Go to **MDedge.com/CHESTPhysician** for the latest news on the coronavirus pandemic.

PRACTICE MANAGEMENT
ABMS has revised its policy on family leave for residents and fellows // 6

CRITICAL CARE MEDICINE
Evidence is accumulating on the CNS impact of COVID-19 // 7

PULMONOLOGY
EVALI can present in the ED with unusual symptoms // 8

VOL. 15 • NO. 8 • AUGUST 2020

CHEST Physician™

Juanmonino/E+

Half of the respondents to a survey said women physicians are stigmatized for taking a full maternity leave.

Work-life balance trumps pay in female doctors' top concerns

BY MARCIA FRELLICK

Work-life balance was the top concern for female physicians who responded to a new Medscape survey, far outpacing concerns about pay.

A psychiatrist who responded to the survey commented, "I've been trying to use all my vacation to spend time with my spouse. I'm always apologizing for being late, not being able to go to an event due to my work schedule, and missing out on life with my husband."

Nearly two-thirds (64%) said the balance was their top concern whereas 43% put pay at the top.

Medscape surveyed more than 3,000 women physicians about how they deal with parenthood, work pressures, and relationships in Women Physicians 2020: The Issues They Care About.

Almost all are making personal trade-offs

An overwhelming percentage (94%) said they have had to make personal trade-offs for work obligations.

"Women are more likely to make work compromises to benefit their families," a cardiologist responded. "I won't/can't take a position that would disrupt my husband's community ties, my children's schooling, and relationships with family."

More than one-third of women (36%) said that

BALANCE // *continued on page 8*

Lingering impact: COVID-19 symptoms can persist for weeks

BY DIANA SWIFT

Clinicians and researchers have focused on the acute phase of COVID-19 infection, but it's increasingly clear that some recovered patients discharged from acute care need continued monitoring for long-lasting effects, a study has found.

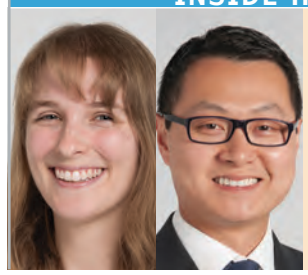
In a research letter published online in JAMA (doi: 10.1001/jama.2020.12603), Angelo Carfi, MD, and colleagues from the Gemelli Against COVID-19 Post–Acute Care Study Group in Rome, report that 87.4% of 143 previously hospitalized patients had at least one persistent symptom 2 months or longer after initial onset and at more than a month after discharge.

Postdischarge assessments of patients who met criteria for SARS-CoV-2 negativity, including a reverse transcriptase–polymerase chain reaction test, were conducted from April 21 to May 29. Among the results:

- Only 12.6% of the 143 patients were completely free of any COVID-19 symptom
- About 32% of patients had one or two symptoms and 55% had three or more

COVID-19 // *continued on page 9*

INSIDE HIGHLIGHT



NEWS FROM CHEST

CRITICAL CARE COMMENTARY

Management of EVALI in the ICU

Page 10

CHEST Physician
10255 W Higgins Road,
Suite 280
Rosemont, IL 60018

CHANGE SERVICE REQUESTED

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

Rx

Why we write Esbriet

Your patients trust you. That's why you trust Esbriet for efficacy, safety, and tolerability.

INDICATION

Esbriet® (pirfenidone) is indicated for the treatment of idiopathic pulmonary fibrosis (IPF).

SELECT IMPORTANT SAFETY INFORMATION

Elevated liver enzymes and drug-induced liver injury (DILI): DILI has been observed with Esbriet. In the postmarketing period, non-serious and serious cases of DILI, including severe liver injury with fatal outcome, have been reported. Patients treated with Esbriet had a higher incidence of ALT and/or AST elevations of ≥3x ULN (3.7%) compared with placebo patients (0.8%). Increases in ALT and AST ≥3x ULN were reversible with dose modification or treatment discontinuation.

Conduct liver function tests (ALT, AST, and bilirubin) prior to the initiation of therapy with Esbriet, monthly for the first 6 months, every 3 months thereafter, and as clinically indicated. Measure liver function promptly in patients who report symptoms that may indicate liver injury, including fatigue, anorexia, right upper abdominal discomfort, dark urine, or jaundice. Dosage modification or interruption may be necessary for liver enzyme elevations.

Photosensitivity reaction or rash: Patients treated with Esbriet had a higher incidence of photosensitivity reactions (9%) vs placebo (1%). Patients should avoid or minimize exposure to sunlight and sunlamps, regularly use sunscreen (SPF 50 or higher), wear clothing that protects against sun exposure, and avoid concomitant medications that cause photosensitivity. Dosage reduction or discontinuation may be necessary.

Gastrointestinal (GI) disorders: Patients treated with Esbriet had a higher incidence of nausea, diarrhea, dyspepsia, vomiting, gastroesophageal reflux disease (GERD), and abdominal pain. GI events required dose reduction or interruption in 18.5% of 2403 mg/day Esbriet-treated patients, compared with 5.8% of placebo patients; 2.2% of 2403 mg/day Esbriet-treated patients discontinued treatment due to a GI event, vs 1.0% of placebo patients. The most common (>2%) GI events leading to dosage reduction or interruption were nausea, diarrhea, vomiting, and dyspepsia. Dosage modification may be necessary.

Adverse reactions: The most common adverse reactions (≥10%) were nausea, rash, abdominal pain, upper respiratory tract infection, diarrhea, fatigue, headache, dyspepsia, dizziness, vomiting, anorexia, GERD, sinusitis, insomnia, weight decreased, and arthralgia.

Drug Interactions:

CYP1A2 inhibitors: Concomitant use of Esbriet and strong CYP1A2 inhibitors (e.g., fluvoxamine) is not recommended, as CYP1A2 inhibitors increase systemic exposure of Esbriet. If discontinuation of the CYP1A2 inhibitor prior to starting Esbriet is not possible, dosage reduction of Esbriet is recommended. Monitor for adverse reactions and consider discontinuation of Esbriet.

Concomitant use of ciprofloxacin (a moderate CYP1A2 inhibitor) at the dosage of 750 mg BID and Esbriet are not recommended. If this dose of ciprofloxacin cannot be avoided, dosage reductions of Esbriet are recommended, and patients should be monitored.

Moderate or strong inhibitors of both CYP1A2 and other CYP isoenzymes involved in the metabolism of Esbriet should be avoided during treatment.

Genentech
A Member of the Roche Group

AN IPF TREATMENT BACKED BY EXPERIENCE

Used in more than 60 countries worldwide for the treatment of idiopathic pulmonary fibrosis (IPF)[1]*

MORE THAN

136,000

PATIENT-YEARS

were derived from the volume of global sales of Esbriet and the estimated total amount taken by patients with IPF worldwide, from February 2011 through February 2019[1]

>5 YEARS

IN CLINICAL TRIALS[2]

The safety of pirfenidone has been evaluated in more than 1400 subjects, with over 170 subjects exposed to pirfenidone for more than 5 years in clinical trials

Demonstrated safety and efficacy

In ASCEND and CAPACITY 004, Esbriet delayed disease progression by slowing lung function decline vs placebo[2,3]

In CAPACITY 006, no statistically significant difference vs placebo in change in %FVC or decline in FVC volume from baseline to 72 weeks was observed[2,4]

Serious AEs, including elevated liver enzymes and drug-induced liver injury, photosensitivity reactions, and GI disorders, have been reported with Esbriet[1]

Learn more at **EsbrietHCP.com**

*Countries include Albania, Argentina, Australia, Austria, Belgium, Bulgaria, Brazil, Canada, Chile, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Estonia, Finland, France, Georgia, Germany, Greece, Hong Kong (special administrative region), Hungary, Iceland, Ireland, Israel, Italy, Kosovo, Kuwait, Lithuania, Luxembourg, Macao (special administrative region), Malaysia, Malta, Montenegro, Myanmar, the Netherlands, New Zealand, Norway, Oman, Qatar, Paraguay, Poland, Portugal, Peru, Romania, Russia, Saudi Arabia, Serbia, Singapore, Spain, Slovakia, Slovenia, Sweden, Switzerland, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States, and Uruguay.[1]

CYP1A2 inducers: Concomitant use of Esbriet and strong CYP1A2 inducers should be avoided, as CYP1A2 inducers may decrease the exposure and efficacy of Esbriet.

Specific Populations:

Mild to moderate hepatic impairment: Esbriet should be used with caution in patients with Child Pugh Class A and B. Monitor for adverse reactions and consider dosage modification or discontinuation of Esbriet as needed.

Severe hepatic impairment: Esbriet is not recommended for patients with Child Pugh Class C. Esbriet has not been studied in this patient population.

Mild (CL_{cr} 50–80 mL/min), moderate (CL_{cr} 30–50 mL/min), or severe (CL_{cr} <30 mL/min) renal impairment: Esbriet should be used with caution. Monitor for adverse reactions and consider dosage modification or discontinuation of Esbriet as needed.

End-stage renal disease requiring dialysis: Esbriet is not recommended. Esbriet has not been studied in this patient population.

Smokers: Smoking causes decreased exposure to Esbriet which may affect efficacy. Instruct patients to stop smoking prior to treatment and to avoid smoking when on Esbriet.

You may report side effects to the FDA at 1-800-FDA-1088 or www.fda.gov/medwatch or to Genentech at 1-888-835-2555.

Please see Brief Summary of Prescribing Information on adjacent pages for additional Important Safety Information.

Study design: The safety and efficacy of Esbriet were evaluated in three phase 3, randomized, double-blind, placebo-controlled, multicenter trials in which 1247 patients were randomized to receive Esbriet (n=623) or placebo (n=624).[2] In ASCEND, 555 patients with IPF were randomized to receive Esbriet 2403 mg/day or placebo for 52 weeks. Eligible patients had percent predicted forced vital capacity (%FVC) between 50%–90% and percent predicted diffusing capacity of lung for carbon monoxide (%DL_{co}) between 30%–90%. The primary endpoint was change in %FVC from baseline at 52 weeks.[2,3] In CAPACITY 004, 348 patients with IPF were randomized to receive Esbriet 2403 mg/day or placebo. Eligible patients had %FVC ≥50% and %DL_{co} ≥35%. In CAPACITY 006, 344 patients with IPF were randomized to receive Esbriet 2403 mg/day or placebo. Eligible patients had %FVC ≥50% and %DL_{co} ≥35%. For both CAPACITY trials, the primary endpoint was change in %FVC from baseline at 72 weeks.[2,4] Esbriet had a significant impact on lung function decline and delayed progression of IPF vs placebo in ASCEND.[2] Esbriet demonstrated a significant effect on lung function for up to 72 weeks in CAPACITY 004, as measured by %FVC and mean change in FVC (mL).[2] **No statistically significant difference vs placebo in change in %FVC or decline in FVC volume from baseline to 72 weeks was observed in CAPACITY 006.[2]**

References: 1. Data on file. Genentech, Inc. 2019. **2.** Esbriet Prescribing Information. Genentech, Inc. July 2019. **3.** King TE Jr, Bradford WZ, Castro-Bernardini S, et al; for the ASCEND Study Group. A phase 3 trial of pirfenidone in patients with idiopathic pulmonary fibrosis [published correction appears in *N Engl J Med*. 2014;371(12):1172]. *N Engl J Med*. 2014;370(22):2083–2092. **4.** Noble PW, Albera C, Bradford WZ, et al; for the CAPACITY Study Group. Pirfenidone in patients with idiopathic pulmonary fibrosis (CAPACITY): two randomised trials. *Lancet*. 2011;377(9779):1760–1769.

Esbriet® (pirfenidone) tablets 267 mg 801 mg

Physician shortage grows in latest projections

BY MARCIA FRELLICK

Fifteen-year projections for the shortage of primary care and specialty physicians in the United States grew to between 54,000 and 139,000 in the latest annual report by the Association of American Medical Colleges.

Those estimates are up from last year's projections of a shortfall of 46,900-121,900 by 2032.

The Complexities of Physician Supply and Demand: Projections from 2018 to 2033, was the sixth annual study conducted for the AAMC by the Life Science division of global analytics firm IHS Markit.

This analysis, conducted in 2019, includes supply and demand scenarios but predates the COVID-19 pandemic.

In a telephone press briefing, David J. Skorton, MD, AAMC's pres-

ident and CEO, told reporters that the pandemic has highlighted the acute effects of physician shortages.

"We've seen in stark detail how fragile and quickly overwhelmed America's health care system truly is, and we're nowhere near out of the woods with this public health emergency yet," he said.

The persistent shortages mean people "will have ongoing difficulty accessing the care that they need, especially as we all age."

Some of the biggest shortages will be seen in non–primary care specialists. Dr. Skorton notes that, during the pandemic, shortages of specialists in hospital settings, including critical care, emergency medicine, pulmonology, and infectious disease, are an urgent concern.

Population trends continue to be the biggest drivers of the shortage. Report authors found that by 2033 the U.S. population is expected to grow by 10.4% from 327 million to 361 million, with wide differences by age.

The under-18 population is expected to grow by 3.9%, whereas the numbers of those aged 65 and older is expected to balloon by 45.1% in that time, thus stoking demand for specialties focused on care for older Americans.

Physician age is also a large factor in the projections. More than two in five currently active physicians will be 65 or older in the next 10 years, according to the report. A wave of retirements will have a large impact on the supply of physicians.

The report explains that the projected shortages remain under predictable scenarios: an increase in the use of advanced practice nurses (APRNs) and physician assistants (PAs), more care in alternative settings such as retail clinics, and changes in payment and delivery.

According to the report, the supply of APRNs and PAs is on track to double over the next 15 years (with growth rates varying by APRN and PA specialty).

"At current rates of production, by 2033 APRN supply will grow by 276,000 FTEs [full-time equivalents] and PA supply by nearly 138,000 FTEs," the report states.

However, authors acknowledge there is scant evidence on what effect these numbers will have on demand for physicians.

The report points out that, if underserved communities were able to access health care in numbers similar to those without barriers imposed by where they live or what insurance they have, demand could rise beyond the projections in this report by an additional 74,000-145,000 physicians.

Stemming the shortages

The first step in addressing the shortage, Dr. Skorton said, is ensuring a healthy physician pipeline to meet the demand for generations.

"One essential step that we believe Congress must take is to end the freeze that has been in place since 1997 that limits federal support for residency training of new physicians," Dr. Skorton said.

He noted that AAMC supports the bipartisan Resident Physician Shortage Reduction Act, introduced to Congress in 2019, which calls for an increase in Medicare support for 3,000 new residency positions each year over the next 5 years.

However, additional steps are needed, including enabling advanced practice providers to play a greater role in increasing the health care workforce, Dr. Skorton said.

Pointing out some of the effects of physician shortages, Janis M. Orlowski, MD, chief health care officer for the AAMC, noted that high rates

Continued on following page

PRACTICE MANAGEMENT

Residents, fellows will get minimum 6 weeks leave for caregiving

BY MARCIA FRELLICK

Starting July 1, 2021, residents and fellows are allowed a minimum 6 weeks away for medical leave or caregiving once during training, without having to use vacation or sick leave and without having to extend their training, the American Board of Medical Specialties has announced.

The "ABMS Policy on Parental, Caregiver and Family Leave" announced July 13 was developed after a report from the Accreditation Council for Graduate Medical Education's Council of Review Committee Residents in June 2019.

Richard E. Hawkins, MD, ABMS President and CEO, said in a statement that "the growing shifts in viewpoints regarding work-life balance and parental roles had a great influence in the creation of this policy, which fosters an environment that supports our trainees' ability to care not only for patients, but also for themselves and their families."

Specifically, the time can be taken for birth and care of a newborn, adopting a child, or becoming a foster parent; care of a child, spouse, or parent with a serious health condition; or the trainee's own serious health condition. The policy applies to member boards with training programs of at least 2 years.

Boards must communicate when a leave will require an official extension to avoid disruptions to a physician's career trajectory, a delay in starting a fellowship, or moving into a salaried position.

Work/life balance was by far the biggest challenge reported in the Medscape Residents Lifestyle & Happiness Report 2019.

Several member boards had already implemented policies that offered more flexibility without unduly delaying board certification; now ABMS is extending that to all boards.

ABMS says member boards may limit the maximum time away in a single year or level of training and directed member boards to "make reasonable testing accommodations" – for example, by allowing candidates to take an exam provided the candidate completes all training requirements by a certain date.

Kristy Rialon, MD, an author of the ACGME report and assistant professor of surgery at Baylor College of Medicine and the Texas Children's Hospital, both in Houston, noted the significance of the change in a news release.

"By virtue of their ages, residents and fellows – male and female – often find themselves having and raising children, as well as serving as family members' caregivers," Dr. Rialon said. "By adopting more realistic and compassionate approaches, the ABMS member boards will significantly improve the quality of life for residents and fellows."

A version of this article originally appeared on Medscape.com.

Continued from previous page

of maternal morbidity are partially linked to lack of adequate numbers of physicians in the United States, and a lack of behavioral health specialists has exacerbated effects of the opioid epidemic.

Shortages are already evident in the current pandemic, she added, saying, "Today we see governors calling for retired physicians or physicians from other states to come and help battle the pandemic within their states."

The report explains that long-term effects on physician numbers from the pandemic likely will include workforce exits because of COVID-19 deaths, early retirements from burnout, or a shift in interest in certain specialties.

Karen Fisher, JD, chief public policy officer for AAMC, said telehealth will also play an important role in bridging gaps in access to care, and its importance has already been seen in this first wave of the pandemic.

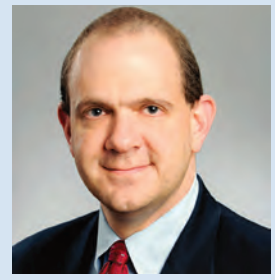
She noted that temporary federal waivers have made it easier for those enrolled in Medicare, Medicaid, and the Children's Health Insurance Program to receive telehealth services during the pandemic.

Dr. Skorton, Dr. Orlowski, and Ms. Fisher have disclosed no relevant financial relationships.

A version of this article originally appeared on Medscape.com.

CHEST PHYSICIAN IS ONLINE

CHEST Physician is available at chestphysician.org.



David A. Schulman, MD, FCCP, is Editor in Chief of *CHEST Physician*.

CHEST Physician™

AMERICAN COLLEGE OF CHEST PHYSICIANS (CHEST)

EDITOR IN CHIEF
David A. Schulman, MD, FCCP

PRESIDENT
Stephanie M. Levine, MD, FCCP

EXECUTIVE VICE PRESIDENT & CEO
Robert Musacchio

PUBLISHER, *CHEST*® JOURNAL
Nicki Augustyn

DIRECTOR, PUBLISHING
Kavitha Reinhold

MANAGER, EDITORIAL RESOURCES
Pamela L. Goorsky

PUBS & DIGITAL CONTENT EDITOR
Martha Zaborowski

SECTION EDITORS
Corey Kershaw, MD
Pulmonary Perspectives®
Angel Coz, MD, FCCP
Critical Care Commentary
Michelle Cao, DO, FCCP
Sleep Strategies

E-mail: chestphysiciannews@chestnet.org

FRONTLINE MEDICAL COMMUNICATIONS

FRONTLINE MEDICAL COMMUNICATIONS SOCIETY PARTNERS

EXECUTIVE EDITOR Kathy Scarbeck, MA
EDITOR Therese Borden, PhD
CREATIVE DIRECTOR Louise A. Koenig

DIRECTOR, PRODUCTION/MANUFACTURING
Rebecca Slebodnik

DIRECTOR, BUSINESS DEVELOPMENT
Monique Michowski,
973-206-8015, cell 732-278-4549,
mmichowski@mdedge.com

CLASSIFIED SALES REPRESENTATIVE
Linda Wilson 973-290-8243,
lwilson@mdedge.com
SENIOR DIRECTOR OF CLASSIFIED SALES
Tim LaPella, 484-921-5001,
tlapella@mdedge.com

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, 10255 W Higgins Road, Suite 280, Rosemont, IL 60018-9914.

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., 7 Century Drive, Suite 302, Parsippany, NJ 07054-4609. Subscription price is $244.00 per year. Phone 973-206-3434, fax 973-206-9378.

EDITORIAL OFFICES 2275 Research Blvd, Suite 400, Rockville, MD 20850, 240-221-2400, fax 240-221-2548

ADVERTISING OFFICES 7 Century Drive, Suite 302, Parsippany, NJ 07054-4609
973-206-3434, fax 973-206-9378

FRONTLINE MEDICAL COMMUNICATIONS

Corporate
VP, SALES Mike Guire
VP, MEMBER MARKETING & DIGITAL PRODUCTION Amy Pfeiffer
PRESIDENT, CUSTOM SOLUTIONS JoAnn Wahl
VP, HUMAN RESOURCES & FACILITY OPERATIONS Carolyn Caccavelli
CIRCULATION DIRECTOR Jared Sonners
DIRECTOR, CUSTOM PROGRAMS Patrick Finnegan

In affiliation with Global Academy for Medical Education, LLC
PRESIDENT David J. Small, MBA

Three stages of COVID-19 impact on brain, CNS

BY BATYA SWIFT YASGUR, MA, LSW

A new review outlined a three-stage classification of the impact of COVID-19 on the central nervous system and recommended all hospitalized patients with the virus undergo MRI to flag potential neurologic damage and inform postdischarge monitoring.

In stage 1, viral damage is limited to epithelial cells of the nose and mouth, and in stage 2 blood clots that form in the lungs may travel to the brain, leading to stroke. In stage 3, the virus crosses the blood-brain barrier and invades the brain.

"Our major take-home points are that patients with COVID-19 symptoms, such as shortness of breath, headache, or dizziness, may have neurological symptoms that, at the time of hospitalization, might not be noticed or prioritized, or whose neurological symptoms may become apparent only after they leave the hospital," said coauthor Majid Fotuhi, MD, PhD, medical director of NeuroGrow Brain Fitness Center in McLean, Va.

"Hospitalized patients with COVID-19 should have a neurological evaluation and ideally a brain MRI before leaving the hospital; and, if there are abnormalities, they should follow up with a neurologist in 3-4 months," said Dr. Fotuhi, who is also affiliate staff at Johns Hopkins Medicine, Baltimore.

The review was published in the Journal of Alzheimer's Disease (doi: 10.3233/JAD-200581).

It has become "increasingly evident" that SARS-CoV-2 can cause neurologic manifestations, including anosmia, seizures, stroke, confusion, encephalopathy, and total paralysis, the authors wrote.

They noted that SARS-CoV-2 binds to ACE2, which facilitates the conversion of angiotensin II to angiotensin. After ACE2 has bound to respiratory epithelial cells and then to epithelial cells in blood vessels, SARS-CoV-2 triggers the formation of a "cytokine storm."

These cytokines, in turn, increase vascular permeability, edema, and widespread inflammation, as well as triggering "hypercoagulation cascades," which cause small and large blood clots that affect multiple organs.

If SARS-CoV-2 crosses the blood-brain barrier, directly entering the brain, it can contribute to demyelination or neurodegeneration.

"We very thoroughly reviewed the literature published between Jan. 1 and May 1, 2020, about neurological issues [in COVID-19]," said Dr. Fotuhi.

Three-stage classification

- **Stage 1:** The extent of SARS-CoV-2 binding to the ACE2 receptors is limited to the nasal and gustatory epithelial cells, with the cytokine storm remaining "low and controlled." During this stage, patients may experience smell or taste impairments, but often recover without any interventions.
- **Stage 2:** A "robust immune response" is activated by the virus, leading to inflammation in the blood vessels, increased hypercoagulability factors, and the formation of blood clots in cerebral arteries and veins. The patient may therefore experience either large or small strokes. Additional stage 2 symptoms include fatigue, hemiplegia, sensory loss, double vision, tetraplegia, aphasia, or ataxia.
- **Stage 3:** The cytokine storm in the blood vessels is so severe that it causes an "explosive inflammatory response" and penetrates the blood-brain barrier, leading to the entry of cytokines, blood components, and viral particles into the brain parenchyma and causing neuronal cell death and encephalitis. This stage can be characterized by seizures, confusion, delirium, coma, loss of consciousness, or death.

"Patients in stage 3 are more likely to have long-term consequences, because there is evidence that the virus particles have actually penetrated the brain," said Dr. Fotuhi. "Studies of coronaviruses have shown a link between the viruses and the risk of multiple sclerosis or Parkinson's disease even decades later."

The study had no specific funding. Dr. Fotuhi disclosed no relevant financial relationships. One coauthor reported receiving consulting fees as a member of the scientific advisory board for Brainreader and reports royalties for expert witness consultation in conjunction with Neurevolution.

A version of this article originally appeared on Medscape.com.

EVALI can present with nonrespiratory symptoms

BY TED BOSWORTH
MDedge News

ED physicians and hospitalists should consider a diagnosis of e-cigarette–vaping associated lung injury (EVALI) across a broad range of nonspecific symptoms, according to a synthesis of current information presented at the virtual Pediatric Hospital Medicine meeting.

Respiratory symptoms, including cough, chest pain, and shortness of breath are common but so are constitutive symptoms, including fever, sore throat, muscle aches, and nausea and vomiting, said Yamini Kuchipudi, MD, a staff physician at Cincinnati Children's Hospital, during a session at the meeting, sponsored by the Society of Hospital Medicine, the American Academy of Pediatrics, and the Academic Pediatric Association.

If EVALI is not considered across this broad array of symptoms, of which respiratory complaints might not be the most prominent at the time of presentation, the diagnosis might be delayed, Dr. Kuchipudi warned during the meeting.

Teenagers and young adults are the most common users of e-cigarettes and vaping devices. In these patients or in any individual suspected of having EVALI, Dr. Kuchipudi recommended posing questions about vaping relatively early in the work-up "in a confidential and nonjudgmental way."

Eliciting a truthful history will be particularly important, because the risk of EVALI appears to be largely related to vaping with tetrahydrocannabinol (THC)–containing products rather than with nicotine alone. Although the exact cause of EVALI is not yet completely clear, this condition is now strongly associated with additives to the THC, according to Issa Hanna, MD, of the department of pediatrics at the University of Florida, Jacksonville.

"E-liquid contains products like hydrocarbons, vitamin E acetate, and heavy metals that appear to damage the alveolar epithelium by direct cellular inflammation," Dr. Hanna explained.

These products are not only found in THC processed for vaping but also for dabbing, a related but different form of inhalation that involves vaporization of highly concentrated THC waxes or resins. Dr. Hanna suggested that the decline in reported cases of EVALI, which has followed the peak incidence in September 2019, is likely to be related to a decline in THC additives as well as greater caution among users.

E-cigarettes were introduced in 2007, according to Dr. Hanna, but EVALI was not widely recognized until cases began accruing early in 2019. By June 2019, the growing number of case reports had attracted the attention of the media as well as public health officials, intensifying the effort to isolate the risks and causes.

Consistent with greater use of e-cigarettes and

Continued on following page

Achieving balance can mean lower pay for women

// *continued from page 1*

being a woman had a negative or very negative impact on their compensation. Only 4% said their gender had a positive or very positive impact on pay and 59% said gender had no effect.

The Medscape Physician Compensation Report 2020 showed male specialists made 31% more than their female counterparts and male primary care physicians earned 25% more.

Some factors may help explain some of the difference, but others remain unclear.

Poor negotiating skills have long been cited as a reason women get paid less; in this survey 39% said they were unskilled or very unskilled in salary negotiations, compared with 28% who said they were skilled or very skilled in those talks.

Katie Donovan, founder of Equal Pay Negotiations, reports that only 30% of women negotiate pay at all, compared with 46% of men.

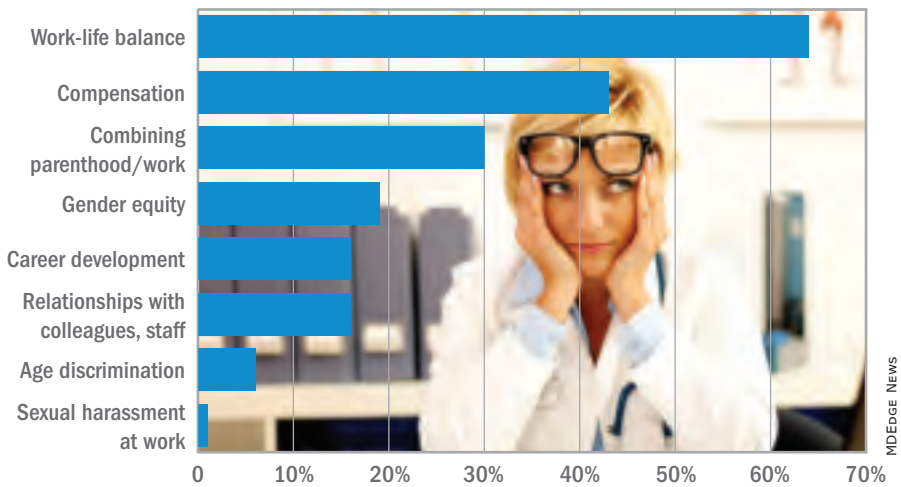
Additionally, women tend to gravitate in specialties that don't pay as well.

They are poorly represented in some of the highest-paying specialties: orthopedics (9%), urology (12%), and cardiology (14%).

"Society's view of women as caretaker is powerful," a radiologist commented.

"Women feel like they need to choose specialties where they can work part-time or flexible time in order to be the primary caretaker at home."

Women's most important workplace concerns



Note: The survey, conducted March 6 to May 1, 2020, involved 3,003 Medscape members.
Source: Medscape Women's Physician Report 2020

Confidence high in leadership abilities

The survey asked women about their confidence in taking a leadership role, and 90% answered that they were confident about taking such a role. However, only half said they had a leadership or supervisory role.

According to the American Medical Association, women make up 3% of health care chief medical officers, 6% of department chairs, and 9% of division leaders.

Asked whether women have experienced gender inequity in the workplace, respondents were almost evenly split, but hospital-based physicians at 61% were more likely to report inequity than were 42% of office-based physicians.

A family physician responded, "I have experienced gender inequality more from administrators than from my male colleagues. I think it's coming from corporate more than from medical professionals."

In this survey, 3% said their male colleagues were unsupportive of gender equality in the workplace.

The survey responses indicate most women physicians who have children are also conflicted as parents regarding their careers. Almost two-thirds (64%) said they were always or often conflicted with these dueling priorities; only 8% said they sometimes or rarely are.

Those conflicts start even before having children. More than half in this survey (52%) said their career influenced the number of children they have.

A family physician said, "I delayed starting a family because of my career. That affected my fertility and made it hard to complete [in-vitro fertilization]."

Family responsibilities meet stigma

Half of the respondents said women physicians are stigmatized for taking a full maternity leave (6 weeks or longer). An even higher percentage (65%) said women are stigmatized for taking more flexible or fewer hours to accommodate family responsibilities.

A 2019 survey of 844 physician mothers found that physicians who took maternity leave received lower peer evaluation scores, lost potential income, and reported experiencing discrimination.

One-quarter of the participants (25.8%) reported experiencing discrimination related to breastfeeding or breast milk pumping upon their return to work.

Burnout at work puts stress on primary relationships, 63% of respondents said, although 24% said it did not strain those relationships. Thirteen percent of women gave the response "not applicable."

"I try to be present when I'm home, but to be honest, I don't deal with it very well," a family physician commented.

A version of this article originally appeared on Medscape.com.

Pages 8a—8f ▸

COVID-19 recovery process remains poorly understood

// continued from page 1

- None had fever or other signs and symptoms of acute illness
- About 53% of patients still had fatigue, 43.4% had dyspnea, 27.3% had joint pain, and had 21.7% chest pain
- About 44% reported worsened quality of life on the EuroQol visual analog scale.

The sample cohort, assessed in a COVID-19 patient service recently established at the Fondazione Policlinico Universitario Agostino Gemelli, had a mean age of 56.5 years and 37% were women. The mean length of hospital stay was 13.5 days. During their hospitalization, 72.7% of patients showed evidence of interstitial pneumonia. Noninvasive ventilation was given to 14.7% of patients and 4.9% received invasive ventilation.

The reality of lingering symptoms has led Dr. Carfi's clinic to schedule a final "wrap-up visit" for patients after full assessment. "On that occasion the doctor prescribes anything necessary to correct the anomalies found during the full evaluation," Dr. Carfi, a geriatrician at the Gemelli clinic, said in an interview. "These usually include vitamin supplementation and, in selected cases, a new drug prescription such as a blood thinner if necessary."

Patients can also enroll in a training program in which breathing status is monitored.

In North America, doctors are also addressing the reality that the road to recovery can be a long and upward one, with persistent symptoms worse than those seen with acute influenza infection. "We see patients who were first diagnosed in March or April and still have symptoms in July," said Zijian Chen, MD, an endocrinologist and medical director of Mount Sinai Health System's Center for Post-COVID Care in New York.

"Persistent symptoms are much worse for COVID patients than flu patients. Even flu patients who spent time in the intensive care unit recover fully, and we can optimize their breathing before discharge," Dr. Chen said in an interview.

As in the Italian study, Dr. Chen sees patients with COVID-19 who have ongoing shortness of breath, some requiring supplemental oxygen, or with persistent chest pain on exertion, blood clotting problems, poor concentration, gastrointestinal distress, and reduced muscle strength and impaired grasping power. He doesn't rule out permanent lung damage in some. "Even asymptomatic individuals already show lung scarring on imaging," he said.

The Mount Sinai program provides specialized interdisciplinary management that may include CT scans, endoscopy, and drugs such as respiratory medications or anticoagulants. It also offers training to combat the fatigue and deconditioning caused by the infection, symptoms that are not medically treatable but impact quality of life.

"These patients do get better, but I expect they may still have symptoms requiring monitoring after a year," Dr. Chen said.

The study received no specific funding. Dr. Carfi and colleagues have disclosed no relevant financial relationships. Dr. Chen has disclosed no relevant financial relationships.

A version of this article originally appeared on Medscape.com.

VIEW ON THE NEWS

Daniel Ouellette, MD, FCCP, comments: She was a survivor. My colleague, a previously healthy woman of about 40, had contracted COVID-19 while working as a physician in an urgent care center for our health care system. Her acute illness of cough, air space disease on x-ray, and hypoxemia had occurred suddenly 1 month prior to our video visit, her chest x-ray had cleared, and her laboratory tests normalized. Yet she still was dyspneic, she still had tachycardia with the least effort, and she was still hypoxemic. Why was she still sick? That was the question that both of us pondered.

She wasn't the only one. Those of us caring for patients who have had COVID-19 are beginning to understand that many patients have a protracted recovery. We have poor understanding of their underlying pathophysiology. I am treating at least some of these patients with either inhaled or oral corticosteroids and other bronchodilators. I hope that these patients fully recover, but fear that we may be faced with a cohort of patients who have chronic respiratory disease related to COVID-19. If that is true, then we have a lot to learn in order to care for them effectively.

Eric Gartman, MD, FCCP, comments: There are two facets to this disease in the long term that are worth noting. First, patients tend to be at a higher level of care for a longer period of time when hospitalized with COVID-19. With that comes tremendous deconditioning, muscle loss, and associated functional decline – and if one adds on pre-existing comorbidities and age, the road to reconditioning is very long. Second, there are clearly certain features relatively unique to COVID-19 that are important that may promote long-term sequelae (high rates of renal impairment, accelerated inflammatory states, prolonged encephalopathy and cognitive impairment, and poorly defined coagulopathies). Obviously, the two facets also have a lot of interaction – and may explain the overall longitudinal burden that these patients may face.

Continued from previous page

vaping among younger individuals, nearly 80% of the 2,807 patients hospitalized for EVALI in the United States by February of this year occurred in individuals aged less than 35 years, according to data released by the Centers for Disease Control and Prevention. The median age was less than 25 years. Of these hospitalizations, 68 deaths (2.5%) in 29 states and Washington, D.C., were attributed to EVALI.

Because of the nonspecific symptoms and lack of a definitive diagnostic test, EVALI is considered a diagnosis of exclusion, according to Abigail Musial, MD, who is completing a fellowship in hospital medicine at Cincinnati Children's. She presented a case in which a patient suspected of EVALI went home after symptoms abated on steroids.

Eliciting a truthful history will be particularly important, because the risk of EVALI appears to be largely related to vaping with tetrahydrocannabinol (THC)-containing products rather than with nicotine alone.

"Less than 24 hours later, she returned to the ED with tachypnea and hypoxemia," Dr. Musial recounted. Although a chest x-ray at the initial evaluation showed lung opacities, a repeat chest x-ray when she returned to the ED showed bilateral worsening of these opacities and persistent elevation of inflammatory markers.

"She was started on steroids and also on antibiotics," Dr. Musial said. "She was weaned quickly from oxygen once the steroids were started and was discharged on hospital day 3."

For patients suspected of EVALI, COVID-19 testing should also be part of the work-up, according to Dr. Kuchipudi. She also recommended an x-ray or CT scan of the lung as well as an evaluation of inflammatory markers.

Dr. Kuchipudi said that more invasive studies than lung function tests, such as bronchoalveolar lavage or lung biopsy, might be considered when severe symptoms make aggressive diagnostic studies attractive.

Steroids and antibiotics typically lead to control of acute symptoms, but patients should be clinically stable for 24-48 hours prior to hospital discharge, according to Dr. Kuchipudi. Follow-up after discharge should include lung function tests and imaging 2-4 weeks later to confirm resolution of abnormalities.

Dr. Kuchipudi stressed the opportunity that an episode of EVALI provides to induce patients to give up nicotine and vaping entirely. Such strategies, such as a nicotine patch, deserve consideration, but she also cautioned that e-cigarettes for smoking cessation should not be recommended to EVALI patients.

The speakers reported no potential conflicts of interest relevant to this study.

chestphysiciannews@chestnet.org

CRITICAL CARE COMMENTARY

Management of EVALI in the ICU

BY MAEVE G. MACMURDO, MBCHB, AND HUMBERTO CHOI, MD, FCCP

Since 2019, more than 2,700 individuals have been hospitalized with electronic cigarette- (e-cigarette), or vaping-associated lung injury (EVALI). This entity first reached clinical attention after a series of otherwise healthy young adults presented with dyspnea, severe hypoxia, and diffuse pulmonary infiltrates in the Midwest (Layden J, et al. *N Engl J Med*. 2020;382[10]:903).

Investigation of these cases revealed an association with the use of e-cigarettes, or vaping. As cases continued to mount, the link between vaping and acute lung injury became increasingly apparent.

How it presents

EVALI can present in variable ways, ranging from mild cough or dyspnea without hypoxia to severe acute respiratory distress syndrome (ARDS), requiring advanced life support.

Although challenging in the ICU setting, obtaining a detailed history of vaping is crucial to make the diagnosis. Collateral history can be helpful, but if unrevealing, it should not be considered sufficient to exclude vaping as potential etiology, particularly in adolescent e-cigarette users, where parental awareness of substance use history may be limited. If a vaping history is obtained, it is important to assess the substance(s) vaped, how these substances were obtained, and methods of inhalation.

While e-cigarettes are the most commonly recognized method of vaping, alternate methods such as "dabbing" and "dripping," are increasingly popular among vape users, often utilizing modified e-liquid components that may not be reported by patients unless specifically queried.

About 82% of patients hospitalized with EVALI reported vaping tetrahydrocannabinol- (THC) containing fluid. This is important because, unlike nicotine based e-liquids that are primarily purchased over the counter, more than 70% of THC-containing e-liquids are reportedly obtained through informal sources, including illegal distributors. In contrast, only 14% of patients hospitalized with EVALI reported vaping of commercial nicotine products alone. Nicotine-based e-liquids can also be modified, and informal purchasing sources remain a concern, particularly among younger users.

The onset of respiratory symptoms in EVALI is often preceded by several days of a systemic prodrome,

Dr. MacMurdo

Dr. Choi

including low-grade fevers, myalgia, gastrointestinal complaints, and fatigue (MacMurdo M, et al. *Chest*. 2020;157[6]:e181). The diagnosis of EVALI is made clinically, and alternative etiologies of lung injury (eg, infections) should be excluded. As there is significant overlap between the presenting symptoms of EVALI and COVID-19 infection, patients should be tested for COVID-19 before a diagnosis of EVALI can be made.

Imaging patterns of EVALI include diffuse alveolar damage (the most common), comprising of diffuse ground-glass opacities, septal thickening, and heterogeneous consolidation (MacMurdo M, et al. *Chest*. 2020;157[6]:e181). Bilateral ground glass opacities suggestive of organizing pneumonia have also been described. Atypical patterns of nodularity suggestive of hypersensitivity pneumonitis are significantly less common.

Given the variety of imaging patterns, EVALI should be considered as a differential diagnosis in all patients presenting with new bilateral pulmonary infiltrates and severe hypoxia.

Early evaluation of these patients revealed lipid-laden macrophages in the bronchoalveolar lavage (BAL) fluid of these patients, raising concern for exogenous lipid inhalation resulting in the development of lipoid pneumonia (Maddock SD, et al. *N Engl J Med*. 2019;381[15]:1488). Analysis of BAL fluid revealed the presence of vitamin E acetate, a diluent utilized to cut, or dilute, e-liquid (Blount BC, et al. *MMWR*. 2019;68[45]:1040). This supported the hypothesis that the outbreak of EVALI was being driven, at least in part, by contaminated or self-modified e-liquid. Evaluation of lung biopsies revealed different pathologic patterns of acute lung injury, including diffuse alveolar damage and organizing pneumonia. Importantly, while lipid-laden macrophages were detected, other characteristics of lipoid pneumonia were absent (Mukhopadhyay S, et al. *Am J Clin Path*. 2019;153[1]30).

How to manage EVALI

Approximately half of patients hospitalized with EVALI required ICU admission. However, there is likely a substantial portion of patients with mild disease who may not be represented in the current registry since they did not require hospitalization. The management is primarily supportive and, in patients who require mechanical ventilation, following lung-protective ventilator strategies is of paramount importance. Steroids have been used in some case series, particularly for patients presenting with more severe disease, but data on benefit, optimal dose, and duration are limited.

Vaping cessation is crucial and should be aggressively encouraged. Newer generations of e-cigarettes contain comparatively higher nicotine concentrations, and likely have high potential for nicotine addiction. Treatment for nicotine dependence, including pharmacologic therapy, needs to be considered in all patients following recovery from EVALI.

With supportive care and removal of ongoing exposure, recovery is anticipated in most patients. Long-term outcomes in patients who develop EVALI remain unclear. Although early fibrosis was present in some patients who had transbronchial biopsies, the long-term effects on pulmonary function that may be seen in patients with a history of EVALI are yet to be determined.

What about policy?

New regulations related to e-cigarette use have been proposed in response to the increasing prevalence of vaping and the EVALI outbreak. These regulations center primarily on limiting adolescent e-cigarette usage. Tobacco 21, federal legislation passed in 2019, makes it illegal to sell tobacco products to those under the age of 21. The FDA also issued an enforcement policy on unauthorized flavored e-cigarette products. However, this has been criticized for not being comprehensive enough. For example, tobacco and menthol flavors were not included in the ban. Furthermore, THC-containing e-liquid remains largely unregulated at the federal level, and state-level regulation varies significantly by marijuana legalization status.

Policy initiatives that restrict sales without also addressing drivers of e-cigarette use, such as nicotine dependence and aggressive marketing campaigns, are of particular concern and are likely to disproportionately impact younger users. Another unintended effect of e-cigarette sales restrictions may result in a new wave of illegal product distribution and e-liquid modification. Supporting this hypothesis was the finding that the risk of EVALI was higher in states without legalized recreational marijuana, suggesting that users who obtained e-liquid through these informal sources were at greater risk of exposure to contaminated product (Wing C, et al. *JAMA Netw Open*. 2020;3[4]:e202187). While the CDC is no longer actively tracking EVALI cases, they continue to be reported, and vape use remains common (Armatas C, et al. *MMWR*. 69[25]:801). As long as e-cigarettes remain in use, another EVALI outbreak remains possible.

It remains important for the intensivist to be familiar with the full spectrum of vaping methods, and to report suspected cases when they arise. While treatable, much remains unknown about the long-term effects on this patient population. Further research is needed to better understand the long-term outcomes in patients with EVALI, in addition to the treatment of nicotine dependence and substance use associated with vaping. Finally, comprehensive regulation to curb e-cigarette usage is needed, particularly among adolescents. However, legislation that is too narrow in scope runs the risk of channeling adolescent e-cigarette users to obtain product through informal sources, further increasing their risk for EVALI. As clinicians, we cannot afford to drop our guard!

Dr. MacMurdo and Dr. Choi are with Cleveland Clinic, Respiratory Institute, Cleveland, Ohio.

PULMONARY PERSPECTIVES®

Telehealth in the COVID-19 era: The NYC experience

BY SEAN D. FEDYNA, MD, AND CLAIRE MCGRODER, MD

Big data scientists and health-care experts have tried preparing physicians and patients for the arrival of telemedicine for years. Health tracking applications are on our smartphones. Compact ambulatory devices diagnose hypertension and atrial fibrillation. Advanced imaging modalities make the stethoscope more of a neck accessory than a practical tool. Despite these efficient technologic advancements, the idea of making the sacred in-person office visit remote and through a screen appealed to few. In fact, prior to the COVID-19 pandemic, only 15% of medical practices offered telehealth services and 8% of Americans joined in remote visits annually (Mann DM et al. *J Am Med Inform Assoc*. 2019 Feb 1;26[2]:106-114).

Dr. Fedyna

Dr. McGroder

When the COVID-19 pandemic hit New York City and admissions for hypoxemic respiratory failure skyrocketed, ED and in-person clinic visits for other acute and chronic conditions plummeted. Prior to clinics officially closing their doors, doctors in New York City asked their patients to reserve office visits for emergency issues only ,with most patients willingly staying home to avoid exposure to the virus. Suddenly, after years of disinterest in adopting telehealth, hospitals and clinics were catapulted into a full-on need for this technology. Overnight, our division's secretaries and medical assistants became IT support staff. We all learned together what worked, what didn't work, and how to adapt our workflow to meet everyone's needs.

Previously, longstanding issues with accessibility and reimbursement presented barriers to widespread adoption of telemedicine. Once the pandemic hit, though, many regulatory changes were quickly made to accommodate telehealth.

Three such changes are worth highlighting (Centers for Medicare and Medicaid Services. COVID-19 emergency declaration blanket waivers for health care providers. March 30, 2020).

First, patient privacy rules became more lenient. Prior to the pandemic, HIPAA mandated that both doctor and patient use embedded video interfaces with high levels of security. Now, health-care providers can use commonplace video chat applications such as FaceTime, Google Hangouts, Zoom, or Skype to provide telehealth without risk of penalty for HIPAA noncompliance. When connectivity concerns arose with our EMR's embedded telehealth application, a quick transition to one of these platforms mitigated patient and provider frustration.

Second, prior to the pandemic, some private insurance providers reimbursed for televisits, but there were stipulations on how the visit could be conducted. Now, many of the commercial insurers plus Medicare and Medicaid in New York State reimburse the same amount for televisits as in-person visits (fee-for-service rate). Reimbursement rates of audio-only encounters were increased. If these changes are continued post-pandemic, it will have an expansive impact on the future of an outpatient practice.

Third, restrictive government regulations relaxed with regard to telehealth deployment. Gone are the demands on providers and patients to be physically face-to-face. Many colleagues worked from home, safely social distancing.

Even though remote medical visits were a crucial part of flattening the curve during the peak of the pandemic in New York City, the telehealth experience is not without flaws.

An informal survey of providers in our own division garnered diverse and spirited viewpoints about seeing patients remotely. Instead of using a stethoscope to pick up a subtle finding, telehealth visits require the use of our eyes to scan a patient's home environment for insights explaining their chronic cough (Where is the mold? Where is the water damage? Where is the bird?). We use our ears to hear the intonation of our patient's voice to know when he or she is concerned, anxious, or are at their baselines. We would implore patients to put on their pulse oximeter and perform activities of daily living and/or exertion. On multiple occasions, patients would perform their own, unsolicited walks about their home to show us what they could and couldn't do, where they place their concentrators, and where they are likely to trip over oxygen tubing. We learned to depend on them to reach the conclusion that they were at their normal state of health.

For straight-forward encounters with existing patients, most of our colleagues appreciated the simplicity and efficiency of telemedicine. But when it came to new patients, some colleagues struggled with whether they should see them for the first time over video. Universally, providers felt feelings of inadequacy without an in-person examination and review of diagnostic information.

Along those lines, many of our colleagues worried about their ability to perform the most fundamental role of a physician over the phone/internet for all patients: building trust with a patient. Eye contact, the physical exam, and verbal and nonverbal communication that engenders confidence and displays empathy remain a challenge. Multiple colleagues commented on the difficulty of communicating a new horrible diagnosis over a spotty internet connection. Others expressed concern about the inability to review chest imaging in-person with patients as this often enhances patient comprehension and relieves anxiety about diagnostic possibilities.

Providers also noted that telehealth implementation is not the same for all individuals. Just as COVID-19 disproportionately affects the most vulnerable populations (NYC Health. COVID-19: data. Accessed July 1, 2020. https://www1.nyc.gov/site/doh/covid/covid-19-data.page), practicing telehealth has uncovered more ways in which racial/ethnic minorities, low income communities, and older patients are at a disadvantage (Garg S, et al. *MMWR Morb Mortal Wkly Rep*. 2020;69[15]:458). The relatively quick transition to telemedicine revealed that many of our patients don't have emails or home computers to connect with online platforms. Similarly, some do not have smart phones with internet capabilities. Many do not speak English and cannot partake in video visits since translators are not yet embedded into the EMR's video system. Elderly patients were frequently very anxious with telemedicine because of unfamiliarity with the technology, and many preferred a phone conversation. Thus, while more fortunate patients get to use a video interface and its association with higher patient understanding and satisfaction, our most vulnerable populations are often denied the same access to such care (Voils CI et al. *J Genet Couns.*

Continued on page 15

JEAN-PHILIPPE WALLET/ISTOCK/GETTY IMAGES

Pulmonary arterial hypertension (PAH, WHO Group I) is a silently progressive disease[1]

The ONLY Oral Prostacyclin Pathway Therapy Proven to Reduce the Risk of Disease Progression and PAH-related Hospitalization[2]

INDICATION

UPTRAVI® (selexipag) is indicated for the treatment of pulmonary arterial hypertension (PAH, WHO Group I) to delay disease progression and reduce the risk of hospitalization for PAH.

Effectiveness was established in a long-term study in PAH patients with WHO Functional Class II-III symptoms.

Patients had idiopathic and heritable PAH (58%), PAH associated with connective tissue disease (29%), and PAH associated with congenital heart disease with repaired shunts (10%).

IMPORTANT SAFETY INFORMATION

CONTRAINDICATIONS

Concomitant use of strong inhibitors of CYP2C8 (eg, gemfibrozil) with UPTRAVI is contraindicated.

WARNINGS AND PRECAUTIONS

Pulmonary Veno-Occlusive Disease (PVOD)

Should signs of pulmonary edema occur, consider the possibility of associated PVOD. If confirmed, discontinue UPTRAVI.

ADVERSE REACTIONS

Adverse reactions more frequent compared to placebo (≥3%) are headache (65% vs 32%), diarrhea (42% vs 18%), jaw pain (26% vs 6%), nausea (33% vs 18%), myalgia (16% vs 6%), vomiting (18% vs 9%), pain in extremity (17% vs 8%), flushing (12% vs 5%), arthralgia (11% vs 8%), anemia (8% vs 5%), decreased appetite (6% vs 3%), and rash (11% vs 8%).

These adverse reactions are more frequent during the dose titration phase.

Hyperthyroidism was observed in 1% (n=8) of patients on UPTRAVI and in none of the patients on placebo.

DRUG INTERACTIONS

CYP2C8 Inhibitors

Concomitant administration with gemfibrozil, a strong inhibitor of CYP2C8, doubled exposure to selexipag and increased exposure to the active metabolite by approximately 11-fold. Concomitant use of UPTRAVI with strong inhibitors of CYP2C8 is contraindicated.

Concomitant administration of UPTRAVI with clopidogrel, a moderate inhibitor of CYP2C8, had no relevant effect on the exposure to selexipag and increased the exposure to the active metabolite by approximately 2.7-fold. Reduce the dosing of UPTRAVI to once daily in patients on a moderate CYP2C8 inhibitor.

Please see additional Important Safety Information on the adjacent page.

BEFORE PROGRESSION TAKES MORE AWAY

Add UPTRAVI Earlier
in FC II and FC III

Add UPTRAVI as part of early comprehensive treatment to help delay disease progression

Visit UptraviHCP.com to learn more.

IMPORTANT SAFETY INFORMATION (cont'd)

DRUG INTERACTIONS

CYP2C8 Inducers

Concomitant administration with an inducer of CYP2C8 and UGT 1A3 and 2B7 enzymes (rifampin) halved exposure to the active metabolite. Increase UPTRAVI dose, up to twice, when co-administered with rifampin. Reduce UPTRAVI when rifampin is stopped.

DOSAGE AND ADMINISTRATION

Recommended Dosage

Recommended starting dose is 200 mcg twice daily. Tolerability may be improved when taken with food. Increase by 200 mcg twice daily, usually at weekly intervals, to the highest tolerated dose up to 1600 mcg twice daily. If dose is not tolerated, reduce to the previous tolerated dose.

Patients With Hepatic Impairment

For patients with moderate hepatic impairment (Child-Pugh class B), the starting dose is 200 mcg once daily. Increase by 200 mcg once daily at weekly intervals, as tolerated. Avoid use of UPTRAVI in patients with severe hepatic impairment (Child-Pugh class C).

Co-administration With Moderate CYP2C8 Inhibitors

When co-administered with moderate CYP2C8 inhibitors (eg, clopidogrel, deferasirox and teriflunomide), reduce the dosing of UPTRAVI to once daily. Revert back to twice daily dosing frequency of UPTRAVI when co-administration of moderate CYP2C8 inhibitor is stopped.

Dosage Strengths

UPTRAVI tablet strengths: 200, 400, 600, 800, 1000, 1200, 1400, and 1600 mcg.

Please see Brief Summary of Prescribing Information on the adjacent page.

#1 MOST-PRESCRIBED ORAL PROSTACYCLIN PATHWAY THERAPY[2]*

*Based on Pharmacy Benefit Manager claims data from Express Scripts and Prime Therapeutics as of June 30, 2019.

FC=functional class; WHO=World Health Organization.

References: 1. Lau EM, Humbert M, Celermajer DS. Early detection of pulmonary arterial hypertension. *Nat Rev Cardiol.* 2015;12(3):143-155.
2. Data on file, Actelion Pharmaceuticals.

ACTELION | A JANSSEN PHARMACEUTICAL COMPANY OF Johnson&Johnson

Uptravi® selexipag tablets | 200-1600 mcg

BRIEF SUMMARY OF FULL PRESCRIBING INFORMATION
Please see full Prescribing Information.

INDICATIONS AND USAGE
Pulmonary Arterial Hypertension UPTRAVI® (selexipag) is indicated for the treatment of pulmonary arterial hypertension (PAH, WHO Group I) to delay disease progression and reduce the risk of hospitalization for PAH. Effectiveness was established in a long-term study in PAH patients with WHO Functional Class II-III symptoms. Patients had idiopathic and heritable PAH (58%), PAH associated with connective tissue disease (29%), and PAH associated with congenital heart disease with repaired shunts (10%).

CONTRAINDICATIONS
Concomitant use of strong inhibitors of CYP2C8 (e.g., gemfibrozil) *[see Drug Interactions (CYP2C8 Inhibitors) and Clinical Pharmacology (Pharmacokinetics)]*.

WARNINGS AND PRECAUTIONS
Pulmonary Veno-Occlusive Disease (PVOD) Should signs of pulmonary edema occur, consider the possibility of associated PVOD. If confirmed, discontinue UPTRAVI.

ADVERSE REACTIONS
Clinical Trial Experience Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

The safety of UPTRAVI has been evaluated in a long-term, placebo-controlled study enrolling 1156 patients with symptomatic PAH (GRIPHON study). The exposure to UPTRAVI in this trial was up to 4.2 years with median duration of exposure of 1.4 years.

The following list presents adverse reactions more frequent on UPTRAVI (N=575) than on placebo (N=577) by ≥3%: headache 65% vs 32%, diarrhea 42% vs 18%, jaw pain 26% vs 6%, nausea 33% vs 18%, myalgia 16% vs 6%, vomiting 18% vs 9%, pain in extremity 17% vs 8%, flushing 12% vs 5%, arthralgia 11% vs 8%, anemia 8% vs 5%, decreased appetite 6% vs 3%, and rash 11% vs 8%.

These adverse reactions are more frequent during the dose titration phase.

Hyperthyroidism was observed in 1% (n=8) of patients on UPTRAVI and in none of the patients on placebo.

Laboratory Test Abnormalities
Hemoglobin In a Phase 3 placebo-controlled study in patients with PAH, mean absolute changes in hemoglobin at regular visits compared to baseline ranged from –0.34 to –0.02 g/dL in the selexipag group compared to –0.05 to 0.25 g/dL in the placebo group. A decrease in hemoglobin concentration to below 10 g/dL was reported in 8.6% of patients treated with selexipag and 5.0% of placebo-treated patients.

Thyroid function tests In a Phase 3 placebo-controlled study in patients with PAH, a reduction (up to –0.3 MU/L from a baseline median of 2.5 MU/L) in median thyroid-stimulating hormone (TSH) was observed at most visits in the selexipag group. In the placebo group, little change in median values was apparent. There were no mean changes in triiodothyronine or thyroxine in either group.

Postmarketing Experience The following adverse reactions have been identified during postapproval use of Uptravi. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.
Symptomatic hypotension

DRUG INTERACTIONS
CYP2C8 Inhibitors Concomitant administration with gemfibrozil, a strong inhibitor of CYP2C8, doubled exposure to selexipag and increased exposure to the active metabolite by approximately 11-fold. Concomitant administration of UPTRAVI with strong inhibitors of CYP2C8 (e.g., gemfibrozil) is contraindicated *[see Contraindications and Clinical Pharmacology (Pharmacokinetics)]*.

Concomitant administration of UPTRAVI with clopidogrel, a moderate inhibitor of CYP2C8, had no relevant effect on the exposure to selexipag and increased the exposure to the active metabolite by approximately 2.7-fold. When co-administered with moderate CYP2C8 inhibitors (e.g., clopidogrel, deferasirox and teriflunomide), reduce the dosing of UPTRAVI to once daily. Revert back to twice daily dosing frequency of UPTRAVI when co-administration of moderate CYP2C8 inhibitor is stopped *[see Clinical Pharmacology (Pharmacokinetics)]*.

CYP2C8 Inducers Concomitant administration with an inducer of CYP2C8 and UGT 1A3 and 2B7 enzymes (rifampin) halved exposure to the active metabolite. Increase dose up to twice of UPTRAVI when co-administered with rifampin. Reduce UPTRAVI when rifampin is stopped *[see Clinical Pharmacology (Pharmacokinetics)]*.

USE IN SPECIFIC POPULATIONS
Pregnancy *Risk Summary* There are no adequate and well-controlled studies with UPTRAVI in pregnant women. Animal reproduction studies performed with selexipag showed no clinically relevant effects on embryofetal development and survival. A slight reduction in maternal as well as in fetal body weight was observed when pregnant rats were administered selexipag during organogenesis at a dose producing an exposure approximately 47 times that in humans at the maximum recommended human dose. No adverse developmental outcomes were observed with oral administration of selexipag to pregnant rabbits during organogenesis at exposures up to 50 times the human exposure at the maximum recommended human dose.

The estimated background risk of major birth defects and miscarriage for the indicated population is unknown. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2-4% and 15-20%, respectively. *Data Animal Data* Pregnant rats were treated with selexipag using oral doses of 2, 6, and 20 mg/kg/day (up to 47 times the exposure at the maximum recommended human dose of 1600 mcg twice daily on an area under the curve [AUC] basis) during the period of organogenesis (gestation days 7 to 17). Selexipag did not cause adverse developmental effects to the fetus in this study. A slight reduction in fetal body weight was observed in parallel with a slight reduction in maternal body weight at the high dose.

Pregnant rabbits were treated with selexipag using oral doses of 3, 10, and 30 mg/kg (up to 50 times the exposure to the active metabolite at the maximum recommended human dose of 1600 mcg twice daily on an AUC basis) during the period of organogenesis (gestation days 6 to 18). Selexipag did not cause adverse developmental effects to the fetus in this study.

Lactation It is not known if UPTRAVI is present in human milk. Selexipag or its metabolites were present in the milk of rats. Because many drugs are present in the human milk and because of the potential for serious adverse reactions in nursing infants, discontinue nursing or discontinue UPTRAVI.

Pediatric Use Safety and effectiveness in pediatric patients have not been established.

Geriatric Use Of the 1368 subjects in clinical studies of UPTRAVI 248 subjects were 65 years of age and older, while 19 were 75 and older. No overall differences were observed between these subjects and younger subjects, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity cannot be ruled out.

Patients with Hepatic Impairment No adjustment to the dosing regimen is needed in patients with mild hepatic impairment (Child-Pugh class A).

UPTRAVI® (selexipag) Rx Only

A once-daily regimen is recommended in patients with moderate hepatic impairment (Child-Pugh class B) due to the increased exposure to selexipag and its active metabolite. There is no experience with UPTRAVI in patients with severe hepatic impairment (Child-Pugh class C). Avoid use of UPTRAVI in patients with severe hepatic impairment *[see Clinical Pharmacology (Pharmacokinetics)]*.

Patients with Renal Impairment No adjustment to the dosing regimen is needed in patients with estimated glomerular filtration rate >15 mL/min/1.73 m^2.

There is no clinical experience with UPTRAVI in patients undergoing dialysis or in patients with glomerular filtration rates <15 mL/min/1.73 m^2 *[see Clinical Pharmacology (Pharmacokinetics)]*.

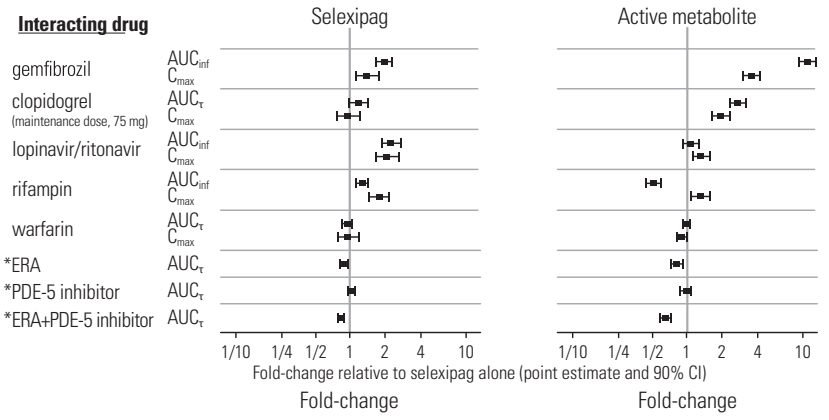
OVERDOSAGE
Isolated cases of overdose up to 3200 mcg were reported. Mild, transient nausea was the only reported consequence. In the event of overdose, supportive measures must be taken as required. Dialysis is unlikely to be effective because selexipag and its active metabolite are highly protein-bound.

CLINICAL PHARMACOLOGY
Pharmacokinetics Specific Populations: *Hepatic Impairment:* In subjects with mild *(Child-Pugh class A)* or moderate *(Child-Pugh class B)* hepatic impairment, exposure to selexipag was 2- and 4-fold that seen in healthy subjects. Exposure to the active metabolite of selexipag remained almost unchanged in subjects with mild hepatic impairment and was doubled in subjects with moderate hepatic impairment. *[see Use in Specific Populations]*.

Based on pharmacokinetic modeling of data from a study in subjects with hepatic impairment, the exposure to the active metabolite at steady state in subjects with moderate hepatic impairment (Child-Pugh class B) after a once daily regimen is expected to be similar to that in healthy subjects receiving a twice daily regimen. The exposure to selexipag at steady state in these patients during a once daily regimen is predicted to be approximately 2-fold that seen in healthy subjects receiving a twice-daily regimen. *Renal Impairment:* A 40-70% increase in exposure (maximum plasma concentration and area under the plasma concentration-time curve) to selexipag and its active metabolite was observed in subjects with severe renal impairment (estimated glomerular filtration rate ≥ 15 mL/min/1.73 m^2 and < 30 mL/min/1.73 m^2) *[see Use in Specific Populations]*. Drug Interaction Studies: *In vitro studies* Selexipag is hydrolyzed to its active metabolite by carboxylesterases. Selexipag and its active metabolite both undergo oxidative metabolism mainly by CYP2C8 and to a smaller extent by CYP3A4. The glucuronidation of the active metabolite is catalyzed by UGT1A3 and UGT2B7. Selexipag and its active metabolite are substrates of OATP1B1 and OATP1B3. Selexipag is a substrate of P-gp, and the active metabolite is a substrate of the transporter of breast cancer resistance protein (BCRP). Selexipag and its active metabolite do not inhibit or induce cytochrome P450 enzymes and transport proteins at clinically relevant concentrations.

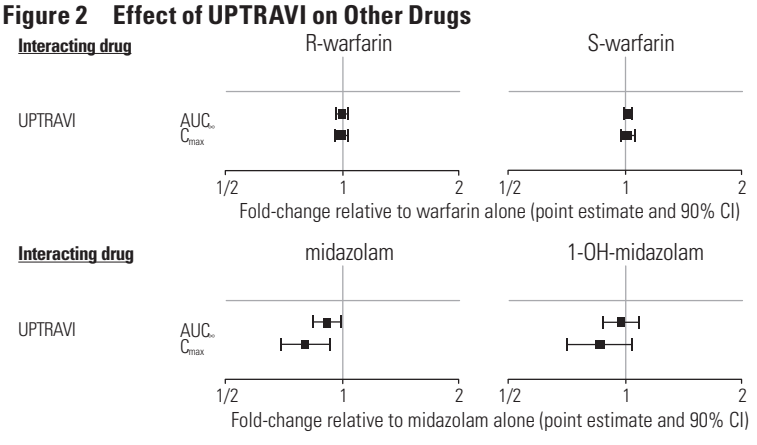
The results on in vivo drug interaction studies are presented in Figure 1 and 2.

Figure 1 Effect of Other Drugs on UPTRAVI and its Active Metabolite



*ERA and PDE-5 inhibitor data from GRIPHON.

Figure 2 Effect of UPTRAVI on Other Drugs



Manufactured for: Actelion Pharmaceuticals US, Inc. 5000 Shoreline Court, Ste. 200, South San Francisco, CA 94080, USA ACT20190806

Reference: UPTRAVI full Prescribing Information. Actelion Pharmaceuticals US, Inc.

ACTELION | A JANSSEN PHARMACEUTICAL COMPANY OF Johnson&Johnson

NEWS FROM THE CHEST BOARD OF REGENTS

Progress during a pandemic – June 2020

BY JOHN HOWINGTON, MD, MBA, FCCP
Regent-at-Large

The Board of Regents met remotely in June because of ongoing travel restrictions and safety concerns for staff and board members.

The meeting was opened with Stephanie Levine, President; Steve Simpson, President-Elect; and Robert Musacchio, CEO/EVP discussing the impacts of the COVID-19 pandemic and Business Continuity Planning. The COVID-19 Task Force, chaired by Steve Simpson, continues to meet weekly to identify emerging content needs toward supporting membership and their patients through the pandemic, connecting with the Education Committee and Foundation to ensure robust coverage, drawing on the expertise of the NetWorks for content development, and leveraging the Social Media Workgroup for dissemination. Key activities include: a regular Thursday webinar series at 3:00 pm CDT titled: "Advice From the Front Lines"; clinical resources in the form of infographics and guides are posted in the resource center and circulated through social media; Alex Niven, MD FCCP, led a team to develop a wellness curriculum and series; the CHEST Foundation developed patient education videos and guides, a public service announcement in partnership with the American Thoracic Society, and a pilot partnership with AMITA Health enabling access to telehealth.

Dr. Howington

The Finance Committee, chaired by John Howington, reported that CHEST is on track to meet its budget and exceed its debt covenants and operating reserve policy for the current fiscal year. The record attendance at the October 2019 annual meeting, along with strong performance from our digital offerings offset the financial impacts of the global pandemic. Bob Musacchio, CEO/EVP, reminded the Board why CHEST is switching from a fiscal year to calendar year budget. A calendar year budget process creates better alignment with budgets of pharma, other clients, and vendors; facilitates various accruals that are based on the calendar year, such as benefits, vacation, sick, and PTO days; provides for greater continuity for doing business throughout the year, and permits more planning time for staff in setting individual goals related to the annual meeting.

CHEST'S Digital Transformation strategy that kicked off in 2019 was timely considering the pandemic. With education as one of our main foci, CHEST has hired and onboarded a Chief Learning Officer, Jim Young, to actively examine how we develop and deploy our educational products and services. Our first movement toward remote meetings occurred on June 26 with the Virtual Congress originally slated for Bologna, Italy. Here, we piloted a new platform and brought to life the tenets established in the new learning strategy—providing choice, demonstrating responsiveness, and fostering connection.

CHEST's Governance Committee reviewed the College bylaws for revisions, as per the group's practice every 2-3 years, and the Board approved the revisions to the bylaws as proposed by the committee.

CHEST's newly formed Health Policy and Advocacy Committee (HPAC), chaired by Neil Freedman, MD, FCCP, is holding monthly meetings with a goal of making a recommendation to the Board of Regents on CHEST's regulatory and policy priorities during the September meeting. The HPAC assists CHEST leadership and the BOR in developing and implementing health policy positions, setting chest advocacy agendas in the legislative and regulatory arenas, engaging with policymakers as directed by the BOR, and educating CHEST members of government affairs relevant to CHEST's mission. The HPAC is currently setting its priorities to bring to the BOR for approval later this summer. Areas of focus include home mechanical ventilation and competitive bidding, rehabilitation and tobacco vaping education, and oxygen access and education.

Peter Mazzone, MD, FCCP; Editor in Chief, CHEST journal, reviewed his editorial team, which now consists of three Deputy Editors, nine Associate Editors, an Assistant Editor, a Statistical Editor, and three Case Series Editors and the publishing staff and partners.

The Board's next meetings will be a scheduled teleconference in early September, followed by their meeting that will occur concomitantly with the CHEST meeting in October.

Continued from page 11

2018;27[2]:339).

Telemedicine will continue to have a significant impact on the future of health care long after the COVID-19 pandemic abates. There will be growing pains, refinement of technology, improvements in policy, and an ongoing general evolution of the system. Patients and providers will grow together as its utilization continues. We suspect patient surveys about their attitudes and preferences for telemedicine will be as varied as the providers surveyed here. A recent survey of 1000 patients about their telehealth experiences during the pandemic reported that over 75% were very or completely satisfied with their virtual care experiences, and over 50% indicated they would be willing to switch providers to have virtual visits on a regular basis (Patient Perspectives on Virtual Care Report, Accessed July 7, 2020, https://tinyurl.com/y4bh5owj.

One hopes that with time and on-going feedback, the fundamental purpose of the physician-patient relationship can be maintained and both sides can still appreciate the conveniences and power of telehealth technology.

Dr. Fedyna and Dr. McGroder are affiliated with the Division of Pulmonary, Allergy, and Critical Care Medicine, Columbia University Medical Center, New York, NY.

FROM THE CEO/EVP

Our CHEST year

BY ROBERT MUSACCHIO, PHD

Greetings. I hope that you are well and are enjoying the summer as best you can during these challenging times. Since the "CHEST year" has drawn to a close recently, I would like to offer my reflections, which were recently shared with the Board of Regents, as well as a glimpse of what is ahead for CHEST. There is just so much great work I want to share.


Dr. Musacchio

This past year has posed a number of challenges. COVID-19 has caused us to interact differently on both a social and a business level. CHEST Headquarters has been closed, and we have not had a live-learning course for more than 4 months. But our work has not faltered. We have been extremely productive during this period and have once again demonstrated our resiliency and innovative spirit; in our vernacular, we "Crushed It."

While COVID-19 has presented us with a number of obstacles, it has presented us with a number of opportunities, and we have taken advantage of them. During this pandemic, CHEST has truly demonstrated its ability to provide a connection at a critical time, giving this phrase new meaning and urgency. We have created a new resource center for clinicians, developed patient education and awareness campaigns to support the public through this crisis, launched a webinar series, developed scientific guidance statements, and more. At the same time, we have invested in our technology and educational infrastructure to grow our capabilities and position CHEST for long-term success.

Prior to COVID-19, we spent a significant amount of time among the CHEST staff, Presidents, and Boards drafting and reviewing a concise strategy statement for CHEST to provide focus and clarity to its efforts and derive and tie together future strategies specific to learning, technology, and more. From this statement, we derived four key areas requiring our continued and explicit focus to achieve this goal:

- People: Ensure we attract, retain, and incentivize the right people (staff, leaders, and volunteers).
- Products: Foster an environment of innovation and product development resulting in overall revenue growth, as well as revenue from new products and services.
- Education: Ensure that CHEST education products and services are robust, differentiated, and scalable
- Growth: Meet or exceed revenue and margin targets.

As long as the mission and strategy of the organization does not deviate, these goals should not change. However, how we go about executing on achieving these goals each year will depend on the context of our environment and be shaped by the specific initiatives planned affecting our People, Products, Education, and building toward Growth. This consistency is important to sustain a vibrant, aligned, and productive organization.

Beyond this groundwork, I also would like to list a series of things that, together, CHEST accomplished over the last year.

- Reviewed existing contracts and, where appropriate, renegotiated major contracts to ensure terms more favorable for CHEST.
- Hired and on-boarded a Chief Learning Officer to place greater emphasis on expanding CHEST educational programs. Analyzed current educational products and have begun repositioning our educational efforts to better serve our learners.
- Refined the one CHEST concept, realigned responsibilities throughout the organization in general, and the CHEST Foundation, in particular, to enhance resource readiness and productivity. Clarified relationship with industry by continuing to implement our Industry Partnership Guidelines and streamline efforts with our partners.
- Continued rollout and execution of our international event strategy. Successfully developed and held a program for CHEST Congress 2020 Italy with our CHEST Italian Delegation, in a virtual format, due to COVID, while enabling us to build momentum for a rescheduled meeting in 2021. We had over 3,000 virtual registrants from over 100 countries, and there was a

Continued on following page

President's report

BY STEPHANIE M. LEVINE, MD, FCCP

Dear Colleagues,

We are now near 6 months into living with COVID-19. In Texas, we are experiencing the surge that much of the Northeast saw in March and April. The COVID-19 Task Force led by Dr. Steve Simpson (CHEST President-Elect) and with representation from the Critical Care, Chest Infections, and Disaster Response and Global Health NetWorks continues to meet regularly to keep our members updated on the latest research and rapidly changing clinical management of COVID-19 illness and the sequelae. COVID-19 has put our medical profession and our subspecialty under considerable stress, and CHEST has launched a new longitudinal Wellness Center led by Dr. Alex Niven, from Mayo Clinic, Rochester. These new resources will feature a wellness webinar series focused on mental health and wellness for clinicians during COVID-19 and beyond. CHEST received overwhelming positive feedback from members and attendees to the Women & Pulmonary Virtual Happy Hour that focused on sharing stories and building community. Many leaders have suggested other such topics and efforts that may be useful to the CHEST community. The CHEST Wellness Center will launch on July 15.

In addition to COVID-19 activities, our nation and the world have compelled a new powerful look at race relations, disparities, and diversity. I represented CHEST at a "White Coats for Black Lives" event in San Antonio. Following our nation's call for racial equality, CHEST released a Statement of Equity that received overwhelmingly positive feedback and response from members via email and on social media. This statement clearly resonated with the CHEST community. We are asking our leadership and members to consider ways in which CHEST might continue to raise awareness and continue with efforts related to diversity and equity. CHEST also hosted an excellent webinar moderated by Dr. Demondes Haynes and Dr. Nneka Sederstrom in late June that offered a direct and meaningful dialogue on issues facing clinicians and patients of color, and the responsibility of those in leadership positions. CHEST leadership stand firm that racism and inequality are public health issues and are working to define how we further our efforts in this arena.

On June 17, CHEST held a 1-day Virtual CHEST Congress in conjunction with our the CHEST Italian Delegation, as COVID-19 prevented us from safely holding the live Congress in Bologna. We had 3,250 registered attendees. I was so impressed at what a virtual platform can deliver, complete with great educational sessions, including much on COVID-19, as well as capturing the CHEST experience with games, bocce, jeopardy etc! This gave CHEST an opportunity to explore further virtual-based education to reach our wider global audience. CHEST will still be holding an in-person Congress in Bologna, June 24-26, 2021.

Dr. Levine

CHEST will host three entirely virtual Board Review Courses this August in the areas of Pulmonary, Critical Care, and Pediatric Pulmonary Medicine. These courses will include a combination of pre-recorded lectures and live, interactive sessions. Audience response systems and SEEK questions will still be utilized. There's still time to register, so don't miss it! With time being a major commodity at present, all attendees will receive year-long access to all material!

I know you have been wondering about CHEST 2020, and as you have heard by now, CHEST 2020 in Chicago will be a virtual meeting. I am sure that this announcement came as no big surprise, but is certainly disappointing. As you can imagine this was a difficult decision, but one that was necessary based upon our new reality. It was compounded by limitations on the convention center venue under the Illinois reopening plan, and the fact that a large number of our faculty, as well as our attendees, are under a travel ban for the remainder of 2020 that will not allow them to travel to Chicago. The abstract and case report deadline closed June 1, and despite these circumstances, we saw our highest number of submissions to date! Late abstracts were due on July 17. We will be presenting standalone and complementary online offerings to ensure seamless delivery of critical education in formats that cater easily to our newly formed habits.

Thanks to our dedicated Scientific Program Committee Chair, Dr. Victor Test, and staff, we had already begun preparing for virtual CHEST Annual Meeting 2020. Here's what you can expect:

- A memorable experience
- A highly interactive education program that includes audience Q&A, discussion threads, and audience response systems
- Opportunities for one-on-one discussions, networking, and access to faculty
- Industry-sponsored programs and a virtual exhibit hall
- Access to hundreds of narrated poster presentations, case reports, and research abstracts
- Competitive educational gaming where attendees can participate, win, or watch
- Dedicated COVID-19 update sessions
- CME and MOC credits

If you have already registered for CHEST 2020, you will have the option to transfer your registration to this new model. Our main focus is delivering the virtual program with the highest level of service that you have come to expect from CHEST and respect for our member's time and current situation. I know Dr. Victor Test and the program committee will deliver a superb educational experience in a virtual meeting setting. Thank you for your support and understanding as we continue to evolve our events to meet the needs of our members while adapting to the best delivery methods.

Since so many fellows were unable to hold their live graduation events, and celebrations, we decided to send them off with a virtual event! On June 30 we held a Joint CHEST/ATS Respiratory Community Graduation Ceremony–for graduating fellows, and to welcome new fellows to our profession. The ceremony consisted of a combination of live and recorded messages from key leaders from both organizations. In addition, there was a keynote address from Dr. Rana Awdish, a critical care physician at Henry Ford Hospital in Detroit, who authored the bestselling book "In Shock: My Journey from Death to Recovery and the Redemptive Power of Hope." I encourage you to watch the video on the Early Career Professionals page on our Chestnet.org website.

The National Association for Medical Direction of Respiratory Care (NAMDRC) merger with CHEST was finalized at the end of May. Look for more advocacy-related actions coming from CHEST. The newly formed Health Policy and Advocacy Committee is helping to set CHEST's advocacy agendas in the legislative and regulatory arenas, engaging with policymakers and educating CHEST members on governmental affairs relevant to CHEST's mission. Did you see the

Continued on page 20

FROM THE CEO/EVP *continued from previous page*

thank you given to all attendees by Dr. Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases, to start off the program – what a success!

- Accelerated our digital transformation with an educational focus on virtual Board Review, CHEST 2020 Annual Meeting, online simulation.
- Forecasting strong financial outlook and improving financial reporting for FY19-20. Successful 2019 annual meeting:
- Total attendance 8,593—the largest attendance to date.
- Simulation Session Registration 979
- Exhibiting companies 160 SOLD OUT
- CHEST Annual Meeting 2019 delivered largest number of APPs and fellows attending in the last 5 years.
- Reintroduced CHEST into the advocacy and health policy arena through the successful acquisition of NAMDRC.

CHEST's operating financial performance is solid, and well thought out efforts have kept CHEST on a growth trajectory over the last 7 years. During this same period (since 2011/12), our staff headcount has grown from 85 to a projected 121 this year; the new expertise and capabilities we have brought on board, combined with our highly talented and committed staff team, have contributed to this tremendous growth.

Our future is bright. These 2 two years have been very exciting for me both professionally and personally. I am grateful for the opportunity to work with all of you and serve as your CEO/EVP because together, we truly are making a significant difference in moving CHEST forward and crushing lung disease.

I know you are as proud of CHEST's efforts this year as I am.

Thank you.

In the crime of severe asthma inflammation...

"TSLP MADE US DO IT"

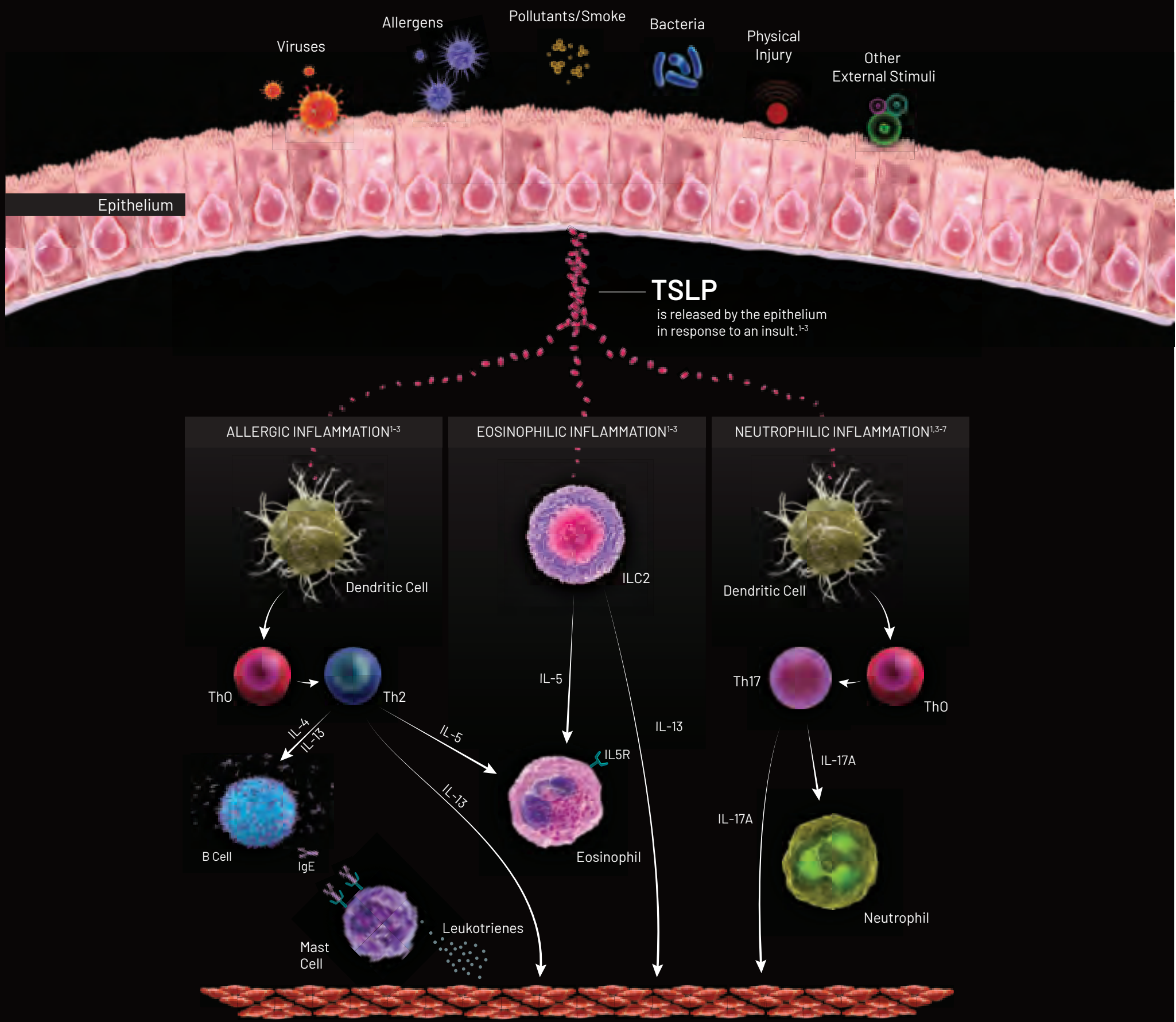
TSLP is a key epithelial cytokine that sits at the top of the inflammatory cascade and offers a new way to think about severe asthma. TSLP may drive an immune response that overreacts to various epithelial insults or injury, regardless of the type of inflammation.[1-3]

TO LEARN MORE ABOUT TSLP, VISIT
TSLPINFLAMMATION.COM

AMGEN® AstraZeneca

THE INFLAMMATORY CASCADE

For individuals with severe asthma, the epithelium is often the starting point for an overactive immune response to various insults such as[1-3]:



This overexpression of TSLP can result in pathologic inflammation, which can cause increased symptoms and asthma exacerbations.[1-3,8]

References: 1. Corren J. *J Allergy Clin Immunol Pract*. 2019;7(5):1394-1403. **2.** Lambrecht BN, Hammad H, Fahy JV. *Immunity*. 2019;50(4):975-991. **3.** Lambrecht BN, Hammad H. *Nat Immunol.* 2015;16(1):45-56. **4.** Liang Y, Yu B, Chen J, et al. *J Allergy Clin Immunol.* 2019;144(4):1025-1035. **5.** Li Y, Wang W, Lv Z, et al. *J Immunol.* 2018;200(7):2253-2262. **6.** Tanaka J, Watanabe N, Kido M, et al. *Clin Exp Allergy*. 2009;39(1):89-100. **7.** Chesné J, Braza F, Mahay G, Brouard S, Aronica M, Magnan A. *Am J Respir Crit Care Med.* 2014;190(10):1094-1101. **8.** Ying S, O'Connor B, Ratoff J, et al. *J Immunol.* 2005;174(12):8183-8190.

NetWorks

Critical care readiness. Coding for telemedicine. Physical therapy teleconsultations. SARS-COV-2 and pregnancy.

Disaster Response and Global Health

Critical care readiness for nonintensivists in rural areas

Intensivist led critical care units are recommended by multiple critical care societies. In medically underserved areas, majority of care of the critical ill is provided by nonintensivists. Preparation is key for disaster management. It includes identifying heath-care worker capability, surge capacity, disposable medical resources, and expert consultation availability.

Staff

- In disaster, the hospital transitions to a mass casualty strategy, repurposing noncritical care staff to a tiered critical care model focusing on disaster triage and mass critical care. The goal is to provide care to minimize mortality.

Stuff

- Critical care supplies improve survival and are implemented quickly and easily. Essential supplies include personal protective equipment, basic modes of mechanical ventilation, hemodynamic support, antimicrobial therapy or other disease-specific countermeasures, oxygen, and prophylactic treatments.

Dr. Reed

Structure

- Disaster critical care can be delivered in noncritical care areas. Hospital policies should establish surge capacity strategies.

System

- Providing quality lifesaving care to appropriately triaged patients by utilizing minimal qualifications for survival, predetermined ICU admission criteria, and dynamic protocols using the highest level of evidence available scalable to local resources.
- Inappropriate triage results in suboptimal care and can lead to increased mortality.
- Virtual critical care can augment critical care capacity and capability.
- The implementation of mass critical care requires hospitals to rapidly increase its patient volume above its normal capacity. The essential four components are staff, stuff, space, and structure. Effective mass critical care requires a different mindset than critical care in day-to-day operations.

Patrick Moon, MD; and Alexis MacDonald, MD (Drs. Reed and Tripp's Fellows)
Mary Jane Reed, MD, FCCP, and Michael Tripp, MD, FCCP
Steering Committee Members

Practice Operations

Coding for telemedicine in the COVID-19 era

Over the years since telemedicine (TM) was developed in the 1960s, it has transformed into more mobile, compact, and interconnected forms. However, its widespread adoption has been limited by the regulatory, compensatory, and licensing status quo. The emergence of the COVID-19 pandemic and its necessity for physical distancing has brought TM into the limelight. With restrictions on TM use lifted by CMS, the scope of TM could extend from outpatient to inpatient care to emergency triaging and

PRESIDENT'S REPORT *continued from page 17*

inaugural CHEST published, on-line issue of Washington Watchline, a newsletter that aims to keep CHEST members informed about governmental activities that affect physicians who provide clinical care in respiratory, critical care, and sleep medicine? Follow Washington Watchline to learn more about CHEST's advocacy around regulatory, legislative, and payment issues that relate to the delivery of health care in support of CHEST's mission. One of the features was Telemedicine, which many of us are now using and is likely to be a part of many of our practices going forward.

With new COVID-19 surges throughout many parts of the United States, CHEST has continued our volunteer matching program for areas of need, including to the Navaho Nations, where CHEST matched 20 volunteers and has had more than a half-dozen inquiries from our members. In addition, in conjunction with the Foundation, CHEST has partnered with American Mask Rally and started a campaign to distribute masks to frontline essential workers in underserved communities. CHEST received a generous donation from AstraZeneca and Glaxo Smith Kline to help in the global fight against COVID-19 to provide current and accurate information and education to frontline clinicians to allow them to provide the best patient outcomes. CHEST also partnered with the American Thoracic Society to launch a joint PSA/ media campaign entitled For My Lung Health Campaign, to provide credible resources for underserved Black and Latino communities, as these communities are disproportionally affected by COVID-19. At the time of this writing, over a million people have seen the related video, featuring tips for taking control of one's health in these difficult and uncertain times.

So, in closing, thank you all for what you do in these challenging times. 2020 will certainly be a year to remember! Stay safe and stay well!

Stephanie

NetWorks Challenge 2020

The CHEST Foundation is excited to announce that the NetWorks Challenge will be reinvented for 2020! Instead of raising funds to support travel grants to CHEST's Annual Meeting as in previous years, the NetWorks Challenge will focus on raising funds to support COVID-19 community service grants. With so many people suffering due to the pandemic, we believe this change will make a tangible impact on the lives of people who need it most.

To date, the CHEST Foundation has dispersed over $60,000 in payments for patient support groups that provide services to those living with chronic lung disease, and we hope this year's efforts will enable us to continue this work. For every $2,500 raised by a NetWork, the CHEST Foundation will provide a grant to a community support group in need.

While providing vulnerable populations with funds to purchase essential items (PPE, cleaning supplies, emergency food purchases, etc), each grant will be named in honor of the NetWork raising the funds, and all stories of impact will be shared with NetWorks' members, once they are available.

The NetWorks Challenge spans from Monday, July 20, to the end of Board Review on August 22, and members can easily designate their donation to their NetWork on the CHEST Foundation's donor page.

In addition to receiving named recognition of your NetWork, the NetWork that raises the most funds, along with the NetWork with the highest percentage of participation, will receive additional prizes, including two complimentary registrations to CHEST 2020. These registrations are specifically for early-career clinicians and fellows-in-training, which will be selected by each NetWorks's steering committee.

For every $5,000 raised by a NetWork, that NetWork will receive one complimentary registration to CHEST 2020, which will be awarded to their early-career and fellows-in-training as selected by that NetWorks's steering committee.

In addition to directly impacting patients across the United States, NetWorks members will have a chance to test their knowledge against their peers by participating in a NetWork Challenge Game Series, where they will be asked a series of hand-selected board review questions each week through the end of Board Review.

For additional Information about the NetWorks Challenge, visit the CHEST Foundation's website (https://tinyurl.com/yxl55pqu).

management of chronic medical conditions.

In February 2020, the comprehensive 2020 COVID-19 ICD 10 coding guidelines were released. To date, CMS has approved approximately 80 codes, which can be used with telehealth and non face-face-to-face (NFTF) encounters. They include telephone calls, online digital E/M services, interprofessional telephone/internet/electric health record consultations, digitally stored data services/remote physiologic monitoring, remote reporting of self-measure blood pressure, and remote physiologic monitoring treatment management services. Some of the key "rules of the game" are highlighted below.

Dr. Anjum

- For telephone visits in the outpatient setting use the codes **99441** (5-10 minutes), **99442** (11-20 minutes), and **99443** (21-30 minutes).
- For interactive real-time audio and video telecommunication (RAVT) in the outpatient setting, use the codes normally used for outpatient E/M: **99201-99215.**
- For using RAVT to perform an initial visit for an inpatient, use the codes that are normally used for inpatient E/M: **99221-99223.**
- For using RAVT to perform a subsequent visit for an inpatient, use the codes that are normally used for subsequent hospital care service E/M: **99231-99233.**
- Seeing a critically ill patient without being in the patient's room is allowed, as a physical exam is not required for either **99291** or **99292**. Be sure to use **99292** for each 30 minutes beyond the initial 74 minutes and document the time spent on the patient.

The details of the coding/billing guidelines are intricate and full of nuances and for a better understanding on how to utilize TM both in an inpatient and outpatient setting, consider the following resources:

1. Coding and Billing Guidelines by ATS: https://www.thoracic.org/about/newsroom/newsletters/coding-and-billing/resources/2020/mostrecentcbqapril.pdf
2. Coding specific for management of COVID patients by the AMA: https://www.ama-assn.org/system/files/2020-05/covid-19-coding-advice.pdf

Humayun Anjum, MD, FCCP
Vice-Chair, Practice Operations

Transplant

Physical therapy teleconsultations

The COVID 19 pandemic led the health-care community to rapidly adopt telecommunication tools allowing provision of care equivalent to in-person visits. Implementation of telemedicine visits demonstrated that providers can simultaneously distance and connect with patients to provide expert care.

The University of Pennsylvania lung transplant team adapted video communications to provide individualized physical therapy (PT) recommendations for lung transplantation candidates. The evaluation includes a systems review, musculoskeletal screen, submaximal aerobic capacity testing, and performance of the short physical performance battery test (SPPBT), a frequently used frailty evaluation tool focused on lower extremity function and balance. In the era

Continued on following page

NETWORKS *Continued from previous page*

of social distancing, telemedicine capabilities have made this crucial aspect of pretransplant evaluation possible.

In advance, patients are emailed a document outlining the telemedicine PT assessment, including the SPPBT. Patients receive videos of the SPPBT to ensure they understand the test and can prepare their home to safely perform the tasks. We are able to highlight the patient's functional capabilities and detail accurate assessments of their deficits. Our teleconsultations utilize BlueJeans for connectivity and typically last about 30 minutes. At this time, we are billing for these pretransplant visits but not for posttransplant PT follow-up.

Dr. Diamond

Dr. Zaleski

Patient experiences with the PT teleconsultations have been overwhelmingly positive. Patients and their families appreciate the uninterrupted evaluation time and the individualized recommendations for improving their deficits. The providers can devote their full attention to the patient directly in front of them. Importantly, patients and providers report they have never felt a stronger connection than through these telemedicine encounters. Longitudinal telemedicine PT assessments will enable us to better monitor our patients throughout the lung transplantation process.

Joshua Diamond, MD
Steering Committee Member
Derek Zaleski, PT, DPT

Women's Lung Health

SARS-COV-2 and pregnancy

The SARS-COV-2 pandemic has brought on many fears and uncertainties with new information emerging daily, including the effect during pregnancy.

At the time of this article,however, data pertaining to COVID-19 and pregnancy remain limited. Pregnant women do not seem to have a higher infection rate than the general population. In a correspondence where pregnant women admitted for delivery underwent universal screening in NY, 1.9% of women were symptomatic and tested positive, and 13.7% of the asymptomatic patients were found to be SARS-COV-2 positive.[1] Furthermore, unlike H1NI, data suggest that pregnant women infected with SARS-COV-2 currently do not seem to have worse outcomes than the average person.[2,3]

As of now, there have not been any reports of maternal fetal vertical transmission from COVID-19 or any other coronavirus variants.[4] Postpartum testing of infants has yielded a very small number of babies who have tested positive for virus, but this more likely represents transmission after birth.

There are currently no specific FDA-approved medications for the treatment of moderate-severe infections with COVID-19 in pregnant women, although there are several clinical trials underway. Patients with moderate to severe symptoms should seek medical attention, while those with mild symptoms should continue with conservative therapies, as well as maintaining proper hygiene.[5]

Delivery methods and timing remain unchanged with cesarean delivery as currently indicated per established guidelines.[5]

Mariam Louis, MD
Steering Committee Member
Jorge Trabanco, MD

Dr. Louis

Dr. Trabanco

1. Sutton D, et al. Universal screening for SARS-CoV-2 in women admitted for delivery. *N Engl J Med*. 2020;382(22):2163.
2. Chen L, et al. Clinical characteristics of pregnant women with Covid-19 in Wuhan, China. *N Engl J Med*. 2020; 382(25):100.
3. Zaigham, M, Andersson O. Maternal and perinatal outcomes with COVID-19: A systematic review of 108 pregnancies. *Acta Obstetricia et Gynecologica Scand.* 2020; 99(7):823.
4. Schwartz D, Dhaliwal A. 2020. Infections in pregnancy with COVID-19 and other respiratory RNA virus diseases are rarely, if ever, transmitted to the fetus: Experiences with coronaviruses, HPIV, hMPV RSV, and influenza. *Arch Pathol Lab Med*. 2020 Apr 27. doi: 10.5858/arpa.2020-0211-SA. Online ahead of print.
5. ACOG.org. Novel coronavirus 2019 (COVID-19). [online] Available at: https://www.acog.org/clinical/clinical-guidance /practice-advisory/articles/2020/03/novel-coronavirus-2019. Accessed July 21, 2020].

CHEST 2020

Premier education from the convenience of home

BY CASEY KESKE
Senior Manager, Marketing Communications

After careful consideration, CHEST has decided to cancel the live, in-person CHEST Annual Meeting in Chicago, Illinois, this October and replace it with a 100% virtual event. The COVID-19 pandemic has provided the opportunity to look at different approaches for delivering education, and over the past several months, CHEST has done just that.

Due to the pandemic, we moved the CHEST Congress 2020, originally scheduled to take place in Bologna, Italy, to June 2021. On June 30, in partnership with the Italian Delegation, the CHEST Virtual Congress event took place with over 3,200 people registered, spanning over 100 countries. This event featured a robust program that included an international COVID panel, additional educational sessions, over 300 recorded poster presentations, and live, interactive games that kept attendees engaged throughout the day. There was also a surprise welcome message delivered by Dr. Anthony Fauci, the Director of the National Institute of Allergy and Infectious Diseases. We are excited to use the success of this virtual event as an opportunity to expand our knowledge and expertise, and deliver a fun, memorable CHEST 2020.

This October, CHEST will bring you the premier virtual education event in pulmonary, critical care, and sleep medicine, all from the comfort and safety of your home or institution. This year's virtual Annual Meeting will include live, interactive education, including panel and case-based discussions, virtual networking opportunities, CHEST GAMES, and the space for you to connect, learn, and recharge with your peers…virtually.

Top faculty from across the field will bring you the latest in clinical developments related to the diagnosis, treatment, and management of pulmonary diseases, critical care complications, and sleep disorders. Nonclinical topics, like cultural diversity and burnout, that feature more prominently than ever in day-to-day practice, will be given equal weight. Sessions like, Being Me: Understanding 'Otherness' and Issues of Diversity, will rely on audience interaction to address scenarios involving bias and racism faced by the panel of presenters and members of the audience.

Crucial and quickly evolving information on COVID-19 will be front and center, including complications with COVID-19 recovery, COVID-19 management in complex situations, and additional discussions on updated drug trials, treatment plans, and practice management changes. We will focus on other challenges the pandemic has highlighted, helping educators with sessions such as APCCMPD: Education Lessons During a Pandemic and sharing key reminders to all on the fundamentals of pandemic preparation with When the Theoretical Becomes Real: Lessons from a Pandemic.

It is more important than ever to stay up to date on developments in health and medicine, but CHEST is putting equal weight on ensuring the experience of CHEST 2020 is a respite from the mental and physical exhaustion our community is experiencing during these unprecedented times. As ever, we will ensure you meet your educational needs. But together, we will also focus on supporting you in building resilience and giving you the tools to continue to find joy in medicine, even amidst the chaos of a pandemic. Thank you for your continued trust in CHEST, and we look forward to "seeing" you at CHEST 2020 October 18-21!

INDEX OF ADVERTISERS

This month in the journal *CHEST*®

Editor's picks

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

Association of Guideline-Recommended COPD Inhaler Regimens With Mortality, Respiratory Exacerbations, and Quality of Life: A Secondary Analysis of the Long-term Oxygen Treatment Trial. By Dr. T. Keller et al.

The Association of ICU Acuity With Adherence to ICU Evidence-Based Processes of Care. By Dr. K. C. Vranas et al.

Drowning classification: Reappraisal of clinical presentation and prognosis for severe cases. By Dr. T. Markarian et al.

Chronic Cough Due to Stable Chronic Bronchitis: CHEST Expert Panel Report. By Dr. M. A. Malesker et al.

Diagnosis of EVALI: General Approach and the Role of Bronchoscopy. By Dr. S. Callahan et al.

Is it COVID-19 or something else?

BioFire's comprehensive respiratory solution has you covered.

Knowing what pathogens are causing acute respiratory symptoms is more important than ever. The BioFire® Respiratory 2.1 (RP2.1) Panel includes SARS-CoV-2 and is now available under an FDA Emergency Use Authorization.[1] Used in combination with the BioFire® FilmArray® Pneumonia (PN) Panel, the two represent the most comprehensive respiratory testing solution available.

Have confidence in your diagnosis. Whether it's SARS-CoV-2, a critical influenza, or a secondary MRSA pneumonia—BioFire's comprehensive pathogen menu can help you weather the storm.

biofiredx.com

BioFire RP2.1 (EUA) Panel
1 Test. 22 Targets. ~45 Minutes.
Includes SARS-CoV-2.
Nasopharyngeal Swab in Transport Media
97.1% Sensitivity and 99.3% Specificity[2]

BioFire PN Panel
1 Test. 33 Targets. ~1 Hour.
Sputum/ETA: 96.3% Sensitivity and 97.2% Specificity[3]
BAL/mini-BAL: 96.2% Sensitivity and 98.3% Specificity[3]

BIOFIRE®
BY BIOMÉRIEUX

Syndromic Testing: The Right Test, The First Time.

1. This test has not been FDA cleared or approved. This test has been authorized by FDA under an EUA for use by authorized laboratories. This test has been authorized only for the detection and differentiation of nucleic acid of SARS-CoV-2 from multiple respiratory viral and bacterial organisms. This test is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of in vitro diagnostic tests for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Act, 21 U.S.C. § 360bbb-3(b)(1), unless the authorization is terminated or revoked sooner. **2.** The stated performance is the aggregate of the prospective data from the clinical study for the BioFire® FilmArray® Respiratory 2 (RP2) Panel. **3.** The stated performance is the aggregate of the prospective data from the clinical study for the BioFire® FilmArray® Pneumonia (PN) Panel.

BFR0000-9002-01