines conditionally recommend double or triple therapy for most patients with SARD and RP-ILD (combination of steroids and one or two of the listed agents). For patients with confirmed or suspected anti-melanoma differentiation-associated gene 5 (MDA-5) RP-ILD, triple therapy is conditionally recommended (steroids and two additional agents) due to substantial risk of death. Of note, for patients with SSc and RP-ILD, there is no consensus on whether corticosteroids should be used. Treatment selection ultimately depends on disease severity, concern for infection, and suspected or confirmed MDA-5 RP-ILD. Finally, the committee recommended early referral for lung transplantation for patients whose disease progresses while on optimal medical treatment.

Conclusion

SARDs represent a diverse group of rheumatologic diseases associated with high risk of ILD. The ACR/CHEST guidelines are a first attempt to provide clinicians with evidence-based recommendations for screening, monitoring, and treatment of SARD-ILD. They represent an essential tool for management of SARD-ILD . The studies utilized to create them were mostly observational, and none had examined the relationship between disease screening, monitoring, and patient-centered outcomes. As a result, the recommendations are largely conditional. Additional studies are needed to examine the impact of surveillance in different populations, determine risk factors for RP-ILD in patients with SARD, and further investigate the most effective treatments. ■

All references are available online at chestphysician.org.

CHEST

A visible impact

Reflecting on CHEST philanthropy with CEO, Robert (Bob) Musacchio, PhD, and Board of Advisors Chair, Robert (Bob) De Marco, MD, FCCP

With the year drawing to a close, it's the perfect time to look back on the accomplishments of 2024 and discuss what we hope to see in the coming year .

In 2023, CHEST's philanthropic approach evolved to align with the organizational mission and elevate the value placed on giving. This was a pivotal transformation allowing CHEST to broaden its scope and deepen its impact, ensuring that every contribution continues to make a meaningful difference. 2024 was the first full year since the transition, and Bob Musacchio, PhD, CEO of CHEST, and Bob De Marco, MD, FCCP, Chair of the CHEST Board of Advisors, sat down to reflect on the year of CHEST philanthropy.

Dr. Musacchio

Dr. De Marco

It's been a full year since the transition to CHEST philanthropy; from your perspective, how has that transition gone so far?

Bob De Marco, MD, FCCP: It's been a real pleasure to watch the evolution over the past year. The pillars that we defined to support our giving strategy resonated with a lot of past donors and also helped to engage new donors. Through clinical research, community impact, and dedication to education, we know exactly where our focus should be, allowing us to have the strongest impact while ensuring that donors know exactly where their gifts are going.

Bob Musacchio, PhD: Another benefit to the redefined strategy was its clear integration with the CHEST organization. In the past year, CHEST added social responsibility as one of the organizational pillars, which clarified the commitment to both philanthropy and advocacy. By aligning every element of philanthropy with the existing CHEST mission, we are able to expand our reach exponentially.

Let's talk about an example of impact you've seen in the past year.

De Marco: When the original CHEST Foundation merged with CHEST, we established a new priority that continues to drive our mission: bridging gaps, breaking barriers, and improving health care interactions to enhance patient outcomes and overall health. This commitment is reflected in initiatives like Bridging Specialties® and First 5 Minutes®—both of which you can learn more about on the CHEST website.

We've also entered into the second year of our partnership grant with the Association of Pulmonary and Critical Care Medicine Program Directors, which supports a fellow pursuing pulmonary and critical care medicine. This award recognizes the value of a diverse community in advancing medical education in pulmonary and critical care medicine. It provides an Accreditation Council for Graduate Medical Education fellow-in-training with the support, training, and mentorship needed to pursue a career in medical education and eventually serve as a mentor to future trainees.

Musacchio: I'd like to highlight the growth we've seen in our Community Impact grants. Following the shift, the impact grants now follow a participatory grantmaking model that empowers local organizations embedded within their communities to solve problems with the unique insights and solutions that only they can provide. This new strategy includes supporting our Community Connections partners, which are highlighted during the annual meeting. In Boston for CHEST 2024, we partnered with three local organizations—Boston Health Care for the Homeless Program, We Got Us, and the Tufts Community Health Workers Engaging in Integrated Care and Community Action Programs Inter-City collaboration—as our Community Connections to financially support their causes and to highlight their work throughout our meeting. Through partnership, we can strengthen our impact and empower communities to prioritize and improve respiratory well-being, and I look forward to continuing to grow this program in Chicago for CHEST 2025.

What's next for CHEST philanthropy? Any closing thoughts for *CHEST Physician*® readers?

De Marco: The future is limitless for CHEST philanthropy. The more funding we receive, the more we can distribute to deserving projects. This includes expanding support to additional disease states, funding the next wave of travel grants, and giving more to support the research and clinical innovations that will shape the future of chest medicine . What I'd love to see is more CHEST members engaging with CHEST philanthropy. We invite you to connect with us—CHEST's philanthropy team—to discuss how your continued investment can drive even greater impact or ask any questions you may have about the program. We'd welcome the opportunity to talk with you!

Also, if you're thinking about giving before the end of the year, please know that every gift, new or increased, will be matched dollar for dollar through December 31.

To each and every one of you: Thank you for being a part of the CHEST community—and for your generosity and dedication.

Musacchio: I echo Dr. De Marco's sentiment and want to reiterate that whether you're a seasoned donor or considering your first gift, you can play a vital role in shaping the future of our field. Every gift—large or small—moves us forward and strengthens the community we all value. Thank you, and have a happy and healthy holiday season. ■

Scan code to make a gift before the end of the year.

Council of Networks: Reflecting on the success of 2024

BY MARGARET PISANI, MD, MPH, FCCP
Chair, Council of Networks

Greetings from the Council of Networks. It has been two years since the Networks were restructured into seven Networks, each with several Sections. I have had the privilege of being the Chair of the Council of Networks this past year, and the engagement of the Chairs, Vice-Chairs, and steering committee members has contributed to a very successful CHEST 2024. Highlights from the meeting include the depth and breadth of 22 Experience CHEST sessions, which were held in the Exhibit Hall and gave trainees and early career faculty the opportunity to submit and present concise teaching on a topic. This year, many of these presentations were devoted to topics of diversity and inclusion.

Dr. Pisani

Our program this year also honored Network Rising Stars at the Network Open Forums. These individuals were early career members who were nominated for their active engagement within CHEST and the Networks. The Networks also hosted a fun and engaging mixer, where members came together and had the opportunity to meet Network leadership, catch up with old friends, and sample a variety of Boston cuisine. I personally had the opportunity to meet several junior faculty who were excited to become involved in the Networks.

One of the initiatives we are working on is developing a robust mentoring program for fellows who are involved in the Networks and Sections. The pieces were put in place over the summer, and we will be gauging success of the program in the spring.

For those of you who have yet to join a Network, we would love for you to be involved. To see the current leadership of each Network, check out their pages on chesnet.org. You can log in to your CHEST account and join as many Networks as you want. ■

CHEST

CHEST staff pose with white ribbons to highlight lung cancer awareness.

White ribbons around CHEST HQ raise awareness for lung cancer screening and early detection

During the month of November, CHEST displayed white ribbons around its headquarters in Glenview, Illinois, to raise awareness for lung cancer screening and early detection.

According to the World Health Organization, lung cancer kills more people yearly than breast, colon, and prostate cancers combined, and there are 2.1 million lung cancer cases worldwide. The risk of death can be drastically reduced through early detection of cancer and appropriate treatment.

"Lung Cancer Awareness Month was an opportunity for us to shine the spotlight on a disease that is impacting the lives of so many," said Robert Musacchio, PhD, CEO of CHEST. "As a society of 22,000 respiratory professionals, we continuously provide the latest resources to our members, including the latest guidelines for lung cancer screening. Leveraging the awareness month, we wanted to spread the message throughout our local community that the best way to combat lung cancer is through early screening and detection."

To identify and diagnose lung cancer in its earlier stages, it is recommended to seek lung cancer screening with a low-dose tomography scan (also known as low-dose CT or LDCT scan). Individuals who meet the below criteria are considered to be at high risk for developing lung cancer and should be screened:

- 50 to 80 years of age;
- have a 20 pack-year history of smoking (one pack a day for 20 years, two packs a day for 10 years, etc.); or
- currently smoke or have quit within the last 15 years.

To secure the ribbons, CHEST worked with an organization called the White Ribbon Project, which promotes awareness about lung cancer by changing public perception of the disease. Started by lung cancer survivor Heidi Onda and her husband, Pierre Onda, MD, the white ribbon initiative has spurred a movement to build community, reframe education, increase awareness, and remove the stigma against lung cancer.

"We are grateful for the advocacy and support of the American College of Chest Physicians in raising awareness for lung cancer," Ms. Onda said. "We believe as a team of survivors, caregivers, those who have lost loved ones, advocates, the medical and science communities, industry representatives, advocacy organizations, legislators, and cancer centers that we can change the public perception of lung cancer. Anyone with lungs can get lung cancer, no one deserves it, and awareness and early detection of the disease are crucial." ■

Scenes from CHEST 2024


Rapid Fire
Rapid Fire 1C
Tune to Channel
3
PLEASE RETURN YOUR
AUDIO RECEIVER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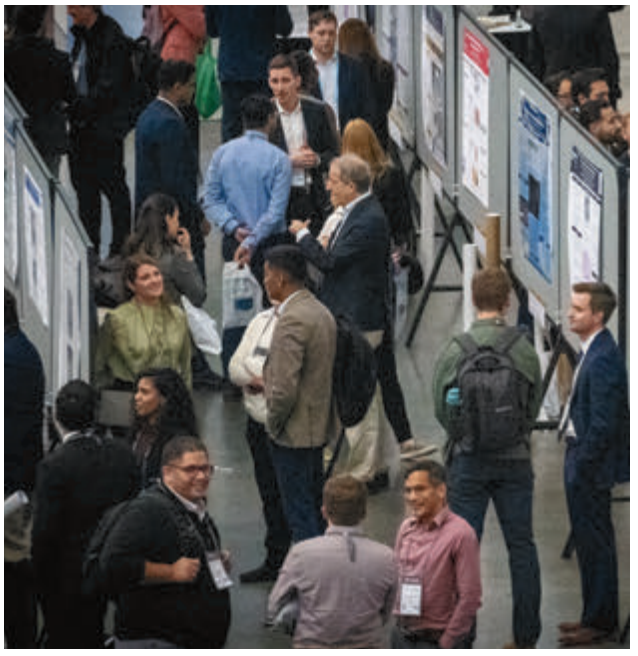

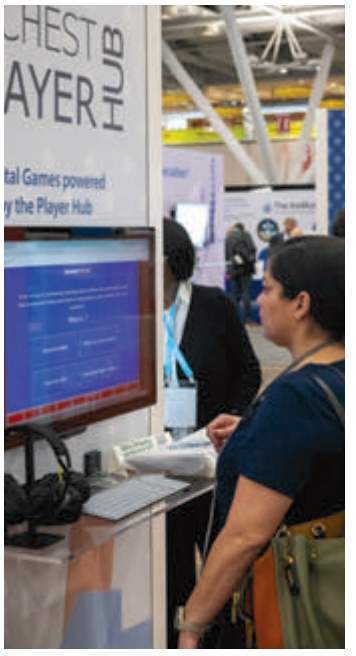
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APP INTERSECTION

Mitigating risk of asthma emergencies during respiratory season

BY EMILY SIMMONS, MSN, APN, CPNP-PC, AND ALEXANDRA KACENA, MSN, APN, CPNP-PC

As the respiratory season approaches, the risk of asthma emergencies often increases, particularly for those with preexisting conditions. Respiratory illness, cold weather, and fluctuating temperatures can all exacerbate asthma symptoms, leading to potentially serious health complications. Understanding how to mitigate these risks is crucial for maintaining respiratory health and ensuring a safe and healthy season.

As schools across the US have just ended their fall semester, students of all ages will spend their time off away from school. Respiratory season is among us, and children with asthma are at risk for severe asthma exacerbation from viruses that may lead to hospitalization. Since students will soon return for their spring semester, it is important to be reminded of asthma care during respiratory season.

Ten percent of school-aged children in the US have a diagnosis of asthma, with a higher prevalence in lower socioeconomic populations. In a classroom of 30 students, three students carry an asthma diagnosis. Of these children, the National Institutes of Health (NIH) reports 60% will experience asthma exacerbations. These exacerbations not only cause patients with asthma to have a total of 13.8 million absences annually but also lead to approximately 767,000 emergency department visits and 74,000 hospitalizations on an annual basis.

As we consider these statistics, safe asthma care during respiratory season requires preparation and a proactive approach. Partnering with families and school personnel will increase the likelihood that students will have a safe return for their next semester.

Patients with asthma are at higher risk for complications from respiratory illnesses such as COVID-19, influenza, respiratory syncytial virus (RSV), and

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Congratulations to 2024 award winners

Each year, CHEST recognizes members who make an impact – through dedication to the organization, by contributions to research and practice, through their commitment to educating the next generation, and so much more.

MASTER FELLOW AWARD
Neil R. MacIntyre, MD, FCCP

DISTINGUISHED SERVICE AWARD
Carolyn M. D'Ambrosio, MD, FCCP

COLLEGE MEDALIST AWARD
Raymond L. Benza, MD, FCCP

EARLY CAREER CLINICIAN EDUCATOR AWARD
Abdullah Alismail, RRT-NPS, PhD, FCCP

EARLY CAREER CLINICIAN EDUCATOR AWARD
Lauren A. Tobias, MD, FCCP

MASTER CLINICIAN EDUCATOR AWARD
Gregory A. Schmidt, MD, FCCP

ALFRED SOFFER AWARD FOR EDITORIAL EXCELLENCE
Fabien Maldonado, MD, FCCP

Network Rising Star Awards

The Network Rising Star Award, established in 2024, is to recognize the contributions of an early career clinician practicing in their respective area under CHEST's Network structure. This award recognizes individual contributions in the areas of clinical care, education, research, and/or other scholarly activity and someone who has shown growth and potential within the Network and CHEST.

AIRWAYS DISORDERS NETWORK
Megan Conroy, MD, MEd, FCCP

CHEST INFECTIONS AND DISASTER RESPONSE NETWORK
Jamie Felzer, MD, MPH

CRITICAL CARE NETWORK
Casey A. Cable, MD, MSc, FCCP

DIFFUSE LUNG DISEASE AND LUNG TRANSPLANT NETWORK
Bathmapriya Balakrishnan, MD, FCCP

PULMONARY VASCULAR AND CARDIOVASCULAR NETWORK
Gaurav Manek, MD

SLEEP MEDICINE NETWORK
Kara L. Dupuy-McCauley, MD, FCCP

THORACIC ONCOLOGY AND CHEST PROCEDURES NETWORK
Jeffrey Thiboutot, MD

For a comprehensive list of Distinguished CHEST Educators, new FCCP designees, and scientific abstract award winners, visit chestnet.org/awards. ■

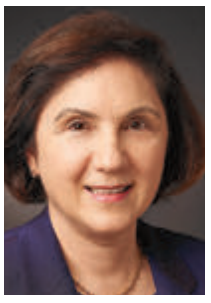

Dr. Alismail


Dr. Balakrishnan


Dr. Benza


Dr. Cable


Dr. Conroy


Dr. D'Ambrosio


Dr. Dupuy-McCauley


Dr. Felzer


Dr. Macintyre


Dr. Maldonado


Dr. Manek


Dr. Schmidt


Dr. Thiboutot


Dr. Tobias

iStock/Getty Images

Ms. Simmons and Ms. Kacena are advanced practice provider colleagues at Ann & Robert H. Lurie Children's Hospital of Chicago in Illinois with the Division of Pulmonary & Sleep Medicine. Partnering with one of the attending pulmonologists, they provide evidence-based, state-of-the-art care to high-risk patients with severe asthma, both within the hospital and in a mobile asthma clinic setting.

ASTHMA *continued from previous page*

streptococcal pneumonia viruses. While RSV vaccination is not widely available yet, vaccination is recommended as early as possible for influenza and COVID-19, as well as consideration for streptococcal pneumonia for patients with severe asthma. Vaccination for all family members should also be considered by the health care team. The health care team should regularly check in with families of patients with asthma to ensure they are educated about the importance of vaccinations and opportunities for immunization.

Parents report their children have a poor understanding of time and may administer medication too frequently, or they lack the necessary dexterity to properly administer an inhaler.

Most children with asthma submit their asthma action plan to their school at the beginning of the year. It is important for families to be reminded that if there is a change to their asthma action plan, the updated plan should be discussed and reviewed with school personnel who are responsible for medication administration. Health care providers often will partner with schools and families to create a 504 plan. Many families may not be familiar with this plan and how to request one. Within the state of Illinois, for example, some school districts require 504 plans and others do not. It is derived from Section 504 of the Americans with Disabilities Act and is a contract outlining a child's asthma care while at school. Families should be reminded that these 504 plans need to be updated at least once a school year.

Asthma guidelines recommend all children with asthma have access to quick relief medications. While this guideline exists, we are reminded by families that their child oftentimes has difficulty obtaining their medication while at school. Despite stock albuterol programs considered by the NIH as being a safe, practical, and potentially lifesaving option for children with asthma, schools across the country are slow to adopt this practice. Families often express financial concern about accessing these medications, mainly due to insurance quantity limitations for either single maintenance and reliever therapy intervention or short-acting β2-agonist therapy.

While self-carry is an option in all 50 states and the District of Columbia, parents report poor memory and reliability of their child to administer their medication appropriately. Parents report their children have a poor understanding of time and may administer medication too frequently, or they lack the necessary dexterity to properly administer an inhaler. The correct use of inhalation devices and adherence to prescribed therapy are key aspects in achieving better clinical control and improved quality of life. Parents express fear associated with children having access but poor direct supervision when using their quick relief medication. Families need a minimum of two quick relief inhalers (one for home and one for school)—or even three in a co-parenting situation.

Stock albuterol programs mitigate the risk of quick relief medication accessibility. Families may have been required to leave a quick relief inhaler with the school nurse when school started last fall. Despite medication being available from a stock program or supplied from a family, medication expiration dates should be monitored to ensure the medication is available when needed. It is important to remind families to track the expiration of medication and request a refill from their asthma provider for replacement at school if a stock albuterol program is not available.

Mitigating the risk of asthma emergencies during respiratory season requires a proactive approach. By partnering with families and schools through vaccination, updating asthma action plans, creating 504 plans, and working to ensure quick relief medication is available, providers and families can work together to decrease the risk of asthma emergencies during respiratory season. Taking these steps can lead to a safer and healthier respiratory season for all. ■

All references are available online at chestphysician.org.

In memoriam

CHEST has been informed of the following deaths of CHEST members. We remember our colleagues and extend our sincere condolences.

James D. Cury, MD, FCCP
Teck Chong Goh, MBBS, FCCP

CHEST™ Physician
THE NEWSPAPER OF THE AMERICAN COLLEGE OF CHEST PHYSICIANS