

Ⓐ **No One Left Behind: Access to Prevention and Treatment for All** Message on World Lung Day from M. Patricia Rivera, M.D. President of the American Thoracic Society

Each year, World Lung Day offers the respiratory community a chance to reflect on the staggering impact of chronic respiratory diseases (CRDs) such as asthma, chronic obstructive pulmonary disease, tuberculosis, and lung cancer. They remain the leading causes of disability and death for millions of people across the globe. According to the latest research from the World Health Organization:

1. Asthma is one of the most common noncommunicable diseases, affecting an estimated 262 million people in 2019 and causing nearly half a million deaths yearly.
2. Chronic obstructive pulmonary disease (COPD) is the third leading cause of death and the seventh leading cause of poor health worldwide, causing 3.2 million deaths in 2019.
3. Pneumonia is the single most significant infectious cause of death in children worldwide, accounting for 14% of all deaths of children under 5 years old, claiming the lives of more than 740,000 children in 2019.
4. Tuberculosis is the world's top infectious killer, taking the lives of 1.5 million people each year, with 10 million falling ill annually.
5. Lung cancer is the leading cause of cancer-related deaths worldwide, accounting for the highest mortality rates among men and women and causing an estimated 1.8 million deaths in 2020.

As a cancer pulmonologist, I have witnessed firsthand the devastating consequences of lung cancer on patients and their families. It is the second most common cancer in the United States and, sadly, the deadliest. Each year, more people will die of lung cancer than of colon, breast, and prostate cancers combined. This year, the American Cancer Society estimates that lung cancer will claim the lives of almost 130,000 Americans. Globally, recent estimates of cancer incidence and mortality produced by the International Agency for Research on Cancer indicate that lung cancer remains the leading cause of cancer mortality worldwide, with an estimated 1.8 million deaths (18%) in 2020.

Bearing the Brunt: Chronic Respiratory Diseases in Low- and Middle-Income Countries

The statistics are sobering. Respiratory illnesses affect people everywhere but disproportionately affect those in low- and

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middle-income countries (LMICs), where research, prevention, and management resources remain scarce. Limited access to health education and screening services, lower literacy rates, and greater exposure to harmful environmental toxins are major challenges to adequate health care in less-resourced countries.

Lung cancer may be the most diagnosed cancer worldwide, but it is often diagnosed late, especially in LMICs, leading to treatment delays and reduced survivability. This is sadly true of other CRDs. Of the 1 million people who die prematurely (at age ≤ 70 yr) from asthma and COPD each year, more than 90% live in LMICs.

On World Lung Day, we in the global respiratory community—clinicians, nurses, respiratory therapists, scientists, healthcare leaders, and policymakers—should be driven to action to promote lung health as a fundamental human right. As a founding member of the Forum of International Respiratory Societies, the American Thoracic Society (ATS) is raising awareness of the impact of chronic respiratory diseases and addressing the disproportionate burden placed on LMICs in the global fight against lung disease. Through advocacy, collaboration, and education, we aim to improve global health outcomes and alleviate disparities, looking beyond medical care to the social and environmental determinants of health, particularly tobacco use and climate change.

Only by doing so can we adequately address the impact of lung diseases worldwide, catalyze health equity, and ensure that no one is left behind.

Tobacco Regulation and Control

The epidemic of tobacco use remains one of the biggest public health threats the world has ever faced, killing more than 8 million people each year (including approximately 1.2 million deaths from exposure to secondhand smoke) according to the World Health Organization. More than 1 billion people worldwide use tobacco products, with 80% living in LMICs, where the incidences of tobacco-related illness and death are highest. Furthermore, its use often contributes to poverty by diverting household spending away from the basic needs of food and shelter.

The social and economic costs of tobacco use are substantial, including significant costs to health care and a loss of human capital from tobacco-caused illnesses and deaths. More than 40 million people in the United States smoke tobacco, the leading cause of preventable death. Each day, 3,200 youth try smoking and 2,100 youth and young adults transition from occasional users to daily users.

The ATS remains steadfast in leading advocacy efforts in the United States to regulate the tobacco industry and curtail the sale of tobacco products, including cigarettes and electronic cigarettes, especially to youth and underrepresented minorities. In March 2023, the ATS joined more than 30 other medical and public

health organizations to urge Congress to provide robust funding for the Centers for the Office on Smoking and Health (OSH) program at the Centers for Disease Control and Prevention (CDC).

The letter implored Congress to provide \$63.5 million to fund OSH efforts to reduce cigarette use, particularly curbing youth e-cigarette use. Although the OSH did receive a small funding increase in 2022, the need for effective nicotine prevention programs, mainly targeted to reduce youth vaping, remains significant. The ATS continues working with its partners to stress that Congress provide much-needed funding for CDC tobacco control programs.

The ATS is committed to reducing the death and disease caused by tobacco use through federal, state, and local policy that reduces tobacco consumption, as well as internationally through its work with the Forum of International Respiratory Societies, recently calling on policymakers globally to take steps to prevent young people from taking up smoking on World No Tobacco Day 2023.

Additionally, the ATS is responding to the evolving array of tobacco products, like e-cigarettes, offered by the tobacco industry to lure the next generation into tobacco dependency. In June, the ATS joined forces with the California Thoracic Society to issue a joint letter urging state health officials to act against “cool/non-menthol” cigarette products. In the letter, we asked the state to treat these new products as menthol tobacco products and immediately remove them from the market. By advocating against tobacco products and discouraging their use, the ATS aims to reduce the prevalence of smoking and its associated health risks and improve public health and well-being.

Health Effects of Climate Change

Fifteen years ago, the ATS took its first steps in helping to raise physician awareness of climate change as a health issue when it published a 2008 editorial in the *American Journal of Respiratory and Critical Care Medicine* and publicly commented in support of the Environmental Protection Agency’s “endangerment finding,” a necessary first step toward allowing the Agency to use its regulatory authority to regulate climate emissions.

Fast forward to 2023, with global record-breaking temperatures and prolonged and extensive wildfires, particularly in North America. Climate change is projected to continue to profoundly impact public health by increasing particulate-matter air pollution and/or ground-level ozone, diminishing lung function, increasing hospital admissions and emergency room visits for asthma, and increasing premature deaths.

According to the CDC, estimates of premature deaths in the United States from combined ozone and particle health effects range from 1,000 to 4,300 per year by 2050. Underserved communities in the United States are expected to be disproportionately affected by the health effects of climate change, particularly vulnerable groups, including women, children, older individuals, and those with preexisting medical conditions; and the same is true globally, where LMICs will bear the brunt physically and environmentally.

In the 15 years since that first editorial, the ATS has published numerous editorials and accelerated its advocacy efforts on the climate change front. During the ATS 2023 International Conference, we led approximately 100 ATS members in a climate change rally on Capitol Hill, urging policymakers to take immediate action against climate change. And most recently, ATS environmental advocacy has also included working in the courts and directly commenting on regulatory matters.

As our climate continues to change, the ATS will continue to step up its efforts to combat adverse health effects and mortality, particularly in underserved communities in the United States and in LMICs globally, by working with members and partner organizations to encourage the reduction of greenhouse gas emissions.

Empowering Clinicians and Patients through Education

For many individuals living with chronic respiratory conditions, regardless of their cause, inhalation therapies and other medical devices play a pivotal role in managing symptoms and improving quality of life. The ATS strongly advocates for equitable access to these essential treatments regardless of an individual’s socioeconomic status. Inhalation therapies, such as bronchodilators and inhaled corticosteroids, are fundamental in the management of conditions like asthma and COPD, working to deliver medication directly to the airways, resulting in faster and more targeted symptom relief.

In addition to inhalation therapies, the ATS advocates for access to other respiratory devices such as continuous positive airway pressure machines for patients with sleep apnea. These devices can significantly improve the quality of life for individuals with sleep-disordered breathing and prevent long-term complications associated with untreated sleep apnea.

Moreover, education plays a vital role in optimizing the benefits of these treatments. Many patients may be unfamiliar with the correct use of inhalation devices, which can impact treatment effectiveness. The ATS collaborates with healthcare professionals to offer clinical resources and educate clinicians on inhalation devices. Additionally, the ATS offers an array of patient education resources on lung disease, critical illnesses, and sleep disorders. The topics range from asthma and COPD to critical illnesses, rarer lung diseases, and other adult and pediatric respiratory diseases and disorders.

Internationally, the ATS has worked to develop lung disease research at the local, country, and regional levels in LMICs through its Methods in Epidemiologic, Clinical, and Operations Research program. To date, more than 1,800 graduates have participated in the program’s worldwide network of multilevel research methods and training courses, which prepare them to design and conduct research relevant to the needs of the countries in which they work.

World Lung Day 2023: A Call to Action

On World Lung Day, the ATS urges policymakers in the United States and abroad to continue to address the social inequities that lead to unequal access to prevention and treatment for CRDs and to call on healthcare leaders to commit themselves to the mission of

ensuring equitable access to preventive services and treatment options for all.

We remain committed to advancing lung health through advocacy, research, and education and are steadfast in our determination to advocate for greater tobacco regulation and urgent climate action.

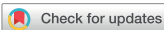
Learn more about World Lung Day at <https://firsnet.org/world-lung-day-2023>. ■

Author disclosures are available with the text of this article at www.atsjournals.org.

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⊗ The Promise of Quantitative Computed Tomographic Analysis in Assessing Progression of Interstitial Lung Abnormalities and Emphysema in Smokers

The recognition of interstitial lung abnormalities (ILAs) on computed tomography (CT) scans performed in patients without clinical suspicion of interstitial lung disease (ILD), namely incidental, is common among older individuals (>60 yr), with a higher prevalence in smokers (4–9%) than in nonsmokers (2–7%) (1). ILA is a term used to define nondependent abnormalities affecting more than 5% of any lung, including ground-glass reticular abnormalities, traction bronchiectasis, honeycombing, and nonemphysematous cysts. They may represent preclinical or mild ILD in high-risk populations, as well as a biomarker of lung aging. On one hand, the presence and progression of ILAs have been associated with increased respiratory mortality, lung cancer mortality, and all-cause mortality, especially for the subtype of fibrotic ILA (1–3). On the other hand, chronic obstructive pulmonary disease (COPD) is a well-known cause of substantial morbidity and mortality linked to cigarette smoking, and emphysema progression has been related to reduced lung function and survival (4, 5).

To date, knowledge of the effects of combined progression of emphysema and ILA in smokers without known ILD is poor. Furthermore, the lack of clinically meaningful thresholds of progression for both emphysema and ILA limited the identification of clinicoradiological criteria to adequately stratify subjects at higher risk of progression. In this context, the inherent limitations of CT visual assessment, particularly in defining mild progression of smoking-related lung disease, have fostered an ever-growing and urgent need to implement automated quantitative imaging methods (6).

In this issue of the *Journal*, Ash and colleagues (pp. 666–675) evaluated the clinical significance of progression of fibrotic ILA in

smokers without known ILD enrolled in the COPDGene (Genetic Epidemiology of COPD) study, correlating the effect of progression of ILA and emphysema on mortality (7). COPDGene is a well-known multicenter longitudinal observational study that enrolled more than 10,000 subjects (current and former smokers) without any evidence of parenchymal lung diseases (such as bronchiectasis or ILD) who underwent clinical and functional evaluation and imaging assessment by CT at baseline and after 5 years and 10 years (8).

The study population included by Ash and colleagues consisted of 4,450 subjects (mean age, 60 ± 9 yr), approximately evenly split between men and women, with a slightly greater prevalence of former smokers than current smokers, evaluated at baseline and after 5 years of follow-up. The authors leveraged a deep learning–based method (involving a long short-term memory layer) to assess the severity of centrilobular emphysema according to the five-grade classification system of the Fleischner Society, defining progression as an increase of at least one emphysema category; such a defined progression was already associated with mortality in smokers (5, 9). A quantitative densitometric analysis of emphysema was performed as well.

A validated deep learning–based algorithm (data-driven texture analysis [DTA]) developed in a population of patients with idiopathic pulmonary fibrosis and variably applied in different cohorts of patients with known ILD, in whom it proved to correlate with visual scoring methods, pulmonary function test results, and mortality, was leveraged to quantify the fibrotic changes in the COPDGene cohort (10). Furthermore, in individuals at risk for familial pulmonary fibrosis, this method correlated with visual evidence of early fibrosis predicting progression and mortality (11). In the COPDGene cohort, the mean DTA fibrosis was, as expected, a small portion of the total lung percentage, accounting for 1.00 ± 1.53% at baseline and 1.25 ± 2.02% at 5-year follow-up.

To determine a significant cutoff for the progression of fibrotic abnormalities, the minimal clinically important difference (MCID) of DTA fibrosis was calculated as a mean between the distribution-based MCID (one-half the SD of DTA fibrosis at baseline) and the

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