

# Many Black men with 'normal' lung function may actually have emphysema

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Black men with emphysema may be misdiagnosed because of race-specific adjustments to spirometry. Credit: ATS

A significant percentage of Black men found to have normal lung function after race-based adjustments to spirometry were actually found

to have emphysema on their computed tomography (CT) scans, according to research published at the ATS 2022 international conference.

"Black adults in the U.S. are more likely to have unrecognized [emphysema](#) than white adults. This is due in part to the normalization of lower lung function in people of color through race-specific interpretations of spirometry," said the study's presenting author Gabrielle Liu, MD, pulmonary and critical care fellow, Northwestern University Feinberg School of Medicine, Chicago. "We found in this observational sample of middle-aged adults in the United States that 14.6 percent of Black men (vs. 1.7 percent of white men) with 'above-normal' spirometry based on race-specific equations were found to have emphysema on CT imaging. Our traditional measures of lung health based on race-specific spirometry may be considerably under-recognizing impaired respiratory health in Black individuals."

It is [standard practice](#) to interpret results from spirometry using race-specific norms, which leads to a decrease in the predicted lower limit of "normal" for FEV<sub>1</sub> and FVC for Black patients. FEV<sub>1</sub> is the maximum amount of air a person can forcibly exhale in one second and FVC is the forced vital capacity—maximum amount exhaled forcefully after breathing in deeply. The practice of race correction has no [biological basis](#) and is based on the mistaken belief, first proposed during [colonial times](#), that Black individuals have smaller lungs.

Spirometry is a commonly used test of lung function in which a patient forcefully exhales into a mouthpiece that is connected to a spirometry machine. The machine measures how much air the person is able to exhale and inhale and helps determine whether he or she has [lung disease](#). Emphysema, which involves the gradual destruction of lung tissue, is often associated with COPD and can lead to extremely poor health outcomes.

Dr. Liu and colleagues evaluated the association between self-identified race and visually identified emphysema on CT scans in participants with normal spirometry who participated in the multicenter Coronary Artery Risk Development in Young Adults (CARDIA) study, which followed Black and white participants starting in 1985. This study examined 2,674 participants' CT scans when they were the average age of 50, and spirometry results when they were average age 55.

"We found that significant racial disparities in emphysema prevalence occur predominantly among those with FEV<sub>1</sub> between 80 and 120 percent of that predicted," said Dr. Liu. "This suggests that the greatest potential for misclassification using race-specific equations occurs among Black adults who are at risk for disease and who could potentially benefit from risk factor modification."

The research team also wanted to see whether individual socioeconomic status (SES) and smoking might contribute to higher rates of emphysema in Black participants, and whether the association between race and emphysema among those with similar lung function would be reduced or eliminated when adjusted for smoking and SES. They found that there was still a racial disparity in emphysema among those with similar predicted race-specific FEV<sub>1</sub>. However, after adjusting for SES and smoking, the disparity in emphysema prevalence between Black and white men was reduced.

"We feel these findings support reconsidering the use of race-specific spirometry reference equations in favor of race-neutral reference equations and support further research into the utility and implications of incorporating CT imaging into the evaluation of those with suspected impaired respiratory health and normal spirometry," stated Dr. Liu.

**More information:** Abstract: [www.abstractsonline.com/pp8/#!/.../76/presentation/4762](http://www.abstractsonline.com/pp8/#!/.../76/presentation/4762)

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