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Health Equality



SUMMARY

Because the frequency of major risk factors for respiratory diseases (e.g. tobacco use) differs across demographic groups (defined by socioeconomic status, race/ethnicity, sexual orientation, healthcare access, occupation or other characteristics), health disparities are commonly encountered in pediatric and adult pulmonary, critical care and sleep medicine. As part of its policy on respiratory health disparities, the American Thoracic Society (ATS) Executive Committee created a Health Equality Sub-Committee of the Health Policy Committee, with an initial mandate of defining respiratory health equality and, as a subsequent task, providing recommendations to the ATS leadership as to how our society may help attain such equality in the United States. After receiving input from the ATS assemblies and committees, the sub-committee developed a document on respiratory health equality¹, which is briefly summarized in this booklet. This booklet defines



respiratory health disparities and respiratory health equality. Attainment of respiratory health equality requires the ending of respiratory health disparities, which can only be achieved through multidisciplinary efforts to eliminate detrimental environmental exposures while promoting a healthy lifestyle, implementing all components of high-quality healthcare (prevention, screening, diagnosis, and treatment), and conducting research that will lead to better prevention and management of respiratory diseases for everyone. The ATS recognizes that such efforts must include all stakeholders: members of society at large, governmental and non-governmental organizations, and other professional societies. The ATS urges all of its members and those of sister societies to work in achieving this laudable goal.



WHY DOES THE ATS CARE?

As a result of improved overall health and particularly the steep decline in cardiovascular disease mortality, the average life expectancy of people in the United States increased from 70 years to 79 years since 1960². However, this gain was not experienced by all people, with profound discrepancies remaining in life span across geographic locations and groups defined by socioeconomic status, race and ethnicity. For example, 8- to 20-year differences in lifespan have been reported for residents of areas in or near Washington, D.C., a finding likely explained by underlying differences in socioeconomic status, race/ethnicity, healthcare access and environmental determinants of health (all of which may impact health outcomes for residents of such areas)³.

The persistence of health disparities is both unacceptable on a societal basis and extremely costly; one study estimated that eliminating health disparities for minorities would have reduced direct medical expenditures and indirect costs (related to illness and premature death) by over \$1.2 trillion dollars during 2003-2006⁴.

Because the major risk factors for respiratory diseases (e.g., cigarette smoking, air pollution and hazardous occupations) differ across demographic groups, *health disparities are evident for most major respiratory diseases*^{5,6}. Asthma, for example, is the most common chronic disease of childhood and affects 26 million people in the U.S.⁷ Asthma is more common among the poor, Puerto Ricans and non-Hispanic blacks, with concurrent and more pronounced disparities in severe disease exacerbations or mortality⁸. Chronic obstructive pulmonary disease (COPD) is the third leading specific cause of death in the United States. Women and African Americans may be more susceptible to developing early-onset COPD after smoking^{9,10}. Obesity (which can cause respiratory impairment and is a strong risk factor for obstructive sleep apnea) is present in over 90 million people in the United States, with inner-city residents and ethnic minorities much more commonly affected¹¹.

Lung cancer has become the most common cause of cancer-related deaths in men and women. Lung cancer mortality is higher in blacks than whites, with even higher disparities for blacks living in segregated counties¹². Among patients with stage IV lung cancer, Hispanics or non-Hispanic blacks are nearly three times as likely as non-Hispanic whites to have false expectations about cure from chemotherapy¹³. Human immunodeficiency virus (HIV) infection, a major risk factor for lung disease, disproportionately affects ethnic minorities and men who have sex with men¹⁴. Cystic fibrosis (CF) disproportionately affects non-Hispanic whites. Medicaid insurance is associated with greater risk of death in children with CF, and adults of low socioeconomic status are less likely to be accepted for lung transplantation for CF¹⁵. African Americans are disproportionately affected by lung disease and pulmonary hypertension from sickle cell disease. Compared with whites, African Americans have lower rates of successful resuscitation and post-resuscitation survival after a cardiac arrest¹⁶.

WHAT ARE THE CAUSES OF RESPIRATORY HEALTH DISPARITIES?

Most individuals develop respiratory diseases because of environmental exposures or lifestyle-related factors (Table 1).

TABLE 1. MAJOR ENVIRONMENTAL/LIFESTYLE RISK FACTORS FOR RESPIRATORY HEALTH DISPARITIES IN THE UNITED STATES

Risk Factor	Impact
Tobacco smoke (direct or passive exposure)	Multiple respiratory illnesses, including asthma, chronic obstructive pulmonary disease (COPD), tuberculosis and lung cancer
Air pollution	Morbidity and mortality from asthma and COPD
Intravenous drug use	Human immunodeficiency virus infection, pulmonary hypertension
Obesity	Obstructive sleep apnea, obesity-hypoventilation syndrome, asthma morbidity
Occupational hazards	Asthma, lung cancer, berylliosis, silicosis
Infections (e.g. influenza)	Pneumonia, acute respiratory failure, asthma, COPD

Adapted from reference 1

From 1965 to 2014, active and passive smoking contributed to about 20.8 million premature deaths in the U.S., including those due to cancer (about 6.6 million) and pulmonary diseases (about 3.8 million)¹⁷. From 2005 to 2009, active and passive smoking caused over 480,000 premature deaths annually in adults 35 years and older. During this period, current smoking caused 87% and 61% of all deaths from lung cancer and pulmonary diseases, respectively¹⁷.

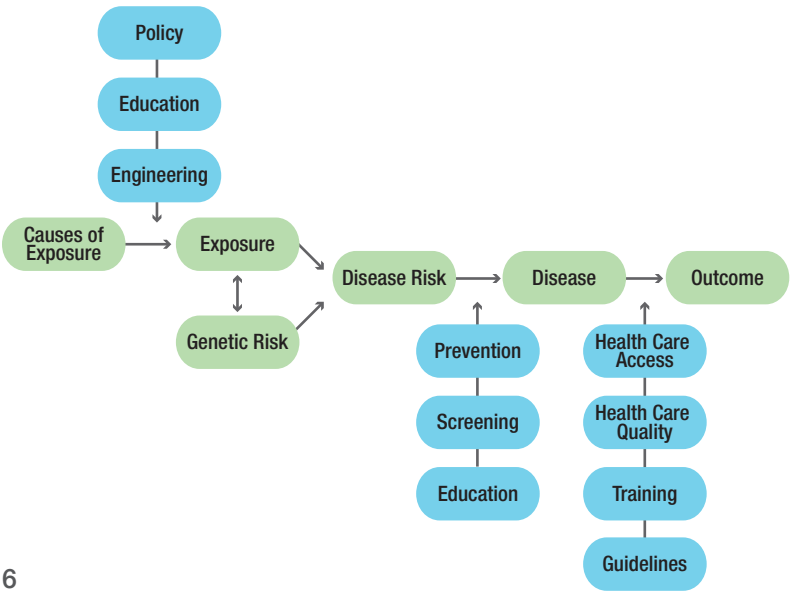
Tobacco use is a major cause of respiratory health disparities. Among adults in the U.S., current cigarette smoking differs by gender, race/ethnicity, education, socioeconomic status, sexual orientation and geographic area^{17,18}. Current smoking is more common in adults living below the poverty level (32.5%) than in those living at or above this level (20%). High school dropouts are three times more likely to be current smokers than college graduates (31.5% vs. 10.4%)¹⁷.

Air pollution contributes to morbidity and mortality from cardiovascular and respiratory diseases, including asthma and COPD. In 2010, about 4% of the U.S. population (about 11.3 million people) lived within 150 meters of a major road and thus were intensely exposed

to traffic-related air pollution⁶. However, not all demographic groups are equally exposed to such pollution. The proportion of non-Hispanic blacks (4.4%) or Hispanics (5%) living near a major road is higher than that of non-Hispanic whites (3.1%). Other groups disproportionately exposed to traffic-related pollution include subjects who are born outside of the U.S., Spanish-speaking, or living below the poverty level⁶.

A few respiratory diseases occur solely on the basis of genetic susceptibility (e.g. cystic fibrosis and sickle cell disease), but even these diseases vary in severity according to the presence of environmental and lifestyle factors. A genetic component is being discovered for many respiratory conditions, but environmental factors continue to be the strongest correlate of disease. Often, genetic and environmental factors act together to influence clinical disease severity. Once disease is present, the clinical course and prognosis is further affected by environmental and social factors, including access and quality of healthcare (which are in turn influenced by governmental policies, health insurance, health literacy, cultural competency of healthcare providers and the patient’s cultural beliefs)(Figure 1). Disparities in the prevalence, morbidity or mortality from respiratory diseases are thus ultimately due to underlying differences in genetic susceptibility, exposure to environmental and lifestyle factors or quality of healthcare across groups differing by race and ethnicity, socioeconomic status, education, occupation, sexual orientation or other characteristics.

FIGURE 1. CONCEPTUAL FRAMEWORK FOR DISEASE CAUSATION.
Group differences at any stage in this pathway can result in respiratory health disparities (adapted from Schraufnagel D et al. Am J Respir Crit Care Med 2013; 188:867)





HOW DOES THE ATS DEFINE HEALTH DISPARITIES AND HEALTH EQUALITY?

RESPIRATORY HEALTH DISPARITIES

Significant differences in respiratory health that are closely linked to racial ancestry, social, economic, and/or environmental differences. Health disparities adversely affect groups of people who have experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; occupation; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion.

RESPIRATORY HEALTH EQUALITY

The attainment of the highest level of respiratory health for all people. Achieving health equality requires valuing everyone equally, implementing and maintaining focused societal efforts to address avoidable inequalities and historical and contemporary injustices, and eliminating health care disparities.



WHAT IS THE ATS DOING TO HELP US MOVE TOWARD RESPIRATORY HEALTH EQUALITY?

CONCEPTUAL FRAMEWORK

Achieving equality in respiratory health entails the elimination of existing disparities in Pulmonary, Critical Care and Sleep Medicine. Health equality is thus an idealized goal, a target that can only be attained by addressing the causes of existing health disparities.

Achieving equality is best accomplished by eliminating exposure to detrimental environmental or lifestyle risk factors through advocacy, education, and public health policy; and achieving equal access to high-quality healthcare through broadening insurance coverage while also removing other barriers to optimal patient care and ensuring a diverse workforce.

“Upstream” factors are powerful determinants of environmental exposures, including who is exposed. These upstream determinants might be considered as “root causes” and cannot be overlooked in strategies to reduce health disparities. The tobacco industry is a relevant example; it manufactures and markets cigarettes and other tobacco

products. While smoking may be considered a “lifestyle” choice, the decision to smoke is driven by the diverse activities of the tobacco industry that have the intent of capturing new smokers and maintaining the market of those who are nicotine-addicted. The industry’s actions in marketing to specific populations are well documented, such as its success with menthol cigarettes among African-Americans¹⁷.

Risk factors for respiratory diseases (both known and unknown) may differ across demographic groups. Such risk factors may be non-modifiable or modifiable. Most genetic influences are non-modifiable. Most environmental and lifestyle risk factors for respiratory diseases are modifiable and, thus, can be reduced or eliminated at the individual or community level, through vigorous efforts to affect public health policy, educating patients and the public, and reducing exposure levels through regulatory measures.

Public health policy is critical in eliminating environmental hazards. Tobacco control efforts led to a decline in the prevalence of smoking from 42% in 1965 to 18% in 2012¹⁷. However, over 42 million Americans still smoke, and smoking remains the most important preventable cause of premature death in the United States. Given that the tobacco industry continues to develop and market new products to promote nicotine addiction (e.g. menthol and electronic cigarettes), comprehensive tobacco control approaches (including media campaigns, smoke-free policies, tobacco excise taxes, access to smoking cessation programs, and restriction on sales of tobacco products) are more needed now than ever, if the laudable goal of eliminating smoking is to be achieved¹⁷. Traffic-related air pollution can be reduced by policies aimed at improving access to alternative transportation, financial incentives to reduce motor vehicle use, diesel retrofitting, and promoting the use of low emission vehicles and roadside barriers¹⁹.

Whereas an uneven distribution of risk factors (acting independently or, more often, synergistically) can cause disparities in the prevalence or incidence of respiratory diseases, co-existing disparities in education, screening or prevention can cause or worsen such disparities. Screening can lead to early detection of diseases caused by non-modifiable or genetic factors (e.g., alpha-1-antitrypsin deficiency), as well as those caused by environmental factors (e.g., lung cancer). In some instances, early detection may enhance efforts to avoid detrimental exposures in high-risk individuals (e.g. smoking in children with alpha-1-antitrypsin deficiency²⁰) or prompt early treatment (e.g. for lung cancer²¹). Prevention may lead to attenuation or elimination of diseases due to unavoidable exposure to environmental factors such as infection (e.g. through vaccines) or suboptimal air quality (e.g. through policies to reduce industrial pollutants and traffic emissions). A low level of

education may negatively impact prevention or screening. For example, smoking is more common in those who do not finish high-school; they may be more likely to be exposed to other risk factors (e.g. occupational hazards) but less likely to engage in health-promoting behaviors (e.g. regular exercise and a healthy diet)¹⁹.

Once a respiratory disease develops, variation in access to or quality of healthcare can lead to disparities in morbidity or mortality from such disease. Ensuring health insurance coverage for all members of society is a major priority, given a potentially high impact on reducing disparities in respiratory health. However, access to or quality of healthcare may still be compromised by barriers including inadequate health literacy, patient beliefs, difficult access to healthcare centers (e.g. no transportation), language barriers, limited cultural competency by healthcare providers, or lack of appropriate clinical guidelines.

Although minority physicians provide a disproportionate percentage of healthcare to underserved populations, there is still marked underrepresentation of such physicians relative to the percentage of minorities in the general population²². Moreover, the percentage of minority faculty in United States medical schools (which are major engines for research and innovation) increased only modestly from 2000 (6.8%) to 2010 (8%), while the proportion of under-represented minority individuals in the general United States population increased by over 30% during the same period²³. Thus, increasing the diversity of the physician workforce should be a key piece of a plan to eliminate disparities in respiratory health.



NEXT STEPS

The Affordable Care Act will increase access to health insurance and coverage of preventive services for millions of previously uninsured individuals, both of which should have a substantial impact on reducing respiratory health disparities in the U.S.^{24,25}

Although this law addresses disparities in respiratory health, enthusiasm should be tempered by recognizing that many members of society will remain uninsured (e.g., migrants without legal residency status), and that increasing access to healthcare largely targets morbidity from respiratory diseases but not modifiable risk factors for such diseases. In addition, health care and preventive services depend not only on access but also on removing other barriers that may lead to suboptimal quality of health care (Figure 1). Furthermore, no cure is available for most respiratory conditions that disproportionately affect certain demographic groups.

Known genetic or environmental and lifestyle risk factors for respiratory disease are directly linked to disparities and are being addressed through multipronged efforts by many groups. Reducing disparities in respiratory diseases resulting from non-modifiable

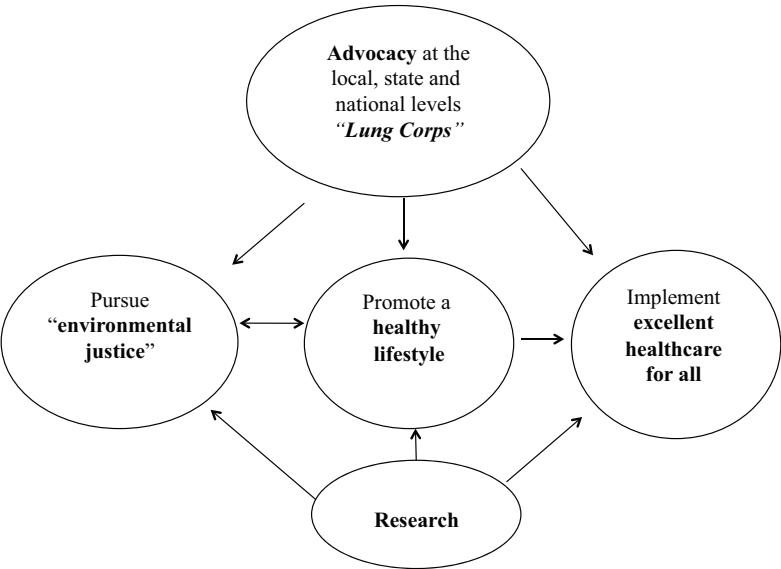
(genetic) risk factors (e.g. cystic fibrosis) largely depends on early detection, avoidance of exposures that may lead to increased morbidity (e.g. smoking), and treatment. Most common respiratory diseases have known risk factors that can be modified either through avoidance (e.g. tobacco use) or reduction (e.g. air pollutants) of exposure levels, and by promoting changes in the behavior of those at risk (e.g. adopting a healthy diet, adhering to prescribed treatments). While progress has been made, much remains to be done in these areas.

Attainment of respiratory health equality requires the elimination of respiratory health disparities, which can only be achieved through multidisciplinary efforts to eliminate detrimental exposures while promoting a healthy lifestyle, implementing all aspects of high-quality healthcare (prevention, screening, diagnosis, and treatment), and conducting research that will lead to better prevention and management of respiratory diseases for all members of society. The ATS recognizes that such efforts must include all stakeholders: members of society at large, governmental and non-governmental organizations, and other professional societies⁵.

Because the ATS membership is composed of healthcare providers, researchers, public health workers, patients, and advocates for respiratory health, it is well-positioned to assume a leadership role in fostering the elimination of respiratory health disparities.

A full description of current and future actions planned by the ATS to reduce respiratory health disparities in the United States and abroad can be found in the recent ATS/ERS policy statement⁵. The policy aims to help eliminate respiratory health disparities by promoting scientific inquiry and training, disseminating medical information and best practices, and monitoring and advocating for public respiratory health⁵. We briefly summarize the impact of this policy in the context of the causal framework depicted in Figure 1, while also expanding on other

FIGURE 2. Overview of the approach of the American Thoracic Society to help eliminate respiratory health disparities through advocacy for “environmental justice” and promotion of a “healthy lifestyle”, implementation of broad access to high-quality healthcare for everyone, and cutting-edge research.



future directions in this field (Figure 2).

PURSUING “ENVIRONMENTAL JUSTICE” AND PROMOTING A HEALTHY LIFESTYLE

Exposures to certain environmental or lifestyle risk factors impact multiple respiratory diseases, and thus the ATS should continue to prioritize policies that aim to reduce or eliminate such exposures. In particular, the ATS should continue to advocate for comprehensive anti-smoking efforts, defend the right of all people to breathe clean air, and promote a safe and healthy work environment. Because these risk factors have a major impact on non-respiratory diseases (e.g. cardiovascular illnesses and cancer), working to positively influence relevant groups and organizations such as the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) is essential. ATS members conduct research that informs EPA policies on air quality standards, and the ATS actively supports the authority of the FDA to regulate all tobacco products. In recognition of the epidemic of obesity in the United States¹¹ and obesity’s role in breathing, collaborative efforts to prevent overweight during childhood merit future consideration.

In addition to advocacy at the local, state and federal levels, the ATS should continue to develop and promote programs aimed at educating the public and policy makers on environmental or lifestyle hazards, while fostering etiologic and interventional research on established or emerging environmental exposures that could threaten respiratory health. This might include topics such as nicotine delivery devices, climate change, and occupational hazards.

IMPLEMENTING HIGH-QUALITY HEALTHCARE FOR ALL INDIVIDUALS

The ATS can positively influence broad access to high-quality healthcare through shaping research and innovation agendas; stimulating the creation of a diverse and well-trained workforce of healthcare professionals in pulmonary/critical care/sleep medicine who can advocate and help solve existing respiratory health disparities; creating and updating clinical guidelines for respiratory diseases that disproportionately affect vulnerable populations; and advocacy.

RESEARCH

The ATS should shape a strategic national research agenda focused on eliminating respiratory health disparities. Specific actions to be continued or undertaken include the development and maintenance of relevant clinical guidelines and workshop statements, which help identify gaps in knowledge and prioritize areas for investigation on health disparities; promoting research studies through advocacy for funding by other societies and agencies, as well as developing a mechanism to fund multidisciplinary research on respiratory health disparities (e.g. by the ATS Foundation, possibly in conjunction with other interested societies or agencies); encouraging research studies developed and implemented in partnership with relevant communities (e.g. community-based participatory research, including multifaceted interventions); and fostering the career development of investigators on respiratory health disparities, while also ensuring their inclusion as members of appropriate decision-making committees (e.g. the Scientific Advisory Committee).

FOSTERING DIVERSITY OF THE WORKFORCE

Both a membership survey of the ATS and a survey of training directors in 1999-2000 found remarkable under-representation of minority physicians among ATS members or trainees in pediatric and adult fellowships in Pulmonary and Critical Care Medicine. For example, only 5.6% of ATS members self-identified as under-represented minorities at that time. Because increasing the diversity of the workforce in pediatric

and adult Pulmonary, Critical Care and Sleep Medicine may have a substantial impact on eliminating respiratory health disparities, an updated membership survey of the ATS regarding not only gender, race and ethnicity but other characteristics (e.g. sexual orientation) should be conducted as early as possible. In addition, the ATS should maintain or develop partnerships with institutions and organizations that foster the creation of a pipeline of minority physicians and scientists at various stages (high school, college and medical school), with the ultimate goal of attracting such individuals to careers in respiratory health.

The ATS should aim to enhance funding for early-stage minority investigators (e.g. minority trainee travel awards), while further developing existing programs to stimulate and recognize achievements by minority physicians and scientists in respiratory medicine (e.g. the Diversity Forum). Finally, the ATS should vigorously pursue inclusion of minority members in decision-making bodies within the society (e.g. committees, assemblies, and leadership), while ensuring that at least one member of the ATS Board of Directors belongs to a minority group.

ADVOCACY

The ATS should continue to monitor and advocate, at the state and national level, for greater access of all individuals to general and specialized healthcare, and to national programs aimed to eliminate health disparities. The ATS should continue to focus on such advocacy for vulnerable populations, including children (e.g. Medicaid expansion) and migrant workers. To enhance its efforts, the ATS should commit to the creation of a “lung corps” to serve as advocates for respiratory health and the elimination of respiratory health disparities.



CONCLUSIONS

The ATS recognizes the difficulties involved in achieving respiratory health equality and welcomes these challenges as an impetus to act with the “fierce urgency of now”¹⁹.

Those who believe that respiratory health equality cannot or will not be achieved in the United States would do well by remembering the words of President Lyndon B. Johnson as part of his inaugural address in January of 1965: “For this is what America is all about. It is the uncrossed desert and the unclimbed ridge. It is the star that is not reached and the harvest sleeping in the unplowed ground. Is our world gone? We say “Farewell.” Is a new world coming? We welcome it — and we will bend it to the hopes of man.”

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