Go to MDedge.com/CHESTPhysician for the latest pulmonary medicine news and updates.

NEWS
Letter to the Editor on recalled study // 7

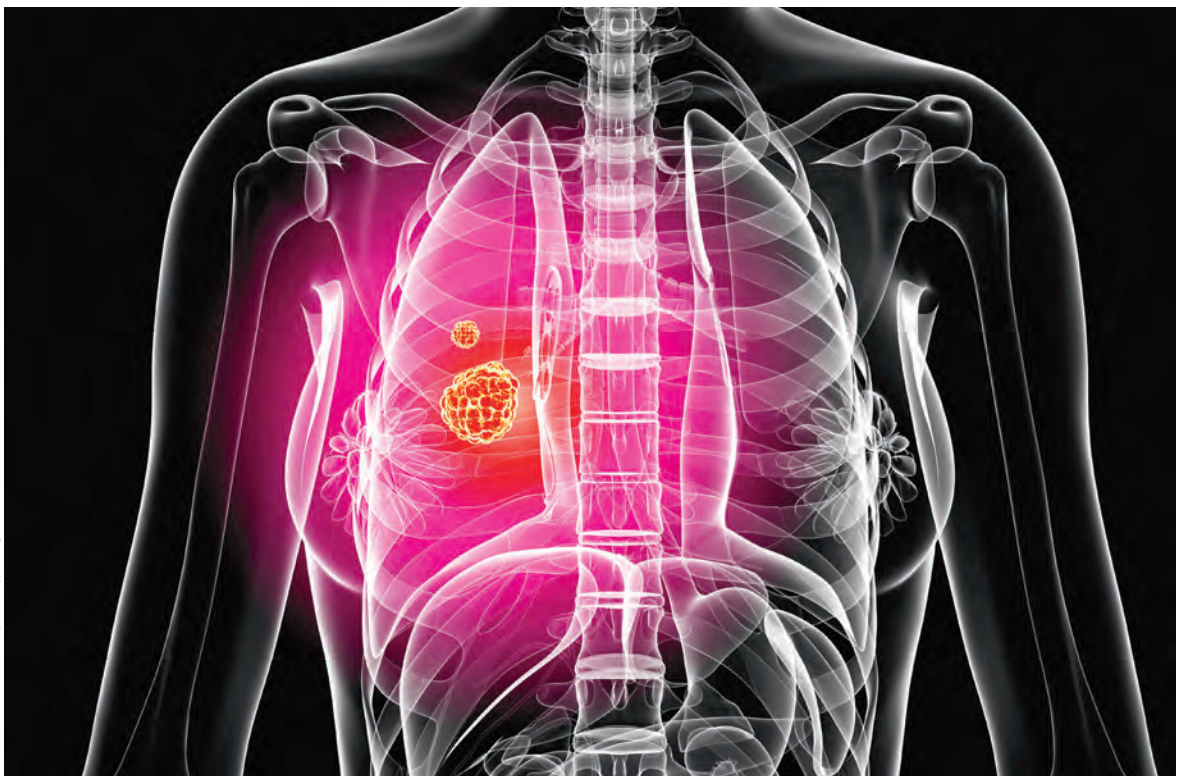
PULMONARY MEDICINE
Flu vaccination reminders not effective // 8

ASTHMA & COPD
Inhaler price caps could improve access // 10

VOL. 19 • NO. 5 • MAY 2024

CHEST Physician®

THE NEWSPAPER OF THE AMERICAN COLLEGE OF CHEST PHYSICIANS



Science Photo Library/Getty Images

Lung cancer vaccine gets injection of funding for research

BY HEIDI SPLETE

Development of a DNA-based lung cancer vaccine in the United Kingdom received funding for 2 years of laboratory research and initial manufacture of 3000 doses, according to a press release from the University of Oxford, England.

The LungVax vaccine is based on technology similar to that used in the creation of a viral-vector COVID-19 vaccine and will carry a DNA strand that trains the immune system to recognize the neoantigens that indicate abnormal lung cancer cells and then activate the immune system to kill these cells and stop the cancer, according to the statement.

Initially, scientists are working to develop a vaccine that triggers an immune response in the lab setting. If successful, the vaccine will move directly into a clinical trial. "If the subsequent early trial delivers promising results, the vaccine could then be scaled up to bigger trials for people at high risk of lung cancer," according to the release.

A team of scientists from the University of Oxford, the Francis Crick Institute, and University College London (UCL) will receive funding from the Cancer Research UK and the CRIS Cancer Foundation.

Help for high-risk patients

Tim Elliott, MD, professor of immuno-oncology

LUNG CANCER // *continued on page 6*

FDA OKs first-in-class agent for pulmonary arterial hypertension

BY MEGAN BROOKS

The US Food and Drug Administration (FDA) has approved sotatercept (Winrevair, Merck), for the treatment of adults with pulmonary arterial hypertension (PAH), World Health Organization (WHO) Group 1, to increase exercise capacity, improve WHO functional class, and reduce the risk for clinical worsening events. Sotatercept, which had breakthrough therapy designation, is a first-in-class activin signaling inhibitor that works by improving the balance between pro- and antiproliferative signaling to regulate the vascular cell proliferation that underlies PAH.

New standard-of-care potential

"Sotatercept added to background therapy has the potential to become a new standard-of-care option for patients with PAH," added coinvestigator Aaron B. Waxman, MD, PhD, executive director of the Center for Pulmonary Heart Diseases at Brigham and Women's Hospital, Boston.

The approval was based on results of the phase 3 STELLAR study, a global, double-blind,

PAH // *continued on page 7*

INSIDE HIGHLIGHT

NEWS FROM CHEST

Fellowship mentee focuses on pediatric-to-adult care transition

Page 19

CHEST Physician
17550 N Perimeter Drive,
Suite 110
Scottsdale, AZ 85255-7829

CHANGE SERVICE REQUESTED

PRSRT STD
U.S. POSTAGE
PAID
HARRISBURG PA
PERMIT 500

at the University of Oxford and lead researcher on the LungVax project, said in an interview that lung cancer is diagnosed in approximately 48,000 individuals in the United Kingdom each year, and the average 10-year survival is only 10%. Nearly three-quarters of the 35,000 annual deaths are preventable by quitting smoking, which remains the best risk reduction strategy to date, he said. However, "an intervention such as a vaccine, given when people are healthy and are more likely to have a strong immune system, could benefit 1.8 million patients worldwide," he said.

Preliminary trial plans

The initial trial of the vaccine is a collaboration between Oxford University, UCL, and the Francis Crick Institute, Dr. Elliott said. The trial is a culmination of research into the biology and genetics of lung cancer at UCL and vaccine design research at the University of Oxford.

"Longitudinal data regarding efficacy, side effects, and prevention will be vital prior to application in high-risk patients in clinical practice."

– Dr. Faiz

"We are at a very early stage of the program, which will develop over the next 6 years if all goes to plan," Dr. Elliott said. The vaccine is designed on the basis of shared lung cancer antigens and packaged into the ChAdOx delivery system that proved successful as the Oxford-AstraZeneca COVID-19 vaccine, he said.

"We intend to vaccinate individuals who have had curative surgery for their lung cancer after being diagnosed with a very early stage of the disease," Dr. Elliott said.

Challenges to vaccine development include knowing whether there is a clinical benefit, Dr. Elliott noted. "Our clinical trial is calculated to show up to 15% reduction in risk over 3-5 years, but only long-term follow-up will really tell us whether the immune responses we see to the vaccine within the first few weeks will have a long-term effect," he emphasized.

In clinical practice, "these people are cancer-free and healthy after surgery," Dr. Elliott said. However, "they are at a high risk of recurrence; 30%-70% of ex-patients will develop new cancer in their lifetime and in the majority of cases that will happen within 2 years after surgery," he said. "We think that vaccinating them against common lung cancer antigens could reduce this risk significantly and remove some of the uncertainty that they live with after their operation."

Vaccine has potential for immense impact

Lung cancer remains one of the most frequently diagnosed cancers. "In the past few decades, public health measures including tobacco cessation and lung cancer screening have contributed to the reduction of lung cancer incidence and improved survival in high-income countries, but lung cancer continues to be the leading cause of cancer-related deaths worldwide," Saadia A. Faiz, MD, a member of the *CHEST Physician* Editorial Board, said in an interview.

"Further, new cancer diagnoses continue to increase in low-income countries where there may not be widespread public health initiatives and/or access to health care. Thus, development of a vaccine to prevent lung cancer could be very impactful," she said.

Challenges to vaccine development include the heterogeneous nature of the disease, which may occur in both people who smoke and those who do not smoke, Dr. Faiz said. "Targeting the various molecular markers may be challenging," she said. However, building on the success of other vaccine initiatives, such as the human papillomavirus vaccine for cervical cancer, and COVID-19 vaccines with collaboration and clinical research will ideally overcome these challenges, she added.

"The potential implications for a lung cancer vaccine are immense," Dr. Faiz said.

A lung cancer vaccine could prevent a deadly disease, but continued efforts in risk factor reduction and lung cancer screening will also be important, she said.

"Depending on the results of this clinical research, longitudinal data regarding efficacy, side effects, and prevention will be vital prior to application in high-risk patients in clinical practice," she emphasized.

The development of the lung cancer vaccine is supported in part by Cancer Research UK and the CRIS Cancer Foundation. Dr. Elliott has received support from Cancer Research UK but had no financial conflicts to disclose. Dr. Faiz had no financial conflicts to disclose. ■

NEWS FROM CHEST // 16

SLEEP STRATEGIES // 16

***CHEST PHYSICIAN* IS ONLINE**

CHEST Physician *is available at chestphysician.org.*

Angel Coz, MD, FCCP, is Editor in Chief of *CHEST Physician*.

CHEST Physician®

THE NEWSPAPER OF THE AMERICAN COLLEGE OF CHEST PHYSICIANS

CHEST PHYSICIAN, the newspaper of the American College of Chest Physicians, provides cutting-edge reports from clinical meetings, FDA coverage, clinical trial results, expert commentary, and reporting on the business and politics of chest medicine. Each issue also provides material exclusive to CHEST members. Content for **CHEST PHYSICIAN** is provided by Frontline Medical Communications Inc. Content for News From Chest is provided by the American College of Chest Physicians.

POSTMASTER: Send change of address (with old mailing label) to CHEST PHYSICIAN, Subscription Services, 17550 N Perimeter Drive, Suite 110, Scottsdale, AZ 85255-7829.

RECIPIENT: To change your address, contact Subscription Services at 1-800-430-5450. For paid subscriptions, single issue purchases, and missing issue claims, call Customer Service at 1-833-836-2705 or e-mail custsvc.chph@fulcoinc.com

CHEST PHYSICIAN (ISSN 1558-6200) is published monthly for the American College of Chest Physicians by Frontline Medical Communications Inc., 283-299 Market Street (2 Gateway Building), 4th Floor, Newark, NJ 07102.

Subscription price is $251.00 per year. Phone 973-206-3434, fax 973-206-9378.

E-mail: chestphysiciannews@chestnet.org

FRONTLINE MEDICAL COMMUNICATIONS

FRONTLINE MEDICAL COMMUNICATIONS SOCIETY PARTNERS

EDITOR Katherine Pfaff, MA

CREATIVE DIRECTOR Louise A. Koenig

DIRECTOR, PRODUCTION/MANUFACTURING
Rebecca Slebodnik

DIRECTOR, BUSINESS DEVELOPMENT
John Molluso
201-232-5567
jmolluso@mdedge.com

FRONTLINE MEDICAL COMMUNICATIONS

Corporate

VP, SALES Mike Guire

VP, SALES LEAD Dino Marsella

VP PARTNERSHIPS Amy Nadel

DIRECTOR, CIRCULATION Jared Sonners

EXECUTIVE EDITOR Patrick Finnegan

LETTER TO THE EDITOR

A word of caution on e-cigarettes: Retracted paper

HAROLD J. FARBER, MD, MSPH, FCCP

Professor of Pediatrics, Pulmonary Division Baylor College of Medicine and Texas Children's Hospital

Editor's note: On March 29, 2024, the authors of the study, "Efficacy of Electronic Cigarettes vs Varenicline and Nicotine Chewing Gum as an Aid to Stop Smoking: A Randomized Clinical Trial," published in *JAMA Internal Medicine*, issued a formal retraction of their article. The *CHEST Physician*® Editorial Board apologizes for any confusion this may have caused.

An article in the April issue of the *CHEST Physician* publication headlined, "E-cigarettes beat nicotine gum for smoking cessation," was based on an article in *JAMA Internal Medicine* by Liu Z and colleagues, which was subsequently retracted by the author due to coding errors and discrepancies in calculations that cast doubt on the accuracy and reliability of the reported findings.

One should be cautious in evaluating claims of the benefits of electronic cigarettes (e-cigarettes). e-Cigarettes are a highly addictive and largely unregulated product. The fine print in previous clinical trials of e-cigarettes shows greater rates of stopping nicotine products — including e-cigarettes — in the groups assigned to recommendation for nicotine replacement therapy. e-Cigarettes have substantial acute and chronic harms.

Dr. Farber

Although much of the research to date is from animal models, there is a growing body of evidence in humans that validates the findings from the animal models. In laboratory animal models, e-cigarettes impair airway defenses, contribute to epithelial dysfunction, lead to apoptosis of airway cells, cause emphysematous changes, and lead to increased cancer rates.

Adverse effects on cardiovascular health have also been demonstrated. There is evidence of genotoxicity from e-cigarette exposure, with increased rates of DNA damage and decreased rates of DNA repair. Carcinogenic substances are present in e-cigarettes, and we may not see the carcinogenic effects in humans for several years or even decades. Commonly used flavoring chemicals have substantial pulmonary toxicity. There is evidence that the dual use of e-cigarettes and combustible tobacco can be more harmful than the use of combustible tobacco alone, as the person who smokes is now exposed to additional toxins unique to the e-cigarette.

e-Cigarettes can cause severe acute lung disease; 14% of the severe e-cigarette or vaping product use-associated lung injury (EVALI) cases reported use of *only* nicotine-containing e-cigarette products. There are reports of people who used e-cigarettes who required lung transplant due to complications of their e-cigarette use.

The tobacco industry has a long history of "harm reduction" products that were anything but — from filter cigarettes (the "advanced" Kent Micronite filter contained asbestos) to the so-called low tar and nicotine cigarettes (which were no less harmful). There is a long history of physicians endorsing these products as "must be better." The growing evidence that e-cigarettes carry distinct health risks of their own should prompt us to consider a broader picture beyond just comparing them with traditional cigarettes to assess their impact on health.

Physicians treating tobacco dependence should recommend US Food and Drug Administration-approved medications for pharmacotherapy. These have a robust evidence base documenting that they help people who smoke to break free of nicotine addiction. The goal of tobacco dependence treatment should be stopping ALL harmful tobacco/nicotine products — including e-cigarettes — not simply changing from one harmful product to another. ■

All references available online at chestphysician.org.

PAH // *continued from page 1*

placebo-controlled, multicenter, parallel-group clinical trial in which 323 patients with PAH (WHO Group 1, functional class [FC] II or III) were randomly assigned 1:1 to add sotatercept or placebo to stable background therapy.

Improvement in outcome measures

The results showed sotatercept, administered subcutaneously every 3 weeks for 24 weeks, improved average 6-minute walk distance from baseline by a significant and clinically meaningful 40.8 meters compared with placebo, the trial's primary efficacy endpoint ($P < .001$). Sotatercept also led to significant improvement in multiple secondary outcome measures, including:

- Reduction in the risk for death from any cause or PAH clinical worsening events by 84% vs background therapy alone (number of events: 9 vs 42; hazard ratio, 0.16; $P < .001$)
- Improvement in FC from baseline at 24 weeks in 29% of patients compared with 14% of patients treated with placebo ($P < .001$)
- Improvement in pulmonary vascular resistance (PVR), with an average 235 dyn/sec/cm^5 reduction in PVR from baseline ($P < .001$)
- Improvement from baseline in N-terminal pro–B-type natriuretic peptide (NT-proBNP) levels. The median treatment difference in NT-proBNP between sotatercept and placebo was -442 pg/mL ($P < .001$)

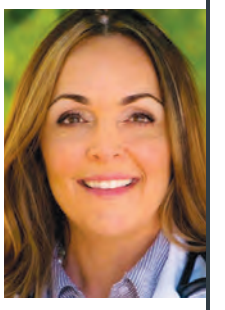
The results were reported last year at the joint scientific sessions of the American College of Cardiology and the World Heart Federation, with simultaneous publication in *The New England Journal of Medicine*.

Sotatercept injection may be administered by patients or caregivers with guidance, training, and follow-up from a health care provider. The recommended starting dose is 0.3 mg/kg. The recommended target dose is 0.7 mg/kg every 3 weeks.

Sotatercept may increase hemoglobin, may lead to erythrocytosis, and may decrease platelet count and lead to severe thrombocytopenia. Treatment should not be initiated if platelet count is < 50,000/mm^3. Hemoglobin and platelets should be monitored before each dose of sotatercept for the first five doses, or longer if values are unstable, and periodically thereafter to determine if dose adjustments are required.

Full prescribing information is available online (www.merck.com/product/usa/pi_circulars/w/winrevair/winrevair_pi.pdf). Merck estimates sotatercept will be available for dispensing by select specialty pharmacies in the US by the end of April 2024. ■

Corinne Young, MSN, FNP-C, FCCP, comments: The recent FDA approval of sotatercept for the treatment of Group 1 PAH marks a significant milestone in the management of this challenging condition by opening doors to a new class of therapy. The efficacy data from the phase 3 STELLAR study provides compelling insights into sotatercept's therapeutic potential. Improvements in exercise capacity, WHO functional class, and reductions in clinical worsening events offer hope for patients seeking effective interventions. These outcomes not only signify tangible benefits for patients but also hold implications for disease management strategies and treatment algorithms. The patient-administered nature of sotatercept injections introduces an intriguing dimension to PAH management. While it may enhance convenience and patient autonomy, it also raises questions about adherence, training, and follow-up under health care provider guidance. Furthermore, potential barriers to access, affordability, and insurance coverage warrant consideration to ensure equitable access to this novel therapy. Comprehensive discussions involving health care providers, patients, and insurance plans are imperative to navigate the complexities surrounding sotatercept's integration into clinical practice effectively.



Ms. Young is a member of the CHEST Physician *Editorial Board.*

Lung cancer screening unveils hidden health risks

BY M. ALEXANDER OTTO

Screening for lung cancer may be able to detect other health issues as well, according to a new study.

The reason is because the low-dose computed tomography (CT) scans used for screening cover the lower neck down to the upper abdomen, revealing far more anatomy than simply the lungs.

In fact, lung cancer screening can provide information on three of the top 10 causes of death worldwide: ischemic heart disease, chronic obstructive pulmonary disease (COPD), and, of course, lung cancer.

With lung cancer screening, "we are basically targeting many birds with one low-dose stone," explained Jelena Spasic, MD, PhD, at the European Lung Cancer Congress (ELCC) 2024.

Dr. Spasic, a medical oncologist at the Institute for Oncology and Radiology of Serbia in Belgrade, was the discussant on a study that gave an indication on just how useful screening can be for other diseases.

Prospective study on screening utility

The study, dubbed 4-IN-THE-LUNG-RUN trial (4ITLR), is an ongoing prospective trial in six European countries that is using lung cancer screening scans to also look for coronary artery calcifications, a marker of atherosclerosis.

Usually, coronary calcifications are considered incidental findings on lung cancer screenings and reported to subjects' physicians for heart disease risk assessment.

The difference in 4ITLR is that investigators are actively looking for the lesions and quantifying the extent of calcifications.

It's made possible by the artificial intelligence-based software being used to read the scans. In addition to generating reports on lung nodules, it also automatically calculates an Agatston score, a quantification of the degree of coronary artery calcification for each subject.

Low-dose CT scans used for screening cover the lower neck down to the upper abdomen... Lung cancer screening can provide information on three of the top 10 causes of death worldwide: ischemic heart disease, COPD, and, of course, lung cancer.

At the meeting, which was organized by the European Society for Clinical Oncology, 4ITLR investigator Daiwei Han, MD, PhD, a research associate at the Institute for Diagnostic Accuracy in Groningen, the Netherlands, reported outcomes in the first 2487 of the 24,000 planned subjects.

Participants included people who smoke currently or in the past

To be eligible for screening, participants had to be 60-79 years old and either people who currently smoke, people who smoked but had quit within 10 years, or people with a 35 or more pack-year history. The median age in the study was 68.1 years.

Overall, 53% of subjects had Agatston scores of 100 or more, indicating the need for treatment to prevent active coronary artery disease, Dr. Han said. Fifteen percent were at high risk for heart disease with scores of 400-999, indicating extensive coronary artery calcification, and 16.2% were at very high risk, with scores of 1000 or higher. The information is being shared with participants' physicians.

The risk of heart disease was far higher in men, who made up 56% of the study population. While women had a median Agatston score of 61, the median score for men was 211.1.

The findings illustrate the potential of dedicated cardiovascular screening within lung cancer screening programs, Dr. Han said, noting that 4ITLR will also incorporate COPD risk assessment.

The study also shows the increased impact lung cancer screening programs could have if greater use were made of the CT images to look for other diseases, Dr. Spasic said.

4ITLR is funded by the European Union's Horizon 2020 Program. Dr. Spasic and Dr. Han didn't have any relevant disclosures. ■

Digital nudges found to be duds in flu vaccine trial

BY JAKE REMALY

Despite common use by public health authorities, health systems, and commercial pharmacies, a study involving more than 260,000 patients found that digital reminders were not particularly effective in persuading patients. According to the research, neither text messages nor reminders received in patient portals significantly increased rates of influenza vaccination.

Patient portal reminders

The study was conducted from September 2022 to April 2023 in the University of California, Los Angeles (UCLA) health system, involving 262,085 patients.

Patients were randomly assigned to one of three groups: a control group who received usual care, a group who received reminders through the patient portal, and a group who received reminders via text message.

The primary outcome was the influenza vaccination rate by April 30, 2023, including vaccinations from pharmacies and other sources.

Prompts were unsuccessful

Neither digital intervention significantly improved influenza vaccination rates, according to results. Vaccination rates remained around 47% for all the groups.

Pre-appointment text reminders appeared to have a slight effect on unvaccinated patients who had scheduled appointments, suggesting potential for targeted use in this population, according to the researchers.

Targeted messaging for impact

"Health systems should consider the potential opportunity costs of sending reminders for influenza vaccination and may decide on other, more intensive interventions, such as improving access to vaccinations (eg, Saturday or after-hour clinics) or communication training for clinicians to address vaccine hesitancy," the authors of the study wrote.

The study was led by Peter G. Szilagyi, MD, MPH, with the Department of Pediatrics at UCLA Mattel Children's Hospital, University of California, Los Angeles. It was published online in *JAMA Internal Medicine* (doi: 10.1001/jamainternmed.2024.0001).

DIGITAL VISION/GETTY IMAGES

Motivations not evaluated

It is important to note limitations, including that the study was confined to a single health system. The study also did not assess patients' reasons for not getting vaccinated.

The study was supported by grants from the National Institutes of Health. Coauthors disclosed financial ties to pharmacy and pharmaceutical companies and the Pediatric Infectious Disease Society. ■

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

Inhaler price caps set to take effect in summer

BY WALTER ALEXANDER

In addition to warmer weather, June will usher in changes in asthma and COPD inhaler costs for many patients, potentially reducing barriers to those seeing high prescription prices. Price ceilings have been set by some companies, likely following action earlier this year by a Senate Committee which pointed to higher costs of US inhalers compared with other countries.

Senator Bernie Sanders stated: "In my view, Americans who have asthma and COPD should not be forced to pay, in many cases, 10-70 times more for the same exact inhalers as patients in Europe and other parts of the world."

Starting June 1, Boehringer Ingelheim will cap out-of-pocket costs for the company's inhaler products for chronic lung disease and asthma at $35 per month, according to a March 7, 2024, press release from the German drugmaker's US headquarters in Ridgefield, Connecticut. The reductions cover the full range of the company's inhaler products for asthma and chronic obstructive pulmonary disease (COPD) including Atrovent, Combivent Respimat, Spiriva HandiHaler and Respimat, Stiolto Respimat, and Striverdi Respimat. In the release, Boehringer Ingelheim USA Corporation's President and CEO Jean-Michel Boers stated, "The US health care system is complex and often doesn't work for patients, especially the most vulnerable. While we can't fix the entire system alone, we are bringing forward a solution to make it fairer. We want to do our part to help patients living with COPD or asthma who struggle to pay for their medications."

Similar announcements were made by AstraZeneca and GSK. GSK's cap will go into effect on January 1, 2025, and includes Advair Diskus, Advair HFA, Anoro Ellipta, Arnuity Ellipta, Breo Ellipta, Incruse Ellipta, Serevent Diskus, Trelegy Ellipta, and Ventolin HFA. The AstraZeneca cap, which covers Airsupra, Bevespi Aerosphere, Breztri Aeroshpere, and Symbicort, goes into effect on June 1, 2024.

Senate statement on pricing

These companies plus Teva had received letters sent on January 8, 2024, by the members of the Senate Committee on Health, Education, Labor, and Pensions: Senator Sanders and colleagues. The letters cited enormous inhaler price discrepancies, for example $489 for Combivent Respimat in the United States but just $7 in France, and announced the conduct of an investigation into

"The announced price cap from Boehringer Ingelheim is a step toward improving access to essential asthma medicine and demonstrates that the voice of the asthma patient community is being heard."
– Mr. Mendez

efforts by these companies to artificially inflate and manipulate prices of asthma inhalers that have been on the market for decades. A statement from Sen. Sanders' office noted that AstraZeneca, GSK, and Teva made more than $25 billion in revenue from inhalers alone in the past 5 years (Boehringer Ingelheim does not provide public US inhaler revenue information).

Suit claims generic delay

A federal lawsuit filed in Boston on March 6, according to a Reuters brief from March 7, cited Boehringer for improperly submitting patents to the US Food and Drug Administration (FDA). The purpose of those patents, the suit charges, was to delay generic competition and inflate Combivent Respimat and Spiriva Respimat inhaler prices.

Inhaler prices soared in the United States, according to a March 10 *U.S. News & World Report* commentary by The Conversation, a nonprofit news organization, after the 2008 FDA ban on chlorofluorocarbon (CFC)-propellants led to the phase-out of CFC-containing inhalers and their replacement with hydrofluoroalkane-propellant inhalers. For the insured that meant an average out-of-pocket inhaler cost increase from $13.60 per prescription in 2004 to $25 in 2015. The current rate for the now nongeneric HFA-propelled but otherwise identical albuterol inhaler is $98. Competition from a more recently FDA-approved (2020) generic version has not been robust enough to effect meaningful price reductions, the report stated. While good insurance generally covers most of inhaler costs, the more than 25 million uninsured in 2023 faced steep market prices that put strain even on some insured, the CDC found, driving many in the United States to purchase from Mexican, Canadian, or other foreign pharmacies. The Teva QVAR REdiHaler corticosteroid inhaler, costing $9 in Germany, costs $286 in the US. Dosages, however, may not be identical. A first FDA authorization of drug importing this past January applied only to agents for a limited number of disease states and pertained only to Florida, but may serve as a model for other states, according to the commentary.

"The announced price cap from Boehringer Ingelheim," stated Kenneth Mendez, president and CEO of the Asthma and Allergy Foundation of America (AAFA) in a press release, "is a step toward improving access to essential asthma medicine and demonstrates that the voice of the asthma patient community is being heard." The AAFA release noted further that asthma death rates, while declining overall, are triple in Blacks compared with Whites. Death rates, asthma rates, and rates of being uninsured or underinsured are much higher in Black and Puerto Rican populations than in Whites. The complex layers of the current US system, composed of pharmaceutical manufacturers, pharmacy benefit managers, insurance companies, employers, and federal policies often conspire against those people who need asthma drugs the most. AAFA research has shown that when drug prices become a barrier to

INHALER *continued on following page*

Biomarkers predict adverse events in COPD exacerbations

BY HEIDI SPLETE

Two biomarkers may be clinically useful in determining which patients with COPD are at increased risk for ill effects, study finds. C-reactive protein (CRP) levels and eosinophil-to-platelet ratio (EPR) are significant independent predictors of adverse events in patients with COPD hospitalized with acute exacerbations, according to the study findings.

Better exacerbation prediction needed

Known risk factors for COPD exacerbations do not fully explain the variation in susceptibility among patients. At the same time, data on potential biomarkers to predict COPD exacerbations are limited. In a prospective, observational, single-center study, researchers examined clinical and lab data, including serum CRP levels, EPR, sarcopenia, lung function, nutrition, and frailty. The study population included 200 adults older than 40 years with COPD who were hospitalized for acute exacerbations. Fifty study participants experienced adverse events.

Linked to adverse events

Researchers found that both elevated CRP and low EPR were significant predictors of adverse events in an adjusted analysis in patients with COPD exacerbations (area under the curve, 0.71 and 0.76, respectively). In a multivariate analysis, EPR and CRP, as well as sarcopenia, were significantly associated with adverse events (adjusted odds ratios, 2.33, 2.09, and 1.97, respectively). The adverse events are mortality, rehospitalization, prolonged stay, hypoxemia, or hypercapnia. Additionally, COPD symptom scores, frailty, and malnutrition showed predictive value in bivariate but not multivariate analysis.

Biomarkers for screening?

Study authors suggested their findings pointed to possible utility in identifying patients: "Screening for these biomarkers [EPR and CRP] on admission could help identify high-risk patients who need more aggressive monitoring and treatment." The lead author on the study was Rohankumar Gandhi, MD, of Guru Gobind Singh Government Hospital, Jamnagar, India. The study was published online in *Cureus* (doi: 10.7759/cureus.56651). Study limitations included the use of data from a single center, lack of information on nutritional interventions and counseling, and lack of data on outpatient outcomes. The study received no outside funding. The researchers had no financial conflicts to disclose. ■

Consistent exercise linked to better sleep

BY BATYA SWIFT YASGUR

Over time, exercising at least twice a week is associated with significantly fewer insomnia symptoms and better sleep duration, new research shows.

Survey-based study

Participants responded to questions about physical activity, insomnia symptoms, sleep duration, and daytime sleepiness at 10-year follow-up.

Being "physically active" was defined as exercising at least twice a week for ≥ 1 hour per week. The main outcome measures were insomnia, sleep time, and daytime sleepiness in relation to physical activity. The study included 4339 adults aged 39-67 years (48% men) from 21 centers in nine countries participating in the third follow-up to the European Community Respiratory Health Survey (ECRHS III).

Fewer sleep symptoms with exercise

From baseline to follow-up, 37% of participants were persistently inactive, 25% were persistently active, 20% became inactive, and 18% became active.

After adjustment for age, sex, body mass index, smoking history, and study center, persistently active participants were less likely to report difficulties with sleep initiation (adjusted odds ratio [aOR], 0.60; 95% CI, 0.45-0.78), with short sleep duration of ≤ 6 hours/night (aOR, 0.71; 95% CI, 0.59-0.85) and long sleep of ≥ 9 hours/night (aOR, 0.53; 95% CI, 0.33-0.84), compared with persistently nonactive subjects.

Those who were persistently active were 22% less likely to report any symptoms of insomnia, 40% less likely to report two symptoms, and 37% less likely to report three symptoms. "This study has a long follow-up period (10 years) and indicates strongly that consistency in physical activity might be an important factor in optimizing sleep duration and reducing the symptoms of insomnia," the authors wrote. Daytime sleepiness and difficulties maintaining sleep were found to be unrelated to physical activity status.

Residual confounders not evaluated

It's unclear whether individuals who were active at both timepoints had been continuously physically active throughout the study period or only at those two timepoints. Sleep variables were available only at follow-up and were all subjectively reported, meaning the associations between physical activity and sleep may not be longitudinal. Residual confounders (eg, mental health and musculoskeletal disorders or chronic pain) that can influence both sleep and exercise were not explored.

International agencies funded

Erla Björnsdóttir, of the Department of Psychology, Reykjavik University, Reykjavik, Iceland, was the co-senior author and corresponding author of the study. The study was published online in *BMJ Open*. Financial support for ECRHS III was provided by the National Health and Medical Research Council (Australia); Antwerp South, Antwerp City: Research Foundation Flanders (Belgium); Estonian Ministry of Education (Estonia); and other international agencies. Additional sources of funding were listed on the original paper. The authors reported no relevant financial relationships. ■

Could regular daytime naps increase glucose levels?

BY MANASI TALWADEKAR

New research suggests not all naps are equal, with time of day and length factoring into impact. Long naps of an hour or more, naps in the morning, or regular siestas may increase blood glucose levels in older people with type 2 diabetes (T2D).

Napping is common in some cultures and may play a role in cardiometabolic health, but previous studies on the relationship between napping and glycemic control in T2D have reported conflicting results.

In a cross-sectional study, the researchers assessed 226 individuals with T2D (median age, 67 years; about half women; mostly retired) from two community health care centers in China between May 2023 and July 2023.

Using questionnaires, the participants were evaluated for A1c levels, as well as frequency, duration (shorter or longer than 1 hour), timing, and type of napping behavior (restorative for lack of sleep vs appetitive by habit or for enjoyment).

Multivariate analysis controlled for age, sex, body mass index, T2D treatment regimen, diabetes duration, cognitive impairment, depression, night sleep duration, and insomnia symptoms.

Among 180 participants who reported napping, 61 (33.9%) took long naps of 60 minutes and more, 162 (90%) reported afternoon napping, and 131 (72.8%) displayed appetitive napping.

Long vs short napping duration (standardized coefficient [β], 0.179; $P = 0.014$) and morning vs afternoon/evening napping (β, 0.163; $P = 0.027$) were associated with increased A1c levels.

Restorative napping was linked to lower A1c levels than appetitive napping (β, −0.176; $P = 0.028$).

Napping frequency was not associated with A1c levels.

"In clinical practice, health care professionals may offer tips about napping, eg, taking a nap less than an hour, taking a nap in the afternoon instead of in the morning, avoiding appetitive napping," the authors concluded.

MARKETING/SHUTTERSTOCK

Authors noted that limitations included that the participants were older individuals, mostly retired, who may have had less need for restorative napping and more time for appetitive napping, limiting generalizability. The sample size may have been too small to find a link to napping frequency. Self-reported data could introduce recall bias. Only A1c levels were used as a measure of glycemic control.

The study, from corresponding author Bingqian Zhu, PhD, of the Shanghai Jiao Tong University School of Nursing, Shanghai, was published in *Frontiers in Endocrinology*. The study was supported by the National Natural Science Foundation of China and other sources. The authors declared no potential conflict of interest. ■

INHALER *continued from previous page*

treatment, people with asthma ration or simply discontinue their essential asthma medications. Beyond saved lives, access to asthma medications can reduce hospitalizations and lower the more than $82 billion in annual asthma costs to the US economy.

Sen. Sanders, on March 20, applauded the GSK announcement: "As Chairman of the Senate Health, Education, Labor, and Pensions Committee, I very much appreciate GlaxoSmithKline's announcement today that Americans throughout the country with asthma and COPD will pay no more than $35 for the brand name inhalers they manufacture. I look forward to working with GSK to make sure that this decision reaches as many patients as possible."

"Inhaled medications continue to be an essential part of the therapy for patients with asthma, COPD, and other respiratory conditions," said Diego J. Maselli, MD, FCCP, chief of the Division of Pulmonary Diseases & Critical Care at UT Health at San Antonio and a member of the *CHEST Physician* Editorial Board. He added, "Unfortunately, with increasing cost of these and other treatments, access has been challenging for many patients. Patients, families, and providers constantly experience frustration with the difficulties of obtaining these lifesaving medications, and cost is the main barrier. Even those with ample insurance coverage face difficult challenges, as the high prices of these medications motivate insurance carriers to constantly adjust what is the 'preferred' option among inhalers. Regrettably, noncompliance and nonadherence to inhaled therapies has been linked to poor patient outcomes and increased health care utilization in both asthma and COPD. Because of the high prevalence of these diseases in the US and worldwide, efforts to increase the access of these vital medications has been a priority. With the leveling of the prices of these medications across the world, we hope that there will be both improved access and, as a consequence, better patient outcomes." ■

SLEEP STRATEGIES

Home ventilation consult

Specialist input on a sudden shift in device availability



***John M. Coleman III, MD, FCCP**, is Associate Professor, Division of Pulmonary & Critical Care Medicine, Department of Neurology, Northwestern University Feinberg School of Medicine.*
***Bethany L. Lussier, MD, FCCP**, is in the Department of Internal Medicine, Division of Pulmonary & Critical Care Medicine, Department of Neurology, Division of Neurocritical Care, UT Southwestern Medical Center.*
***Jason Ackrivo, MD**, is Assistant Professor of Medicine and Neurology, and Associate Director, Jay and Randy Fishman Program for Home Assisted Ventilation, Pulmonary, Allergy, and Critical Care Division, Perelman School of Medicine, University of Pennsylvania.*

Philips Respironics released a public statement on January 25, 2024, that would dramatically change the landscape of home mechanical ventilation and sleep-disordered breathing management in the United States. The company announced that, effective immediately in the US and US territories, Philips Respironics would stop production and sale of all hospital and home mechanical ventilation products, home and hospital ventilation devices, and oxygen concentrators.

For years, Respironics devices have been broadly used in the world of sleep medicine and chronic respiratory failure; thus, this announcement has significantly impacted clinical management options for clinicians engaged in the care of individuals on home ventilation. There are many unknowns and uncertainties about how to proceed with care for patients requiring these devices. So CHEST gathered an expert panel of clinicians from the Home-Based Mechanical Ventilation and Neuromuscular Section within the Sleep Medicine Network to explain the current situation and offer suggestions on moving forward in caring for these patients.

Why is this happening?

John M. Coleman III, MD, FCCP: To understand the current Philips Respironics announcement, we must go back to June 2021. At that time, Philips recalled certain home mechanical ventilators, CPAP machines, and BiPAP machines due to potential health risks related to breakdown of the polyester-based polyurethane (PE-PUR) foam placed in these devices for noise reduction. Small and microscopic particles of this foam were at risk for being inhaled or ingested by patients using these devices. It was suspected that inhalation of these particles could potentially result in temporary or permanent injury. Machines in hot temperatures or using ozone cleaning were at increased risk. The US Food and Drug Administration (FDA) issued a class 1 recall, defined as "a situation in which there is reasonable probability that the use of or exposure to a violative product will cause serious adverse health consequences or death."

In the months following the initial recall, there were additional recalls of both in-hospital and home ventilators related to the potential of these foam particles to move and block the air path, reducing airflow and causing the device to alarm.

Over the next few years, tens of thousands of medical device reports were filed about PE-PUR foam-related injuries, with some cases resulting in death. At this time, the Department of Justice began collaborating with the FDA on a consent decree. There were ongoing recalls of the CoughAssist T70 device, as well as the newest generation of Philips Respironics home ventilators, the Trilogy EVO.

Ultimately, after years of ongoing recalls and reports of numerous deaths and injuries, with multiple class action lawsuits, the consent decree was finalized. Philips Respironics agreed to stop production of all respiratory-related products in the US and US territories.

What devices does this apply to?

Jason Ackrivo, MD: This notice affects the devices shown in **Table 1**. All sales and device shipments have been discontinued as of January 25, 2024. Philips Respironics will continue to service the devices, subject to part availability, up to 5 years after sales discontinuation. However, Philips Respironics will continue to sell consumables and accessories, including masks.

What are my options for home mechanical ventilators?

Bethany L. Lussier, MD, FCCP: In the US, alternative approved home mechanical ventilator (HMV) devices include Astral by ResMed, Vivo 45 and Vivo 65 by Breas, and VOCSN by Ventec. Additional options made available through emergency use authorization by the FDA between 2020 and 2022 included Luisa by Löwenstein Medical, the V+ by Ventec, and Life2000 by Baxter. Many of us expedite disposition from the hospital by prescribing HMVs rather than respiratory assist devices (RADs) because it is easier to meet qualifying criteria for insurance. In efforts to promote just allocation of resources, now might be the ideal time to reconsider higher utilization of RADs over HMVs. Reasonable RAD candidates are those who do not need autotitration of EPAP, dual mode therapy, or invasive ventilation. In these cases, the qualifying criteria and patient needs may be met with a RAD capable of VAPS or BPAP-ST mode.

How are these alternative devices similar to and different from the Trilogy EVO?

Dr. Ackrivo: All these devices are portable ventilators that can deliver noninvasive or invasive ventilation. They have internal batteries for enabling portability. They offer multiple programmable presets and mouthpiece ventilation, and some offer both oxygenation and CO_2 monitoring (both $TcCO_2$ and $EtCO_2$).

All alternative portable ventilators include a proprietary ventilation mode analogous to the Trilogy AVAPS algorithm (**Table 2**). The ResMed Astral has a safety tidal volume feature that targets a minimum tidal volume in PS, S/T, or P(A)C modes. The ResMed iVAPS algorithm adjusts inspiratory pressure and respiratory rate to target an alveolar ventilation based on patient-entered height. The Breas Vivo can target a tidal volume (TgV) in either PSV or PCV mode.

Unique ventilator characteristics are shown in **Table 2**. ResMed Astral mode options will differ between leak (passive) or valve (active) circuits. Both the Breas Vivo and Löwenstein Luisa enable high-flow oxygen delivery. Only the Breas Vivo enables connecting to a transcutaneous carbon dioxide monitor. The VOCSN name is an acronym for its multifunctional capabilities: ventilation, oxygenation, cough assist, suction,

SLEEP *continued on following page*

Table 1. Discontinued Philips Respironics products, organized by product type[a]

Mechanical ventilators	Portable oxygen concentrators/home oxygen systems	Sleep diagnostic equipment	Other
• Trilogy 100/200/202[#] • Trilogy EVO and EV300[†] • V30[*] • V60/V60 Plus[§] • DreamStation Go[†] • E30[&] • OmniLab Advanced +[†]	• EverFlo[†] • Millennium M10[†] • SimplyGo[†] • SimplyGo Mini[†]	• Alice 6[†] • Alice NightOne[†] • Alice PDx[*]	• T70 CoughAssist Device[*] • I-neb AAD nebulizer and other nebulizers[*] • NightBalance[†]

End of service dates: [#]December 1, 2025; [†]October 1, 2026; [&]November 1, 2026; [*]October 1, 2028; [†]January 25, 2029; [§]December 1, 2029

[a]Adopted from: https://www.usa.philips.com/healthcare/e/sleep-and-respiratory-care/src-portfolio-update (accessed March 1, 2024)

MDEDGE NEWS

Making invisible problems visible

How Erika Mosesón, MD, educates on the effects of air pollution and encourages community-level advocacy

BY MADELEINE BURRY

For Erika Mosesón, MD, a pulmonologist and ICU doctor, advocacy for clean air and climate action started small: signing petitions and writing letters.

Even as she attended conferences and learned about the health impacts of air pollution, her impression was that experts were handling it. "I didn't really think my voice was worth highlighting," Dr. Mosesón said.

Dr. Mosesón

But her concerns grew with the repeal of the Clean Power Plan in 2019 and rolled-back federal protections around particulate matter and other environmental guidelines.

In response, Dr. Mosesón moved from writing letters to educating people in her home state of Oregon on the lung-related effects of pollution. She spoke at organization meetings and town halls and met with legislators. One way or another, she knew she needed to get the word out.

After all, problem-causing particulates are teeny-tiny; too small to be seen. "It's literally invisible," Dr. Mosesón said. But the impact on patients is not.

That's how the *Air Health Our Health* podcast was born. The podcast has a straightforward tagline — "Clean air saves lives" — and a blunt recommendation: "If you do nothing else, don't light things on fire and breathe them into your lungs."

Giving a voice to the voiceless

In early 2017, the Oregon legislature was considering bills aimed at transitioning from diesel-fueled engines to cleaner alternatives. At the time, Dr. Mosesón was on the executive committee for the Oregon Thoracic Society, and, in partnership with the American Lung Association, she was tapped to speak to legislators about clean air and the health impacts of air pollution.

This role made it clear to her that lawmakers don't hear diverse perspectives. A trucking company may budget for full-time lobbyists, whereas parents of kids with asthma aren't in the room.

So there's an asymmetry to who is and is not heard from, Dr. Mosesón said. That's why in her conversations and presentations, she advocates for those who might not otherwise be represented in the rooms where big decisions are made.

Automating advocacy

Over time, Dr. Mosesón found her schedule was filling up with meetings and presentations.

"I'm a full-time clinician," Dr. Mosesón noted. She's also a parent to three kids. When she was asked to attend a hearing, sometimes her schedule required her to decline. And so, early in the pandemic, the *Air Health Our Health* podcast and the accompanying website were born.

"The podcast and website were honestly a way to automate advocacy," Dr. Mosesón said.

In many ways, the pandemic was an ideal time to launch the podcast. For one thing, the idea of podcasting from your closet or living room (as opposed to a professional audio studio) became commonplace. Plus, for a pulmonologist, these years were full of relevant topics like how climate change and particulate matter interacted with COVID-19 , Dr. Mosesón noted.

Then, in 2020, the Labor Day fires led to Oregon's having the worst air quality in the world. That same year, there were George Floyd protests around the country, including in Portland, which led to rampant

POLLUTION *continued on following page*

SLEEP *continued from previous page*

and nebulizer treatments. Lastly, the VOCSN can disable leak compensation, which may be advantageous for enabling leak speech with a tracheostomy.

I just provided my patient with a Trilogy EVO. Do I need to change this immediately?

Dr. Coleman: No, but you should start conversations with your patient/caregiving support and with your durable medical equipment (DME) provider about alternative options. The ripple effects of the Philips Respironics recall will be ongoing for years. The silver lining of this situation is that there are numerous HMV options on the market currently. It is important to review the differences between these new devices and consider what will work best for your patient and your practice. In addition, it is critical that your DME provider is familiar with these new devices, both for support and education, and is taking steps to make alternate devices available. We anticipate a push in coming months to switch patients off Trilogy EVO, so it important to get this process started.

For patients not interested in switching just yet, Philips Respironics will continue to service and offer supplies for these devices for up to 5 years, depending on part availability (**Table 1**). Refer to the Philips Respironics Sleep & Respiratory Product Portfolio Changes website for the most up-to-date information: www.usa.philips.com/healthcare/e/sleep-and-respiratory-care/src-portfolio-update.

Table 2. VAPS modes and key unique characteristics by ventilator

Device	VAPS mode	Unique ventilator characteristics
ResMed Astral	Safety tidal volume feature in PS, S/T, or P(A)C iVAPS (±AE)	• Ventilation modes differ across leak versus valve circuits
Breas Vivo	PSV (TgV) PCV (TgV)	• High flow oxygen • Transcutaneous carbon dioxide
Löwenstein Luisa	TTV-VAPS-AE	• High flow oxygen
VOCSN	Volume target PS	• Multifunctional: ventilation, oxygenation, suctioning, cough assist, nebulizer • Proprietary circuit permits switching between functions • Can disable leak compensation to permit leak speech with tracheostomy

MDEDGE NEWS

I have a patient on AVAPS, and I must change to iVAPS. What now?

Dr. Lussier: As mentioned previously by Dr. Ackrivo, the ResMed iVAPS algorithm adjusts inspiratory pressure and respiratory rate to target an alveolar ventilation based on patient-entered height. A download from a current VAPS setting can be helpful in defining target ventilation and pressure ranges for a tailored prescription. ResMed has an online iVAPS calculator (resmed.com) to assist in making this switch. Close clinical monitoring with data downloads is recommended to assure desired targets are still achieved.

What will happen to Philips Respironics' cloud patient data?

Dr. Lussier: Representatives have reported that both providers and DME companies will have continued access to Care Orchestrator going forward. Currently, the logistics of data maintenance and ownership remain unclear, which poses additional questions about global access to patients' data downloads.

The recent discontinuation of Philips Respironics ventilation devices will induce a dramatic shift in home ventilation options in the US. Clinicians and DME companies should begin familiarizing themselves with alternative ventilators and their unique features. While significant uncertainty exists, we encourage a proactive approach to education and communication to ensure a smooth transition for patients on home ventilation. ■

POLLUTION *continued from previous page*

use of tear gas and prompted Dr. Mosesón to dig into studies about these chemicals.

Given just how much air pollution affects health — and the continued extreme weather events (such as Oregon's heat dome in summer 2021) — there was no shortage of topics for the podcast.

Next steps to empower physicians

Confronting climate change is daunting, and it is made more challenging by a partisan environment, distrust of experts, and disinformation. On her podcast, Dr. Mosesón aims to make it easier.

In each episode, she shares information and interviews experts. She shares how a patient might be affected by particular issues — radon, wildfires, and so on. The goal is to provide clinicians with a foundation on everyday issues.

"Every single doctor feels like they can talk to a patient about smoking, even if they don't know all the deep nitty-gritty studies about it," Dr. Mosesón said. The exact effects of smoking — cancer, heart disease, and lung disease — occur due to air pollution. "When I give talks, I tell people, if you can talk about smoking, you can talk about air pollution."

Each podcast also features an array of action items. Some steps are practical, such as creating a plan for heat events or encouraging radon testing. The solution could also be as simple as asking the right questions.

For example, at a doctor's visit for asthma, common recommendations are to use a HEPA filter or place a sheet protector on the bed, Dr. Mosesón said. It won't typically come up that a patient's asthma may be caused or exacerbated by living beside a highway.

Dr. Mosesón also encourages advocacy. "There are all these different levels [of response]," she said. Next steps might involve writing a letter, contacting a councilperson, or advocating for a program (like retiring gas-powered leaf blowers).

For many patients, their doctor is the only person they routinely interact with who has advanced scientific training. Rather than presenting dry data, Dr. Mosesón recommends framing changes and recommendations in ways that are meaningful to neighbors.

"Each physician or clinician is going to know the values of their community," Dr. Mosesón said. If you're in a military town, advocating for electric cars may be easier if framed around decreasing dependence on foreign oil. If the region recently experienced back-to-back heat events, advocating for a cooling center might be galvanizing.

"When I give talks, I tell people, if you can talk about smoking, you can talk about air pollution."
– Dr. Mosesón

What is Dr. Mosesón's ultimate goal? Inform others so well that she can retire her podcasting equipment.

"I would love," Dr. Mosesón said, "for every physician in their local community to be a clean air and climate advocate." ■

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 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.

Arthur F. Saari, MD
Richard R. O'Reilly, MD

Fellow to use diversity scholar mentorship to strengthen care in pediatric-to-adult transitions

During residency training at the Rush University Medical Center in Internal Medicine and Pediatrics, Esha Kapania, MD, quickly became interested in the pulmonary pathologies that span the life of a patient, beginning in childhood and lasting into adulthood.


Dr. Kapania

Now in her first year of fellowship at the University of Louisville and as the recipient of the 2024 Medical Educator Scholar Diversity Fellowship from CHEST and the Association of Pulmonary and Critical Care Medicine Program Directors (APCCMPD), Dr. Kapania will utilize the support of the program to explore this space.

"Recent advancements in pediatric pulmonary medicine have prolonged the expected lifespan of many previously fatal diagnoses, and I have realized that, despite these innovations, there remains very little communication between the adult and pediatric subspecialists," Dr. Kapania said. "There is minimal education on congenital pulmonary pathology in adult medicine and, perhaps equally as important, negligible instruction on the cultural and social changes that patients experience when they transition from pediatric to adult providers."

"Recent advancements in pediatric pulmonary medicine have prolonged the expected lifespan of many previously fatal diagnoses, and I have realized that, despite these innovations, there remains very little communication between the adult and pediatric subspecialists. There is minimal education on congenital pulmonary pathology in adult medicine."
– Dr. Kapania

In residency, Dr. Kapania witnessed the success of cystic fibrosis (CF) clinics and hopes to leverage that experience to advance transitional care across disease states. Using the guidelines set to transition patients with CF from pediatric to adult care as a model, Dr. Kapania will focus her time on creating a streamlined process for patients living with severe asthma and patients with neuromuscular diseases who are chronically vented.

"Patients who are chronically vented tend not to have a lot of resources dedicated to them and are a resource- and time-heavy population," she said. "Because there is no defined process to transition these patients, we tend to see pediatric providers hold on to these patients for a lot longer than they do with [patients with CF]. A set of evidence-based practices would go a long way in this space."

Through the APCCMPD and CHEST Medical Educator Scholar Diversity Fellowship, Dr. Kapania will work closely with the program's selected mentor, Başak Çoruh, MD, FCCP, who is an Associate Professor of Pulmonary, Critical Care, and Sleep Medicine and Director of the Pulmonary and Critical Care Medicine fellowship program at the University of Washington.

"I'm looking forward to working with Dr. Çoruh for career guidance and for support of my area of interest within [pulmonary and critical care medicine]," Dr. Kapania said. "She is an established physician who has a lot of insight to share, and this is a great opportunity to make the best of my fellowship." ■

NETWORKS

Corticosteroids in septic shock, RSV and air pollution, transesophageal ultrasound, and more

THORACIC ONCOLOGY AND CHEST PROCEDURES NETWORK

Ultrasound and Chest Imaging Section

Transesophageal ultrasound: The future of ultrasound in the ICU

Historically, transesophageal ultrasound (TEE) has been regarded as a diagnostic and management tool for structural heart disease in relatively stable patients. However, TEE is more commonly being utilized by intensivists as a first-line tool in the diagnostics and management of patients in the ICU.

Dr. Meredith

Dr. Patel

TEE, with its unobstructed superior cardiac views, facilitates rapid diagnosis in undifferentiated shock and guides appropriate resuscitation efforts. Studies have shown that TEE alters management strategies in 40% of cases, following transthoracic echocardiography with an extremely low complication rate of 2% to 3% (primarily in the form of self-limited gastrointestinal bleeding).

TEE also provides ultrasonographic evaluation of the lungs through transesophageal lung ultrasound (TELUS). TELUS allows for visualization of all six traditional lung zones utilized in traditional lung ultrasound. Patients with severe acute respiratory distress syndrome may greatly benefit from TEE utilization. TEE enables early detection of right ventricular dysfunction, aids in fluid management, and assesses the severity of lung consolidation, thereby facilitating prompt utilization of prone positioning or adjustments in positive end-expiratory pressure.

Cardiac arrest is another unique opportunity for TEE utilization by providing real-time cardiac visualization during active cardiopulmonary resuscitation. This facilitates optimal chest compression positioning, early recognition of arrhythmia, timely identification of reversible cause, and procedural guidance for ECMO-assisted CPR. TEE is an invaluable tool for the modern-day intensivist, providing rapid and accurate assessments, and therefore holds the potential to become standard of care in the ICU.

All references available online at chestphysician.org.

– Simon Meredith, DO
Fellow-in-Training
– Maulin Patel, MD,
Member-at-Large

SLEEP MEDICINE NETWORK

Respiratory-Related Sleep Disorders Section

Is it time to embrace a multinight sleep study?

Since the 1960s, sleep researchers have been intrigued by the first-night effect (FNE) in polysomnography (PSG) studies. A meta-analysis by Ding and colleagues revealed FNE's impact on sleep metrics, like total sleep time and REM sleep, without affecting the apnea-hypopnea index, highlighting PSG's limitations in simulating natural sleep patterns.

Dr. Quintero

Lechat and colleagues conducted a study using a home-based sleep analyzer on more than 67,000 individuals, averaging 170 nights each. This study found that single-night studies could lead to a 20% misdiagnosis rate in OSA, attributed to overlooking real sleep factors such as body posture, environmental effects, alcohol, and medication. Despite this, the wider use of multinight studies for accurate diagnosis is limited by insurance coverage issues.

The last decade has seen substantial advances in health technology, particularly in consumer wearables capable of detecting various medical conditions. Devices employing techniques like actigraphy and accelerometry have reached a level of performance comparable with US Food and Drug Administration-approved clinical tools. However, these technologies are still in development for the diagnosis and classification of sleep-disordered breathing.

Tech companies are actively innovating sleep sensing technologies, smartwatches, bed sensors, wireless EEG, radiofrequency, and ultrasound sensors. With significant investments in this sector, these technologies could be ready for widespread use in the next 5 to 10 years. Health care professionals should consider data from sleep-tracking wearables when there are inconsistencies between a patient's sleep study results and symptoms. The insights from these devices could provide crucial diagnostic information, enhancing the accuracy of sleep disorder diagnoses.

All references available online at chestphysician.org.

– Luis D. Quintero, DO, MPH, FCCP
Member-at-Large

CRITICAL CARE NETWORK

Sepsis/Shock Section

The pendulum swings in favor of corticosteroids

The pendulum swings in favor of corticosteroids and endorses the colloquialism among intensivists that no patient shall die without steroids, especially as it relates to sepsis and septic shock.

In 2018, we saw divergence among randomized controlled trials in the use of glucocorticoids for adults with septic shock such that hydrocortisone without the use of fludrocortisone showed no 90-day mortality benefit; however, hydrocortisone with fludrocortisone showed a 90-day mortality benefit. The Surviving Sepsis Guidelines in 2021 favored using low-dose corticosteroids in those with persistent vasopressor requirements in whom other core interventions had been instituted.

In 2023, a patient-level meta-analysis of low-dose hydrocortisone in adults with septic shock included seven trials and failed to demonstrate a mortality benefit by relative risk in those who received hydrocortisone compared with placebo. Separately, a network meta-analysis with hydrocortisone plus enteral fludrocortisone was associated with a 90-day all-cause mortality. Of the secondary outcomes, these results offered a possible association of hydrocortisone with a decreased risk of ICU mortality and with increased vasopressor-free days.

Dr. Upson

Dr. Gotur

The 2024 Society of Critical Care Medicine recently shared an update of focused guidelines on the use of corticosteroids in sepsis, acute respiratory distress syndrome, and community-acquired pneumonia. These included a conditional recommendation to administer corticosteroids for patients with septic shock but recommended against high-dose/short-duration administration of corticosteroids in these patients. These guidelines were supported by data from 46 randomized controlled trials, which showed that corticosteroid use may reduce hospital/long-term mortality and ICU/short-term mortality, as well asresult in higher rates of shock reversal and reduced organ dysfunction.

With the results of these meta-analyses and randomized controlled trials, clinicians should consider low-dose corticosteroids paired with fludrocortisone as a tool in treating patients with septic shock given that the short- and long-term benefits may exceed any risks.

All references available online at chestphysician.org.

– Sarah M. Upson, MD, MBA
Fellow-in-Training
– Deepa Gotur, MD, FCCP
Network Member-at-Large

DIFFUSE LUNG DISEASE AND LUNG TRANSPLANT NETWORK

Occupational and Environmental Health Section

Fighting for fresh air: RSV's connection to environmental pollution

Poor air quality has numerous health hazards for patients with chronic lung disease. Now

NETWORKS *continued on following page*

NETWORKS *continued from previous page*

chronic lung disease. Now mounting evidence from pediatric studies suggests a concerning link between air pollution and viral infections, specifically respiratory syncytial virus (RSV). Multiple studies have shown increased incidence and severity of disease in children with exposure to air pollutants such as particulate matter and nitrogen dioxide. Researchers speculate that these pollutants potentiate viral entry to airway epithelium, increase viral load, and dysregulate the immune response. Air pollution, increasingly worsened by climate change, is also associated with acute respiratory infections in adults, though adult research remains sparse.

Dr. Glick

Dr. Monoson

Dr. Callahan

The adoption of viral testing during the pandemic has revealed a previously under-recognized prevalence of RSV in adults. RSV accounts for an estimated 60,000 to 160,000 hospitalizations and 6,000 to 10,000 deaths annually among elderly adults. This newfound awareness coincides with the exciting development of a new RSV vaccine that has shown around 85% efficacy at preventing symptomatic RSV infection in the first year, and new data suggest benefits persisting even into the second year after vaccination. With an estimated 60 million adults at high risk for RSV in the US, RSV prevention has become an increasingly important aspect of respiratory care.

While more research is needed to definitively quantify the link between air pollution and RSV in adults, the existing data offer valuable insights for all pulmonologists. These findings suggest a benefit in counseling patients with chronic lung conditions on taking steps to mitigate exposure to air pollutants, either through avoidance of outdoor activities or mask-wearing when air quality levels exceed healthy ranges, as well as promoting RSV vaccination for patients who are at risk.

All references available online at chestphysician.org.

– Matthew Glick, MD
Fellow-in-Training
– Alexys Monoson, MD
Fellow-in-Training
– Sean Callahan, MD, FCCP
Member-at-Large

This month in the journal *CHEST*®

Editor's picks

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

Read these articles and more by visiting journal.chestnet.org.

National and Local Direct Medical Cost Burden of COPD in the United States From 2016 to 2019 and Projections Through 2029
By David M. Mannino, MD, et al.

Prophylactic Minocycline for Delirium in Critically Ill Patients: A Randomized Controlled Trial
By Felipe Dal-Pizzol, MD, PhD, et al.

Application of Machine Learning Models to Biomedical and Information System Signals From Critically Ill Adults
By Craig M. Lilly, MD, et al.

Variable Practice, Variable Results: Impact of Postinterview Communication Practices Among CCM/PCCM Fellowship Applicants and Program Directors
By Mira M. John, MD, et al.

Discussing and Teaching About Race and Health Inequities
By Arun Kannappan, MD, et al.

Physicians received $12 billion from drug, device makers in less than 10 years

BY ALICIA AULT

A review of the federal Open Payments database found the pharmaceutical and medical device industry paid physicians $12.1 billion over nearly a decade. Almost two thirds of eligible physicians — 826,313 doctors — received a payment from a drug or device maker from 2013 to 2022, according to a study published online in *JAMA*.

Excluding 2013, the total value of payments was highest in 2019 at $1.6 billion, up from $1.34 billion in 2014. It was lowest in 2020, the peak year of the COVID-19 pandemic, and rebounded to $1.28 billion in 2022, wrote the authors.

The Open Payments database, administered by the Centers for Medicare & Medicaid Services, requires drug and device makers and group purchasing organizations to report payments made to physicians, including for consulting services, speaking fees, food and beverages, travel and lodging, education, gifts, grants, and honoraria. The database was created to shed light on these payments, which have been linked in multiple studies to more prescribing of a particular drug or more use of a particular device.

The *JAMA* review appeared to show that with the exception of the pandemic year, the relationships have more or less stayed the same since Open Payments began. "There's been no sea change, no massive shift in how these interactions are happening," said Deborah C. Marshall, MD, assistant professor in the Department of Radiation Oncology at the Icahn School of Medicine at Mount Sinai in New York City, who has studied industry payments.

"There's no suggestion anything is really changing other than there is transparency," said Robert Steinbrook, MD, director of the Health Research Group at Public Citizen. Still, Dr. Steinbrook said, "it's better to know this than to not know this." The unchanging nature of industry-physician relationships "suggests to reduce the volume and magnitude of payments, more would need to be done," he said.

"Really, this should be banned. Doctors should not be allowed to get gifts from pharmaceutical companies," said Adriane Fugh-Berman, MD, professor of pharmacology and physiology at Georgetown University, and director of PharmedOut, a Georgetown-based project that advances evidence-based prescribing and educates health care professionals about pharmaceutical marketing practices. "The interactions wouldn't be happening unless there was a purpose for them," Dr. Marshall said. The relationships are "built with intention."

Top earners range from $195,000 to $4.8 million

Median payments to physicians over the study period ranged from $0 to $2339; mean payment to top earners — those in the top 0.1% — ranged from $194,933 for hospitalists to $4.8 million for orthopedic specialists. Overall, the median payment was $48 per physician.

But small dollar amounts should not be discounted — even if it's just a $25 catered lunch — said Aaron Mitchell, MD, a medical oncologist and assistant attending physician at Memorial Sloan Kettering Cancer Center in New York City who has studied industry-physician relationships. "The influence is not just in the dollar value," Dr. Mitchell said. "It's about the time listening to and the time in personal contact with industry representatives these dollars are a marker for," he said.

Dr. Fugh-Berman said, "the size of the gift doesn't really matter," adding research she conducted had shown "accepting a meal increased not only the expense of the prescriptions Medicare physicians wrote but also the number of prescriptions."

Payments mostly for high-dollar products

The top 25 drugs and devices that were related to industry payments

BILLION *continued on following page*

Time is money: Should physicians be compensated for EHR engagement?

BY JODI HELMER

Electronic health records (EHRs) make providing coordinated, efficient care easier and reduce medical errors and test duplications; research has also correlated EHR adoption with higher patient satisfaction and outcomes.

However, for physicians, the benefits come at a cost. Physicians spend significantly more time in health care portals, making notes, entering orders, reviewing clinical reports, and responding to patient messages.

"I spend at least the same amount of time in the portal that I do in scheduled clinical time with patients," said Eve Rittenberg, MD, primary care physician at Brigham and Women's Hospital and assistant professor at Harvard Medical School, Boston, Massachusetts.

"So, if I have a 4-hour session of seeing patients, I spend at least another 4 or more hours in the patient portal," she said.

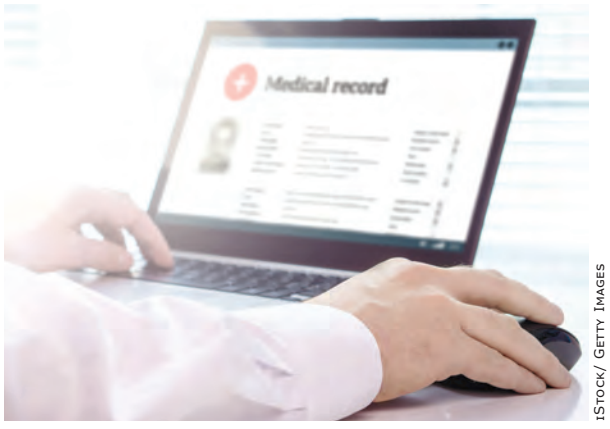
The latest data showed some physicians logged a median of 36.2 minutes in the portal per patient visit, spending 58.9% more time on orders, 24.4% more time reading and responding to messages, and 13% more time on chart review compared with prepandemic portal use.

Portal time isn't paid time

Sharp increases in the amount of time spent in the EHR responding to messages or dispensing medical advice via the portal often aren't linked to increases in compensation; most portal time is unpaid.

"There isn't specific time allocated to working in the portal; it's either done in the office while a patient is sitting in an exam room or in the mornings and evenings outside of traditional working hours," said Ralph DeBiasi, MD, a clinical cardiac electrophysiologist at Yale New Haven Health in Connecticut. "I think it's reasonable to consider it being reimbursed because we're taking our time and effort and making decisions to help the patient."

Compensation for portal time affects all physicians, but the degree of impact depends on their specialties. Primary care physicians spent significantly more daily and after-hours time in the EHR, entering notes and orders, and doing clinical reviews compared to surgical and medical specialties.



iStock/ Getty Images

Dr. Rittenberg researched the issue and found a higher volume of communication from both patients and staff to female physicians than male physicians.

As a result, female physicians spend 41.4 minutes more on the EHR than their male counterparts, which equates to more unpaid time. It's likely no coincidence then that burnout rates are also higher among female physicians, who also leave the clinical workforce in higher numbers.

Addressing the issue

Some health systems have started charging patients who seek medical advice via patient portals, equating the communication to asynchronous acute care or an additional care touch point and billing based on the length and complexity of the messages.

Patient fees for seeking medical advice via portals vary widely depending on their health system and insurance.

At University of California San Francisco Health, billing patients for EHR communication led to a sharp decrease in patient messages, which eased physician workload.

Changes to the Medicare Physician Fee Schedule also allow physicians to bill for "digital evaluation and management" based on the time spent in an EHR responding to patient-initiated questions and requests.

However, more efforts are needed to ease burnout and reverse the number of physicians who are seeing fewer patients or leaving medical practice altogether as a direct result of spending increasing amounts of unpaid time in the EHR.

Prioritizing patient and physician experiences

The ever-expanding use of EHRs is a result of their value as a health care tool. Data showed the electronic exchange of information between patients and physicians improves diagnostics, reduces medical errors, enhances communication, and leads to more patient-centered care — and physicians want their patients to use the portal to maximize their health care.

"[The EHR] is good for patients," Dr. DeBiasi said. "Sometimes, patients have access issues with health care, whether that's not knowing what number to call or getting the right message to the right person at the right office. If [the portal] is good for them and helps them get access to care, we should embrace that and figure out a way to work it into our day-to-day schedules."

But maximizing the patient experience shouldn't come at the physicians' expense. Dr. Rittenberg advocates a model that compensates physicians for the time spent in the EHR and prioritizes a team approach to rebalance the EHR workload to ensure physicians aren't devoting too much time to administrative tasks and can focus on clinical tasks. ■

BILLION *continued from previous page*

tended to be high-cost brand-name products. The top drug was Janssen's Xarelto, an anticoagulant first approved in 2011 that costs about $600 a month, according to GoodRx. The drug has had annual sales of $4-$6 billion. Xarelto was followed by Eliquis, another anticoagulant; Humira, used for a variety of autoimmune conditions including plaque psoriasis, rheumatoid arthritis, Crohn's disease, and ulcerative colitis; and Invokana, Jardiance, and Farxiga, all for type 2 diabetes.

The top medical devices included the da Vinci Surgical System, Mako SmartRobotics, CoreValve Evolut, Natrelle Implants, and Impella, a heart pump that received a US Food and Drug Administration (FDA) warning that it was associated with a heightened risk for death.

Industry influence may lead to higher cost

Studies have shown payments to physicians tend to lead to increased prescribing and higher costs for Medicare, health systems, or patients. "I'm sure there are a lot of physicians out there who think they're getting away with something, that they can take meals, or they can take consulting fees and not be influenced, but there's overwhelming data showing it always influences you," Dr. Fugh-Berman said.

One study in 2020 that used the Open Payments database found physicians increase prescribing of the drugs for which they receive payment in the months just after the payment.

Among the *JAMA* study authors, Joseph S. Ross, MD, reported he is a deputy editor of *JAMA* but was not involved in decisions regarding acceptance of the manuscript or its review. Dr. Ross also reported receiving grants from the FDA, Johnson and Johnson, the Medical Devices Innovation Consortium, the Agency for Healthcare Research and Quality, and the National Heart, Lung, and Blood Institute. He was an expert witness in a qui tam suit alleging violations of the False Claims Act and Anti-Kickback Statute against Biogen that was settled in 2022. Dr. Steinbrook, Dr. Marshall, and Dr. Mitchell reported no relevant financial relationships. Dr. Fugh-Berman reported being an expert witness for plaintiffs in complaints about drug and device marketing practices. ■

INDEX OF ADVERTISERS

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