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THE NEWSPAPER OF THE AMERICAN COLLEGE OF CHEST PHYSICIANS



Healthy diet and habits are the best approach for OSA, experts say.

Both promise and concern for OSA and CPAP with GLP-1s

BY WALTER ALEXANDER

Will the weight reduction success with glucagon-like peptide-1 (GLP-1) agonists translate into reductions in obstructive sleep apnea (OSA)? Will those potential OSA benefits obviate the need in many for continuous positive airway pressure (CPAP)? Experts are voicing high hopes while citing health equity concerns and reluctance to de-emphasize lifestyle remedies.

“I think it’s a game changer for helping people who are overweight or obese,” stated Samuel Kuna, MD, chief of sleep medicine at the Corporal Michael J Crescenz VA Medical Center in Philadelphia, Pennsylvania, in an interview with *CHEST Physician*. “I think we’re just starting out on a very exciting new era. We finally have quite effective treatments for this population.”

Dr. Kuna’s Sleep AHEAD (Action for Health in Diabetes) 2021 study (doi: 10.1164/rccm.201912-2511OC) found participants with OSA and type 2 diabetes mellitus receiving intensive lifestyle interventions for weight loss had reduced OSA severity at 10 years, and OSA remission at 10 years was more common with intensive lifestyle intervention than with diabetes support and education.

In a *JAMA Network Open/Pulmonary Medicine* article on a 2022 study (doi: 10.1001/jamanetworkopen.2022.8212) conducted among 89 Spanish male adults with moderate to severe OSA and body mass index (BMI) of 25 or greater, participants received CPAP therapy with or without 8 weeks of weight loss and lifestyle intervention. The primary endpoint of apnea-hypopnea index at 6 months showed the intervention to yield

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Dupilumab earns priority review for add-on COPD care

BY HEIDI SPLETE

The Food and Drug Administration (FDA) has accepted an application for Priority Review for dupilumab as an add-on therapy for adults with uncontrolled chronic obstructive pulmonary disease (COPD), according to a press release from manufacturer Regeneron.

If approved, dupilumab would be the only biologic option for COPD and the first new treatment option in approximately 10 years, according to the company. Dupilumab works by blocking signaling by the interleukin (IL)-4 and IL-13 pathways, and Regeneron’s development program focuses on a population of COPD patients who also have type 2 inflammation.

The supplemental Biologics License Application was based on data from clinical trials in the company’s phase 3 COPD clinical research program. In the BOREAS study, adults with uncontrolled COPD and type 2 inflammation who were current or former smokers were randomized to 300 mg of subcutaneous dupilumab or

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INSIDE HIGHLIGHT



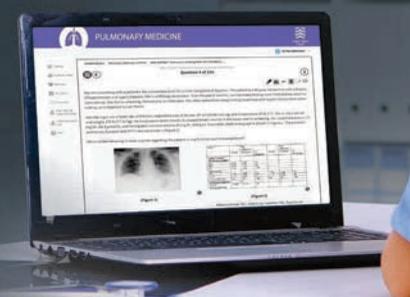
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“clinically meaningful and sustainable improvements in OSA.”

Dr. Kuna stated, “I don’t think these [weight loss] agents eliminate the importance of behavioral modification, of changing diet, of reducing highly processed foods and maintaining a healthy lifestyle.” He acknowledged, however, that behavioral endeavors have been in general disappointing with respect to patients’ ability to achieve weight loss. “These medicines really open up a new strategy to help patients do that,” he added.

Dr. Kuna pointed to a recent (2023) Grunstein et al perspective article (doi: 10.1093/sleep/zsad224) published in *Sleep* citing phase 3 trial results showing placebo-subtracted weight loss percentages. With subcutaneous (SC) semaglutide 2.4 mg they were 12.6% in patients with obesity or overweight with one or more weight-related comorbidities (but not type 2 diabetes), and 17.8% with tirzepatide (15 mg, SC, weekly), a combination GLP-1 agonist and glucose-dependent insulinotropic polypeptide agonist, in a similar population. The authors stated, “These new agents, provided they are available to persons who need them most

target populations derive the most benefit with incretin therapies.

Despite the unanswered questions, the direction was unequivocally clear for Grunstein et al: “Ultimately, the focus must shift away from mechanical therapy for obesity-related OSA toward weight loss, the latter which is likely to produce multiple health outcome improvements that are superior, including all-cause mortality.”

Dr. Kuna agreed with the *Sleep* article authors that one implication of this “incretin revolution” is sleep physicians will have to broaden their skills to encompass obesity management. “As the field evolves, perhaps we should start training our fellows about how to manage these patients,” Dr. Kuna said.

Significant impact on OSA and CPAP

“Obesity is a risk factor for sleep apnea,” stated Saadia A. Faiz, MD, FCCP, professor, Department of Pulmonary Medicine, University of Texas MD Anderson Cancer Center, Houston, Texas, “so with increased use of these semaglutide-type agents for weight reduction, we would anticipate a significant impact on both OSA

“Since cessation of the drug can lead to rebound weight gain, the emphasis on healthy eating and exercise are crucial to management.”

—Saadia A. Faiz, MD, FCCP, is a member of the CHEST Physician Editorial Board



Dr. Faiz

— who are often socioeconomically disadvantaged — could revolutionize the management of obesity and its many complications, including OSA.” Grunstein et al, also noted the number of studies showing improvement in cardio-metabolic outcomes (eg blood pressure) with pre-incretin OSA therapies are “minimal.” They underscored, however, the need for risk/benefit cost-effectiveness data on incretin therapies, and cited evidence that withdrawal from incretin treatment brings back weight gain and adverse cardio-metabolic factors. They also indicated key areas of uncertainty requiring research: gender-based response differences to incretins (women predominate in most weight loss studies, but OSA is more common in men), how CPAP users will adapt to incretin OSA benefits, direct comparisons of impact on OSA with incretins vs mechanical therapy, and understanding which

severity and need for CPAP” Speaking in an interview and referring to the Dr. Kuna et al. study, she stated, “Since cessation of the drug can lead to rebound weight gain, the emphases on healthy eating and exercise are crucial to management.” Dr. Faiz said further, “It’s important to note there are other weight-independent mechanisms for OSA, including upper airway anatomy, mechanisms that modulate upper airway stability, chemoreceptor sensitivity, visceral adiposity, neuroendocrine control, sleep quality, and other aspects of OSA pathophysiology yet to be discovered.”

Cost an obstacle for some

“For many insurances, criteria for coverage include obesity and pre-diabetes based on HbA1c. For some not meeting requirements, they will have to pay out of pocket,” Dr. Faiz said. She pointed

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FDA clears medical grade OTC pulse oximeter

BY HEIDI SPLETE

The MightySat Medical, an over-the-counter (OTC) medical fingertip pulse oximeter, has received clearance from the US Food and Drug Administration (FDA) for use without a prescription, according to manufacturer Masimo. The device is the first medical fingertip pulse oximeter available directly to consumers without a prescription that includes the same technology used by many hospitals, Masimo said. According to the FDA, home pulse oximeters are generally of two classes: hospital-grade prescription devices which have been vetted through clinical trials, and OTC devices which often estimate oxygen saturation.

Pulse oximeter use is important for patients with diagnosed breathing problems or lung diseases such as asthma, COPD, pulmonary fibrosis, lung cancer, flu, pneumonia, or COVID-19 to collect accurate data on arterial blood oxygen saturation they can share with their health care providers, according to the company. Patients with cardiac conditions, including pulmonary hypertension and heart failure may also benefit



Dr. Maselli

from pulse oximeter monitoring.

However, challenges of pulse oximeter use include measuring accuracy when patients are moving, patients with poor circulation, and cool, thick, or darker skin. The MightySat Medical is designed to provide reliable measures of oxygen saturation and pulse rate across all patient groups, the manufacturer said. Asked for additional com-

“Patients should be aware that there are different grades of pulse oximeter before selecting one for home use.”

—Diego J. Maselli, MD, FCCP, is a member of the CHEST Physician Editorial Board

ment, Diego J. Maselli, MD, FCCP, professor and chief in the Division of Pulmonary Diseases and Critical Care at UT Health at San Antonio, San Antonio, Texas, noted, “Over the past decades, there has been an increased interest in home monitoring of medical conditions, particularly with the development of more portable and accessible technology. This was heightened by the COVID-19 pandemic where telemedicine was frequently required as a means of delivering care,” Dr. Maselli

continued. “One of the important characteristics to monitor was the oxygen saturation in patients that had an active COVID-19 infection as it would dictate management and was part of the protocol for monitoring the clinical course of infection. Because of this need, many companies developed portable pulse oximeters for home use. This resulted in widespread use of pulse oximeters at home and other places outside clinic or hospital.”

Other OTC pulse oximeters not cleared by the FDA may create confusion among patients about the accuracy of their measurements, according to the company. Dr. Maselli commented that pulse oximeters’ value can vary. “Unfortunately, these devices vary in quality and reliability and patients may not be fully aware of this. Most recently, the FDA approved a hospital-grade pulse oximeter that requires no prescription. This device may provide a more accurate reading in a wide range of clinical situations outside the health care setting. Patients should be aware there are different grades of pulse oximeter before selecting one for home use. In addition, patients should work closely with their providers to better select the monitoring modality that best fits their clinical situation,” he said.

MightySat Medical is indicated for individuals aged 18 years and older who are well or poorly perfused under no motion conditions and is not intended as a diagnostic or screening tool for lung disease. ■

GLP-1 *continued from previous page*

to a *Respirology* (doi: 10.1111/resp.14545) commentary in which Garun S. Hamilton, MBBS, PhD, and Bradley A. Edwards, PhD, underscored the nearly 1 billion people worldwide with OSA, most of whom are overweight or obese. “GLP-1 agonists are so effective that they have become a worldwide phenomenon. ... The high cost of the medications combined with the high prevalence of OSA means,” they stated, “there is no way universal health care funding schemes can afford these medications, unless strict criteria are in place to prioritize those who can gain subsidized access and/or a duration of use limit is in place. This will no doubt exacerbate inequities in health care access and outcome between those from lower versus higher socioeconomic populations, as the attributable benefit from GLP-1 agonists is likely to be dependent on a patient’s ability to afford them.”

Beyond health equity concerns

The evidence for clinically relevant reductions in weight and resultant lowering of other adverse risk factors supports a wide embrace of GLP-1 agonists. However, there are the cautionary pleas of nutrition/

lifestyle-focused health advocates. They urge that prescriptions for nonpharmacological strategies that promote better sleep, healthier food choices, and more exercise need sharper highlighting and strong incentivizing.

Dr. Faiz commented, “The availability and consumption of ultraprocessed foods can impact food intake and weight. Specifically, in a small study of 20 inpatient adults admitted to the NIH Clinical Center randomized to either ultraprocessed or unprocessed diets for 14 days, increased caloric intake and weight gain were found in the ultraprocessed cohort.” In the study Dr. Faiz cited (doi: 10.1016/j.cmet.2019.05.008), meals were matched for calories, energy density, macronutrients, sugar, sodium, and fiber. Analysis showed a 4-pound weight difference between groups within 2 weeks: the ultraprocessed cohort had taken in an extra 500 calories a day and had gained weight (0.9 ± 0.3 kg [$P = 0.009$]) and body fat while the unprocessed food group lost weight (0.9 ± 0.3 kg [$P = 0.007$]) and body fat. “Thus, the type of foods we opt for can also have significant impact,” Dr. Faiz stated.

Dr. Faiz and Dr. Kuna stated had no conflicts of interest to disclose. ■

COPD // *continued from page 1*

placebo once every 2 weeks. Type 2 inflammation was defined as blood eosinophil counts of at least 300 cells per microliter.

All patients received standard-of-care therapy. The primary endpoint of reduced annualized moderate or severe acute COPD exacerbations was 30% greater in the dupilumab group compared with the placebo groups, and the significant differences in improvement persisted at 52 weeks. Safety data were similar to previous studies of dupilumab for its

approved indications. The most common adverse events seen in 5% or more of dupilumab patients compared with placebo patients included back pain, diarrhea, and headache.

Priority Review status is granted to applications for approval for therapies that may offer significant improvements, although the therapies are still in clinical development. The target action date for the FDA decision is June 27, 2024, and regulatory submissions for dupilumab for COPD also are under consideration in China and Europe. ■

Michael Marll, MD, comments: The BOREAS trial highlights the significant role that type 2 inflammation plays in both acute and chronic airway obstruction for select patients with COPD. If approved by the FDA, dupilumab would become the first biologic therapy for patients with moderate to severe COPD as add-on treatment to triple bronchodilator therapy (ICS, LABA, and LAMA). Characterization of the unique immunologic endotypes of airway inflammation in patients with COPD remains a promising direction for developing desperately needed therapeutics. While there has been a press release on the NOTUS trial, we look forward to seeing the article in a peer-reviewed publication.



Dr. Marll is a member of the CHEST Physician Editorial Board.

FDA authorizes sleep apnea app

BY HEIDI SPLETE

The Food and Drug Administration has granted De Novo classification to a sleep apnea feature developed by Samsung for use via the Health Monitor app, according to a company press release.

The sleep apnea feature will be available on watches in Samsung's Galaxy series in the third quarter of 2024, according to the press release.

The new feature on the app is designed to help users with no previous diagnosis of sleep apnea to detect moderate to severe symptoms over a 2-night period.

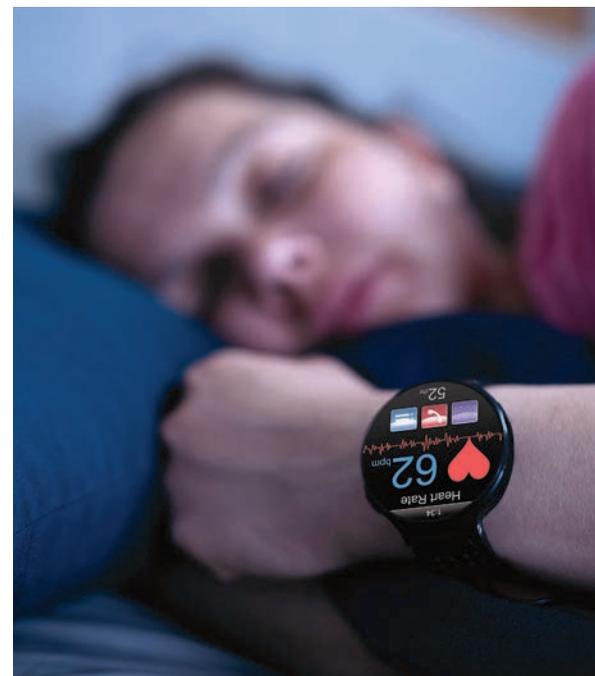
The sleep apnea feature allows individuals older than 22 years to track their sleep twice for more than 4 hours within a 10-day period. The feature identifies breathing disruptions.

The feature "is expected to help more people proactively detect moderate or severe forms of OSA and, as a result of the detection, seek medical care to reduce the possibility of health-related complications," according to the company.

Health-related complications associated with poor sleep include increased risk for hypertension, coronary artery disease, heart failure, and stroke, as well as fatigue, decreased mental and emotional well-being, and problems in personal relationships, according to the release.

The feature is not meant for use by individuals with a sleep apnea diagnosis, nor should it replace traditional sleep apnea assessment and diagnosis by qualified clinicians, the company noted.

The feature on the app was approved by Korea's Ministry of Food and Drug Safety in October 2023. ■



Andrey Popov/Pond 5



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Paxlovid lowers risk of COVID-19 hospitalization, study finds

BY JAY CROFT

The risk of being hospitalized because of COVID-19 was reduced by 84% among people who used Paxlovid, reports a new study.

This medicine has been approved for use in the United States for people over 12 years old who are at risk of having a severe COVID-19 infection.

The study was published in the *Journal of Antimicrobial Chemotherapy*.

Study authors examined the health records of almost 45,000 outpatients who tested positive for COVID-19 from January to August 2022. This sample period was when the Omicron strain was dominant.

The average patient age was 47. Sixty-two percent were White, 24% were Black, 6% were Hispanic, and 8% had an unknown ethnicity. A slight majority, 51%, had received two or more vaccine doses before the study period.

From the study group, 201 people were hospitalized within 28 days of their positive COVID test.

Almost 5,000 people in the study group received Paxlovid. The use of Paxlovid was the best indicator of avoiding hospitalization, with three of those people being hospitalized.

"Patients who were treated with Paxlovid were twice as likely to have received at least two doses of COVID-19 vaccine," the University of Minnesota's CIDRAP reported. "They were also more likely to be 70 years or older."

People taking Paxlovid were more likely to be White and to live in middle- or upper-income areas.

"COVID-19 hospitalization risk was reduced by 84% among [Paxlovid] recipients in a large, diverse health care system during the Omicron wave," the study's authors wrote. "These results suggest that [Paxlovid] remained highly effective in a setting substantially different than the original clinical trials." ■

Flu vaccines to change after COVID kills off one strain of virus

BY RALPH ELLIS

The Food and Drug Administration (FDA) advisory committee has recommended that the United States switch from a quadrivalent to trivalent influenza vaccine for the next flu season.

The flu vaccine currently in use targets two A strains and two B strains. But the Yamagata/B subtype, which was already in decline, has not been detected worldwide since March 2020, the FDA said. Social distancing and other precautions used to avoid COVID apparently finished it off.

In response to that change, the Vaccines and Related Biological Products Advisory Committee (VRBPAC) voted on March 5 to recommend the three-strain flu shot.

VRBPAC recommended the egg-based flu vaccines contain an A/Victoria/4897/2022 (H1N1)pdm09-like virus, an A/Thailand/8/2022 (H3N2)-like virus; and a B/Austria/1359417/2021 (B/Victoria lineage)-like virus.

The committee recommended the cell- or recombinant-based flu vaccines contain an A/Wisconsin/67/2022 (H1N1)pdm09-like virus; an A/Massachusetts/18/2022 (H3N2)-like virus; and a B/Austria/1359417/2021 (B/Victoria lineage)-like virus.

The move is no surprise. The World Health Organization and

FDA experts had been recommending the change since last year.

Jerry Weir, MD, director of the FDA's Division of Viral Products, said companies that make flu vaccines should have the trivalent shot ready for the 2024-2025 flu season.

"The FDA anticipates that there will be an adequate and diverse supply of approved trivalent seasonal influenza vaccines for the United States in the coming season."

"Each of the US influenza vaccine manufacturers have submitted updated regulatory files related to a trivalent influenza vaccine, and approval of all the necessary regulatory submissions is on track for 2024-25," he said during the advisory committee's meeting, according to CNN.

"FDA anticipates that there will be an adequate and diverse supply of approved trivalent seasonal influenza vaccines for the United States in the coming season," the agency said.

US flu vaccine manufacturers will still make a four-strain vaccine for distribution to overseas markets, CNN said. ■

Cognitive deficits after most severe COVID cases associated with 9-point IQ drop

BY MEGAN BROOKS

A new study provides greater clarity on how SARS-CoV-2 infection can affect cognition and memory, including novel data on how long brain fog may last after the illness resolves and which cognitive functions are most vulnerable.

In a large community sample, researchers found, on average, people who had recovered from COVID-19 showed small cognitive deficits equivalent to a 3-point loss in IQ for up to 1 year or more after recovering from the acute illness compared with peers who never had COVID-19.

However, people who had more severe cases, requiring treatment in a hospital intensive care unit, had cognitive deficits equivalent to a 9-point drop in IQ. “People with ongoing persistent symptoms, indicative of long COVID, had larger cognitive deficits than people whose symptoms had resolved,” said first author Adam Hampshire, PhD, with Imperial College London in England. The largest deficits among cognitive tasks were in memory, reasoning, and executive function, he added.

“That is, people who had had COVID-19 were both slower and less accurate when performing tasks that measure those abilities,” Dr. Hampshire said. “The group with the largest cognitive deficits were

patients who had been in intensive care for COVID-19.”

The study was published online in *The New England Journal of Medicine* (2024 Feb 28. doi: 10.1056/NEJMoa2311330).

Lingering brain fog

Cognitive symptoms after SARS-CoV-2 infection are well recognized, but whether objectively measurable cognitive deficits exist and how long they persist remains unclear.

To investigate, researchers invited 800,000 adults from the REACT study of SARS-CoV-2 transmission in England to complete an online assessment for cognitive function with eight domains.

Altogether, 141,583 participants started the cognitive battery by completing at least one task, and 112,964 completed all eight tasks.

The researchers estimated global cognitive scores among participants who had been previously infected with SARS-CoV-2 with symptoms that persisted for at least 12 weeks, whether or not resolved, and among uninfected participants.

Compared with uninfected adults, those who had COVID-19 that resolved had a small cognitive deficit, corresponding to a 3-point loss in IQ, the researchers found.

Adults with unresolved persistent COVID-19 symptoms had the equivalent of a 6-point loss in IQ,

and those who had been admitted to the intensive care unit had the equivalent of a 9-point loss in IQ, in line with previous findings of cognitive deficits in patients hospitalized in a critical care unit, the researchers report.

“People with ongoing persistent symptoms, indicative of long COVID, had larger cognitive deficits than people whose symptoms had resolved.”

—Adam Hampshire, PhD

Larger cognitive deficits were evident in adults infected early in the pandemic by the original SARS-CoV-2 virus or the B.1.1.7 variant, whereas peers infected later in the pandemic (eg, in the Omicron period), showed smaller cognitive deficits. This finding is in line with other studies suggesting that COVID-19-associated cognitive deficits attenuated as the pandemic progressed, the researchers noted.

They also found people who had COVID-19 after receiving two or more vaccinations showed better cognitive performance compared with those who had not been vaccinated. The memory, reasoning, and

executive function tasks were among the most sensitive to COVID-19-related cognitive differences and performance on these tasks differed according to illness duration and hospitalization.

Dr. Hampshire said that more research is needed to determine whether the cognitive deficits resolve with time.

Larger cognitive deficits likely?

These results are “a concern and the broader implications require evaluation,” wrote Ziyad Al-Aly, MD, with Washington University School of Medicine in St. Louis, Missouri, and Clifford Rosen, MD, with Tufts University School of Medicine in Boston, Massachusetts, in an accompanying editorial.

In their view, several outstanding questions remain, including what the potential functional implications of a 3-point loss in IQ may be and whether COVID-19-related cognitive deficits predispose to a higher risk for dementia later in life.

“A deeper understanding of the biology of cognitive dysfunction after SARS-CoV-2 infection and how best to prevent and treat it are critical for addressing the needs of affected persons and preserving the cognitive health of populations,” Drs. Al-Aly and Rosen concluded.

Commenting on the study for this

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Vaccinated people have up to 58% lower long COVID risk

BY LISA O'MARY

People vaccinated against COVID-19 were significantly less likely to have long COVID during the first few years of the pandemic, a new study from Michigan shows.

The findings were published in the journal *Annals of Epidemiology* (2024 Feb 19. doi: 10.1016/j.annepidem.2024.02.007). Researchers analyzed data for 4695 adults in Michigan, looking for people reporting COVID symptoms for more than 30 or more than 90 days after infection. They then looked at whether people had completed a full, initial vaccination series or not. Vaccinated people were 58% less likely than unvaccinated people to have symptoms lasting at least 30 days, and they were 43% less likely to have symptoms for 90 days or more.

The researchers did their study because previous estimates of how much vaccination protects against long COVID have varied widely due to different ways of doing the research, such as mixed

definitions of long COVID or including a limited set of people in the unvaccinated comparison group. The researchers wrote that their study offers more certainty because the people who took part in it more widely represent the general population. All of the people in the study had lab test-confirmed infections of SARS-CoV-2 (the virus that causes COVID) between March 2020 and May 2022.

Among vaccinated and unvaccinated people combined, 32% of infected people said they had symptoms for at least 30 days, and nearly 18% said they had symptoms for 90 days or more, according to a summary of the study published by the Center for Infectious Disease Research and Policy at the University of Minnesota. The researchers compared vaccinated and unvaccinated people multiple ways and consistently showed at least a 40% difference in long COVID.

In 2022, 6.9% of US adults self-reported that they had had long COVID, which researchers defined as symptoms for at least 3 months after testing positive or being diagnosed by a doctor,

according to a report from the CDC. That report also showed that the states with the highest rates of long COVID in 2022 were Alabama, Montana, North Dakota, Oklahoma, Tennessee, West Virginia, and Wyoming. West Virginia had the highest rate of self-reported long COVID, at 10.6% of adults.

People with long COVID may have one or more of about 20 symptoms, including tiredness, fever, and problems that get worse after physical or mental effort. Other long-term signs are respiratory and heart symptoms, thinking problems, digestive issues, joint or muscle pain, rashes, or changes in menstrual cycles. The problems can be so severe that people may qualify for disability status.

About 8 in 10 US adults got the initial round of COVID vaccines, but just 22% of people reported receiving the latest version that became available in the fall of 2023.

The authors of the Michigan study wrote that “COVID-19 vaccination may be an important tool to reduce the burden of long COVID.” ■

Is this disease another great pretender?

BY GEORGE D. LUNDBERG, MD

Has COVID replaced syphilis as the great imitator? At the turn of the 20th century, Sir William Osler was quoted as saying, “He who knows syphilis knows medicine.”

If you have any doubts about the “imitator” analogy, simply use any broad search engine or AI portal and enter “what is the differential diagnosis of primary syphilis, or secondary syphilis, or tertiary syphilis?” A plethora of diseases across many body systems appears.

Another great pretender?

Did you or do you now have long COVID? How do you know? Do you even know what long COVID is? How would you diagnose it?

When asked about long COVID, this is what Google’s artificial intelligence entity, Gemini, had to say:

“Long COVID, also known as post-acute sequelae of COVID-19 or PASC, is a complex condition that can occur in people who have had COVID-19, even if their initial illness was mild or even asymptomatic. It’s characterized by a wide range of symptoms that can last for weeks, months, or even years after the initial infection.

“Symptoms of long COVID can include fatigue, shortness of breath, brain fog (trouble thinking or concentrating), loss of smell or taste, sleep problems, muscle pain, joint pain, headache, dizziness, depression or anxiety, heart palpitations, gastrointestinal problems.”

It reads much like a continuation of the symptoms of acute COVID. Gemini continued:

“The exact cause of long COVID is still unknown, but there are several theories. One possibility is that the virus itself can damage organs and tissues, leading to ongoing symptoms. Another possibility is that the immune system’s response to the virus can continue to cause inflammation even after the virus is gone.

“Long COVID or long-haul COVID is a group of health problems persisting or developing after an initial COVID-19 infection. Symptoms can last weeks, months or years and are often debilitating. The World Health Organization defines long COVID as starting 3 months after infection, but other definitions put the start of long COVID at 4 weeks.

“The symptoms are highly varied, including postexertional malaise (symptoms made worse with effort), fatigue, muscle pain, shortness of breath, chest pain, and cognitive dysfunction (brain fog).”

Acute COVID to long COVID

The World Health Organization estimates that 36 million people in the European region have developed long COVID in the first 3 years of the pandemic. That’s a lot. We all know that the common signs and symptoms of acute COVID-19 include fever or chills, a dry cough and shortness of breath, feeling very tired, muscle or body aches, headache, loss of taste or smell, sore throat, congestion, runny nose, nausea, vomiting, and diarrhea. Except for the taste and smell findings, every one of these symptoms or signs could indicate a different virus infection or even some type of allergy. My point is the *nonspecificity* in this list.

The exact cause of long COVID is still unknown, but there are several theories.

One possibility is the virus itself can damage organs and tissues, leading to ongoing symptoms. Another possibility is that the immune system’s response to the virus can continue to cause inflammation even after the virus is gone.

Uncommon signs and symptoms of acute COVID include a flat skin rash covered with small bumps, discolored swollen areas on the fingers and toes (COVID toes), and hives. The skin of hands, wrists, or ankles also can be affected. Blisters, itchiness, rough skin, or pus can be seen.

Severe confusion (delirium) might be the main or only symptom of COVID-19 in older people. This COVID-19 symptom is linked with a high risk for poor outcomes, including death. Pink eye (conjunctivitis) can be a COVID-19 symptom. Other eye problems linked to COVID-19 are light sensitivity, sore eyes, and itchy eyes. Acute myocarditis, tinnitus, vertigo, and hearing loss have been reported. And 1-4 weeks after the onset of COVID-19 infection, a patient may experience de novo reactive synovitis and arthritis of any joints.

So, take your pick: Myriad symptoms, signs, diseases, diagnoses, and organ systems — still present, recurring, just appearing, apparently de novo, or after asymptomatic infection. We have so much still to learn.

What symptoms, signs, and major diseases are not on any of these lists? Obviously, cancer, atherosclerotic cardiovascular diseases, obesity, bone diseases, and competitive infections. But be patient; the lingering effects of direct tissue invasion by the

virus as well as a wide range of immunologic reactions may just be getting started. Mitochondrial damage, especially in muscles, is increasingly a pathophysiologic suspect.

Human diseases can be physical or mental; and in COVID, that twain not only meet but mix and mingle freely, and may even merge into psychosoma. Don’t ever forget that. Consider “fatigue.” Who among us, COVID or NOVID, does not experience that from time to time?

Or consider brain fog as a common reported symptom of COVID. What on earth is that actually? How can a person know they have brain fog, or whether they had it and are over it? We need one or more lab or other diagnostic tests that can objectively confirm the diagnosis of long COVID.

Useful progress?

A recent research paper in *Science* reported intriguing chemical findings that seemed to point a finger at some form of complement dysregulation as a potential disease marker for long COVID. Unfortunately, some critics have pointed out this entire study may be invalid or irrelevant because the New York cohort was recruited in 2020, before vaccines were available. The Zurich cohort was recruited up until April 2021, so some may have been vaccinated.

We physicians don’t really know what long COVID even is, but we have to sign death certificates blaming thousands of deaths on it anyway? And rolling back the clock to 2020: Are patients dying *from* COVID or *with* COVID, according to death certificates?

Now, armed with the knowledge that “documented serious post-COVID-19 conditions include cardiovascular, pulmonary, neurological, renal, endocrine, hematological, and gastrointestinal complications, as well as death,” CDC has published clear and fairly concise instructions on how to address post-acute COVID sequelae on death certificates.

In late January, this news organization painted a hopeful picture by naming four phenotypes of long COVID, suggesting that such divisions might further our understanding, including prognosis, and even therapy for this condition. Among the clinical phenotypes of (1) chronic fatigue-like syndrome, headache, and memory loss; (2) respiratory syndrome (which includes cough and difficulty breathing); (3) chronic pain; and (4) neurosensorial syndrome (which causes an altered sense of taste and smell), overlap is clearly possible but isn’t addressed. ■

9-POINT *continued from previous page*

news organization, Jacqueline Becker, PhD, clinical neuropsychologist and assistant professor of medicine, Icahn School of Medicine at Mount Sinai, New York City, noted that “one important caveat” is that the study used an online assessment tool for cognitive function and therefore the findings should be taken with “a grain of salt.”

“That said, this is a large sample, and the findings are generally consistent with what we’ve seen in terms of cognitive deficits post COVID,” Dr. Becker said. It’s likely this study “underestimates” the degree of cognitive deficits that would be seen on validated neuropsychological tests, she added.

In a recent study, Dr. Becker and her colleagues investigated rates

of cognitive impairment in 740 COVID-19 patients who recovered and were treated in outpatient, emergency department, or inpatient hospital settings. Using validated neuropsychological measures, they found a relatively high frequency of cognitive impairment several months after patients contracted COVID-19. Impairments in executive functioning, processing speed,

category fluency, memory encoding, and recall were predominant among hospitalized patients.

Support for the study was provided by the National Institute for Health and Care Research and UK Research and Innovation and by the Department of Health and Social Care in England and the Huo Family Foundation. Dr. Becker has no relevant disclosures. ■

Tightened pollution standards a breath of fresh air to pulmonologists

BY NEIL OSTERWEIL

Soot, or in scientific parlance “fine particulate matter,” isn’t just the stuff that blackens window sills or dulls car finishes — it’s a serious health hazard, linked to cardiopulmonary disease, asthma, allergies, and lung cancer, as well as a host of other harmful conditions.

Until recently, the annual ambient air quality standard established by the US Environmental Protection Agency (EPA) was a maximum of 12 micrograms per cubic meter of air of fine particles smaller than 2.5 micrometers (PM_{2.5}).

But on February 7, 2024, the EPA announced that the Biden-Harris administration had finalized a new standard of 9 mcg PM_{2.5}/per cubic meter of air.

In addition, the EPA reported that it will be modifying its PM_{2.5} monitoring network to include a factor that will account for the proximity to pollution sources of at-risk populations.

In a press release, the EPA said that the modification “will advance environmental justice by ensuring localized data collection in overburdened areas,” with the goal of informing future National Ambient Air Quality Standards reviews.

In a statement supporting the new standard, Environment America, a network of 30 state environmental groups, noted that,



Dr. Coates

in “the United States, the largest human-caused sources of soot pollution are fossil fuels — coal, oil, and gas — burned for electricity and transportation. Since the government last updated its standards, new research has found there may be no safe amount of air pollution and the World Health Organization cut in half its guidelines for allowable particulate matter (soot) pollution. The final rule lowers allowable soot limits for annual exposure by 25%, although it leaves the 24-hour limit unchanged, allowing for temporary pollution spikes.”

A good start

Pulmonologists interviewed for this article also applauded the tightened



IronHeart/Moment/Getty Images

PM_{2.5} standard, but said that the change doesn’t go far enough.

“We know that particulate matter, also called particulate pollution, is the most dangerous form of air pollution, and there has been an extensive body of literature which outlines the negative impact of air pollution and poor air quality not only on respiratory health, but also on cardiovascular disease, premature pregnancies, mental health,



Dr. Balakrishnan

and death,” Anne C. Coates, MD, FCCP, a pediatric pulmonologist at MaineHealth in Portland, Maine, said in an interview.

“Lowering the limits certainly can help promote overall health as well as reduce asthma, COPD exacerbations, heart attacks, hospitalizations and death,” she said.

However, “I wish that the EPA had gone further to address lowering the daily particulate matter standards because, remember, what they issued on February 7 was the reduction in the annual particulate matter,” she noted.

With the tighter standards, “things are going the right way,” said Priya Balakrishnan, MD, MS, FCCP, staff physician in the Division of Pulmonary Medicine at Cleveland Clinic, Ohio.

regulations promulgated under President Obama, “this is the first kind of positive legislation moving forward,” she said in an interview with this news organization.

“Obviously, it’s not ideal, because it’s just monitoring the annual particulate matter 2.5 levels rather than

daily ones, but it’s still a change in the right direction,” she said.

Deadly air

As Dr. Coates and Dr. Balakrishnan noted, the revised ambient air standard is averaged over a year, and as such may not accurately capture periods where particulate matter concentrations are dangerously high, as occurs in many US states and Canadian provinces during wildfire season, or when one of the more than 200 remaining coal-fired power plants in the US release clouds of soot during daily operations or especially during periods of high electricity demand.

Some pollution sources are worse than others, as shown by a study published in the November 24, 2023, issue of *Science* (doi: 10.1126/science.adf4915). Health and environmental investigators reported that, among Medicare beneficiaries, exposure to PM_{2.5} from sulfur dioxide released by coal burning for electricity generation was associated

POLLUTION *continued on following page*



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Air pollution tied to greater brain amyloid burden

BY EVE BENDER

Exposure to more traffic-related air pollution was associated with greater levels of amyloid plaques in the brain, according to a study which evaluated volunteers' brains after death. In the postmortem research, exposure in the 3 years before death was associated with the greatest risk.

Plaques examined after death

In the study, investigators examined the brain tissue of 224 people living in the Atlanta area who agreed to donate their brains after death for the presence of amyloid plaques and tau tangles. The average age at death of the persons who donated was 76 years.

Researchers also studied the amount of fine particulate matter < 2.5 micrometers (PM_{2.5}) from traffic-related air pollution at participants' home addresses at 1, 3, and 5 years before death. The presence of the APOE e4 gene, which is linked to increased risk of developing Alzheimer's disease (AD), was examined for evidence of any effect on the relationship between air pollution and evidence of Alzheimer's disease.

More pollution linked to more plaques

The average level of exposure in the year before death was 1.32 µg/m³ and 1.35 µg/m³ in the 3 years before death.

People with 1 µg/m³ higher PM_{2.5} exposure

in the year before death were nearly twice as likely to have higher levels of plaques (odds ratio [OR], 1.92; 95% CI, 1.12-3.30), while those with higher exposure in the 3 years before death were 87% more likely to have higher levels of plaques (OR, 1.87; 95% CI, 1.01-3.17).

A little more than half (56%) of the sample were positive for the APOE e4 genotype, but the strongest association between pollution and neuropathology markers was for noncarriers of the genotype, although this relationship did not reach statistical significance.

Further research required

Study authors noted: "More research is needed to establish causality for the association between PM_{2.5} and AD, including epidemiologic and mechanistic studies. Future studies should also investigate the association between PM_{2.5} and other dementia-related pathologies, including cerebrovascular pathology."

Convenience sample study

Study limitations included that the sample was not population-based but instead a convenience sample composed mostly of highly educated White participants. Anke Hüls, PhD, of Emory University in Atlanta, led the study, which was published online on February 21, 2024, in *Neurology*.

Funding sources

The study was funded by the National Institute of Environmental Health Sciences, the Goizueta Alzheimer's Disease Research Center, the National Institute on Aging, and the National Institutes of Health. There were no relevant disclosures. ■



POLLUTION *continued from previous page*

with a doubling in risk of death compared to PM_{2.5} exposure from all other sources.

Air pollution has also been identified as a key factor in the development of non-small cell lung cancer in nonsmokers, according to Charles Swanton, PhD, of the Francis Crick Institute, and chief clinician of Cancer Research UK, both in London, England, and his colleagues.

As Dr. Swanton reported at the 2022 European Society for Medical Oncology Congress, among 447,932 participants in the UK Biobank, increasing exposure to PM_{2.5} was significantly associated with seven cancer types, including lung cancer. They also saw an association between PM_{2.5} exposure levels and EGFR-mutated lung cancer incidence in the United Kingdom, South Korea, and Taiwan.

And as the investigators showed in mouse models, exposure to PM_{2.5} of lung cells bearing somatic EGFR

and KRAS mutations causes recruitment of macrophages that in turn secrete interleukin-1B, resulting in a transdifferentiation of EGFR-mutated cells into a cancer stem cell state, and tumor formation.

Monitoring at-risk communities

Lisa Frank, executive director of the Washington legislative office of Environment America, explained in an interview how the revised standards may result in improvements in air quality, especially for at-risk populations such as lower-income urban dwellers.

"Regulations on particulate matter have been around for a few decades now, so there's an established process that the state agencies and the EPA go through to make sure that air quality standards are met," she said.

Over the next several years, the EPA will designate areas of the United States as either being in "attainment" (meeting primary or

secondary ambient air quality standards) or in "nonattainment."

"After that, implementation is up to the state and local air boards. They all are required to have a cer-

Under the revised regulations, counties will be expected to have air quality monitoring stations in or near at-risk communities, which should help to mitigate inequities that arise from proximity of polluting power plants.

tain number of air quality monitors to keep track of pollution and they also handle reviewing permits for new construction, highways or other projects in that county that might affect air pollution," she said.

Depending upon their size,

counties are required under federal law to have air quality monitoring sites in areas that are likely to have the worst air quality, such as major highways or urban traffic corridors.

Under the revised regulations, counties will be expected to have air quality monitoring stations in or near at-risk communities, which should help to mitigate inequities that arise from proximity of polluting power plants in less-advantaged locations, Ms. Frank said.

"I think obviously any improvement in air quality is going to benefit everyone who breathes there, which I hope is all of us, but certainly people who already have the most air pollution hopefully should see bigger gains as well," she said.

All persons interviewed for this article reported no relevant conflicts of interest.

Dr. Coates and Dr. Balakrishnan are members of the Editorial Board for *CHEST Physician*. ■

Poorly controlled asthma equal to greenhouse gases from more than 124,000 homes

BY ROB HICKS, MBBS

Asthma which is not well controlled can increase the risk of hospital admission and severe illness, as well as higher health care costs. Now, the authors of a new study have reported that poorly controlled asthma is also associated with a higher carbon footprint, eight times higher than that of well-controlled asthma and equivalent to the greenhouse gas emissions produced by more than 124,000 homes each year in the UK.

The study was published in the journal *Thorax* (2024 Feb 7. doi: 10.1136/thorax-2023-220259) and is part of the Healthcare-Based Environmental Cost of Treatment (CARBON) program, which aims to provide a broader understanding of the carbon footprint associated with respiratory care.

John Bell, BMBCh, medical director of BioPharmaceuticals Medical, AstraZeneca, and co-author of the study, said he was surprised by the scale to which poorly controlled asthma contributed to the overall carbon footprint of asthma care. “This suggests that suboptimal asthma care is not just a public health issue, but also one which has environmental consequences,” he said.

SABA as largest contributor to asthma-related greenhouse gases

Health care is a major contributor to greenhouse gas emissions. To estimate the environmental footprint of asthma care in the study, the researchers retrospectively analyzed anonymized data of 236,506 people with asthma submitted to the Clinical Practice Research Datalink between 2008 and 2019.

Greenhouse gas (GHG) emissions, measured as carbon dioxide equivalent (CO₂e), were then

estimated for asthma-related medication use, health care resource utilization, and severe exacerbations.

Well-controlled asthma was considered as having no episodes of severe worsening symptoms and fewer than three prescriptions of short-acting beta-agonists (SABAs) reliever inhalers in a year. Poorly controlled asthma included three or more SABA canister prescriptions or one or more episodes of severe worsening symptoms in a year.

SABA relievers were the largest contributors to per capita asthma-related GHG emissions, with more than 60% of overall GHG emissions and more than 90% of excess GHG emissions. The remainder was mostly due to health care resource utilization.

Almost one in two patients with asthma (47.3%) were categorized as being poorly controlled.

The researchers estimated the overall carbon footprint attributed to asthma care when scaled to the relevant asthma population was 750,540 tons CO₂e/year, with poorly controlled asthma contributing to excess GHG emissions of 303,874 tons CO₂e/year.

“Poorly controlled asthma generated threefold higher greenhouse gas emissions per capita compared with well-controlled asthma, when taking into account GHG emissions related to all aspects of asthma care, including routine prescribing and management,” Dr. Bell explained. It also generated eightfold higher excess per capita carbon footprint compared to well-controlled asthma.

SABA relievers represented the largest contributors to per capita asthma-related GHG emissions, accounting for more than 60% of overall GHG emissions and more than 90% of excess GHG emissions. The remainder was mostly due to health care resource utilization, such as primary care provider and hospital visits, required to treat severe worsening symptoms.

The researchers acknowledged various limitations to their findings, including that the study results were largely descriptive in nature. And factors other than the level of asthma symptom control, such as prescribing patterns, may also have contributed to high SABA use.

Couple optimized patient outcomes with environmental targets

With inappropriate SABA use having emerged as the single largest contributor to asthma care-related GHG emissions, improving this care could achieve substantial carbon emissions savings, the authors explained.

This improvement could include the adoption of the Global Initiative for Asthma (GINA) treatment strategies that, since 2019, no longer recommends that SABAs are used alone as the preferred reliever for acute asthma symptoms, the authors wrote. However, the National Institute for Health and Care Excellence (NICE) asthma guidelines still recommend SABA alone as a reliever therapy.

Dr. Bell explained the carbon footprint of asthma care increased with higher socioeconomic deprivation. “Thus, targeting suboptimal care to areas of higher deprivation could help improve patient outcomes and address health inequities, with the additional benefit of reducing the overall carbon footprint of asthma care,” he said. ■

‘Thunderstorm asthma’ could increase with climate change

BY DAMIAN MCNAMARA, MA

Thunderstorm asthma can strike with little warning, leaving people with the symptoms of an asthma attack during or after the dark clouds pass.

If you’re unfamiliar, the risk for a thunderstorm asthma attack grows when heavy storms arrive on a day with very high pollen or spores. The storm uplifts these particles, adds water, and causes them to explode into smaller grains. The electrical activity in a storm can do the same. Next, strong winds sweep these particles down and across the ground. People in the path of the storm can experience shortness of breath, coughing, and wheezing.

If thunderstorms are predicted to

become more frequent and more severe with climate change, will the same hold true for thunderstorm asthma? “Yes, if only because the amount of pollen appears to be increasing in many areas due to climate change,” said Frank S. Virant, MD, chief of the Allergy Division at Seattle Children’s Hospital in Washington.

Most cases of thunderstorm asthma occur in the spring and early summer, but that also could change. Pollen seasons “have been getting longer and more intense,” said Shaan M. Waqar, MD, an allergist at ENT and Allergy Associates in Plainview, New York.

“Thunderstorm asthma events are rare, but our changing environment and the increase in the number of

people with allergies may make such events more common and more severe into the future,” agreed Paul J. Beggs, PhD, associate professor in the School of Natural Sciences at Macquarie University in Sydney, Australia.

How to minimize your risk

If your patients are sensitive to pollen, advise them to continue to monitor outdoor levels, particularly during tree, grass, and weed pollen season, Dr. Virant recommended. Also patients should pay attention to weather reports. Watch for thunderstorms that could “amplify exposure to the pollen with 40-plus mile per hour winds and often colder air downdrafts.” Cold is an additional asthma trigger, he noted.

People with asthma should try to stay indoors with windows and doors closed during strong thunderstorms and for several hours afterward. Using air filters can also help reduce risk, said Deepti V. Manian, MD, an allergist and immunologist at Stormont Vail Health in Topeka, Kansas.

Patients should continue controller therapies, longer-acting inhalers and allergy medications, and use a rescue inhaler or nebulizer for prompt treatment of symptoms, recommended Donald J. Dvorin, MD, of The Allergy and Asthma Doctors in Mount Laurel, New Jersey. Ideally, people seeking shelter indoors during storms should be “accompanied by friends or family who can help them transport quickly to a hospital if needed.”

THUNDERSTORM *continued on following page*

Cessation before age 40 years yields great benefits

BY PHILIPPE TELLIER, MD

Chronic smoking remains a major cause of premature mortality on a global scale. Despite intensified efforts to combat this scourge, a quarter of deaths among middle-aged adults in Europe and North America are attributed to it. However, over the past decades, antismoking campaigns have borne fruit, and many people who smoke have quit before the age of 40 years, enabling some case-control studies.

Among those abstainers, the excess mortality attributable to smoking over a lifetime would be reduced by 90% compared with control patients who continued smoking. The estimated benefit is clear, but the analysis lacks nuance. Is smoking cessation beneficial even at older ages? If so, is the effect measurable in terms of magnitude and speed of the effect? An article published online in *The New England Journal of Medicine Evidence* (2024 Feb 8. doi: 10.1056/EVIDoa2300272) provided some answers to these questions.

Four-cohort meta-analysis

The study was a meta-analysis of individual data collected within four national cohort studies that were linked to each country's death registry. Two of these studies were nationally representative. The National Health Interview Survey involved a sample of US citizens living in the community, aged 20-79 years, who were included annually in the cohort between 1997 and 2018. The second, the Canadian Community Health Survey, included subjects in the same age group, with samples analyzed between 2000 and 2014.

In Norway, three cohort studies conducted between 1974 and 2003, in which participants aged 25-79 years were included, were combined to form the Norwegian Health Screening Survey. These were the Counties Study (1974-1988), the 40 Years Study (1985-1999), and the Cohort of Norway (1994-2003). The fourth

cohort was established through recruitment via the UK Biobank, with adults aged 40-73 years invited to participate in the survey. The data analysis ultimately covered a relatively heterogeneous total population of 1.48 million adults, all from high-income countries and followed for 15 years. It relied on the Cox proportional hazards model applied to each study, consider-

Smoking cessation halves overall excess mortality. Quitting before age 40 years brings overall mortality back to the level of a person who does not smoke as early as the third year after quitting. The excess mortality decreases even more as the cessation period is prolonged.

ing smoker vs nonsmoker status, as well as the time elapsed since smoking cessation (less than 3 years, between 3 and 9 years, or at least 10 years). Statistical adjustments made in the context of multivariate Cox analysis considered age, education, alcohol consumption, and obesity.

Excess mortality confirmed

At the end of follow-up, 122,697 deaths were recorded. The comparison of smokers and nonsmokers confirmed smoking-related excess mortality, with adjusted hazard ratios (HRs) estimated at 2.80 for women and 2.70 for men. Smoking shortened life expectancy in the 40- to 79-year age group by 12 years for women and 13 years for men, in terms of overall mortality. In terms of smoking-attributable specific mortality, the corresponding figures reached 24 and 26 years, respectively. Respiratory diseases ranked highest in both sexes (HR, 7.6 for women and

6.3 for men), followed by cardiovascular diseases (HR, 3.1 for women and 2.9 for men) and cancers (HR, 2.8 for women and 3.1 for men).

The earlier, the better

Smoking cessation halves overall excess mortality. Above all, quitting before age 40 years brings overall mortality back to the level of nonsmokers as early as the third year after quitting. The excess mortality decreases even more as the cessation period is prolonged, even after age 40 years. Thus, cessation ≥ 10 years in smokers aged 40-49 years almost cancels out overall excess mortality (-99% in women, -96% in men). The trend is almost as favorable in the older age group (50-59 years), with corresponding figures of -95% and -92%, respectively.

Long-term survival increases in the early years after cessation, especially if it occurs at a younger age, but the benefit remains tangible even in older smokers. Thus, cessation of less than 3 years, effective in patients aged 50-59 years, reduces overall excess mortality by 63% in women and 54% in men. In patients aged 60-79 years, the figures are -40% and -33%, respectively.

Naturally, the earlier the cessation, the greater the number of years gained. It is 12 years for cessation before age 40 years, reduced to 6 years for cessation between 40 and 49 years, and 2.5 years when it is even later (50-59 years). These quantitative results are approximate, given the methodology (a meta-analysis) and some heterogeneity in the studies, as well as the multitude of potential confounding factors that have not all been considered. Nevertheless, the results probably contain a kernel of truth, and their optimistic implications should be highlighted to encourage smokers to abstain, even older ones. Better late than never, even if the benefit of cessation is maximal when it occurs as early as possible, knowing that a minimum of 3 years of cessation would be sufficient to gain years of life. ■

THUNDERSTORM *continued from previous page*

Asthma diagnosis not required

Even people who would not consider themselves to have asthma can be seriously affected. For example, people with hay fever, or allergic rhinitis as it's also known, are at risk too, said Ajay Kevat, MBBS, MPH, of the respiratory department at Queensland Children's Hospital in Brisbane, Australia. People with hay fever can also experience stronger symptoms during and after thunderstorms. Optimally treating allergic rhinitis during the pollen season with non-sedating antihistamines and nasal steroids can help, Dr. Virant said, instead of "chasing symptoms with medication after they are already severe."

Part of the challenge is connecting severe weather to worse asthma symptoms. "In my experience,

there is a lack of awareness surrounding thunderstorm asthma," Dr. Manian said. For example, people with nonallergic rhinitis, also known as vasomotor rhinitis, can experience the effects. "It often surprises many of my patients when I introduce the concept of vasomotor rhinitis, which can be triggered by environmental fluctuations."

Gathering clouds, gathering evidence

Climate change could also change which Americans experience the most storms. Researchers in a June 2022 study predicted fewer storms in the Southern plains and more storms in the Midwest and the Southeastern United States in the future.

Dr. Dvorin practices in Southern New Jersey, and in this area, "we are fortunate in this area not to

experience thunderstorm-induced asthma exacerbations," he said. But climate change means in the future, thunderstorm asthma could strike in places it has never been seen before, said Dr. Kevat, who wrote a thunderstorm asthma review article published June 2020 in the *Journal of Asthma and Allergy*.

And this is not just a concern in the United States. Major thunderstorm asthma events have been reported in Italy, the United Kingdom, the Middle East, Asia, and Australia. In November 2016, for instance, a strong set of storms swept across Melbourne, Australia. Temperatures dropped 10°C (about 18°F), humidity rose above 70%, and particulate matter like pollen became more concentrated in the air.

This event spurred a "thunderstorm asthma epidemic of unprecedented magnitude, tempo, and

geographical range and severity," Dr. Beggs and colleagues wrote in their June 2018 report in *The Lancet Planetary Health*.

Large-scale events like this can affect entire communities and quickly overwhelm local health care resources. Within 30 hours of the Melbourne storms, 3365 people more than usual came to local emergency departments with respiratory issues — and 476 with asthma were admitted to the hospital. Ten people died: five in the hospital and five who could not be resuscitated or died while waiting for emergency services.

More research is needed "so as to best prepare for this unpredictable, significant public health threat," Dr. Kevat wrote.

People whose asthma is triggered by pollen or mold spores are particularly at risk for thunderstorm asthma, Dr. Waqar said. ■

SMOKING

E-cigarettes beat nicotine gum for smoking cessation

BY JAKE REMALY

Among adults motivated to quit smoking, electronic cigarettes are more effective than nicotine chewing gum and as effective as varenicline in achieving sustained abstinence at 6 months, a randomized trial found. Questions about the long-term safety of e-cigarettes remain, however, according to the researchers.

The study included 1068 participants in China who were smoking at least 10 cigarettes per day. Participants were randomly assigned to undergo 12 weeks of treatment with a cartridge-based e-cigarette, varenicline, or nicotine chewing gum.

E-cigarettes better than nicotine gum

Study results of smoking cessation were reported at a 6-month interval. At 6 months, the biochemically validated rate of quitting was 15.7% for those who received e-cigarettes, 14.2% for those who received varenicline, and 8.8% for those who chewed nicotine gum. In addition, at 6 months, 62.8% of participants in the e-cigarette arm were still using the devices, whereas those in the other study arms had not continued their treatments.

“A moderate approach would be to recommend approved medications as the first step and, if that fails, then inform the patient of the evidence regarding the use of electronic cigarettes as a possible approach, acknowledging all its caveats,” Dorothy K. Hatsukami, PhD, with the University of Minnesota in Minneapolis, and Judith J. Prochaska, PhD, MPH, with Stanford (California) University, wrote in an invited commentary (*JAMA Intern Med.* 2024 Jan 29. doi: 10.1001/jamainternmed.2023.7855).

Some patients experienced adverse effects during the study. Adverse reactions with e-cigarettes and nicotine chewing gum included irritation of the throat and mouth, which occurred in 7%-8% of participants. In the varenicline group, 8.8% experienced nausea. No serious adverse events were reported.

Age and open-label study impact

Study limitations included that the trial had an open-label design, so

Saadia A. Faiz, MD, FCCP, comments: Smoking cessation

can be challenging, and the findings in this open-label design study suggest e-cigarettes may be superior to medication or nicotine gum.

Limitations exist including a specific population and exclusion of combination therapies. Further, a significant number were still using e-cigarettes after 6 months, and these may have deleterious effects as well. The article highlights the need for further study within this arena.



Dr. Faiz is a member of the CHEST Physician Editorial Board.

participants' expectations about their assigned treatment may have influenced the results.

The study did not include participants older than 45 years, so it is unclear how the results apply to older populations. More studies are needed to see whether continued use of e-cigarettes is beneficial or harmful, the researchers wrote. Combining forms of nicotine replacement therapy, such as gum plus a patch, may be more effective than a single form, but the trial did not assess a combined approach, the commentary authors noted. The dose of nicotine gum for some participants may have been suboptimal, they added.

The corresponding author of the study was Zhao Liu, PhD, with the China-Japan Friendship Hospital in Beijing. The study was published online on January 29, 2024, in *JAMA Internal Medicine* (doi: 10.1001/jamainternmed.2023.7846).

The study was supported by the Scientific Research Project Fund of China-Japan Friendship Hospital. The researchers had no conflict-of-interest disclosures. Dr. Prochaska disclosed receiving fees from Achieve Life Sciences, OneLeaf, and attorneys who are involved in litigation against tobacco companies. ■

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Managing severe asthma exacerbations in the ED

We need answers beyond albuterol

BY NICHOLAS E. GHIONNI, DO

Evidence-based medicine (EBM) stems from making the best patient-centered decision from the highest-quality data available that comports with our understanding of pathophysiology. In some situations, clinicians are forced to draw conclusions from data that are imperfect and apply it to patients who are complex and dynamic. For most pathologies, available data provides some direction. There is, however, one pathophysiologic state that remains understudied, precarious, and common.

The Centers for Disease Control and Prevention (CDC) estimates that about 7.7% of the United States population has asthma. There were about 1 million ED visits in 2020, with asthma listed as the primary diagnosis, and only 94,000 required hospitalization. There are many tools we employ that have greatly decreased inpatient admissions for asthma. The uptake of inhaled corticosteroids (ICS) has significantly reduced asthma-related morbidity and mortality and reduced exacerbations that require admission to a hospital. This treatment strategy is supported by the Global Initiative for Asthma (GINA) and National Asthma Education and Prevention Program (NAEPP) guidelines. While we should celebrate the impact that EBM and ICS have had on asthma outcomes, we continue to struggle to control severe asthma.

Bronchodilator therapy in the hospital is ubiquitous. House staff and hospitalists click the bronchodilator order set early and often. However, the optimal frequency, dose, and duration of inhaled bronchodilator therapy for acute asthma exacerbation are unknown. Do frequency, dose, and duration change with exacerbation severity? Nothing gets ED, inpatient, or ICU physicians more jittery than the phrase “exacerbation of asthma on BiPap” or “intubated for asthma.” With its enormous clinical impact and notoriously difficult hospital and ICU course, the lack of evidence we have for managing these patients outside of the initial 24- to 48-hour visit is concerning. Neither NAEPP nor GINA provide management recommendations for the patient with severe asthma

exacerbation that necessitates admission.

Albuterol is a commonly used medication for asthma and chronic obstructive airway disease. It is rapid acting and effective—few medications give patients (or clinicians) such instant satisfaction. As an internal medicine resident and pulmonary fellow, I ordered it countless times without ever looking at the dose. Sometimes, patients would come up from the emergency department after receiving a “continuous dose.” I would often wonder exactly what that meant. After some investigation, I found that in my hospital at the time, one dose of albuterol was 2.5 mg in 2 mL, and a continuous nebulization was four doses for a total of 10 mg.

Shrestha et al. found that high-dose albuterol (7.5 mg) administered continuously was superior to 2.5 mg albuterol delivered three times over 1.5 hours. There were demonstrable improvements in FEV₁ and no ICU admissions. This study is one of many that compared intermittent to continuous and high-dose vs low-dose albuterol in the emergency department. Most are small and occur over the first 24 hours of presentation to the hospital. They often use short-term changes in spirometry as their primary outcome measure. Being a pulmonary and critical care doctor, I see patients who require advanced rescue maneuvers such as noninvasive positive pressure ventilation (NIPPV) or other pharmacologic adjuncts, for which the current evidence is limited.

Because studies of inhaled bronchodilators in acute asthma exacerbation use spirometry as their primary outcome, those with more severe disease and higher acuity are excluded. Patients on NIPPV can't perform spirometry. There is essentially no literature to guide treatment for a patient with asthma in the adult ICU. In pediatric intensive care units, there are some data to support either continuous or intermittent inhaled bronchodilator that extends beyond the initial ED visit up to about 60 hours. Much of the pediatric data revolve about the amount of albuterol given, which can be as high as 75 mg/hr though is typically closer to 10-20 mg/hr. This rate is continued until respiratory improvement occurs.



Dr. Ghionni is in Pulmonary and Critical Care Medicine at Med-Star Union Memorial Hospital, Baltimore.

With poor evidence to guide us and no specific direction from major guidelines, how should providers manage severe asthma exacerbation? The amount of drug deposited in the lung varies by the device used to deliver it. For nebulization, only about 10% of the nebulized amount reaches the lungs for effect; this is a smaller amount compared with all other devices one could use, such as MDI or DPI. Once a patient with asthma reaches the emergency department, that person is usually placed on some form of nebulizer treatment. But based on local hospital protocols, the amount and duration can vary widely. Sometimes, in patients with severe exacerbation, there is trepidation to continuing albuterol therapy due to ongoing tachycardia. This seems reasonable given increased albuterol administration could beget an ongoing cycle of dyspnea and anxiety. It could also lead to choosing therapies that are less evidence based.

In closing, this seemingly mundane topic takes on new meaning when a patient is in severe exacerbation. Fortunately, providers are not often faced with the decision to wade into the evidence-free territory of severe asthma exacerbation that is unresponsive to first-line treatments. This narrative should serve as a general alert that this pathophysiologic state is understudied. When encountered, thoughtful consideration of pathology, physiology, and pharmacology is required to reverse it. ■

All references available online at chestphysician.org.

CHEST grant recipient studying increase in lung cancer diagnoses among Chinese American women

BY MADELEINE BURRY

In his prior research, Chien-Ching Li, PhD, MPH, focused on promoting lung cancer screening in Chinese American men, a population that frequently smokes heavily. But last year, he applied for a CHEST grant that's shifting his focus to another demographic:

Chinese American women who do not smoke, especially those with limited English proficiency.

“They are developing lung cancer, and we don't know why,” said Dr. Li, an associate professor of Health Systems Management at Rush University.

In the United States, Asian American women who don't smoke, and

never have, are twice as likely to be diagnosed with lung cancer as white women with similar nonsmoking habits. In fact, 57% of Asian American women diagnosed with lung cancer never smoked cigarettes.

What's behind this rise in lung cancer in women who have never smoked compared with men, and particularly in Asian American

women? One possibility: While Chinese American women may never smoke themselves, they frequently live with partners or family members who do. (About 28% of Chinese American men smoke heavily, Dr. Li said.)

“We think secondhand smoke might be one of the key risk factors,

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Tackling the massive threat of climate change

How clinicians can—and should—take an active role in matters of environmental justice

BY STEPHANIE MAXIMOUS, MD, MS

Soon after moving to Pittsburgh for my pulmonary and critical care medicine fellowship in 2014, I began noticing a theme: So many of my patients expressed a sense that the air they breathed was harming them or was in some way responsible for the severity of their lung disease.

In this city, the legacy of the steel industry from the last century fostered economic prosperity but resulted in a profound legacy of pollution as well. Unfortunately, due to a combination of fossil fuel dependence for electricity generation and transportation, industrial particulate matter (PM) generation and greenhouse gas emissions, temperature inversions related to the topography of the region, and, most recently, smoke from Canadian wildfires in the summer of 2023, the air quality in Pittsburgh ranks among the 25 least healthy US cities. Our patients are bearing the burden of climate change.

My patients relay that because of the poor air quality in the neighborhood they live in, they feel sick. I remember a patient in clinic talking about how on the days he could see a film of particulate on all the cars and the street outside, he knew he would feel more shortness of breath. Patients share about how when they had lived in different neighborhoods in town or traveled outside of



Dr. Maximous

Pittsburgh, their breathing improved.

Patients tell me that their asthma or COPD that did not use to cause them frequent trouble is now less well controlled despite better therapies available. Patients who used to experience seasonal allergies in just the fall or the spring now are plagued by their allergy symptoms year-round

“We know that some patients, particularly those with underlying lung disease and young children, are at greater risk when exposed to more polluted air and may need to take different steps to limit their exposure.”

—Stephanie Maximous, MD, MS

because of a warming climate yielding excess pollen throughout all seasons.

A recent study of patients with pulmonary fibrosis demonstrated that exposure to excess PM_{2.5} in this region resulted in more rapid clinical deterioration and premature death compared with patients with the same disease in other parts of North America with better air quality. The common denominator is human-generated climate change’s negative impact on health.

In particular, those who are already vulnerable because of underlying chronic disease or socioeconomic disparity are at greater risk and feel these repercussions disproportionately. Black and brown

communities are more heavily exposed to air pollution due to the history of redlining and ongoing structural racism and, as a result, have worse health outcomes than other groups. There is an urgency and moral imperative for us as clinicians to address generations of environmental injustice.

While these themes floated around in the background during the early stage of my career as a pulmonologist, I didn’t have language or deep knowledge around these structural environmental issues. As a profession, we are gradually recognizing that the health impacts of climate change on which to advocate are within our wheelhouse as clinicians.

Our patients and our trainees are increasingly aware of these issues, and, as a result, we as currently practicing clinicians and educators must urgently learn about the lived experiences of our patients and how their diseases interplay with their exposures.

Nowadays, I think more about how to mitigate the impact of air pollution, which did not previously factor into my training or the early years of my clinical practice. We know that some patients, particularly those with underlying lung disease and young children, are at greater risk when exposed to more polluted air and may need to take different steps to limit their exposure. We now consider advising these patients with chronic respiratory disease to be aware of air quality advisories and limit their time outdoors on worse air quality days. We anticipate that when the air quality is worse, we will see more complications of cardiovascular and pulmonary disease.

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because they’re living with people who smoke,” Dr. Li said. His prior research shows that the majority of Chinese American men in greater Chicagoland—89%—are married, and many of them smoke or have a history of smoking.

With the CHEST grant Dr. Li received in October 2023, he’s working to increase awareness among Chinese American women about the risks of secondhand smoke and “reduce the health disparity in lung cancer among women,” Dr. Li said.

Developing culturally sensitive materials for a high-risk group

While many lung cancer reduction efforts focus on people who smoke, there are plenty of pamphlets designed to inform about the risks incurred when breathing in secondhand smoke.

These handouts, however, aren’t always available in languages spoken by Chinese Americans. Nor is it as simple as hiring a translator; doing so may make the pamphlets

readable to the women, but it won’t necessarily make the text culturally appropriate.

This is what Dr. Li—along with his coinvestigators, Alicia Matthews, PhD, a professor of clinical psychology at Columbia University, and Hong Liu, PhD, of the Midwest Asian Health Association—seeks to change, with funding from the CHEST



Dr. Li

grant. Their goal is four-pronged:

1. Discovery: Dr. Li and his team are currently surveying Chinese American women who have never smoked but who live with people who smoke in greater Chicagoland. These surveys will help them learn more about what (if anything) this group knows about the health risks associated with secondhand smoke and other types of environmental smoke.

2. Identify: These surveys, along with focus group interviews with select participants, will help reveal barriers standing in the way of reducing the women’s exposure to secondhand smoke—as well as ways to encourage habits to reduce risk.

3. Develop: All the information gained through surveys and conversations will then be analyzed and used to craft targeted, translated, and culturally appropriate materials on secondhand smoke, conveying communication strategies the women can use to persuade their partners to quit smoking and ways to build a smoke-free household.

4. Evaluate: The effectiveness of the new materials will be tested to assess the change in the women’s knowledge, as well as any uptick in taking steps to reduce exposure or sign up for screening.

Using the CHEST grant as a building block to more grants—and more information

Dr. Li and his collaborators are still in the early stages of using the

CHEST grant: gathering up participants and surveying them.

But there’s much ahead. With the CHEST grant in hand, Dr. Li plans to apply for grants from the National Institutes of Health (NIH): first, an NIH Exploratory/Developmental Research Grant Award (R21) to help achieve that fourth aim of evaluating how the intervention works. And next, they’ll apply for an NIH Research Project Grant Program (R01), which will fund an even larger trial.

“Not many studies focus on identifying the risk factors with lung cancer associated with Chinese American [women who have never smoked],” Dr. Li said. “This is why we want to focus on this area to provide more knowledge and make more contributions to research.”

Projects like this are made possible by generous contributions from CHEST donors. Support the future of chest medicine by visiting <https://chestnet.org/donate>. ■

Getting ready for Boston

A look into the CHEST 2024 Scientific Program Committee meeting

A quality educational meeting starts with a great slate of programs tailored to its audience, and CHEST 2024 is on track to offer the highest tier of pulmonary, critical care, and sleep medicine education that attendees have come to expect from the CHEST Annual Meeting.

While planning for the meeting started with the open call for 2024 sessions at the conclusion of the CHEST Annual Meeting 2023, CHEST 2024 began to take shape when the schedule—and the curriculum chairs—came together. In mid-February, members of the Scientific Program Committee gathered in person at CHEST headquarters in Glenview, Illinois, to review submissions and solidify the schedule for the upcoming CHEST 2024 meeting, taking place in Boston, October 6 to 9.

Following CHEST 2023 in Honolulu, those planning for Boston were brimming with excitement to start planning a meeting closer to home. One event in particular that

committee members are excited for will be a session dedicated to the “Black Angels,” the nurses who helped cure TB, featuring surviving member, Virginia Allen, and book (*The Black Angels: The Untold Story of the Nurses Who Helped Cure Tuberculosis*) author, Maria Smilios. Because of the location, both Allen and Smilios will be able to join on-site in Boston and will bring with them, for the first time on public display, a curated selection of papers from Edward Robitzek, MD, courtesy of the Robitzek family. This collection will include records of TB treatment trials that forever changed the course of the disease in 1952.

In addition to this look into the history of chest medicine, the CHEST Annual Meeting 2024 will also feature the latest advancements in the field, including the anticipated hot topic of the meeting, the use of artificial intelligence (AI) in medicine.

“There [are] going to be a lot of hot topics covered at CHEST 2024,

like bronchoscopic approaches, treatments for COPD,” said Gabe Bosslet, MD, FCCP, Chair of the Scientific Program Committee. “But if there was one that sort of was the outlier this year, I think it’s artificial intelligence and its use in pulmonary and critical care medicine.”

CHEST Annual Meeting 2024 will feature the latest advancements in the field, including the use of AI in medicine.

The sessions covering AI include its presence in medical education, as well as treating interstitial lung disease, chest infections, and more.

Beyond the latest in artificial technology, the CHEST Annual Meeting 2024 will feature more than 200 sessions covering eight curriculum groups with something for everyone in chest medicine:

- Airways Disorders
- Critical Care

- Cardiovascular/Pulmonary Vascular Disease
- Chest Infections/Disaster Medicine/Systemic Disease
- Interstitial Lung Disease/Transplant
- Interdisciplinary/Practice Operations/Education
- Lung Cancer/Interventional Pulmonology/Bronchoscopy/Radiology
- Sleep Medicine

The meeting will host topics for a wide range of experience levels (from those still in training to those who are years or decades into their careers) and welcomes all members of the care team. “These are not physician-centric issues, topics, or sessions. These are sessions that if you’re working around patients with pulmonary or critical care diseases, these are definitively for you,” Dr. Bosslet said.

With something for everyone—and for the first time ever in Boston—CHEST 2024 will not be a meeting to miss. Keep an eye out for registration to open in May, as early bird pricing will be available for a short time. ■



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As lifelong learners, we thirst for the latest data to incorporate into our clinical decision-making. Similarly, colleagues and I are now also voraciously reading and starting to have conversations with peers about the convergence of climate change and disease. But no matter how compelling and urgent these issues are, one clinician cannot tackle the massive threat of climate change and complexity of health care sustainability in isolation.

I am fortunate to work with several like-minded and highly motivated colleagues at my own institution. We have been able to organize effectively to spark local change toward reducing our system’s carbon emissions. Similarly, through professional organizations like CHEST, I have been able to collaborate with other pulmonary and critical care clinicians who share these passions and are doing similar advocacy work across the country. I am honored to serve as CHEST’s representative to the Medical Society Consortium on Climate and Health as another avenue to keep advancing this cause at scale

in collaboration with advocates across all specialties.

While I worry every day for my patients, our communities, and my children as we face the accelerating threat of climate change, knowing that I am actively engaging in these efforts in pursuit of environmental justice and mitigating health care’s climate change contribution gives me a sense of empowerment and solidarity with others also striving to lessen our burden on the planet. ■

This article was adapted from the Winter 2024 online issue of CHEST Advocates. For the full article—and to engage with the other content from this issue—visit <https://chestnet.org/chest-advocates>.

In memoriam

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

- Fortune A. Dugan, MD
- Donald R. Rollins, MD

NETWORKS

Lung transplant, hemodynamic assessment, ventilator-associated pneumonia, and more

DIFFUSE LUNG DISEASE AND LUNG TRANSPLANT NETWORK Lung Transplant Section CLAD prevention in lung transplant recipients: tacrolimus vs cyclosporin

Chronic lung allograft dysfunction (CLAD) remains the leading cause of morbidity and mortality in lung transplant recipients (LTRs), accounting for around 40% of



Dr. Shah



Dr. Sanborn

deaths. LTRs are typically maintained on a three-drug immunosuppressive regimen—a calcineurin inhibitor, antimetabolite agent, and corticosteroid—in order to prevent rejection. Strong randomized controlled trial-generated evidence guiding the choice of immunosuppressive therapy for LTRs is generally lacking.

A recent large, multicentered, randomized controlled trial in Scandinavia compared outcomes between once daily extended-release tacrolimus and twice daily cyclosporin. The target trough for cyclosporin was 250 to 300 ng/mL (0 to 3 months), 200 to 250 ng/mL (3 to 6 months), 150 to 200 ng/mL (6 to 12 months), and 100 to 150 ng/mL beyond 12 months. The trough target for tacrolimus was 10 to 14 ng/mL (0 to 3 months), 8 to 12 ng/mL (3 to 6 months), 8 to 10 ng/mL (6 to 12 months), and 6 to 8 ng/mL beyond 12 months.

The study demonstrated that immunosuppressive regimens containing tacrolimus significantly reduced incidence of CLAD diagnosis at 36 months. The cumulative incidence of CLAD was 39% in the cyclosporin group vs 13% in the tacrolimus group ($P < .0001$), and the number needed to treat was 3.9 patients to prevent one case of CLAD with tacrolimus. While mortality was not significantly different between the two treatment groups in the intention to treat models,

tacrolimus had a mortality benefit in the per protocol analysis.

While there is no consensus guideline recommending a first-line immunosuppression regimen following lung transplantation, the lung transplant steering committee believes that additional trials comparing existing agents are of critical importance to reduce CLAD incidence and improve long-term outcomes in LTRs.

All references available online at chestphysician.org.

–Sadia Z. Shah, MD, MBA, FCCP
Member-at-Large

–David Sanborn, MD
Fellow-in-Training

PULMONARY VASCULAR AND CARDIOVASCULAR NETWORK Cardiovascular Medicine and Surgery Section Empowering ICU physicians in MCS critical care

Intensive care physicians around the nation are pivotal in improving shock-related patient outcomes. At present time, there is still a dearth of available dual-boarded cardiology



Dr. Akkanti



Dr. Warner

and intensive care physicians around the country, and advanced heart failure fellowship positions continue to be unfilled in the NRMP match. Most intensive care units (academic and nonacademic) are currently managed by intensive care physicians, and a large majority of these physicians are either pulmonary/critical care, emergency medicine critical care, surgery critical care, or medicine/critical care.

There is lack of systematic training in cardiogenic shock across the board in these specialties as it relates to management of patients supported on extracorporeal membrane oxygenation (ECMO), left

ventricular assist devices (LVADs), percutaneous devices, and intermediate devices such as centrimag devices.

By integrating comprehensive systematic training on cardiogenic shock recognition and management into educational initiatives, fellowship programs that are noncardiology-based can empower health care providers to make informed decisions and expedite life-saving interventions for patients in need of advanced cardiac support. Furthermore, the next generation of intensive care physicians may require ongoing education in the cardiac space, including additional training in point-of-care ultrasound, transesophageal echocardiography (TEE), and advanced hemodynamics, including management of alarms related to percutaneous and durable devices. Through continuous education and training both at conferences and at the simulation center in Glenview, Illinois, CHEST is especially suited to aid intensive care physicians to navigate the evolving landscape of mechanical circulatory support critical care and improve outcomes for patients in need of mechanical circulatory support.

–Bindu Akkanti, MD, FCCP
Section Vice-Chair

–Mark Warner, MD, FCCP
Member-at-Large

AIRWAYS DISORDERS NETWORK Bronchiectasis Section Eradicating uncertainty: A review of *Pseudomonas aeruginosa* eradication in bronchiectasis

Bronchiectasis patients have dilated airways that are often colonized with bacteria, resulting in a vicious cycle of airway inflammation and progressive dilation. *Pseudomonas aeruginosa* is a frequent airway colonizer and is associated with increased morbidity and mortality in cystic fibrosis (CF) and noncystic fibrosis bronchiectasis (NCFB).

Both CF and NCFB guidelines recommend eradication of *P. aeruginosa* upon detection. In CF, the guidelines suggest use of inhaled tobramycin, without systemic antibiotics. Optimal NCFB eradication regimens remain unknown, though recent studies



Dr. Losier



Dr. Threadgill

demonstrated inhaled tobramycin is safe and effective for chronic *P. aeruginosa* infections in NCFB.

The 2024 meta-analysis by Conceição et al. revealed that *P. aeruginosa* eradication endures more than 12 months in only 40% of NCFB cases, but that patients who received combined therapy—both systemic and inhaled therapies—had a higher eradication rate at 48% compared with 27% in those receiving only systemic antibiotics. They found that successful eradication reduced exacerbation rate by 0.91 exacerbations per year without changing hospitalization rate. They were unable to comment on optimal antibiotic selection or duration.

A take-home point from Conceição et al. suggests trying to eradicate *P. aeruginosa* with combined systemic and inhaled antibiotics if possible, but other clinical questions remain around initial antibiotic selection and how to treat persistent *P. aeruginosa*.

All references available online at chestphysician.org.

–Ashley Losier, MD
Member-at-Large

–Ryan S. Threadgill, MD
Fellow-in-Training

CHEST INFECTIONS AND DISASTER RESPONSE NETWORK Chest Infections Section Can VAP be prevented? New data suggest so

Ventilator-associated pneumonia (VAP) is a common cause of hospital-related morbidity in critically ill patients. The efficacy of prophylactic antibiotics in the prevention of VAP has been the subject of several studies in recent years. Three large randomized controlled trials, all published since late 2022,

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have investigated whether antibiotics can prevent VAP and the optimal method of antibiotic administration.

In the AMIKINHAL trial, patients intubated for at least 72 hours in 19



Dr. Eggleston

ICUs in France received inhaled amikacin at a dose of 20 mg/kg/day for 3 days. Compared with placebo, there was a statistically significant, 7% absolute risk reduction in rate

of VAP at 28 days.

In the SUDDICU trial, patients suspected to be intubated for at least 48 hours in 19 ICUs in Australia received a combination of oral paste and gastric suspension containing colistin, tobramycin, and nystatin every 6 hours along with 4 days of intravenous antibiotics. There was no difference in the primary outcome of 90-day all-cause mortality; however, there was a statistically significant, 12% reduction in the isolation of antibiotic-resistant organisms in cultures.

In the PROPHY-VAP trial, patients with acute brain injury (Glasgow Coma Scale score [GCS] ≤ 12) intubated for at least 48 hours in 9 ICUs in France received a single dose of intravenous ceftriaxone (2 g) within 12 hours of intubation. There was an 18% absolute risk reduction in VAP from days 2 to 7 post-ventilation.

These trials, involving distinct patient populations and interventions, indicate that antibiotic prophylaxis may reduce VAP risk under specific circumstances, but its effect on overall outcomes is still uncertain. The understanding of prophylactic antibiotics in VAP prevention is rapidly evolving.

All references available online at chestphysician.org.

—Reid Eggleston, MD
Fellow-in-Training

CRITICAL CARE NETWORK Nonrespiratory Critical Care Section

Complexity of hemodynamic assessment in patients with cirrho- sis and septic shock

In patients with decompensated

cirrhosis, there are multiple intra-hepatic and extrahepatic factors contributing to hemodynamic alterations at baseline, including endothelial cell dysfunction, hepatic stellate cell activation promoting



Dr. Kapoor

increase in vasoconstrictors, decrease in vasodilators, and angiogenesis leading to worsening of portal hypertension. Increased resistance to hepatic blood flow leads to increased

production of nitric oxide and other vasodilators leading to splanchnic vasodilation, decreased effective blood volume, activation of the renin angiotensin system, sodium, and water retention. In addition to portal hypertension and splanchnic vasodilation, there is a decrease in systemic vascular resistance and hyperdynamic circulation with increased cardiac output. As cirrhosis progresses to the decompensated stage, patients may develop cirrhotic cardiomyopathy, characterized by impaired cardiac response to stress,

manifesting as systolic and diastolic dysfunction, and electrophysiological abnormalities such as QT prolongation leading to hypotension and dysregulated response to fluid resuscitation.

Early recognition of septic shock in these patients can be challenging when using traditional criteria due to their baseline hypotension, tachycardia, systemic vasodilation, and propensity for volume overload with fluid resuscitation. Elevated lactate levels in acutely ill patients are an independent risk factor for mortality in patients with cirrhosis. However, lactate levels >2 mmol/L need not necessarily define sepsis in these patients, as these patients have decreased lactate clearance. Understanding the intricate interplay between the cardiac pump, vascular tone, and afterload is essential in managing shock in these individuals. Aggressive volume resuscitation may not be well tolerated, emphasizing the need for frequent hemodynamic assessments and prompt initiation of vasopressors when indicated.

—Aanchal Kapoor, MD, FCCP
Member-at-Large

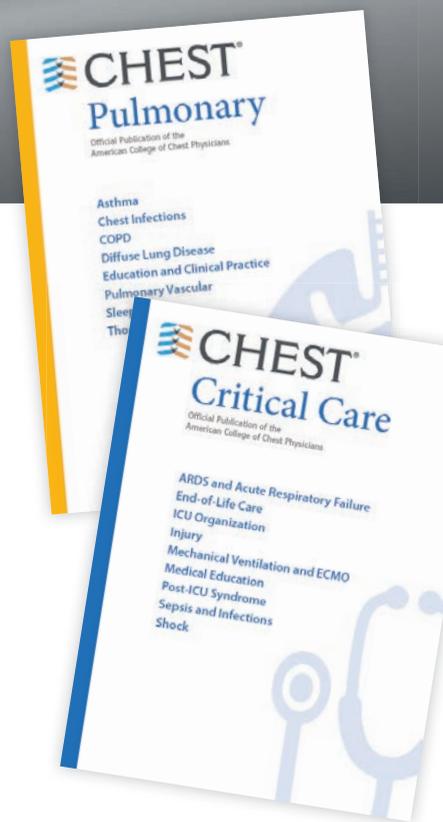
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This month in the journal *CHEST*®

Editor's picks

BY PETER J. MAZZONE, MD,
MPH, FCCP
Editor in Chief

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Psychological Safety: What It Is, Why Teams Need It, and How to Make It Flourish

By Santhi Kumar, MD

Use and Outcomes of Peripheral Vasopressors in Early Sepsis- Induced Hypotension Across Michigan Hospitals: A Retrospec- tive Cohort Study

By Elizabeth S. Munroe, MD, et al.

Hospital Policy Variation in Addressing Decisions to Withhold and Withdraw Life-Sustaining Treatment

By Gina M. Piscitello, MD, et al.

Long-Term Effects of COVID-19 on the Cardiopulmonary System in



Adults and Children: Current Sta- tus and Questions to Be Resolved by the NIH RECOVER Initiative

By Franz Rischard, DO, et al.

COPD Exposed to Air Pollution: A Path to Understand and Protect a Susceptible Population

By Min Hyung Ryu, PhD, et al.

Etiology-Based Prognosis of Extra- corporeal CPR Recipients After Out-of-Hospital Cardiac Arrest: A Retrospective Multicenter Cohort Study

By Toru Takiguchi, MD, PhD, et al.

New data on mild COVID's risk for neurologic, psychiatric disorders

BY BATYA SWIFT YASGUR

While severe COVID-19 is associated with a significantly higher risk for psychiatric and neurologic disorders a year after infection, mild does not carry the same risk, a new study shows.

Hospitalized patients with COVID-19 had twice the risk for psychiatric or neurologic diagnoses during the 12 months after acute infection, compared with individuals who never tested positive for SARS-CoV-2. However, less severe COVID-19 was not linked to a higher incidence of psychiatric diagnoses and was associated with only a slightly higher risk for neurologic disorders.

The new research challenges previous findings of long-term risk for psychiatric and neurologic disorders associated with SARS-CoV-2 in patients who had not been hospitalized for the condition.

“Our study does not support previous findings of substantial post-acute neurologic and psychiatric morbidities among the general population of SARS-CoV-2–infected individuals but does corroborate an elevated risk among the most severe cases with COVID-19,” the authors wrote.

The study was published online on February 21 in *Neurology* (2024. doi: 10.1212/WNL.000000000208113).

‘Alarming’ findings

Previous studies have reported nervous system symptoms in patients who have experienced COVID-19, which may persist for several weeks or months after the acute phase, even in milder cases.

But these findings haven't been consistent across all studies, and few studies have addressed the potential effect of different viral variants and vaccination status on post-acute psychiatric and neurologic morbidities.

“Our study was partly motivated by our strong research interest in the associations between infectious disease and later chronic disease and partly by international studies, such as those conducted in the US Veterans Health databases, that have suggested substantial risks of psychiatric and neurological conditions associated with infection,” senior author Anders Hviid, DrMedSci, MSc, head of the department and professor of pharmacoepidemiology, Statens Serum Institut,

Copenhagen, Denmark, told this news organization.

Investigators drew on data from the Danish National Patient Registry to compare the risk for neurologic and psychiatric disorders during the 12 months after acute COVID-19 infection to risk among people who never tested positive.

They examined data on all recorded hospital contacts between January 2005 and January 2023 for



a discharge diagnosis of at least one of 11 psychiatric illnesses or at least one of 30 neurologic disorders.

The researchers compared the incidence of each disorder within 1-12 months after infection with those of COVID-naïve individuals and stratified analyses according to time since infection, vaccination status, variant period, age, sex, and infection severity.

The final study cohort included 1.8 million individuals who tested positive during the study period and 1.5 who didn't. Three quarters of those who tested positive were infected primarily with the Omicron variant.

Hospitalized vs nonhospitalized

Overall, individuals who tested positive had a 24% lower risk for psychiatric disorders during the post-acute period (incident rate ratio [IRR], 0.76; 95% CI, 0.74-0.78) compared with the control group, but a 5% higher risk for any neurologic disorder (IRR, 1.05; 95% CI, 1.04-1.07).

Age, sex, and variant had less influence on risk than infection severity, where the differences between hospitalized and nonhospitalized patients were significant.

Compared with COVID-negative individuals, the risk for any psychiatric disorder was double for

hospitalized patients (IRR, 2.05; 95% CI, 1.78-2.37) but was 25% lower among nonhospitalized patients (IRR, 0.75; 95% CI, 0.73-0.77).

For neurologic disorders, the IRR for hospitalized patients was 2.44 (95% CI, 2.29-2.60) compared with COVID-negative individuals vs an IRR of only 1.02 (95% CI, 1.01-1.04) among nonhospitalized patients.

“In a general population, there was little support for clinically rel-

or years after infection.”

One limitation is that only hospital contacts were included, omitting possible diagnoses given outside hospital settings.

Caution required

The link between COVID-19 and brain health is “complex,” and the new findings should be viewed cautiously, said Maxime Taquet, PhD, MRCPsych, National Institute for Health and Care Research clinical lecturer and specialty registrar in psychiatry, Oxford Health NHS Foundation Trust, England, who commented on the findings.

Previous research by Dr. Taquet, who was not involved in the current study, found an increased risk for neurologic and psychiatric diagnoses during the first 6 months after COVID-19 diagnosis.

The current study “contributes to better understanding this link by providing data from another country with a different organization of health care provision than the US, where most of the existing data come from,” Dr. Taquet said.

However, “some observations — for example, that COVID-19 is associated with a 50% reduction in the risk of autism, a condition present from very early in life — call for extreme caution in the interpretation of the findings, as they suggest that residual bias has not been accounted for,” Dr. Taquet continued.

Authors of an accompanying editorial, Eric Chow, MD, MS, MPH, of the Division of Allergy and Infectious Diseases, University of Washington, School of Public Health, and Anita Chopra, MD, of the post-COVID Clinic, University of Washington, Seattle, called the study a “critical contribution to the published literature.”

The association of neurologic and psychiatric diagnoses with severe disease “is a reminder of the importance of risk reduction by combining vaccinations with improved indoor ventilation and masking,” they concluded.

The study was supported by a grant from the Independent Research Fund Denmark. Dr. Hviid and coauthors, Dr. Chopra, and Dr. Taquet reported no relevant financial relationships. Dr. Chow received a travel award from the Infectious Diseases Society of America to attend ID Week 2022. ■

Survey: OSA symptoms tied to cognitive deficits

BY MEGAN BROOKS

Symptoms of sleep apnea, including snoring, gasping, or paused breathing during sleep, are associated with a significantly greater risk for problems with cognition and memory, results from a large study showed.

Data from a representative sample of US adults show that those who reported sleep apnea symptoms were about 50% more likely to also report cognitive issues vs their counterparts without such symptoms.

“For clinicians, these findings suggest a potential benefit of considering sleep apnea as a possible contributing or exacerbating factor in individuals experiencing memory or cognitive problems. This could prompt further evaluation for sleep apnea, particularly in at-risk individuals,” study investigator Dominique Low, MD, MPH, department of neurology, Boston Medical Center, told this news organization.

The findings will be presented at the American Academy of Neurology (AAN) 2024 Annual Meeting on April 17.

Need to raise awareness

The findings are based on 4257 adults who participated in the 2017-2018 National Health and Nutrition Examination Survey and completed



Consistent data

Reached for comment, Matthew Pase, PhD, with the Turner Institute for Brain and Mental Health, Monash University, Melbourne, Australia, said the results are similar to earlier work that found a link between obstructive sleep apnea (OSA) and cognition.

For example, in a recent study (JAMA Netw Open. 2023 July 18. doi: 10.1001/jamanetworkopen.2023.25152), the presence of mild to severe OSA, identified using overnight polysomnography in five community-based cohorts with more than 5900 adults, was associated with poorer cognitive test performance, Dr. Pase told this news organization.

“These and other results underscore the importance of healthy sleep for optimal brain health. Future research is needed to test if treating OSA and other sleep disorders can reduce the risk of cognitive impairment,” Dr. Pase said.

Yet, in their latest statement on the topic, the US Preventive Services Task Force concluded there remains insufficient evidence to weigh the balance of benefits and harms of screening for OSA among asymptomatic adults and those with unrecognized symptoms.

The study had no specific funding. Dr. Low and Dr. Pase had no relevant disclosures. ■

questionnaires covering sleep, memory, cognition, and decision-making abilities.

Those who reported snoring, gasping, or breathing pauses during sleep were categorized as experiencing sleep apnea symptoms. Those who reported memory trouble, periods of confusion, difficulty concentrating, or decision-making problems were classified as having memory or cognitive symptoms.

Overall, 1079 participants reported symptoms of sleep apnea. Compared with people without sleep apnea, those with symptoms were more likely to have cognitive problems (33% vs 20%) and have greater odds

of having memory or cognitive symptoms, even after adjusting for age, gender, race, and education (adjusted odds ratio, 2.02; $P < .001$).

“While the study did not establish a cause-and-effect relationship, the findings suggest the importance of raising awareness about the potential link between sleep and cognitive function. Early identification and treatment may improve overall health and potentially lead to a better quality of life,” Dr. Low said.

Limitations of the study include self-reported data on sleep apnea symptoms and cognitive issues sourced from one survey.

OSA linked to higher stroke risk

BY BATYA SWIFT YASGUR

Obststructive sleep apnea (OSA) is associated with a significantly higher risk for stroke — regardless of whether a continuous positive airway pressure (CPAP) device was used. But this was only in White individuals, new data suggested. The study also found that stroke risk among Black individuals with OSA was lower in those who used CPAP machines vs those who did not use CPAP.

Cohort with no stroke history

Researchers used data on 22,192 people from the Reasons for Geographic and Racial Differences in Stroke study, a US population-based cohort of Black and White individuals with no history of stroke at baseline. Mean age among study participants was 64 years, and 38% of participants were Black.

Researchers adjusted for demographic, socioeconomic, and stroke risk factors. Study participants were followed for a mean of 12 years.

Only 11% of participants had provider-diagnosed OSA at baseline.

OSA risk and diagnosis upped risk for some

During the follow-up period, 969 participants (4.4%) experienced a stroke. After adjustment for confounders, having high OSA risk and diagnosed OSA were associated with higher risks for incident stroke in White individuals (adjusted hazard ratio [aHR], 1.22; 95% CI, 1.01-1.47 and aHR, 1.33; 95% CI, 1.04-1.70, respectively) but not in Black individuals.

Among those with diagnosed OSA, CPAP use was associated with a higher risk for incident stroke in White individuals (aHR, 1.38; 95% CI, 1.05-1.80) but a lower stroke risk in Black individuals (aHR, 0.36; 95% CI, 0.14-0.90) compared with no CPAP use. Snoring was not associated with incident stroke in either Black or White individuals.

Surprise findings

“These results were not what we were expecting to find since Black people have been shown to have a higher risk of stroke and are more likely to have sleep apnea than White people,” lead author Rebecca Robbins, MMSc, PhD, of Brigham and

Women’s Hospital in Boston, said in a news release. “Since it has been shown Black people have more severe sleep apnea than White people and take longer to be screened and treated than White people, it’s possible that using a CPAP machine provides a greater benefit on reducing stroke risk for Black people.” Dr. Robbins was the lead and corresponding author of the study. It was published online in *Neurology* (2024 Feb 6. doi: 10.1212/WNL.000000000209171).

Severity not evaluated

The current study assessed only self-reported OSA symptoms, risk, diagnosis, and treatment and did not include data on the hours of CPAP usage at night, number of days of treatment, adherence during the follow-up period, and OSA severity.

The study was funded by the National Institute of Neurological Disorders and Stroke and the National Institute on Aging. Dr. Robbins received consulting income from Sonesta Hotels International, Oura Ring, Savoir Beds, Castle Hot Springs, and ByNight GmbH. The other authors’ disclosures are listed in the original paper. ■

Medicare doctor pay cut eased, but when will serious revisions come?

BY KERRY DOOLEY YOUNG

President Biden on March 9 signed into law a measure that softened — but did not completely eliminate — a 2024 cut in a key rate used to determine how physicians are paid for treating Medicare patients.

While physician groups hailed the move as partial relief, they say they'll continue to press for broader changes in the Medicare physician fee schedule.

“It is well past time to put an end to stopgap measures that fail to address the underlying causes of the continuing decline in Medicare physician payments.”

—Jesse M. Ehrenfeld, MD, MPH, AMA president

The Medicare provision was tucked into a larger spending package approved by the US House and Senate. The American Academy of Family Physicians (AAFP), the American Medical Association (AMA), and other groups have lobbied Congress for months to undo a 3.4% cut in the base rate, or conversion factor, in the physician fee schedule for 2024.

The conversion factor is used in calculations to determine reimbursement for myriad other services. Federal Medicare officials said the cut would mean a 1.25% decrease in overall payments in 2024, compared with 2023.

“With the passage of this legislation, Congress has offset 2.93% of that payment cut,” Steven P. Furr, MD, AAFP’s president, said in a statement. “We appreciate this temporary measure but continue to urge Congress to advance comprehensive, long-term Medicare payment reform.”

In a statement, Rep. Larry Bucshon, MD (R-Ind.), said the payment cut could not be completely eliminated because of budget constraints.

The Medicare physician fee schedule covers much of the care clinicians provide to people older than 65 and those with disabilities.

It covers about 8000 different types of services, ranging from office visits to surgical procedures, imaging, and tests, according to the Medicare Payment Advisory Commission (MedPAC). In 2021, the Medicare program and its beneficiaries paid \$92.8 billion for services provided by almost 1.3 million clinicians, MedPAC said.

Larger changes ahead?

Rep. Bucshon is among the physicians serving in the House who are pressing for a permanent revamp of the Medicare physician fee schedule. He cosponsored a bill (HR 2474) that would peg future annual increases in the physician fee schedule to the Medicare Economic Index, which would reflect inflation’s effect. In April 2023, more than 120 state and national medical groups signed onto an AMA-led letter urging Congress to pass this bill.

The measure is a key priority for the AMA. The organization reached out repeatedly last year to federal officials about it through its own in-house lobbyists, according to a review of congressional lobbying forms submitted by AMA. These required disclosure forms reveal how much AMA and other organizations spend each quarter to appeal to members of Congress and federal agencies on specific issues. The disclosure forms do not include a detailed accounting of spending on each issue.

But they do show which issues are priorities for an organization. AMA’s in-house lobbyists reported raising dozens of issues in 2024 within contacts in Congress and federal agencies.

In a March 6 statement, Jesse M. Ehrenfeld, MD, MPH, AMA president, urged Congress toward more serious consideration of Medicare physician pay beyond short-term tweaks attached to other larger bills. “As physicians, we are trained to run toward emergencies. We urge Congress to do the same,” Dr. Ehrenfeld said. “We encourage Congress to act as if this policy decision is an emergency because — in fact — it is. It is well past time to put an end to stopgap measures that fail to address the underlying causes of the continuing decline in Medicare physician payments.” ■

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Silence is critical when giving bad news to patients

BY PAOLO SPRIANO

Communicating bad news to patients is one of the most stressful and challenging clinical tasks for any physician, regardless of his or her specialty. Delivering bad news to a patient or their close relative is demanding because the information provided during the dialogue can substantially alter the person's perspective on life. This task is more frequent for physicians caring for critical care and oncology patients and can also affect the physician's emotional state.

The manner in which bad news is communicated plays a significant role in the psychological burden on the patient, and various communication techniques and guidelines have been developed to enable physicians to perform this difficult task effectively.

Revealing bad news in person whenever possible, to address the emotional responses of patients or relatives, is part of the prevailing expert recommendations. However, it has been acknowledged that in certain situations, communicating bad news over the phone is more feasible.

Since the beginning of the COVID-19 pandemic, the disclosure of bad news over the phone has become a necessary substitute for in-person visits and an integral

part of clinical practice worldwide. It remains to be clarified what the real psychological impact on patients and their closest relatives is when delivering bad news over the phone compared with delivering it in person.

Right and wrong ways

The most popular guideline for communicating bad news is SPIKES, a six-phase protocol with a special application for cancer patients. It is used in various countries (eg, the United States, France, and Germany) as a guide for this sensitive practice and for training in communication skills in this context. The SPIKES acronym refers to the following six recommended steps for delivering bad news:

- **Setting:** Set up the conversation.
- **Perception:** Assess the patient's perception.
- **Invitation:** Ask the patient what he or she would like to know.
- **Knowledge:** Provide the patient with knowledge and information, breaking it down into small parts.
- **Emotions:** Acknowledge and empathetically address the patient's emotions.
- **Strategy and Summary:** Summarize and define a medical action plan.

The lesson from SPIKES is that when a person experiences strong emotions, it is difficult to continue

discussing anything, and they will struggle to hear anything. Allowing for silence is fundamental. In addition, empathy allows the patient to express his or her feelings and concerns, as well as provide support. The aim is not to argue but to allow the expression of emotions without criticism. However, these recom-

It is paramount to prepare patients or their families for the possibility of receiving bad news well in advance, and to ensure first and foremost that they are in an appropriate environment.

mendations are primarily based on expert opinion and less on empirical evidence, because of the difficulty of studies in assessing patient outcomes in various phases of these protocols.

A recent study analyzed the differences in psychological distress between patients who received bad news over the phone and those who received it in person. The study was a systematic review and meta-analysis.

The researchers examined 5944 studies, including 11 qualitative analysis studies, nine meta-analyses,

and four randomized controlled trials.

In a set of studies ranging from moderate to good quality, no difference in psychological distress was found when bad news was disclosed over the phone compared with in person, regarding anxiety, depression, and posttraumatic stress disorder. There was no average difference in patient satisfaction levels when bad news was delivered over the phone compared with in person. The risk for dissatisfaction was similar between groups.

Clinical practice guidelines

The demand for telemedicine, including the disclosure of bad news, is growing despite the limited knowledge of potential adverse effects. The results of existing studies suggest that the mode of disclosure may play a secondary role, and the manner in which bad news is communicated may be more important.

Therefore, it is paramount to prepare patients or their families for the possibility of receiving bad news well in advance and, during the conversation, to ensure first and foremost that they are in an appropriate environment. The structure and content of the conversation may be relevant, and adhering to dedicated communication strategies can be a wise choice for the physician and the interlocutor. ■

Mega malpractice verdicts against physicians rise

BY ALICIA GALLEGOS

In December 2023, in what's known as the "Take Care of Maya" case, a Florida jury returned a record \$261 million verdict against Johns Hopkins All Children's Hospital, St. Petersburg, Florida, for its treatment of a young patient and her family after an emergency room visit. A month earlier, in New York, a jury ordered Westchester Medical Center Health Network to pay \$120 million to a patient and his family following delayed stroke care that resulted in brain damage.

Mega malpractice awards such as these are rising against physicians and hospitals around the country, according to new data from TransRe, an international reinsurance company that tracks large verdicts. "2023 blew away every record previously set among high medical malpractice verdicts," said Richard Henderson, senior vice president for TransRe. "If we look at the 50 largest verdicts in 2023 and average them out, we have a higher monetary amount than any other year."

In 2023, there were 57 medical malpractice verdicts of \$10 million or more in the United States, the data showed. Slightly more than half of those

reached \$25 million or more. From 2012 to 2022, verdicts of \$10 million or more ranged from 34 in 2013 to 52 in 2022, TransRe research found.

While New York, Illinois, and Florida typically saw the highest dollar verdicts in previous years, so-called "nuclear" verdicts now occur in states

Medical liability insurance premiums for physicians have steadily increased since 2019, according to data from the Medical Liability Monitor.

like Utah and Georgia where they once were uncommon, said Robert E. White Jr., president of TDC Group and The Doctors Company, a national medical liability insurer for physicians.

A rollback of tort reforms across the country is one contributor, he said. For example, Georgia's cap on noneconomic damages is among those that have been ruled unconstitutional by courts. Utah's cap on noneconomic damages still

stands, but the limit was deemed unconstitutional in wrongful death cases. In 2019, a portion of Utah's pre-litigation panel process was struck down by the state's Supreme Court. "We used to be able to predict where these high verdicts would occur," Mr. White said. "We can't predict it anymore."

Research shows a majority of malpractice cases are dropped or settled before trial, and claims that go before juries usually end in doctors' favor. Plaintiffs' attorneys cite large jury verdicts in similar cases to induce settlements and higher payouts, Mr. White said.

And while mega verdicts rarely stick, they can have lasting effects on future claims. The awards lead to larger settlement demands from plaintiffs and drive up the cost to resolve claims, according to Mr. Henderson and Mr. White. "Verdicts are the yardstick by which all settlements are measured," Mr. White said. "That's where the damage is done." The prospect of a mega verdict can make insurers leery of fighting some malpractice cases and motivate them to offer bigger settlements to stay out of the courtroom, he added.

VERDICTS *continued on following page*

Hospital mergers in 2024: Five things to know

BY STEPH WEBER

Hospital mergers and acquisitions continue to garner intense scrutiny from lawmakers, with pressure likely to hold steady following the recent announcement of new antitrust guidelines and state and federal investigations into potential health care monopolies.

In December, the US Department of Justice (DOJ) and the Federal Trade Commission (FTC) released updated guidelines outlining the factors they consider when determining if a merger illegally monopolizes a local health care market or jeopardizes access to critical health care services.

Last week, the DOJ also announced a UnitedHealth Group antitrust probe, just months after the health care conglomerate's workforce numbers indicated it is now affiliated with or employs 10% of the US physician workforce.

While the impact of the latest guidelines is yet to be seen, concerns over health care market consolidation are not new. Over the past two decades, mergers have attracted attention for contributing to a decline in independent hospitals, said Rachel M. Werner, MD, PhD,

executive director of the Leonard Davis Institute of Health Economics at the University of Pennsylvania, Philadelphia.

"At this point, most hospitals are operating in a pretty concentrated market," she said.

Here are five things to know about the current state of hospital mergers.

1) Record-breaking merger enforcements

The DOJ and FTC reported the highest level of enforcement activity in over 20 years in fiscal year 2022 — the latest available data. Together, the agencies filed 50 merger enforcement actions and brought a record-breaking number of merger enforcement challenges, resulting in 11 approved actions, the restructuring or abandonment of seven mergers, and six business deals entering litigation.

Included in those statistics was a proposed merger between the two largest health systems in Rhode Island, Lifespan and Care New England Health System, which was abandoned after the FTC and the state Attorney General took steps to block it. Utah's HCA Healthcare abandoned plans for to acquire five Salt Lake City area hospitals from competitor Steward Health Care

System, as did RWJBarnabas Health after exploring a merger with Saint Peter's Healthcare System in New Jersey.

2) New antitrust guidelines consider labor market

The new guidelines notably focus on labor competition, according to Jody Boudreault, JD, attorney and chair of the Antitrust Life Sciences and Healthcare Group at Baker Botts law firm in Washington. Health professionals typically have more employment opportunities in an urban area, unless hindered by restrictive noncompete agreements, and fewer options in rural settings.

In the Lifespan merger that fell through, Ms. Boudreault said that the newly created hospital system would have employed two-thirds of Rhode Island's full-time nurses, limiting opportunities for local employment elsewhere.

"Going forward, I would expect federal authorities to review not only the competitive impact of the hospitals merging but also the competitive impact of the physician, and especially nursing, workforce," she said.

FTC Chair Lina M. Khan noted similar labor market concerns.

In a statement to Congress, she

said that hospital consolidation reduces options for employees, who fear "being blacklisted from further hiring in a system that controls many of the hospitals in the area" and "makes workers afraid to file complaints, organize their workplace, or leave before the end of a contract."

3) Mergers can drive care costs higher

When hospital markets become less competitive, the cost of care often increases. In Indiana, inpatient prices rose 13% in hospitals that merged. Another study found that prices at monopoly hospitals are 12% higher than in markets with four or more rivals. Even cross-market mergers, when hospitals in different geographic locations combine, can drive prices higher.

Dr. Werner told this news organization that more significant price hikes of 20%-30% aren't unheard of, with reimbursements by some commercial insurance companies rising as much as 50%. "That's the direct price that the insurers pay, but the burden of those higher prices ultimately falls on patients through higher premiums," she said.

Still, the American Hospital

MERGERS *continued on following page*

VERDICTS *continued from previous page*

Juries awarding higher verdicts

There's no single reason for the rise in nuclear verdicts, Mr. Henderson said. One theory is plaintiffs' attorneys held back on resolving high-dollar cases during the COVID pandemic and let loose with high-demand claims when courts returned to normal, he said.

Another theory is people emerged from the pandemic angrier. "Whether it was political dynamics, masking [mandates], or differences in opinions, people came out of it angry, and generally speaking, you don't want an angry jury," Mr. Henderson said. "For a while, there was the halo effect, where health professionals were seen as heroes. That went away, and all of a sudden [they] became 'the bad guys.'"

"People are angry at the health care system, and this anger manifests itself in [liability] suits," added Bill Burns, vice president of research for the Medical Professional Liability Association, an industry group for medical liability insurers. Hospital and medical group consolidation also reduces the personal connection juries may have with health care providers, Mr. Burns said. "Health care has become a big business, and the corporatization of medicine now puts companies on the stand and not your local community hospital or your family doctor that you have known since birth," he said.

Third-party litigation financing also can lead

to mega verdicts. That's an emerging practice in which companies unrelated to a lawsuit provide capital to plaintiffs in return for a portion of any financial award. The firms essentially "invest" in the litigation.

Do high awards stick?

Multimillion-dollar verdicts may grab headlines, but do plaintiffs actually receive them? Rarely, according to TransRe, which tracks the final outcomes of verdicts. Large verdicts often are reduced on appeal. In the Maya case, a judge later lowered the damages against Johns Hopkins All Children's Hospital by \$47.5 million.

After a verdict is awarded, the defendant often challenges the award, and the case goes through the appellate pipeline, Mr. Henderson explained. A judge may reduce some elements of the verdict, he said, but often, the plaintiff and defendant agree on a compromised figure.

Premium rates are associated with how much insurers pay on average for cases and how frequently they are making payouts, Mr. White said.

Medical liability insurance premiums for physicians have steadily increased since 2019, according to data from the Medical Liability Monitor, a national publication that analyzes liability insurance premiums. The Monitor studies insurance premium data from insurers that cover internists, general surgeons, and obstetrician-gynecologists.

From 2019 to 2023, average premium rates for physicians increased between 1.1% and 3% each year in states without patient compensation funds, according to Monitor data. "Nuclear verdicts are a real driver of the industry's underwriting losses and remain top of mind for every malpractice insurance company," said Michael Matray, editor for the Medical Liability Monitor. "Responses to this year's rate survey questionnaire indicate most responding companies have experienced an increase in claims greater than \$1 million and claims greater than \$5 million during the past 2 years."

However, increases vary widely by region. In Montgomery County, Alabama, for instance, premiums for internists rose by 24% from 2022 to 2023, from \$8,231 to \$10,240. Premiums for Montgomery County general surgeons rose by 11.9% from 2022 to 2023, from \$30,761 to \$34,426, according to survey data. In several counties in Illinois (Adams, Knox, Peoria, and Rock Island), premiums for some internists rose by 15% from \$24,041 to \$27,783, and premiums for some surgeons increased by 27% from \$60,202 to \$76,461, according to survey data. Some internists in Catoosa County, Georgia, meanwhile, paid \$17,831 in 2023, up from \$16,313 in 2022. Some surgeons in Catoosa County paid \$65,616 in 2023, up from \$60,032 in 2022. Inflation could be one factor behind higher liability premium rates. ■

Receiving unfair negative patient reviews online? These apps pledge relief

BY LEIGH PAGE

Physicians' negative online reviews — fair or unfair — can scare away new patients. But practices don't have to sit idly by and watch their revenue shrink. Increasingly, they're turning to apps and automated systems like DearDoc, Rater8, and LoyalHealth that ask satisfied patients to post reviews. The goal: To counteract the effect of negative reviews. Not all of these systems are effective, according to physicians who've used them. Asking patients for reviews is still not fully accepted, either. Still, some apps have proved their worth, doctors say.

Karen Horton, MD, a plastic surgeon in San Francisco, California, has used an automated system for 3 years. Even though reviews from plastic surgery patients can be difficult to get, Dr. Horton said, she has accumulated 535, with an average rating of just under 5 stars on a 1- to 5-star scale.

Dr. Horton, who speaks on the topic, said unfair negative reviews are a problem that needs addressing. "A bad review sometimes says more about the patient than the provider," she said. "Patients can use online reviews to vent about some perceived misgiving."

Automated requests can address this problem. "The best way to deal with negative reviews is to ask average patients to post reviews," she said. "These patients are more likely to be positive, but they wouldn't leave a review unless asked."

How automated systems work

A variety of vendors provide an automated review request process to practices and hospitals. DearDoc, Loyal Health, Rater8, and Simple Interact work with health care providers, while Birdeye, Reputation, and Thrive Management work with all businesses. Typically, these vendors access the practice's electronic health record to get patients' contact information and the daily appointment schedule to know which patients to contact. Patients are contacted after their appointment and are given the opportunity to go directly to a review site and post.

Inviting patients digitally rather than in person may seem unwelcoming, but many people prefer it, said Fred Horton, president of AMGA consulting in Alexandria, Virginia, a subsidiary of the American Medical Group Association. "People tend to be more honest and detailed when responding to an automated message than to a person," Mr. Horton said. "And younger patients actually prefer digital communications."

A variety of vendors provide an automated review request process to practices and hospitals. DearDoc, Loyal Health, Rater8, and Simple Interact work with health care providers.

But Mike Coppola, vice president of AMGA consulting, isn't keen about automation. He said practices can instead assign staff to ask patients to post reviews or an office can use signage displaying a Quick Response (QR) code, which is a two-dimensional matrix often used in restaurants to access a menu. Patients who put smartphone cameras over the code are taken to a review site.

Staff would still need to help each patient access the site to be as effective as automation, and a QR invitation may be ignored. Pat Pazmino, MD, a plastic surgeon in Miami, Florida, told this news organization his office displays QR codes for reviews, but "I'm not sure many patients really use them."

Some automated systems can go too far. Dr. Pazmino said a vendor he hired several years ago contacted "every patient who had ever called my office. A lot of them were annoyed." He said the service generated only 20 or 30 reviews, and some were negative. He did not like that he was soliciting patients to make negative reviews, and canceled the service.

What is the cost and return on investment?

"Our system makes it as easy as possible for patients to place reviews," said Ravi Kalidindi,

CEO of Simple Interact, a Dallas-based vendor that markets to doctors. Dr. Kalidindi said Simple Interact charges \$95-\$145 per provider per month, depending on how the tool is used. For each dollar in cost, the practice typically earns \$10 in extra revenue, he said.

Orrin Franko, MD, a hand surgeon in San Leandro, California, started using an automated patient review tool several years ago. He said that after installation he received 10 reviews per month, all 5-star. "Now we have well over 700 reviews that generate close to \$500,000 a year for our three-doctor practice," he said.

Dr. K. Horton reports more modest results. One new review comes in every 3-4 weeks. "Getting online reviews is a challenge for plastic surgeons," she said. "Most patients are very private about having work done."

Dr. Kalidindi reported very few patients respond to Simple Interact's invitation, but the numbers add up. "Typically, 3 of 100 patients contacted will ultimately post a positive review," he said. "That means that a practice that sees 600 patients a month could get 18 positive reviews a month."

Practices can also build their own systems and avoid vendors' monthly fees. Dr. Franko built his own system, while Dr. K. Horton contracted with SILVR Agency, a digital marketing company in Solana Beach, California, to build hers for a one-time cost of about \$3000.

Why should doctors care about online reviews?

Online review sites for doctors include HealthGrades, RateMDs, Realself, Vitals, WebMD, and Zocdoc. Potential patients also consult general review sites like Facebook, Google My Business, and Yelp.

Consumers tend to prefer doctors who have many reviews, but most doctors get very few. One survey found the average doctor has only seven online reviews. Having too few reviews also means just one or two negative reviews can produce a poor average rating. It's virtually

UNFAIR *continued on following page*

MERGERS *continued from previous page*

Association (AHA) said that mergers and acquisitions can significantly lower annual operating expenses per admission and reduce inpatient readmission rates and mortality measures. In comments to the FTC, the AHA stated that mergers could provide a lifeline for rural and community hospitals struggling with shrinking payer reimbursement and rising labor and supply costs. The business arrangements also could ensure these communities maintain continuity of care.

Although a cross-market merger may initially benefit cash-strapped

rural hospitals, Dr. Werner urged caution.

"In the long run, it's not clear that it is good for patients because we start to see decreased access to some types of service, like labor and delivery, which are services needed in rural markets," she said.

4) Mergers to watch in 2024

Ms. Boudreault, who represented RWJBarnabas in the abandoned Saint Peter's transaction, said the courts widely accepted the old merger guidelines, and it will take time to see how the new measures are interpreted. "The guidelines

don't yet have the force of law, but they can be persuasive to a court."

Looking ahead, she is watching how Steward Health Care navigates its impending financial collapse. The nation's largest private for-profit health system was previously owned by private equity firm Cerberus Capital Management and includes nine Massachusetts hospitals plus entities in at least seven other states.

Ms. Boudreault also plans to monitor Jefferson Health's intent to merge with Lehigh Valley Health Network. "It's a pretty big deal because they would become a 30-hospital system," Ms. Boudreault said. The newly

formed network would become the largest employer in Philadelphia.

5) Merger and acquisition reversals unlikely

Dr. Werner said that mergers and acquisitions are complicated business moves that are nearly impossible to undo once approved, so it makes sense for agencies to continue to evaluate them closely.

"The costs of health care are borne by us as a society," she said. "We're going to have to live with the ill effects of a consolidated market once we let hospitals merge, so they deserve additional scrutiny." ■

Patients want the facts delivered in a personal story

BY UTE EPPINGER

Poor communication between physician and patient can cause a lot of harm, according to Joseph N. Cappella, PhD, Gerald R. Miller Professor Emeritus of Communication at the University of Pennsylvania in Philadelphia, and Richard N. Street Jr, PhD, professor of communication and media science at Texas A&M University in Houston. When a physician and patient talk past each other, it may impair the patient's compliance with preventive measures, screening, and treatment; undermine the physician-patient relationship; exacerbate fears and concerns; and possibly lead patients to rely on misleading, incomplete, or simply incorrect information, turning away from evidence-based medicine.

Dr. Cappella and Dr. Street made these points in an essay recently published in *JAMA* (2024 Feb 1. doi: 10.1001/jama.2024.0371). The essay marks the beginning of the *JAMA* series *Communicating Medicine*.

"Helping clinicians deliver accurate information more effectively can lead to better-informed patients," wrote Anne R. Cappola, MD, professor of endocrinology, diabetes, and metabolism at the University of Pennsylvania, and Kirsten Bibbins-Domingo, MD, PhD, professor of medicine at the University of California, San Francisco, in an accompanying editorial. Dr. Cappola and Dr. Bibbins-Domingo also are editors of *JAMA*.

To establish a common understanding between physician and patient, Dr. Cappella and Dr. Street identified the following four responsibilities of the physician:

- Discover what the patient understands and why
- Provide accurate information in an understandable manner
- Promote the credibility of the information
- Verify whether the patient has understood.

"Research has shown that although medical facts need to be the basis for the clinician's

core message, those facts are more effectively communicated in a patient-clinician relationship characterized by trust and cooperation and when the information is presented in a manner that fosters patient understanding," wrote Dr. Cappella and Dr. Street. This

Empirically supported strategies include

- Affirming the patient's values
- Addressing false information
- Using jargon-free language
- Embedding facts into a story

approach includes using interpreters for patients who do not fluently speak the physician's language and supplementing explanations with simple written information, images, and videos.

Patients generally believe their physician's information, and most patients view their physicians as a trustworthy source. Trust is based on the belief that the physician has the patient's best interests at heart.

However, patients may be distrustful of their physician's information if it contradicts their own belief system or personal experiences or because they inherently distrust the medical profession.

In addition, patients are less willing to accept explanations and recommendations if they feel misunderstood, judged, discriminated against, or rushed by the physician. The basis for effective communication is a relationship with patients that is built on trust and respect. Empirically supported strategies for expressing respect and building trust include the following:

- Affirming the patient's values
- Anticipating and addressing false or misleading information
- Using simple, jargon-free language
- Embedding facts into a story, rather than presenting the scientific evidence dryly.

"Conveying factual material using these techniques makes facts more engaging and memorable," wrote Dr. Cappella and Dr. Street. It is crucial to inquire about and consider the patient's perspective, health beliefs, assumptions, concerns, needs, and stories in the conversation. ■

UNFAIR *continued from previous page*

impossible to remove negative reviews, and they can have a big impact. A 1-star rating reduces consumers' clicks by 11%, according to Brightlocal, a company that surveys consumers' use of online ratings.

Online reviews also influence Google searches, even when consumers never access a review site, said Lee Rensch, product director at Loyal Health, an Atlanta, Georgia-based vendor that works exclusively with hospitals. By far, the most common way to find a doctor is to use Google to search for doctors "near me," Mr. Rensch said. The Google search brings up a ranked list of doctors, based partly on each doctor's ratings on review sites. Mr. Rensch said 15%-20% of Google's ranking involves the number of reviews the doctor has, the average star rating, and the newness of the reviews. Other factors include whether the provider has responded to reviews and the description of the practice, he said.

How many people use the internet to find doctors? One survey found that 72% of health care consumers do so. Furthermore, health care ranks second in the most common use of reviews, after service businesses and before restaurants, according to a Brightlocal survey.

Is it OK to ask for reviews?

Dr. Franko said asking for reviews is still not fully accepted. "There remains a spectrum of opinions and emotions regarding the appropriateness of 'soliciting' online reviews from patients," he said.

"I don't think this is a problem," said E. Scot Davis, a practice management consultant in Little Rock, Arkansas, and a board member of the Large Urology Group Practice Association. "Not enough people leave positive reviews, so it's a way of balancing out the impact of a few people who make negative reviews."

Some physicians may wonder whether it's ethical to limit requests for reviews to patients who had positive experiences. Some vendors first ask patients about their experiences and then invite only those with positive ones to post.

Dr. Kalidindi said Simple Interact asks patients about their experiences as a way to help practices improve their services. He said patients' experiences aren't normally used to cull out dissatisfied patients unless the customer asks for it.

Mr. Coppola at AMGA Consulting also opposes the practice. "It's misleading not to ask people who had a bad experience," he said. "Besides, if you only have glowing reviews, consumers would be suspicious." ■

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