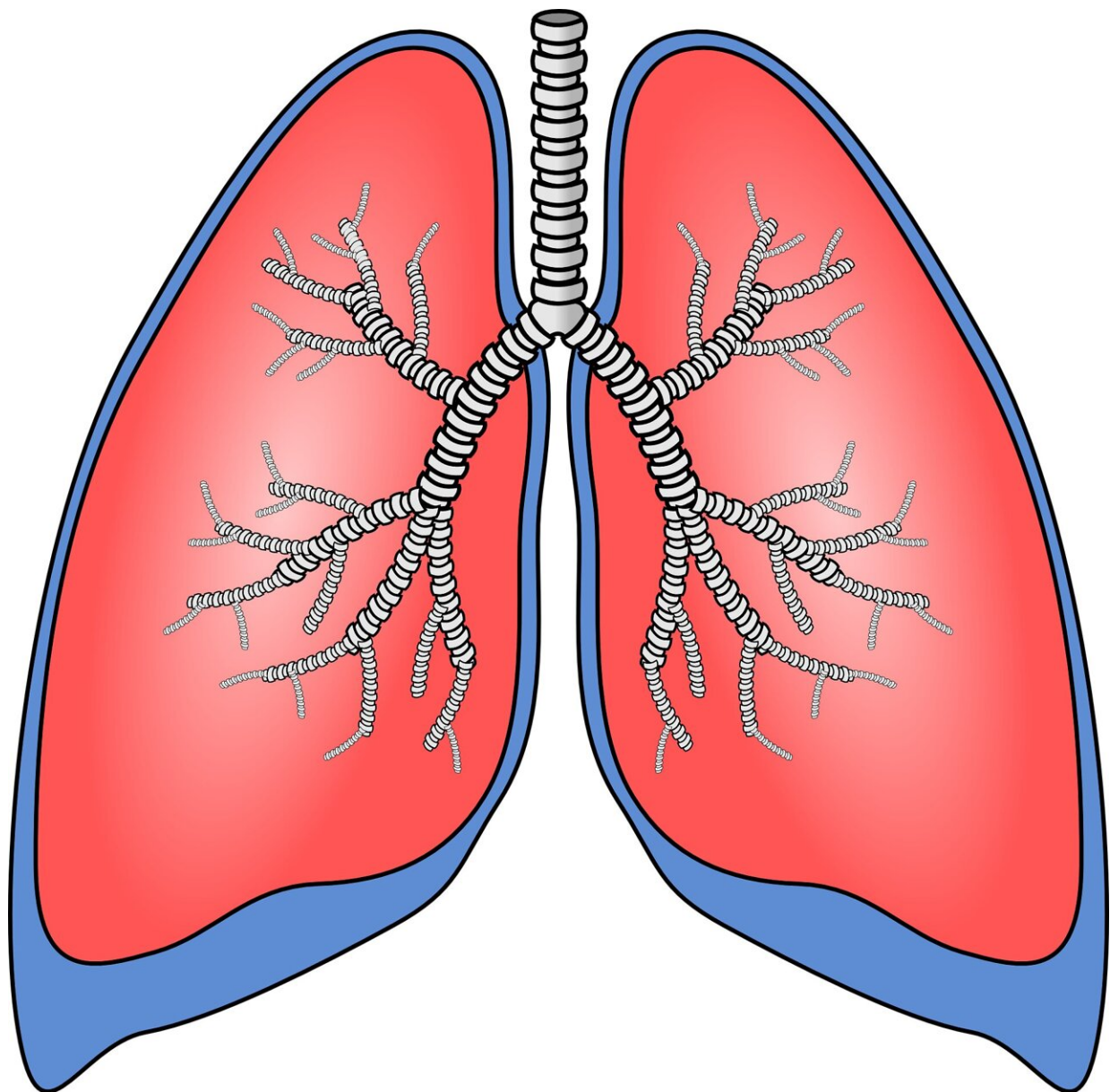


Lung disease tests are failing Black patients, studies show. Experts are calling for change

October 13 2022, by Nada Hassanein



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Widely used lung function tests often fail to detect lung disease in Black patients, according to research—and experts are calling for new methods of testing.

Spirometry, the most common lung function test used by [medical professionals](#), measures how much air a patient breathes into their lungs and how much they can exhale quickly.

The results are interpreted through equations that compare, or correct, results against average healthy values based on sex, height, age—and [race](#). Previous studies found lower lung function in Black patients, leading to lower average reference values and "race corrections" in lung tests.

But increasingly, research shows differences based on race don't reflect biology, but instead structural racism's effect on health. Rather than accounting for inherent differences in lung function, "adjusting" for race instead normalizes poor lung health, prevents diagnosis and perpetuates health disparities and, experts say, the [environmental factors](#) that contribute to them.

"We've decided in the United States that it's 'normal' for Black people to have lower lung function than [white people](#)," said Dr. Ravi Kalhan, deputy division chief of pulmonary and critical care at Northwestern University. "Race-specific equations result in us not diagnosing lung disease in Black people—despite quite high prevalence."

In an essay published online Friday, a group of researchers implored medical professionals to stop using race-based spirometry.

"Advocate for further research into the relationship between lung capacity and social determinants of health that disproportionately impact people of color," the Virginia Commonwealth University School of Medicine authors, physicians and medical school students, wrote in the entry to the *Journal of Hospital Medicine's* "Things We Do For No Reason" series.

The authors called the practice "harmful" and said "accepting the race factor impedes the examination of other social, environmental, and genetic factors as drivers of disease."

"It leads to the underdiagnosis of pulmonary disease in racial minority patients and impacting timely diagnosis, access to effective treatments, and ultimately outcomes," they wrote.

Recent studies have found this to be the case.

Dr. Gabrielle Liu, an instructor at Northwestern University Feinberg School of Medicine's pulmonary and critical care division, along with Kalhan and others, studied spirometry tests and CT scans of more than 2,600 patients, who were Black and white adults from the ongoing, long-term Coronary Artery Risk Development in Young Adults, or CARDIA, study.

Liu and her team found a disproportionate number of Black men and women whose lung function readings appeared "normal" when the race-based equation was used but actually had emphysema apparent in their CT scans. Black men had the highest rates of the illness, a type of chronic obstructive pulmonary disease that causes lung health to worsen over time and impairs breathing.

"Our study findings suggest that this practice is actually normalizing worse lung health," Liu said of the research, published in the *Annals of*

Internal Medicine this summer.

Reliance on spirometry tests alone may perpetuate racial health inequities, she said. The team urged clinicians to conduct CT scans.

"For a long time, this (equation) was thought to just be normalizing potentially inherent differences in lung capacity. But that's really being brought into question," Liu said. "Are we actually just normalizing structural inequities in lung health?"

Growing criticism of 'race correction' in lung function test

In a statement, the American Thoracic Society said it held a workshop about race and ethnicity in lung function interpretation and intends to release a report on the issue.

"In response to emerging evidence, the ATS is now examining whether the interpretation of lung function should be race and ethnicity blind," the statement read. "The society will continue to evaluate the topic of race and ethnicity in clinical decision-making on an ongoing basis and revise its guidance according to the best available science."

Several other researchers have also been studying the issue.

A study of 14,000 spirometry test results collected between 2010 and 2020 found that removing the race factor in the equation led to an increase in diagnosis of [lung disease](#) or any pulmonary defect in Black patients.

"It's not that race is a meaningful biological variable, but just that there are a number of other environmental protection factors that we're not

including, or not controlling for, when we collect these populations of normal individuals," said lead author Alexander Moffett, a clinical fellow at the University of Pennsylvania Perelman School of Medicine's pulmonary, allergy and [critical care](#) division.

His team included Dr. Nwamaka Eneanya, who has researched similar problems for Black patients arising from race adjustments in kidney function tests.

"The net effect then, is (we) perpetuate health disparities by seeing the effects of these disparities as themselves 'normal,'" Moffett said.

Other research has echoed these findings, including a study published last year in the *American Journal of Respiratory and Critical Care Medicine*, which found race-specific equations "underestimate" COPD severity in Black patients. A 2018 analysis found that regardless of how severely they had trouble breathing, Black patients were less likely to have a COPD diagnosis.

Troubling history of racial assumptions about lung function

Experts have been pointing to grim roots of race-based spirometry that date back to slavery.

Southern physician and plantation owner Samuel Cartwright was the first to determine lower lung capacity in Black people compared to white people, according to medical historian Lundy Braun.

A professor of pathology, laboratory medicine and Africana studies, Braun researches racism, structures of inequality and medical pedagogy. She wrote the book "Breathing Race into the Machine: The Surprising

Career of the Spirometer from Plantation to Genetics."

A large survey of Black and white soldiers during the 1860s claimed—without adjustment for height or the conditions of recently emancipated enslaved people—Black people had lower lung capacity than white people, Braun explained in an essay detailing the history of the issue.

Throughout the essay Braun cites staggering instances throughout history of similar assumptions made by researchers about people of color—as well as those who tried to call it out.

"South African researchers questioned the interpretations of difference, arguing that previous research failed to account fully for social conditions," Braun wrote. "North American and European researchers, however, failed to cite these articles and the idea that racial difference was innate remained firmly entrenched in the pulmonology literature."

"It's essential," Braun wrote, "to rethink race correction of spirometric measurements."

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Citation: Lung disease tests are failing Black patients, studies show. Experts are calling for change (2022, October 13) retrieved 3 May 2024 from <https://medicalxpress.com/news/2022-10-lung-disease-black-patients-experts.html>

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