

Editorials

Reconsidering the Use of Race in Spirometry Interpretation

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See related article on page 247.

An article in this issue of *American Family Physician* describes the importance of spirometry in making an accurate diagnosis of obstructive lung disease and in distinguishing between asthma and chronic obstructive pulmonary disease.¹ An analysis of the Multi-Ethnic Study of Atherosclerosis (MESA) Lung Study—a prospective cohort study of more than 3,000 participants—found that the use of race corrections in spirometry interpretation did not help to predict chronic lower respiratory disease events any more accurately than the use of race-neutral calculations.² This analysis demonstrated how a 65-year-old man with a specific height, forced expiratory volume in one second (FEV₁), and forced vital capacity (FVC) would receive a percentage-predicted FEV₁ result of 70% (i.e., moderate lung disease) using a White race correction as opposed to a result of 82% (i.e., normal lung function) using a Black race correction because of assumptions that Black patients have a smaller lung capacity.² Thus, a Black patient could receive a false-negative interpretation of results and be deprived of symptomatic treatment or more targeted counseling for underlying asthma or chronic obstructive pulmonary disease. Others have raised concerns about the use of race-based spirometry in assessing recovery following COVID-19 infection, which could result in missing the diagnosis of restrictive ventilatory dysfunction.³

In July 2020, the American Academy of Family Physicians adopted a policy that recognizes race as a social construct comprising “broad, poorly defined” categories that neither reliably predict genetic ancestry nor consistently unite people biologically.⁴ The American Medical Association also declared that race is a social—not biologic—construct and recommends that medical educators present “race within a socio-ecological model of individual, community and society.”⁵ A policy statement by the American Academy of Pediatrics supports calls for the elimination

of race-based medicine as part of an effort to dismantle systemic health inequities.⁶ With increasing multiracial populations and emerging evidence and agreement that racial and ethnic health disparities are caused by social factors and other structural aspects of society,⁷⁻¹⁰ physicians should reconsider the use of race and/or ethnicity in clinical decision-making tools and algorithms.

Recent examples of a collective movement away from race-based medicine include the removal of race and ethnicity from the calculator for predicting the likelihood of a successful vaginal birth after cesarean delivery^{11,12} and the replacement of race-based estimations of glomerular filtration rate in favor of alternatives, such as cystatin C-based equations.¹³⁻¹⁵ Conversely, the diagnosis of obstructive and restrictive lung diseases via spirometry still uses a race-correction factor that reduces the normal reference range of lung capacity by 4% to 6% for Asian patients and by 10% to 15% for Black or African American patients.^{3,6} A systematic review of spirometry revealed that many investigators did not actually define race and/or ethnicity, and 94% of the studies did not examine socioeconomic status when discussing racial and ethnic differences.^{16,17} Instead of exploring what social factors might be contributing to the differing results between groups, most authors attributed racial differences to biologic or genetic variances and did not consider the methodologic flaws of their analyses. This is problematic in the face of studies that demonstrated strong associations between obstructive lung disease outcomes and social factors, such as housing code violations and the density of housing units.¹⁸

Further complicating the matter is that there is no guidance about what race to apply in a spirometer if a patient has one White parent and one Black parent. According to U.S. Census data from 2020, more than 10% of the population identifies as more than one race—a 276% increase in the multiracial population compared with the 2010 U.S. Census.¹⁹ A racialized view of the practice of medicine is not only imprecise, but it

also attributes health disparities to innate biologic differences, thus creating a missed opportunity to address the social determinants of health.²⁰ Two population-based birth cohort studies—the Manchester Asthma and Allergy Study (MAAS) and the Avon Longitudinal Study of Parents and Children (ALSPAC)—revealed that the trajectory of lung function in patients with low FEV₁ in childhood is strongly associated with social factors such as exposure to tobacco smoke and early sensitization to allergens.²¹

One argument against removing the race correction factor from the interpretation of pulmonary function testing is that a validated alternative is not yet available, and we do not know the cumulative impact of removing race and maintaining all other aspects of diagnosis of chronic respiratory diseases. In the same way that the medical and research communities found replacements for predicting successful vaginal birth after cesarean delivery^{11,12} and estimating kidney function without using race or ethnicity,¹³⁻¹⁵ we can find better proxies for ancestry in the diagnosis of lung disease²²; the American Academy of Pediatrics discussed how the omission of race in spirometry could be a motivating factor to find these alternatives expeditiously.^{6,20} The American Academy of Family Physicians also advocates for further patient-oriented research on the role of social determinants of health in lung disorders,⁴ and family physicians should use shared decision-making with patients when interpreting spirometry. Thus, for now we should inform patients that the use of a race correction for Black and Asian patients could potentially lead to missing diagnoses of chronic obstructive pulmonary disease or asthma, and we should interpret results while considering the clinical picture and contributing environmental and social factors.

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