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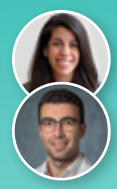

Nerandomilast opens the door for potential monotherapy, add-on therapy for pulmonary fibrosis

BY FRED GEBHART

Positive results from the FIBRONEER trials of nerandomilast in idiopathic pulmonary fibrosis (IPF) and progressive pulmonary fibrosis (PPF) have sent the phosphodiesterase 4B inhibitor to the US Food and Drug Administration (FDA) for marketing approval. If approved, nerandomilast would be the first new antifibrotic agent for interstitial lung disease (ILD) in more than a decade.

"There is a lot of excitement about nerandomilast, but we have to be patient and let the approval process play out," said Barry Shea, MD, Associate Physician at Massachusetts General Hospital and Assistant Professor of Medicine at Harvard Medical School. "Assuming the drug is approved and becomes available later this year or perhaps early next year, we will have another option for pulmonary fibrosis."

Additionally, how the drug is approved will make a significant difference in how it is used.

Nerandomilast slowed decline in FVC both as monotherapy and as an add-on to existing antifibrotic agents nintedanib and pirfenidone for IPF, as well as nintedanib and selected immunosuppressant background therapies for PPF.

"What the trials have shown us is that we now have a third antifibrotic agent," said Adrian Shifren, MBBCh, FCCP, Professor of Medicine and Director of the Interstitial Lung Diseases Program at Washington University School of Medicine. "As monotherapy, it could be prescribed as first-line therapy or to replace an existing drug if patients aren't tolerating it. It could also be considered for upfront combination therapy, but the indications for this are still uncertain. So, we aren't sure how the FDA is going to approve it for use, but we hope it will be approved as both monotherapy and add-on therapy."

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CHEST Physician, an official publication of the American College of Chest Physicians, provides cutting-edge reports on timely news, research, and clinical advances in the world of chest medicine. Regular columns feature the areas of pulmonary, critical care, and sleep medicine, as well as association news and updates from CHEST leadership.

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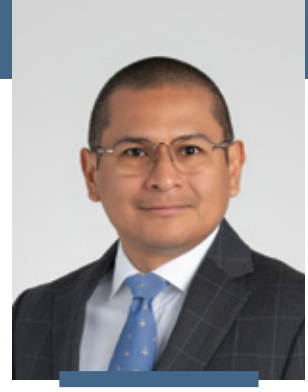
From the Editor



Dear *CHEST Physician* reader,

In a few short weeks, the chest medicine community will gather in Chicago for four days to learn together, teach one another, network, and build community. But before you pack your bags, you'll want to take a deep dive into this issue of *CHEST Physician*.

We're here year-round to bring you news, insights, and commentaries on the research and science that you need to know. But if you read one issue this year, let it be this one.

Before CHEST 2025 kicks off, you'll want to know this information cover and cover. (And don't forget about the crossword puzzle on page 14!) In these pages are some of the studies your colleagues will be talking about and topics that will be covered in-depth in sessions.

So make sure you're caught up, and come prepared. The learning has just begun.

See you in Chicago!

Warm regards,

Angel Coz

Angel Coz, MD, FCCP
Editor in Chief, *CHEST Physician*

In memoriam

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

John P. Judson, MD, FCCP
Anthony Perez, PharmD
Gary J. Richmond, MD

All references are available in the PDF version online at **chestphysician.org/print-archive.**

Column

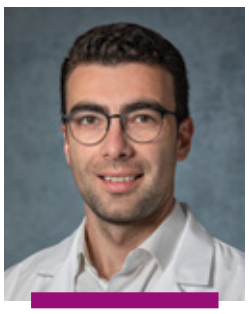
Shock resuscitation: Making the first 30 minutes count

A practical approach for teaching junior trainees

BY NATALIE ACHAMALLAH, MD, MS, MA, FCCP; YURI MATUSOV, MD

Recognition and management of shock are core skills for residents and fellows to master during training. Shock requires an approach contrary to the classical paradigm wherein diagnosis is followed by treatment; it is a medical emergency with heterogeneous presentation and continuous evolution. Clinicians must initiate corrective measures quickly, often with a limited degree of certainty. There is no standard approach to teaching this high-stakes critical condition to trainees, but in this column we will describe our approach to teaching shock to residents at the bedside.

Natalie Achamallah, MD, MS, MA, FCCP



Yuri Matusov, MD

1) IS THE PATIENT IN SHOCK?

Basic understanding of shock pathophysiology is key to its management. Start by defining shock as a mismatch of oxygen supply and demand to peripheral tissues, ultimately leading to end-organ damage. Teach trainees the delivery of oxygen (DO_2) equation (DO_2 = cardiac output x carrying capacity [CaO_2] = [heart rate x stroke volume] x [1.34 x (Hb) x SaO_2 + PaO_2 x 0.003]) to anchor an understanding of variables contributing to shock (preload, contractility, and afterload and the effect of systemic vascular resistance, as well as the contribution of anemia and hemoglobinopathies). Compared with the classic breakdown into distinct categories of distributive, obstructive, cardiogenic, and hypovolemic shock, many of the above components may coexist and meaningfully contribute.

Review markers of hypoperfusion to help the trainee recognize shock. Focus on physical exam features, including cool and mottled extremities, delayed capillary refill, somnolence/encephalopathy, and cyanosis, as well as findings that may identify a source (guarding and rebound tenderness in peritonitis, auscultation of crackles in acute decompensated heart failure).[1,2] Point to the importance of reduced urine output as clinical evidence of end-organ hypoperfusion and its superiority to rise in serum creatinine as a marker of acute kidney injury in shock.[3] Discuss the utility and limitations of serum lactate as a diagnostic tool.[4]

Finally, emphasize that shock is not equivalent to hypotension. Isolated tachypnea may be the first sign of critical illness. Tachycardia often precedes hypotension, assuming the patient is not taking negative chronotropes. The shock index (heart rate/systolic blood pressure) of > 1 is strongly associated with severe illness.[5] Demonstrate this concept using concrete examples, such as a young patient with an early compensatory catecholamine response and one with hypertensive emergency leading to acute left heart failure and cardiogenic shock. Emphasize that hypotension is an advanced sign of decompensated shock and that the goal is to take corrective action before it develops.

2) START TREATMENT BEFORE A CONCRETE DIAGNOSIS

Successful management of shock often requires starting treatment while some diagnostic uncertainty about the underlying cause remains. Outline triage of necessary interventions, starting with immediate stabilization (advanced cardiac life support, impending respiratory failure, hemodynamic support) and establishing appropriate intravenous/intraosseous access for vasoactive agents, sedation, antibiotics, and fluids, where appropriate. In this context, discuss indications for central line and arterial line placement.

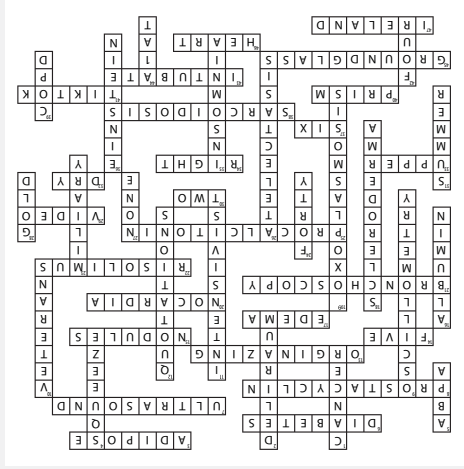
Then, it's a good time to return to the DO_2 equation and the rationale for fluids as a means to raise the patient's preload and thus their stroke volume. This point also explains the utility of bolus vs continuous fluid resuscitation. Point to the Surviving Sepsis Guidelines' recommendation to give at least 30 ml/kg of crystalloid resuscitation within three hours of presentation but acknowledge the low quality of evidence and the potential for

// continued on page 15

Inside

CHEST Puzzler Key

Answer key to crossword puzzle on page 14



Column



Unmasking asthma disparities

The path to equitable care

BY SAMI HOSSRI, MD; SAMRIDHI GULATI, MD; MARIA AZHAR, MD

Asthma continues to be a significant public health challenge in the United States. Despite years of creating awareness and addressing racial disparities, there remains a divide between minority groups and better outcomes in asthma care.

According to data from the 2022 National Health Interview Survey, asthma disproportionately affects certain racial and ethnic groups in the United States. African Americans (10.6 ± 0.41%), American Indian/Alaskan Natives (12.5 ± 1.08%), and Puerto Ricans (9.6 ± 0.87%) experience significantly higher asthma prevalence compared with White Americans (7.8 ± 0.15%). Asthma-related mortality among African Americans (24.4 ± 0.76 per million) is more than double that of White Americans (9.8 ± 0.22 per million), highlighting stark disparities in health outcomes.[1-4]

Besides being a serious public health concern, there is a significant economic burden associated with costs arising in settings of these disparities. Achieving equitable asthma care requires looking beyond the inflammatory pathways of asthma and addressing the biological, sociocultural, behavioral, and environmental challenges.

It is essential to unpack the multifaceted determinants of these gaps in care. Historically, policies such as redlining created racially and economically segregated neighborhoods.[5] This allowed for the isolation of concentrated poverty, lower education levels, and reduced access to resources.

Emergency department visits for asthma are reported to be 2.4 times higher in historically redlined areas. This disparity exists even after adjusting for poverty, diesel exhaust, and particulate matter pollution, with residents of redlined areas still facing an almost 40% greater risk of asthma-related emergency room visits.[6] Inadequate ventilation, cracks in walls, leaky pipes, cockroach infestations, dust mites, lack of climate control, and mold and mildew infestations are all risk factors for increased hospitalizations and emergency room visits.

RACIAL DISPARITIES

Despite socioeconomic status being a primary driver of disparity, it is not the sole driver. There are additional factors to consider. The Hispanic Paradox refers to the puzzling observation that Hispanic individuals in the United States tend to have health outcomes that are as good as, or even better than, those of non-Hispanic White individuals, despite facing significant socioeconomic disadvantages.[7] Several studies have reported a lower overall prevalence of asthma among Hispanic individuals in the United States compared with the general population and non-Hispanic White demographic. There are some potential explanations for these findings, such as the "healthy immigrant effect" (where individuals who are healthier in a population are more likely to migrate), cultural factors, strong social networks, underdiagnosing, and return migration (individuals who are sick returning to their home countries).

However, this paradox does not fit everyone in this category. While Mexican Americans might exhibit a health advantage, Puerto Ricans in the US mainland consistently show a much higher prevalence of and morbidity and mortality from asthma compared with other Hispanic and non-Hispanic White groups. Also, non-Puerto Rican Hispanic individuals in the United States are less likely to be insured when compared with White Americans.[3] Other factors, such as cultural and language barriers, may also contribute to inequitable medical care.

Population studies have revealed notable disparities among different patient groups. A smaller proportion of Black patients were employed full-time and had commercial insurance without the need for a primary care referral compared with other groups. Biologic treatments were also less commonly used among Black patients than among non-Hispanic White patients. Additionally, Hispanic patients exhibited lower median FEV_1% predicted and higher median blood eosinophil counts compared with other populations. Both Black and Hispanic patients experienced significantly higher annualized asthma exacerbation rates, with emergency department visits due to exacerbations being more frequent among Black patients (18%) than non-Hispanic White patients (12%).[4]

PSYCHOLOGICAL BARRIERS

Living in environments marked by racism, violence, and discrimination also takes a hidden but powerful toll on the body.[5] Systemic racism and discrimination, as structural factors, contribute to both individual and community-level stress, thereby worsening disparities in asthma and allergic diseases. Experiencing this level of stress can significantly dysregulate the immune system and impact the response to aeroallergens. This can increase pulmonary inflammation and alter the effectiveness of allergen-specific treatments and diagnostic tools. Elevated cortisol levels, a consequence of stress, can promote a T-helper type 2 immune response, leading to increased IgE production, which we know is a primary driver of asthma control. What might look like poor medication adherence or uncontrolled asthma on paper may, in fact, be a body in survival mode, constantly responding to environmental and emotional triggers.

On top of this, mistrust in the health care system—built on generations of discrimination—continues to shape how people seek and receive care. Parents of African American children have frequently reported higher levels of dissatisfaction with the health care system, which ultimately has led to less frequent clinic visits and more emergency room visits and hospitalizations. It has also been shown that medical providers who treat minority groups are less likely to adhere to guidelines and often underdiagnose asthma severity. This is compounded by less adherence to medication due to transportation and financial limitations. So it's no surprise that treatment plans are frequently interrupted or abandoned altogether.

FINANCIAL ROADBLOCKS

This leads us to explore the realm of financial barriers to care and medications. The implementation of single maintenance and rescue therapy (SMART) and anti-inflammatory rescue (AIR) has led to a paradigm shift in asthma care.[8] This has led to fewer severe exacerbations, less oral corticosteroid use, fewer emergency room visits, and a significantly improved Asthma Control Questionnaire score.

Having said this, many patients who are underserved still have limited access to SMART or AIR due to multiple barriers. These include limited insurance coverage

Nerandomilast

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FIBRONEER-ILD is the second phase 3 study of nerandomilast. The FIBRONEER-ILD study, which randomized patients with PPF in a 1:1:1 ratio to receive 18 mg of nerandomilast twice daily, 9 mg of nerandomilast twice daily, or placebo, met its primary end point of absolute change in FVC from baseline at 52 weeks compared with placebo. Previously, FIBRONEER-IPF, which studied nerandomilast in patients with IPF, also showed positive top-line results.

Nerandomilast 18 mg slowed FVC decline by 67.2 ml compared with placebo (95% CI, 31.9-102.5; $P < .001$) in patients with PPF. Nerandomilast 9 mg slowed FVC decline by 81.1 ml compared with placebo (95% CI, 46.0-116.3; $P < .001$). The most common adverse event was diarrhea, reported by one-third of patients receiving nerandomilast.

The key secondary end point in the PPF trial was a composite of time to first acute exacerbation of ILD, hospitalization for a respiratory cause, or death, whichever occurred first. Other secondary end points included each of the components separately or in combination.

Neither dose of nerandomilast showed a benefit compared with placebo with respect to the key composite secondary end points of the study. However, the hazard ratio for the secondary end point of death alone compared with placebo was 0.48 (95% CI, 0.30-0.79) for the 18 mg dose and 0.60 (95% CI, 0.38-0.95) for the 9 mg dose.

"The potential mortality benefit identified in people with PPF taking nerandomilast is intriguing," Dr. Shifren said. "However, caution needs to be exercised, as it was not the key secondary end point, so it needs to be explored in more detail. If the mortality benefit were confirmed, however, its use as a first-line agent would be compelling."

The open label extension portion of the trial may provide additional mortality data and insight.

What nerandomilast did not demonstrate was any improvement in patients' quality of life.

Changes in the Living with Pulmonary Fibrosis questionnaire, dyspnea score, cough score, and fatigue score were similar across both nerandomilast groups and the placebo group.

"There is still a lot to be done," said Tejaswini Kulkarni, MBBCh, FCCP, Director of the Interstitial Lung Disease Program at the University of Alabama at Birmingham. "The field is excited and optimistic that having another approved medication will help our patients. But, at the same time, the quest for newer therapies that might impact patients' quality of life and not just slow down FVC decline needs to continue."

The biggest limiting factor for now is waiting for approval and distribution. Clinicians and patients know nerandomilast is effective and better tolerated than either nintedanib or pirfenidone, but it is not available outside clinical trial settings.

"Patients who participated in the parent clinical trials have been given the opportunity to enroll in the open label phase of FIBRONEER and are currently receiving study medication," Dr. Kulkarni said. "Decisions from the FDA are anticipated later this year, hopefully in October. Unfortunately, this medication is not approved for use for patients anywhere in the world until then."

For now, Dr. Kulkarni is talking patients through the FIBRONEER findings, assessing their current medication regimen, and discussing tolerability. Existing medications can slow the decline in lung function, but side effects can be intolerable limiting factors for some patients. Assuming nerandomilast is approved, patients who cannot tolerate existing agents or who are not on any antifibrotic therapy will likely be first in line for prescribing.

"I think our threshold for prescribing antifibrotic therapy is going to be lower because we will have an option with fewer side effects," Dr. Shea said. "It also doesn't have the risk of liver toxicity, so it's not going to require liver monitoring. This is going to be a relatively easy medication to start and will lower the threshold to antifibrotic therapy for people who might have been on the fence previously." ●

when prescribed both rescue and maintenance therapy, higher out-of-pocket or copay costs, and the fact that medical providers serving these communities are less likely to be up to date on current guidelines.[9] There is an urgent need for policy change among insurance companies to provide better coverage for inhaled corticosteroids (ICS)-formoterol to be used as SMART and ICS-albuterol to be used as AIR, currently a barrier despite the proven efficacy in reducing asthma exacerbations.

INACCESSIBLE TREATMENTS

Among the treatment options for asthma, specifically severe asthma, we have seen increased use of biologics designed to target inflammatory pathways in asthma. Unfortunately, many underserved populations have limited access to these treatments due to many factors.[10] Higher-income areas have been shown to be more likely to be prescribed biologic therapies and are more compliant. This may be due to the fact that these therapies require specialist oversight, and wealthier geographic locations have better access to these providers.

Another key factor that has the potential to impact access to biologics is that all these therapies are subject to medical review and reauthorization, required every six to 12 months. Prior authorizations and peer review requests significantly impact physicians, which may limit the prescription rates of these therapies in sectors where staffing is reduced.

LOOKING BEYOND INFLAMED AIRWAYS

While shedding light on all these barriers, we have an opportunity to translate knowledge into action. Many interventions were shown to be effective in improving care and outcomes in these specific situations. Community health programs, mobile clinics, and asthma education programs can effectively increase literacy, provide resources to underserved areas, and eliminate transportation as a barrier to receiving adequate care. School programs, home care and assisted living visits, exercise and gym memberships, and care coordination teams are all effective strategies for closing this gap in health care.

It is essential to address these social determinants of health and to advocate for policy and systemic change.

We must reaffirm that the disparities in asthma care are not solely biologic but also embedded deep in the roots of our political, social, and health care systems.

The vision must be clear: a future where every individual, regardless of race, income, or ZIP code, has access to timely, effective, and compassionate asthma care. This is not just a goal—it is a moral imperative. ●

FROM THE PRESIDENT

Column

Looking ahead to CHEST 2025 in Chicago

JOHN HOWINGTON, MD, MBA, FCCP

October 19 - 22
CHICAGO
CHEST 2025

Already finding ourselves in the fall, it's hard not to focus this column on the upcoming CHEST Annual Meeting, which will take place in Chicago from October 19 to 22. Whether you're a longtime, repeat attendee or planning your first CHEST meeting, there's so much to look forward to, including a celebration of the 90th anniversary of the American College of Chest Physicians. Looking back, we will honor nearly a century of progress in chest medicine, featuring sessions on the history of vaccines, lung cancer treatment, and more.

With more than **300 total sessions**, there's truly something for everyone in pulmonary, critical care, and sleep medicine, and the CHEST-Events app is the best way to navigate it all. The app includes smart filters and curated tracks like "Lung Cancer" and "Advanced" so you can zero in on sessions that meet your clinical interests and learning needs.

The app will also help you build a personalized schedule, connect with colleagues, and get real-time updates, making your time in Chicago as meaningful and efficient as possible.

To kick off the meeting, this year's Opening Session on Sunday, October 19, at 8 AM CT, is not one to miss. Providing a comprehensive overview of what's ahead, we'll also be welcoming Sean Swarner, a two-time cancer survivor, inspirational adventurer, and philanthropist, as our keynote speaker. His story of resilience and determination is sure to resonate and inspire.

One of the highlights of every CHEST Annual Meeting is the chance to network with peers, mentors, and more. This year offers many ways to do just that, including the Advanced Practice Provider (Sunday at noon) and Women in Chest Medicine (Monday at noon) luncheons, the Network Mixer (Monday at 5:30 PM), and the Cultures and Communities Reception (Monday at 6 PM).

CHEST 2025 is also about investing in the future of our field, and we are proud to partner with Program Directors from top Illinois respiratory therapy programs to welcome students from Joliet Junior College, Kankakee Community College, and Malcolm X College for a day of immersive learning. They will have the chance to attend sessions and network with members of our Respiratory Care Interest Group to gain invaluable exposure to pulmonary medicine.

Additionally, through the Hennepin Healthcare Talent Garden CHEST Scholarship, we'll be hosting four high school seniors as interns at CHEST 2025. They will connect with mentors, explore educational sessions, and see firsthand the inspiring work being done in chest medicine. It's a privilege to help ignite their interest in health care careers.

Finally, don't miss the expert-led round table discussions. These mini-sessions will bring together world-renowned leaders in chest medicine to facilitate small-group discussions on some of the most pressing topics in our field. It's a rare chance to engage directly with the experts, ask questions, share perspectives, and deepen your understanding.

I hope you will join us as we come together to hear the latest advancements in the field and celebrate the remarkable milestone of 90 years of CHEST. As we look back on the rich history of medicine and the organization, we will also be looking ahead, imagining where the field of medicine may be when CHEST celebrates its 100th anniversary in a decade.

The CHEST Annual Meeting will be a celebration of knowledge, community, and innovation in chest medicine, and your participation is what will make it truly special.

I look forward to seeing you all in Chicago for this landmark event, where we'll celebrate how far we've come and envision a strong, healthy future for CHEST and the patients we serve.

John Howington, MD, MBA, FCCP
President, American College of Chest Physicians

P.S. Continue to use **#CHEST90** on all social media platforms before, during, and after CHEST 2025 to help us celebrate CHEST's 90th anniversary!

PRESIDENT'S RECOMMENDATIONS

- ❑ **OPENING SESSION** (Sunday at 8 AM)
- ❑ **PAUL A. KVALE, MD, MASTER FCCP MEMORIAL LECTURE** (Monday at 11 AM)
- ❑ **JAMES B. D. MARK, MD, FCCP MEMORIAL LECTURE** (Monday at 1:30 PM)
- ❑ **NETWORK MIXER** (Monday at 5:30 PM)
- ❑ **CHEST CHALLENGE CHAMPIONSHIP** (Tuesday at 6 PM)

Connect with the CHEST community at the annual meeting

BY NICK GERIK

The CHEST community gathers for just a few days at each annual meeting, but that short time together builds and strengthens bonds that sustain members throughout the entire year.

At CHEST 2025, October 19 to 22, in Chicago, attendees will find opportunities through CHEST Networks, Sections, and Interest Groups to meet and mingle, collaborate on initiatives, and support each other's personal and professional growth.

CHEST INTEREST GROUPS

CHEST has three Interest Groups that connect members with shared identities. These groups promote inclusive and equitable environments within chest medicine—for not only peers but also patients—by elevating diverse perspectives, developing educational resources, and engaging outside partners.

"If you're interested in providing competent, fair and welcoming, compassionate care to your [pulmonary and critical care medicine] community, then it is important that we understand the different colors that the community has," said Mauricio Danckers, MD, FCCP, Chair of the LGBTQ+ at CHEST Interest Group Steering Committee.

CHEST 2025 attendees will be able to learn more about the Interest Groups during the Cultures and Communities Reception and Network Mixer. Additionally, each Interest Group's Steering Committee Meeting is open to any CHEST member who wishes to attend, so check the CHEST-Events app for details.

The LGBTQ+ at CHEST Interest Group was present for the first time at last year's annual meeting in Boston and has kept the momentum going with regular written pieces by LGBTQ+ members and allies. Research collaborations are now in the works, and the Interest Group recently hosted a webinar about LGBTQ+ inclusion during uncertain times. At CHEST 2025, group members will continue those conversations.

While in Chicago, the Women in Chest Medicine Interest Group will support women's career development, promote awareness of disparities, and highlight presentations on the impact of sex and gender in health care. Speed mentoring will return for the third year in a row, and the annual luncheon will present a lecture on tips for navigating through challenging times.

"Given the challenges we're facing in the present day in health care—concerns for our patients' access to care, concerns for ongoing research and research funding—I think the lecture at our luncheon will be an important topic for everybody to hear, whether you are in academic medicine, in private practice, or working in industry," said Steering Committee Chair Margaret Pisani, MD, MPH, FCCP.

Additionally, the Respiratory Care Interest Group will continue its efforts to cultivate a multidisciplinary home for respiratory therapists, medical directors for respiratory therapy programs, and others in the field.

"The idea is to really build collaboration between physicians and therapists, to work on areas of common interest, and to provide education, particularly for the physicians who have to work in an advisory role for a lot of hospitals," said Steering Committee Chair Kevin O'Neil, MD, MHA, FCCP.

Attendees can reserve a spot at the Women in Chest Medicine Luncheon for free, but it must be done as part of the overall meeting registration process.

CHEST NETWORKS

The CHEST Networks will offer even more chances to establish personal connections and expand professional circles during CHEST 2025. Each of the Networks will showcase the latest opportunities to get involved in one of seven curriculum areas—Airways Disorders, Chest Infections and Disaster Response, Critical Care, Diffuse Lung Disease and Lung Transplant, Pulmonary Vascular and Cardiovascular, Sleep Medicine, and Thoracic Oncology and Chest Procedures.

The Network Mixer, on Monday, October 20, will allow attendees to learn about each Network and meet with leaders. Dedicated Open Forums for each Network, held concurrently on Tuesday, October 21, will outline current and future initiatives and celebrate outstanding contributors. And each of the 22 Sections—specialty subgroups within the Networks' broader curriculum areas—will present at Experience CHEST in the Exhibit Hall.

No matter where attendees go during the meeting, they will find a supportive community waiting to embrace them.

"Nobody who goes leaves with a sense of emptiness. They always leave with a sense of richness in their careers and motivation to continue to improve the health of our patients," Dr. Danckers said. "Even though environments can feel divisive, I think the meeting helps bring us all together and prioritizes what is important." ●

COMMUNITY EVENTS AT CHEST 2025

Women in Chest Medicine Luncheon (Registration required)
Monday, October 20
12 PM - 1:30 PM

Network Mixer
Monday, October 20
5:30 PM - 6:30 PM

Cultures and Communities Reception
Monday, October 20
6 PM - 7 PM

Network Open Forums
Tuesday, October 21
11:15 PM - 12:15 PM

Section Presentations at Experience CHEST
Various times, check schedule

Interest Group Steering Committee Meetings
Various times, check schedule

Using consumer sleep trackers in clinical practice

What the evidence tells us

BY JOSHUA LANDVATTER, PHD; KELLY G. BARON, PHD, MPH, DBSM

Consumer sleep technologies (CSTs), such as Fitbit, Apple Watch, Oura Ring, and Garmin wearables, are becoming more prevalent in mainstream life, offering users new ways to monitor sleep. As their popularity grows, more patients are bringing CST-generated data into the clinic, often accompanied by months of information. While these devices are, in most cases, not intended for identifying sleep disorders, their presence in clinical encounters is unavoidable.

CSTs offer something traditional assessments rarely do: longitudinal, ecologically valid sleep data. By tracking metrics across days or weeks, these devices can reveal behavioral patterns relevant to a patient's sleep health, especially in those with irregular schedules or circadian rhythm disturbances. When integrated thoughtfully into care, CSTs may boost patient engagement, support behavioral interventions, and extend treatment into the home through telehealth or remote monitoring.

Still, caution is necessary. These tools vary in technical accuracy, lack universal performance evaluation, and perform differently across populations and devices

WHAT CSTs ACTUALLY MEASURE

Most consumer sleep devices use a combination of accelerometry and photoplethysmography-derived data to estimate sleep. From these inputs, they report common metrics such as total sleep time (TST), time in bed (TIB), and sleep efficiency. Some models also estimate sleep stages. While sleep staging is typically the least reliable output, multiple validation studies suggest that CSTs produce moderately accurate estimates of TST and TIB relative to polysomnography, particularly among healthy adults in controlled settings.[1,2]

Devices that pair movement and heart rate data, such as the Fitbit, Apple Watch, and the Oura Ring, tend to outperform older models that rely solely on motion. However, limitations persist. Most CSTs struggle with detecting wake after sleep onset (WASO), and their sleep staging accuracy remains highly variable. Complicating matters, CSTs rely on proprietary algorithms, and these differ across manufacturers. The Oura Ring, for example, places heavier emphasis on heart rate variability, while the Fitbit uses a combination of pulse rate and movement through methods not publicly disclosed. As a result, the same person wearing two devices on the same night might receive very different results, potentially leading to confusion or mistrust in the data.

POPULATION-SPECIFIC CONSIDERATIONS

CSTs tend to overestimate total sleep time and underestimate WASO, particularly in individuals with insomnia or fragmented sleep patterns. This mismatch between device-generated estimates and subjective experience may cause confusion or anxiety. Some patients may mistakenly believe their sleep has improved based on tracker outputs despite ongoing symptoms, while others may grow preoccupied with the data, potentially complicating clinical care. Baron and colleagues introduced the term "orthosomnia" to describe sleep-related anxiety and hypervigilance that arise in response to wearable sleep feedback.[3] Even among patients who do not meet diagnostic criteria for insomnia, CST data may contribute to rumination or reinforce maladaptive sleep behaviors in some patients.

There is a limited role of CSTs in identification of OSA. For instance, the Apple Watch received US Food and Drug Administration (FDA) clearance in 2024 for detecting breathing irregularities consistent with moderate to severe OSA, but it is not approved as a diagnostic tool and cannot replace formal screening, and the Fitbit offers feedback on oxygen variation in the night. Another concern is that the sleep metrics measured by devices tend to be less accurate among individuals with disrupted sleep (eg, insomnia). Additionally, individuals with chronic diseases, pain, or mood disorders all may have disrupted sleep patterns that compromise device accuracy. While poor sleep is common in these groups, interpreting CST outputs requires clinical caution to avoid misdiagnosis, premature reassurance, or missed opportunities for appropriate treatment.

WHEN CONSUMER DATA CAN HELP

Despite these limitations, CSTs offer a window into longitudinal sleep behavior —a view that is difficult to obtain through in-clinic assessments or brief sleep questionnaires. Most devices provide multiweek summaries of sleep timing, duration, and regularity, which can be especially helpful in cases of circadian rhythm disorders, delayed sleep phase, or inconsistent sleep schedules. These patterns may not surface during a single clinic visit but often emerge clearly in CST reports.

For instance, population data show that weekday sleep is 30 to 45 minutes shorter than weekend sleep, and sleep schedules shift later during summer months.[4] Tracking data can also enhance behavioral sleep treatments. A usability study by Pulantara and colleagues found that CST integration with a digital cognitive behavioral therapy for insomnia (CBT-I) platform increased treatment engagement, adherence, and personalization.[5] By providing behavioral feedback, CSTs can reinforce consistent bedtimes, support sleep restriction therapy, and help track progress over time.

That said, clinicians can help patients focus on the big picture. When patients are guided to view CSTs as behavioral tools rather than diagnostic instruments, they may become more engaged and less anxious about individual fluctuations.

Our lab at the University of Utah has developed and tested a coaching program for individuals with short sleep duration that utilizes brief coaching, a CST, and education to set goals and encourage behavior change.[6] We have utilized this technique in several studies, and patients have found the CST to be engaging and helpful for extending their sleep.[7]

CLINICAL VALIDATION AND REGULATORY LIMITATIONS

Importantly, most CSTs are marketed as wellness devices and do not have FDA approval. The exception is the Apple Watch, which recently received FDA clearance for sleep apnea detection in 2024. Proprietary algorithms are rarely disclosed or standardized, and software updates, often unannounced, can alter sleep scoring, undermining consistency and clinical reliability. Performance evaluation studies to date have primarily involved young, healthy, and predominantly White participants in lab settings, limiting generalizability.

// continued on page 11

Optimizing lung transplant care

The expanding role of advanced practice providers

BY ELIZABETH OLSEN, APRN, CNP; HALEY HOY, PHD, ACNP

With approximately 20,000 individuals in the United States living with a lung transplant, general pulmonologists are increasingly encountering posttransplant patients. However, many nontransplant providers report discomfort managing the unique challenges these patients present. Advanced practice providers (APPs)—including nurse practitioners and physician assistants/associates—increasingly bridge this gap.

Lung transplant recipients require nuanced, multidisciplinary care that extends beyond the capabilities of many general pulmonary practitioners. While general pulmonologists are encouraged to participate in longitudinal management—particularly for comorbidities and preventative care—the literature consistently underscores the challenges in identifying and managing transplant-specific complications such as rejection, infection, and allograft dysfunction.[1,2]

APPs are uniquely positioned to support the care of these patients complex cases. Their consistent presence during lung transplant services—where physicians often rotate—allows them to maintain continuity, deliver direct care, and educate both patients and medical professionals.

THE EXPANDING ROLE OF APPs

Inpatient settings: In hospital-based transplant programs, APPs often lead or support daily rounds, coordinate care with consulting specialties (eg, nephrology, infectious disease), and serve as the primary continuity providers. They play a pivotal role in evaluating trends in pulmonary function, identifying early signs of graft dysfunction, and managing immunosuppressive regimens. Their consistent clinical presence ensures proactive intervention and comprehensive discharge planning.

Outpatient clinics: APPs manage stable posttransplant patients in clinic settings, independently or alongside transplant pulmonologists. They monitor for signs of rejection or infection, titrate immunosuppressive medications, and conduct routine screening for corticosteroid-related complications (eg, osteoporosis, diabetes). They also facilitate essential surveillance testing, including pulmonary function tests (PFTs) and bronchoscopy schedules.

Community integration and telehealth: With many transplant recipients living far from specialized centers, APPs are increasingly extending their expertise through telehealth and regional outreach. They act as liaisons to local pulmonologists and primary care physicians, offering case reviews, consultative support, and guidance on when to escalate care back to the transplant center.

Leadership: APPs educate patients and families on posttransplant expectations, medication adherence, and lifestyle modifications. Within the clinical team, they mentor new staff, train rotating residents and fellows, and contribute to quality improvement initiatives. APPs often participate in protocol development and institutional guideline updates to standardize transplant care.

Care coordination: Posttransplant care requires meticulous coordination across multiple disciplines. APPs routinely collaborate with pharmacists, social workers, coordinators, and dietitians to optimize outcomes. Their roles is essential in organizing follow-up appointments, managing transitions between inpatient and outpatient care, and ensuring timely interventions for complications.

CORE CLINICAL PRINCIPLES: A HEAD-TO-TOE OVERVIEW

Lung transplant APPs are trained to identify and manage a wide spectrum of complications.

Neurologic: Calcineurin inhibitors (CNIs), such as tacrolimus and cyclosporine, can cause neurotoxicity—manifesting as tremors, seizures, or posterior reversible encephalopathy syndrome. Stroke risk is elevated due to embolic events and anticoagulation, while long-term cognitive changes, anxiety, and posttraumatic stress disorder are common.

Ophthalmic: Long-term corticosteroid use necessitates screening for cataracts and glaucoma. Cytomegalovirus (CMV) retinitis, though rare, should be considered in patients presenting with visual complaints.

Pulmonary: Primary graft dysfunction may present acutely postoperatively. Acute cellular rejection is typically confirmed via transbronchial biopsy in patients with unexplained respiratory symptoms or declining PFTs. Long-term surveillance focuses on chronic lung allograft dysfunction, including bronchiolitis obliterans syndrome and restrictive allograft syndrome. Airway complications often require bronchoscopic intervention.

Phrenic and diaphragmatic: Phrenic nerve injury and diaphragmatic paralysis can present as dyspnea, weak cough, or paradoxical breathing. These complications are more common in bilateral lung transplant recipients and may necessitate noninvasive ventilation.

Cardiovascular: Hypertension, dyslipidemia, and arrhythmias are common and multifactorial. APPs assist in managing antihypertensive therapy, rhythm monitoring, and surveillance for right ventricular dysfunction in patients with preexisting pulmonary hypertension.

Endocrine and metabolic: Posttransplant diabetes is often induced by CNIs and corticosteroids. Weight gain and dyslipidemia contribute to metabolic syndrome. APPs play a key role in monitoring blood glucose, managing insulin regimens, and coordinating with endocrinology.

Gastrointestinal: Gastrointestinal (GI) symptoms may arise from medications or opportunistic infections such as CMV. APPs monitor liver enzymes for hepatotoxicity, manage reflux and peptic ulcer prophylaxis, and evaluate persistent GI symptoms promptly.

Renal: Nephrotoxicity from CNIs necessitates regular monitoring of renal function and electrolytes. Chronic kidney disease significantly impacts survival and may require eventual renal replacement therapy.

// continued on page 13

Prevention of COPD exacerbations with an eosinophilic endotype

The era of COPD biologics is here

BY KRITHIKA SUBRAMANIAN, PHD

With the recent US approval of the IL-5-directed monoclonal antibody (mAb) mepolizumab as an add-on therapy for patients with COPD, the era of COPD biologics is undeniably here.

Mepolizumab is the second approved biologic for the prevention of COPD exacerbations. Dupilumab, an IL-4- and IL-13-targeted mAb approved in 2024, was the first biologic to be included in the Global Initiative for Chronic Obstructive Lung Disease (GOLD) Report, recommended for treating patients with chronic bronchitis exacerbations despite triple therapy and blood eosinophil counts (BECs) ≥ 300 cells/μL.

Gerard J. Criner, MD, FCCP, Chair and Professor of Thoracic Medicine and Surgery at the Lewis Katz School of Medicine at Temple University and Director of the Temple Lung Center, said, "For a chronic disease that is associated with high morbidity and mortality and is, globally, the third leading cause of death, and, in the United States, the sixth leading cause of death, we are making incremental progress. COPD has long been considered difficult to treat. During the past decade, the progress in COPD treatments has accelerated, and I hope these advances continue."

TWO BIOLOGICS NOW APPROVED

The approval of dupilumab was based on data from replicate pivotal phase 3 studies, BOREAS and NOTUS. These studies compared dupilumab with placebo in adults who actively smoke or previously smoked with a history of moderate to severe COPD exacerbations and a BEC ≥ 300 cells/μL.[1]

Adding dupilumab to standard triple therapy reduced moderate to severe exacerbations (by 30% in BOREAS and 34% in NOTUS), improved lung function, and increased the St. George's Respiratory questionnaire (SGRQ) score.[1]

Mepolizumab was approved based on MATINEE study findings and building on previous studies.[2,3] In MATINEE, add-on mepolizumab therapy reduced exacerbations by 21%, prolonged time to first moderate or severe exacerbation, and reduced the rate of emergency department visits, hospitalization, or both due to exacerbations by 35% in patients with COPD with a history of exacerbations and BECs ≥ 300 cells/μL (at screening) or ≥ 150 cells/μL (in the preceding 12 months or two to three weeks before randomization). There were no significant differences in SGRQ scores between mepolizumab and placebo.[2] One-third of the patients smoked actively.

"MATINEE differed from BOREAS and NOTUS in that it included an expanded population of patients—those with more severe airway inflammation, [those with] very severe airway obstruction, and those with and without chronic bronchitis. MATINEE also used exhaustive exclusion criteria," Dr. Criner said.

"The study really focused on patients with COPD with a type 2 inflammation/eosinophilic phenotype. About a third of the patients in MATINEE also had either physician-diagnosed or self-awareness of emphysema," he added. "The outcomes showed that mepolizumab benefited a wider spectrum of patients with COPD in terms of the airflow obstruction severity over a longer period, as MATINEE was extended because of the COVID-19 pandemic."

MORE BIOLOGICS WAIT IN THE WINGS

The recent approvals of biologics represent a successful course correction based on lessons from early failures when biologics were assessed in broad COPD cohorts with less stringent BEC cutoffs, said Sanjay Ramakrishnan, MBBS, PhD, FRACP, Senior Lecturer at the University of Western Australia.

"It comes down to finding the right patient," Dr. Ramakrishnan said. "In COPD, it seems to be patients with elevated BECs within the past 12 months and a history of exacerbations who benefit from biologic therapy."

Other biologics are advancing along the clinical development pipeline.

In the COURSE phase 2a trial, tezepelumab, an mAb targeting thymic stromal lymphopoietin, reduced moderate or severe exacerbations in patients with COPD with BECs ≥ 150 cells/μL, with greater benefit seen in patients with BECs ≥ 300 cells/μL.[4] Two registrational phase 3 studies, JOURNEY and EMBARK, are currently evaluating tezepelumab in people with COPD with BECs ≥ 150 cells/μL.[5,6]

In addition to COURSE data, Dr. Criner also pointed out top-line results from the AERIFY-1 study of itepekimab, which met the primary end point of a statistically significant reduction in moderate or severe exacerbations in patients who had formerly smoked, regardless of eosinophilic phenotype, and provided a clinically meaningful benefit.[7]

Itepekimab, an IL-33-directed mAb, reduced moderate or severe acute exacerbations by 27% compared with placebo after 52 weeks in AERIFY-1.[7] However, itepekimab did not decrease exacerbations after 52 weeks in AERIFY-2, despite showing benefit earlier in the study. Notably, both trials included similar populations of patients with a history of smoking and moderate to severe COPD who were aged 40 to 85 years, regardless of BECs.[7]

"While AERIFY-1 was positive, AERIFY-2 was negative. These data make it unlikely that this agent will be licensed in a broad population," Dr. Ramakrishnan said. The reasons for the negative results in AERIFY-2 are currently unclear.

When it comes to the acute management of exacerbations, promising efficacy has also been reported for benralizumab, a humanized mAb against IL-5 receptor-α. In the phase 2 ABRA study, benralizumab reduced treatment failure to 45% from 75% with prednisolone in patients with acute exacerbations of asthma or COPD.[8] Benralizumab is being evaluated in patients with moderate to extremely severe COPD with a history of frequent COPD exacerbations and BECs ≥ 300 cells/μL in the phase 3 RESOLUTE study.[9]

Notably, the COPD-HELP trial tested the use of mepolizumab for severe exacerbations of eosinophilic COPD in the acute setting and it was not effective.[10]

Speaking of the different mAbs and targets in the context of COPD pathophysiology, Dr. Ramakrishnan said, "COPD pathophysiology is mixed and complex, and there are many reasons why people develop COPD and many exacerbation triggers. These epithelial and other interleukins are a small part of the underlying pathophysiology. Our hope is that by targeting this aspect, we can make headway in improving COPD exacerbations. In patients with higher BECs, who need to be identified efficiently, the biologics that target eosinophilic inflammation are improving outcomes."

BECs: A MOVING TARGET?

BECs are a marker of pulmonary type 2 inflammation, mediated by Th2 cells and eosinophils, which significantly contribute to COPD exacerbations in some patients.

Dr. Ramakrishnan said that BEC not only predicts drug response but also identifies patients with COPD at risk of future exacerbations. However, BEC is a labile marker, he said, and there are data suggesting that it is important to measure BEC more than once.

Recent research led by Lydia J. Finney, MBBCh, PhD, Clinical Associate Professor in Respiratory Medicine at the National Heart and Lung Institute, Imperial College London, showed that repeated, rather than a single, BEC assessment may better predict risk of future exacerbations.[11]

Dr. Finney explained that in their cohort of 100 patients with COPD, BECs fluctuated throughout a four-year follow-up.

"While 300 cells/µL has been identified as a BEC threshold for biologic efficacy in many clinical trials, in our study, 18% had a persistently high BEC (≥ 300 cells/µL)," Dr. Finney said. "About half of the patients always had a persistently low BEC (< 300 cells/µL), and BECs were intermittently high in about 30% of patients. Most patients (90%) with persistently high BECs had high BECs at exacerbation. However, high BECs were also detected in about 50% of patients in the intermittently high [BEC] or 25% of patients in the persistently low BEC groups."

Dr. Ramakrishnan said the context of BEC measurement matters.

"Measuring BECs in patients who are stable may miss patients who may benefit from biologic therapy, as only about a third of patients have elevated BECs in this setting," he said.

Dr. Ramakrishnan added that BECs measured at exacerbation in patients receiving prednisolone may be artificially suppressed, as prednisolone (and other corticosteroids) lowers BECs.

The GOLD Report includes recommendations for BEC assessment to guide use of inhaled steroids and dupilumab; however, it does not specify timing or context for BEC testing.

"Current COPD guidelines recommend BEC assessment, so it should become a routine part of care. But moving from single or sporadic BEC measurements to measuring BECs at exacerbations is a huge step, another paradigm shift, especially in primary care where most exacerbations are first reported/managed," Dr. Ramakrishnan said.

Dr. Ramakrishnan and colleagues showed that it is feasible to measure BEC in primary care at acute COPD exacerbation to guide prednisolone use in the STARR2 trial.[12] In the ABRA trial, elevated BECs at exacerbation identified patients who achieved greater responses with benralizumab, Dr. Ramakrishnan said.[8]

Dr. Ramakrishnan noted, "While guidelines currently include recommendations on BEC testing, what remains is how to change physician practice."

"The key message is that you cannot rely on just one blood test," Dr. Finney said. "While it may be challenging to evaluate BECs at multiple instances in real-world clinical practice, conducting BEC assessments at exacerbation might be a clue to identify potential candidates for biologic therapy."

TACKLING UNMET NEEDS

"In COPD, the main goal of biologic therapy is to reduce exacerbations, and any concomitant improvements in lung function are an add-on benefit, if they occur," Dr. Ramakrishnan said. COPD exacerbations are a significant health care resource and economic burden. Globally, COPD-related exacerbations are estimated to increase by nearly 25%, with a nearly sevenfold increase in health care costs.[13]

"Although the positive findings from studies of biologics, including dupilumab and mepolizumab, are great news, the benefit thus far has been limited to a small proportion of patients with COPD—the 20% to 40% who have type 2 inflammation with an eosinophilic phenotype," Dr. Criner said. "There is an unmet need for new therapies for patients who experience an exacerbation but do not have high BECs."

While a substantial proportion of people with COPD and exacerbations do not have an eosinophilic endotype, this proportion may not be as high as previously thought, as suggested by Dr. Finney's work.

Nevertheless, biomarkers and effective targeted therapies for patients with noneosinophil-driven exacerbations are needed.

"One of the good things about COPD biologics is that now people are thinking about the different reasons and categories of exacerbation, rather than grouping all exacerbations together," Dr. Ramakrishnan said. "To prevent exacerbations in patients with low or no elevation in BECs, it is necessary to identify the underlying driver(s) of exacerbation." ●

Consumer sleep trackers

// continued from page 8

The accuracy of CSTs remains unclear in older adults, those with comorbid conditions, and racially or ethnically diverse populations. Medications that alter heart rate or movement may further distort outputs, complicating interpretation. These limitations highlight the need for real-world validation. Future studies should assess CST performance in naturalistic settings and high-risk populations and clarify whether they can augment, though not replace, remote monitoring, behavioral therapies, or clinical evaluation.

INTEGRATING CSTs INTO CLINICAL PRACTICE

To help clinicians navigate the growing role of CSTs in clinical settings, the World Sleep Society issued a set of consensus recommendations in April 2025.[8] These guidelines encourage empathetic, informed engagement with CST data and recommend the following best practices:

- **Ask patients** about their sleep tracker use and what information they find helpful or concerning.
- **Acknowledge the interest** while educating them on the benefits and limitations of tracking.
- **Avoid overinterpreting** sleep staging data, which are less reliable and not clinically important for treating sleep disorders.
- **Emphasize behavioral trends** and multiday averages instead of nightly readings.
- **Do not use CSTs to diagnose sleep disorders.** Insomnia is a self-reported sleep disorder. OSA risk may be identified by some devices, but formal sleep testing is necessary for diagnosis.
- **Use CSTs cautiously** to support behavioral treatments such as CBT-I. They may help with engagement but are not necessary for the intervention.

Some health care systems, including Kaiser Permanente and Ochsner, have already started integrating wearable data into care models, pairing tracking tools with health coaching, electronic health record integration, and trained support teams.[9] These models show that CSTs can support patient-centered care when used thoughtfully and interpreted within the context of clinical expertise.

COMMUNICATING EFFECTIVELY WITH PATIENTS

Clinicians do not need to become wearable tech experts to address CST concerns effectively. Patients may misinterpret nightly variability as a sign of pathology or dysfunction. Helping patients reframe CST data as behavioral feedback—rather than a sleep "grade"—might prevent unnecessary worry and redirect attention to core treatment goals.

Framing the conversation around long-term patterns, daily functioning, and symptom changes provides context and supports better outcomes. Patients are more likely to benefit when providers ground the discussion in consistency, routine, and sleep-related behaviors rather than nightly scores. This approach also reinforces the ideology of helping patients feel understood while also potentially reducing distress around misunderstood metrics.

BE PREPARED FOR CSTs

Consumer sleep trackers are likely to remain a fixture in modern sleep care. Although not designed or validated for clinical diagnosis, they can support treatment adherence, promote behavior change, and deepen patient engagement when integrated thoughtfully and with scientific transparency. Clinicians should be prepared to discuss CST data, clarify their limitations, and interpret findings within the broader context of each patient's symptoms and history. By anchoring these conversations in evidence and applying frameworks such as the 2025 World Sleep Society guidelines, providers can engage with CSTs in ways that enhance care without compromising clinical integrity. ●

BY NICK GERIK

Honoring our legacy by investing in 90 early career clinicians

CHEST sponsors record number of Travel Grants in honor of 90th anniversary

In 1935, about 40 people attended an inaugural educational event that would eventually become the CHEST Annual Meeting. Today, generations of clinicians, patients, and community members worldwide have felt ripple effects that can be traced back to that small group of attendees.

As CHEST celebrates its 90th anniversary, it honors that legacy by investing in 90 early career clinicians who can similarly shape the future of pulmonary, critical care, and sleep medicine. This initiative, called the 90 for 90 Campaign, will fund travel grants that make it possible for these clinicians to attend CHEST 2025 in Chicago. Each award includes free meeting registration plus a $1,000 stipend to cover travel costs.

Just as importantly, the grant program connects these clinicians with the larger CHEST professional network. Each recipient is paired with a mentor, ensuring that they have the knowledge they need to advance patient care where they live and work. This exponentially expands the impact of CHEST's world-class clinical education, said Robert De Marco, MD, FCCP, Chair of the CHEST Board of Advisors.

"It's about how you will take something you learned and bring it back to your community," he said. "Will you be able to help do better lung cancer screening? Will you be able to set up things to allow people to get care that they might not have received?"

REAL-WORLD IMPACT

Sudha Misra, MD, had heard others question the feasibility of pursuing research while at a community-based fellowship program. "There's this belief that fellows or trainees who are in community-based settings don't do much research or don't have enough resources to pursue academic research," she said. "And that was a question that plagued me."

So when she received a travel grant to attend CHEST 2024, she took the opportunity to ask "every single person I came across"—including CHEST Presidents, past and present—for input on the topic. Inspired by their responses, less than a year later Dr. Misra helped conduct the first research symposium in her program at Reading Hospital, Tower Health, in Pennsylvania.

"The reason I think it happened, entirely, is because all these people gave me hope. They gave me the belief," she said. "This resource limitation, being in a community setting, affecting research—it's not true. Where we are, we have enough. We have smart people; we have brilliant people. We can come together and organize research in our way, at our level."

FILLING MANY NEEDS

The current CHEST Travel Grant program has been building momentum for several years. Donors funded 35 travel grants in 2023 and 55 in 2024. CHEST had already hoped to expand the program for 2025 before a new wave of funding uncertainty reinforced the importance of the grants.

Even in the best of times, early career clinicians are in a uniquely vulnerable position. Their learning curve is steeper, and their networks are thinner. With further opportunities reliant on both knowledge and connections, that can be a difficult cycle to navigate. CHEST travel grants help early career clinicians move beyond those hurdles and focus on what really matters, said Anthony J. Esposito, MD, who received a travel grant to attend CHEST 2024 as a junior faculty member.

"When you have early career professionals come to a conference like this and get exposed to new technologies and new ways of approaching clinical problems, it doesn't just help us—it helps our patients," Dr. Esposito said.

"Unfortunately, a lot of people don't make it out on the other side where they [thought] they would," he said. "Any help, even if it may seem insignificant, is not actually insignificant for someone in my position."

INVESTING IN THE FUTURE

Dr. Esposito, Assistant Professor at Northwestern University's Feinberg School of Medicine, said the mentorship component of the travel grant was especially meaningful for furthering his career within CHEST. His mentor guided him through the ins and outs of being a leader, collaborated on a session proposal, and recommended Dr. Esposito for induction as a Fellow of the American College of Chest Physicians at this year's meeting.

CHEST 2025 will take place from October 19 to 22, but the 90 for 90 Campaign will remain open until the end of the year in an effort to maximize support for CHEST's commitment to education, mentorship, and equity in access. Members of CHEST's Board of Advisors and Board of Regents have each individually supported a full travel grant. Other members of the CHEST community can contribute gifts of any size through the CHEST website at **chestnet.org/donate** or while at the meeting in Chicago. As with all CHEST philanthropy donations, every dollar is passed along fully to the grant recipient, so member generosity directly affects their life and the lives of others.

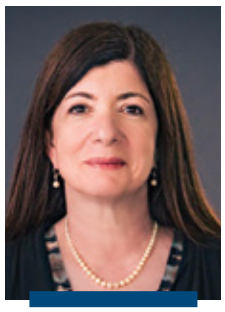
"We are more than just the number of people who receive grants," Dr. Misra said. "The subjective impact and the ripple effect from one grant can be a magnificent thing." ●

Bridging Specialties program tackles NTM pulmonary disease and bronchiectasis

BY JEN A. MILLER

The newest iteration of CHEST's Bridging Specialties® program targets two often misdiagnosed lung conditions: nontuberculous mycobacterial (NTM) pulmonary disease and bronchiectasis. It was created because the problem with both disease states is they can easily look like something else, especially to primary care physicians (PCPs).

"These patients are often [people who don't smoke and] who won't have other pulmonary diseases, and we want [providers] to understand these conditions so they're not routinely misdiagnosing asthma, COPD, or bronchitis," said Doreen J. Addrizzo-Harris, MD, FCCP, Professor of Medicine at NYU Grossman School of Medicine, Chair of the Steering Committee, and CHEST Past President.



Doreen J. Addrizzo-Harris, MD, FCCP

COMMON SYMPTOMS, COMMON MISDIAGNOSIS

Some patients with NTM pulmonary disease can carry an infection for years—or decades—and not be symptomatic, while others suffer gravely with symptoms that can include fatigue, night sweats, shortness of breath, weight loss, and cough. Similarly, bronchiectasis can be a symptom of more than 20 different conditions, including antibody deficiencies, autoimmune disorders, childhood infections, or genetics. Because these symptoms can be chalked up to other common maladies, including asthma, COPD, or recurring bronchitis, Dr. Addrizzo-Harris said that it can take as long as 10 years for someone to get a correct diagnosis.

NTM pulmonary disease and bronchiectasis are commonly diagnosed by sputum culture or by a CT scan, neither of which are routine tests ordered by PCPs. "If a patient is coughing for years and gets a chest [radiograph], it will often miss the diagnosis," Dr. Addrizzo-Harris said.

Getting a correct diagnosis early can be life-altering. "Many of the patients have been to many physicians over the years, and by the time they come to us, they have lost a significant portion of lung function," she said. "Early diagnosis can help preserve that lung function and help patients resolve symptoms more quickly, and both improve and preserve their quality of life."

EXPANDING THE BRIDGING SPECIALTIES SERIES

To address the gaps in diagnosis of both conditions, CHEST launched a new addition to its Bridging Specialties series: Timely Diagnosis for NTM Pulmonary Disease and Bronchiectasis. The goal of each Bridging Specialties program is to connect specialists to PCPs to reduce time to diagnosis and improve patient care.

"It's important to educate our primary care physicians so they know that bronchiectasis is one of the causes of cough, especially in patients who have recurring episodes," Dr. Addrizzo-Harris said. The goal of the program is for more people within health care to remember NTM pulmonary disease and bronchiectasis as possible diagnoses. Perhaps this will encourage PCPs to order a CT scan or sputum culture or refer patients to a pulmonologist as soon as they present symptoms.

The program also addresses important questions such as what to do if a physician inadvertently finds nonsymptomatic NTM pulmonary disease through a patient's unrelated CT scan or sputum culture: Do you treat the patient now (often through a multiantibiotic drug course) or track them through regular check-ins until the condition turns symptomatic?

Dr. Addrizzo-Harris added that this Bridging Specialties installation is a "novel way" to get NTM pulmonary disease and bronchiectasis on the mind of health care professionals "with many different tools for learning," whether it's a podcast, webinar, infographic, or decision-making module. "I really think it makes it very easy for the learner to get this information," she said.

KEEPING NTM-B TOP OF MIND

Dr. Addrizzo-Harris hopes that this Bridging Specialties program will be used by the entire care team—from PCPs to advanced practice providers, respiratory therapists, nutritionists, and research staff. And because bronchiectasis can be caused by so many different conditions, she hopes it's taken up by immunology, gastroenterology, and rheumatology professionals too.

The ability to be picked up by so many people outside of pulmonology "really makes it phenomenal," she said. ●

CHEST gratefully acknowledges the following supporters of Bridging Specialties®: Timely Diagnosis for NTM Pulmonary Disease and Bronchiectasis. *Supported by Insmed Incorporated*

Optimizing lung transplant care

// continued from page 9

Musculoskeletal: Chronic steroid use contributes to osteoporosis, avascular necrosis, and muscle wasting. APPs coordinate DEXA screening, initiate bone-protective therapies, and direct patients to physical therapy to prevent frailty.

Dermatologic: Patients who are immunosuppressed are at high risk for skin cancers, particularly squamous cell carcinoma. Routine dermatologic screening and sun protection education are essential.

Distinguishing infection from rejection: A foundational principle in transplant care is discerning infection from rejection, as their treatments are diametrically opposed. APPs are trained to recognize subtle signs of both, especially in patients with nonspecific symptoms or atypical presentations due to immunosuppression.

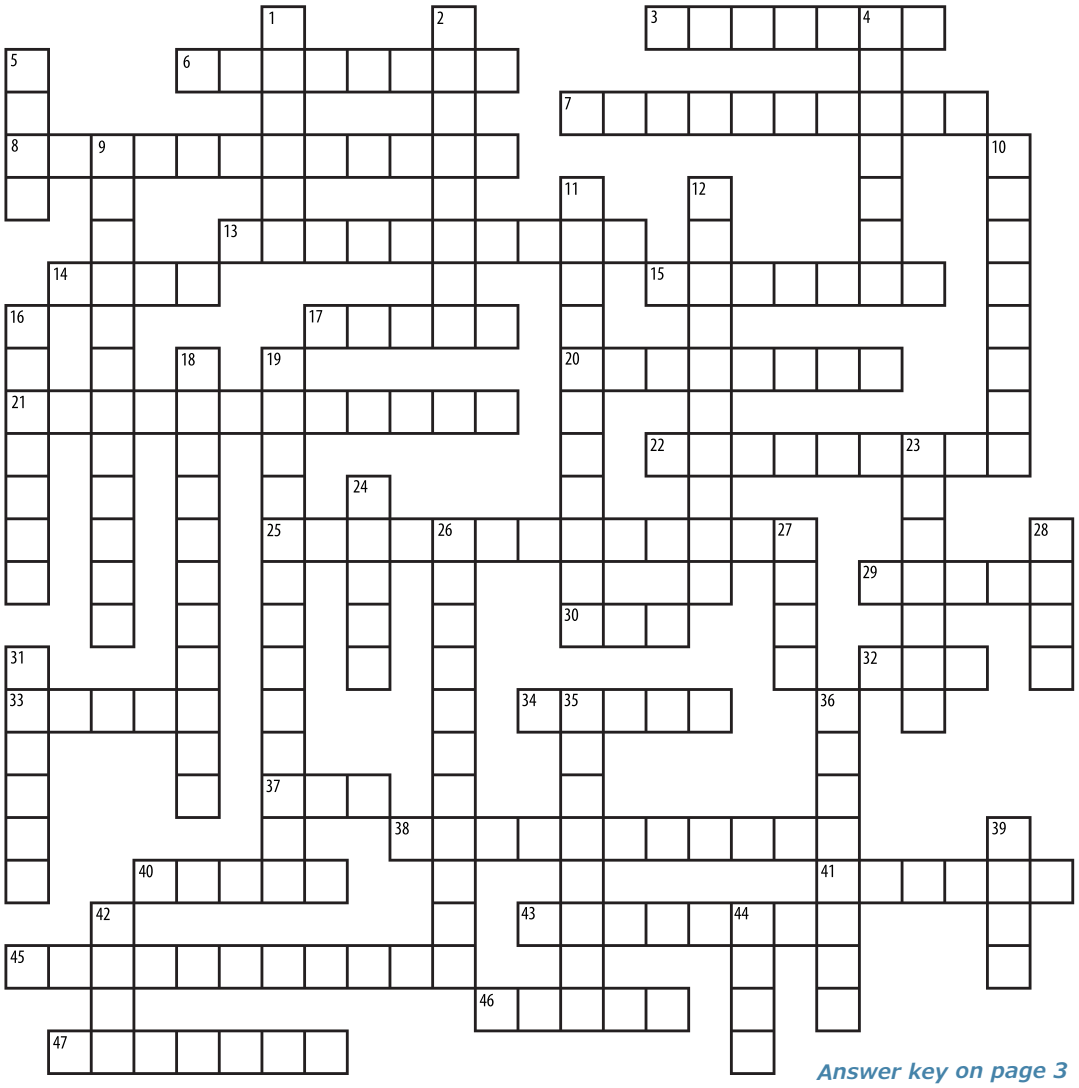
Close monitoring of posttransplant CNI levels, renal function, and timing is essential. APPs often serve as the first point of contact in managing these nuanced decisions and should be consulted by general pulmonologists managing posttransplant patients.

OPTIMIZING CARE

APPs are integral to the success of lung transplant programs. Their clinical expertise, consistency, and adaptability allow them to manage the complexity of transplant patients across care settings. By serving as educators, coordinators, and care providers, APPs not only improve outcomes but also extend specialized transplant care to community providers and nontransplant pulmonologists. In the evolving landscape of transplant medicine, APPs are not only valuable—they are indispensable. ●

CHEST Puzzler

Test yourself with these clues from the April, May, and June 2025 issues of the journal *CHEST*®—compiled by William Kelly, MD, FCCP.



Answer key on page 3

ACROSS

3. Epicardial _____ tissue (EAT), more than body mass index, was shown in a retrospective study to be associated with decreased pulmonary arterial hypertension survival (May p.1265)
6. The only demonstrated risk factor for cavitary pulmonary coccidioidal infection is this common and chronic endocrine disorder when poorly controlled (May p.1313)
7. Multicenter, cross-sectional study suggested benefits of _____ screening for RA-ILD, a non-ionizing alternative to HRCT, which may also avoid incidental pulmonary nodule work-ups (Jun p.1692)
8. Three main classes of medications for PAH include endothelin-receptor antagonists, phosophodiesterase inhibitors, and _____ receptor agonist (Jun p.1747)
13. _____ pneumonia is a noninfectious, nonmalignant cause of reverse halo sign andradial bands of consolidation with air bronchograms on CT. Treatment is often prednisone or macrolides. (Apr p.1157)
14. Number of classes (categories) of pulmonary hypertension in the World Symposium on PH System (Apr p.1192)
15. Follow-up of pulmonary _____ remains unacceptably low and worse in more vulnerable neighborhoods. 1.6 million of them are diagnosed each year. (May p.1259)
17. Bilateral, symmetrical B-lines on lung ultrasound, with dependent gradient and smooth pleural line suggest pulmonary _____ (Jun p.1674)
20. Opportunistic, gram-positive bacillus that typically causes multiple pulmonary nodules that may cavitate, but, interestingly, 75% may also have a crazy-paving appearance surrounding those masses (Apr p.1145)
21. Current gold standard test for diagnosis of expiratory central airway collapse (Apr p.1030)
22. Drug which has shaped the therapeutic landscape for lymphangioleiomyomatosis, stabilizing lung function and improving survival (Jun p.1711)
25. Large, randomized trial showed shortening ICU antibiotic treatment from seven to five days based on THIS BIOMARKER of calcium metabolism, reduced mortality (Apr p.918)
29. A secondary analysis of the DEVICE trial (again) showed intubation of patients in cardiac arrest more often successful and faster with _____ laryngoscopy (May p.1259)
30. Optimal ICU staffing recommendations are 1 intensivist for every 7.5 patients, and this number of patients for each nurse (Jun p.1518)
32. Sure, it's an arid topic, but using _____ powder inhalers with suboptimal inspiratory flow is associated with COPD readmissions and exacerbations (Apr p.920)
33. Endobronchial lung volume reduction in the left _____ lobe was among risk factors for severe pneumothorax in a single-center retrospective study (Apr p.1012)
34. The goal of precision medicine in ILD and other conditions is to target the _____ treatment to the _____ patient at the _____ time (Apr p.1121)
37. Number of available asthma biologics (Apr p.911)
38. Prednisone and repository corticotropin injection are the only two US Food and Drug Administration-approved immunosuppressive agents for this granulomatous condition, though alternatives are used or added 40% of the time (Apr p.1100)
40. Term for spirometry that is abnormal but without signs of obstruction, associated with all cause, cardiac, and pulmonary mortality in a systemic review and meta-analysis (Jun p.1591)
41. On this social media video streaming platform with 1.6 billion users, 25% of its top asthma posts were found to be potentially harmful (May p.1297)
43. Failure to _____ a patient on the first attempt is associated with increased hypoxemia, aspiration, and dental injury (May p.1409)
45. Pulmonary nodule appearance that warrants conservative, noninvasive, serial follow-up approach, given their indolent nature (Jun p.1535)
46. A randomized trial showed use of noninvasive ventilation before and after high-risk surgery on this organ reduces the rate of cardiopulmonary failure (Jun p.1728)
47. Testing for allergic bronchopulmonary aspergillosis (ABPA) varies by nation, with this European country having the highest rate of testing (Apr p.980)

DOWN

1. In a feasibility study, 38% of eligible people responded "Yes" when randomly texted about their interest in screening for _____ (May p.1509)
2. Studying prevention of this condition in ICU patients is difficult because so many at ICU entry have, or cannot be screened for, such acute brain dysfunction (May p.1405)
4. Pulmonary barotrauma of descent among breath-hold divers is referred to as "lung _____" perhaps because it feels like being pressed between fingers (May p.1468)
5. Abbreviation for this complex hypersensitivity allergic response insusceptible individuals to the saprophytic fungus (Apr p.914)
9. Test that measures airway obstruction during tidal breathing, requiring minimal cooperation by superimposing sound or airwaves (May p.1288)
10. Disparities in sarcoidosis outcomes are less for this group of Americans, perhaps due to access to a health care system that bears their name (May p.1263)
11. An _____ consulting on or managing all patients in the ICU reduces ICU and hospital mortality and shortens length of stay (May p.1452)
12. Use of _____ in the medical record is intended to reflect patients' actual words rather than their interpretation. More often used by palliative care physicians and varied with patient race in one study. (Jun p.1738)
16. Water soluble, nonglycosylated protein largely responsible for oncotic pressure. Its infusion in sepsis is debated and may cause harm in subgroups. (Apr p.926 & 1090)
18. After lung transplant, patients with this disease may still need management for associated digital ischemia, other skin issues, esophageal dysmotility, and renal crisis (May p.1283)
19. Parasite that commonly affects the central nervous system in patients who are immunocompromised and can also cause pulmonary opacities with or without nodules. Bactrim prophylaxis is not purrrfect. (Apr p.1155)

23. _____ pulmonary nodules are profuse, diffuse, randomly distributed, well-defined micronodules of uniform size of 1-2 mm, resembling a type of seed (Apr p.1144)

24. In a randomized trial, postextubation high flow nasal cannula flow rate of _____ L/min compared with 60 L/min was no different in terms of reintubation or rescue noninvasive ventilation (May p.1389)

26. Radiographic pulmonary finding in up to 80% of patients after cardiac surgery (Jun p.1528)

27. Symptom in up to 30% of patients with RA-ILD (Jun p.1688)

28. Did you notice the color tabs printed on the edge of the CHEST® journal to mark start and end of each section? THIS is the color for obstructive lung disease (Jun p.1557)

31. Serum eosinophil levels vary with medication, comorbidities, and smoking and are also relatively lower in this season of the year (Apr p.912)

35. A condition defined as difficulty in initiating or maintaining sleep or early morning awakening with inability to sleep was associated with increased risk of IPF disease progression and all-cause and especially respiratory mortality (Apr p.1108)

36. An editorial recommends individualized patient antibiotic treatment and not algorithm, quoting this genius physicist who said everything should be made as simple as possible, but not simpler (Apr p.918)

39. 13.4% of randomly selected American adults had this pulmonary condition—which was news to 71% of them. A Canadian study showed intervention can improve quality of life and outcomes. (Apr p.943)

42. Number of patients out of every eligible 100 Medicare patients who get pulmonary rehabilitation (Jun p.1524)

44. Canadian Thoracic Society meta-analysis and guideline recommends checking this serum level (abbreviated) in patients with COPD, bronchiectasis, or adult-onset asthma with persistent obstruction (Apr p.1046)

Shock resuscitation // continued from page 3

harm in certain patients, including those with mixed shock states.[6] This may open a discussion of point-of-care ultrasonography (POCUS), a sensitive, specific, and reproducible tool to assess fluid responsiveness and guide resuscitation.[7,8] Review its limitations—in particular, the assessment of the inferior vena cava collapsibility in positive pressure vs spontaneous respiration. Then, segue into selection of vasopressors and inotropes tailored to the patient's physiology (eg, consider adding low-dose inotropic support to vasopressors in patients with sepsis and resultant cardiomyopathy). Discourage the use of fluids as a means to avoid vasopressor use, reminding learners of the importance of systemic vascular resistance.

During initial triage, attend to life-threatening laboratory abnormalities such as significant potassium, calcium, or acid/base abnormalities that warrant immediate correction. Discuss the indications for, and timing of, renal replacement therapy.

Unless the patient is at risk of impending respiratory failure, intubation should generally be deferred during the stabilization period. Review the potential consequences of induction agents and positive pressure ventilation in patients who are volume-depleted, in right ventricular failure, or with significant metabolic abnormalities and how they may lead to cardiovascular collapse.

At this point, pause to consider goals of care and the patient's desire to receive or defer aggressive care. Discussion with either the patient or their surrogate to ensure that the described interventions are within the patient's wishes is absolutely critical. When possible, one team member may speak to a surrogate while another continues efforts to stabilize the patient.

3) EVALUATE FOR ETIOLOGIES OF SHOCK

At this point, you have already spoken about the utility of POCUS for hemodynamic assessment, and, here, you should turn to its use as a diagnostic tool. Rapid echocardiography may demonstrate right ventricular dilation consistent with acute pulmonary embolism or the diastolic collapse of cardiac tamponade. Lung ultrasound may show evidence of pneumothorax or B-lines that suggest decompensated heart failure. Abdominal ultrasound may show free fluid consistent with intraabdominal bleeding. These findings can be obtained in minutes at the bedside with minimal training.[9]

Highlight additional data that can be obtained in patients with central venous access, again returning to our initial discussion of shock physiology. Explain expected central venous oxygen saturations in different shock states and discuss the limitations of central venous pressure.

4) PLAN AHEAD

Following triage, stabilization, and initial evaluation and management based in physiology, go over preparation for upcoming needs or obstacles. Consider source control, particularly for patients with sepsis or hemorrhage. Encourage early consultation for assistance with advanced hemodynamic support or renal replacement therapy and discussion with nursing leadership to ensure appropriate staffing. For patients who require transfer to radiology, the cardiac catheterization laboratory, or surgery, discuss what goals need to be met to transport these patients safely. Finally, and most importantly, highlight the need for a calm, collected, and collaborative environment where the input of all staff members is valued and respected.

5) EVALUATE SUCCESS OR FAILURE

Successful management of shock requires constant reevaluation. Trainees are encouraged to continuously assess for response to their treatment decisions and alter their approach, if needed. Review markers of success, including hemodynamic goals that may be met with vasopressors and inotropes, and clinical signs of adequate perfusion, including urine output, mottling, lactate clearance, and mental status.[2]

Acknowledge the dangers of anchoring and premature closure and urge humility. Management of shock requires willingness to consider alternative diagnoses or treatment strategies if the above goals are not met or if there are signs of deterioration. In our program, we encourage trainees to have a very low threshold to call for help.

Finally, emphasize the importance of a more in-depth assessment as soon as the opportunity to do so arises. Details of the patient's presentation and preceding illness, exposures, recent clinical events, medications, or any number of other factors may point to a diagnosis or influence management. Ask learners to carefully review their work, ensuring that appropriate treatments are ordered, medications not appropriate in shock states are discontinued, and the necessary consultants are kept updated. It is also imperative that they communicate a clear plan to the multidisciplinary team, including colleagues from nursing, respiratory therapy, and pharmacy, as these specialists may identify additional challenges not readily noted by the physician.

Shock, irrespective of cause, carries very high risk of morbidity and mortality. Early recognition and structured approach to evaluation and management are critical skills for all clinicians.

The framework we present encourages trainees to develop a physiology-based approach to individualized, patient-oriented care. We recognize that there are many variations of our approach and hope that our thoughts are helpful to clinician-educators. ●

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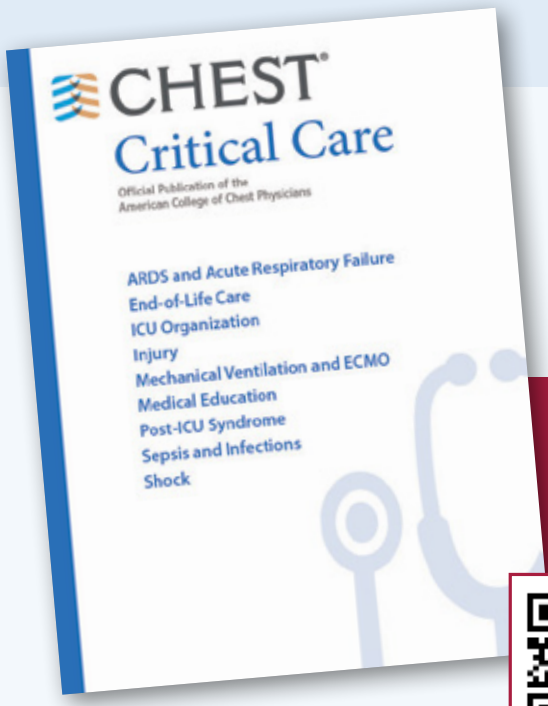

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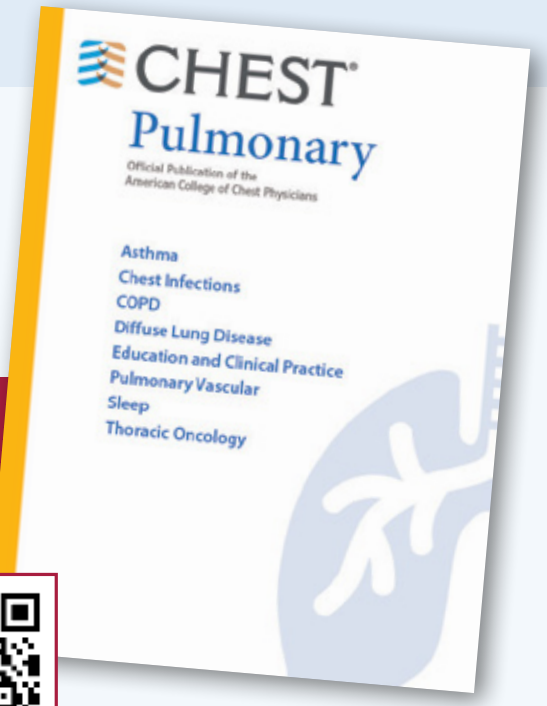

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