

REFERENCES

1. Wasserman RL, Hague AR, Pence DM, Sugerman RW, Silvers SK, Rolen JG, et al. The real world is not standardized. *J Allergy Clin Immunol Pract* 2019;7:2098-9.
2. Wang J. Peanut oral immunotherapy: data from a real-world clinical practice. *J Allergy Clin Immunol Pract* 2019;7:427-8.
3. Wasserman RL, Hague AR, Pence DM, Sugerman RW, Silvers SK, Rolen JG, et al. Real world experience with peanut oral immunotherapy: lessons learned from 270 patients. *J Allergy Clin Immunol Pract* 2019;7:418-26.e4.
4. Merriam-Webster. Dictionary by Merriam-Webster: America's most trusted online dictionary. Available from: <https://www.merriam-webster.com/>. Accessed March 20, 2019.
5. Blumchen K, Ulbricht H, Staden U, Dobberstein K, Beschoner J, de Oliveira LC, et al. Oral peanut immunotherapy in children with peanut anaphylaxis. *J Allergy Clin Immunol* 2010;126:83-91.e1.
6. Anagnostou K, Islam S, King Y, Foley L, Pasea L, Bond S, et al. Assessing the efficacy of oral immunotherapy for the desensitisation of peanut allergy in children (STOP II): a phase 2 randomised controlled trial. *Lancet* 2014;383:1297-304.
7. Varshney P, Jones SM, Scurlock AM, Perry TT, Kemper A, Steele P, et al. A randomized controlled study of peanut oral immunotherapy: clinical desensitization and modulation of the allergic response. *J Allergy Clin Immunol* 2011;127:654-60.
8. Filep S, Block DS, Smith BRE, King EM, Commins S, Kulis M, et al. Specific allergen profiles of peanut foods and diagnostic or therapeutic allergenic products. *J Allergy Clin Immunol* 2018;141:626-31.e7.
9. Hindley JP, Filep S, Block DS, King EM, Chapman MD. Dose of allergens in a peanut snack (Bamba) associated with prevention of peanut allergy. *J Allergy Clin Immunol* 2018;141:780-2.
10. Cox L, Nelson H, Lockey R, Calabria C, Chacko T, Finegold I, et al. Allergen immunotherapy: a practice parameter third update. *J Allergy Clin Immunol* 2011;127:S1-55.
11. Greenhawt MJ, Vickery BP. Allergist-reported trends in the practice of food allergen oral immunotherapy. *J Allergy Clin Immunol Pract* 2015;3:33-8.
12. Wasserman RL, Jones DH, Windom HH. Oral immunotherapy for food allergy: the FAST perspective. *Ann Allergy Asthma Immunol* 2018;121:272-5.
13. Soller L, Abrams EM, Chan ES. An update on the controversy around offering oral immunotherapy to peanut-allergic children outside of research. *Ann Allergy Asthma Immunol* 2019;122:559-62.
14. Vickery BP, Vereda A, Casale TB, Beyer K, du Toit G, Hourihane JO, et al. AR101 Oral immunotherapy for peanut allergy. *N Engl J Med* 2018;379:1991-2001.
15. Wasserman RL, Factor JM, Baker JW, Mansfield LE, Katz Y, Hague AR, et al. Oral immunotherapy for peanut allergy: multipractice experience with epinephrine-treated reactions. *J Allergy Clin Immunol Pract* 2014;2:91-6.

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Closing the door on social determinants of health and asthma disparities: Not so fast



To the Editor:

We read with interest the article by Guilbert et al,¹ which aims to address the important question of whether racial and ethnic asthma disparities are caused by differences in social determinants of health. Although asthma disparities research is critically important, particularly because we have made little progress in reducing these disparities, there are some methodologic limitations and overinterpretation of the results, which call for a reevaluation of the study's conclusions and implications.

Because the statistically significant differences in measures of asthma burden between black and white children were not eliminated by including various factors in statistical models, the authors concluded that the study “extends the finding of an increase in asthma burden in black compared with white children to a phenotype with severe or difficult-to-treat asthma.” The results of the analyses, however, suggest that a substantial proportion of differences observed between black and white children were in fact explained by fairly simplistic measures of

socioeconomic status (SES). For example, adjustment for residence in an urban area, health insurance type, and median income in the zip code of residence reduced differences in the exacerbation score by approximately 40%, suggesting that addressing poverty- and neighborhood-associated factors would reduce the exacerbation disparity by this amount. This degree of reduction would dwarf the advances in reducing disparities that have been made over more than 3 decades!

A second concern is that the measures of SES and environmental differences were unlikely to capture all relevant variation by race that has resulted from multigenerational policies of segregation and racial discrimination. On the one hand, the experience of what it means to live in an urban core or neighborhood with a particular level of SES can be quite different for black and white families, with important implications for health outcomes.² And, on the other hand, the measures fail to capture multiple aspects of SES.³ For example, even when comparing blacks and whites with similar incomes, blacks experience much greater financial and social hardship, and one study found that these differences in hardship explained approximately 40% of differences in asthma readmission rates between black and white children.⁴ Not only were measures of financial and social hardship not captured in the Guilbert et al study, other factors such as wealth, health literacy, and direct measures of a host of environmental exposures were also not captured. The authors acknowledge this limitation, but the magnitude of this limitation warrants a reevaluation of the conclusions.

A final important point is the framing of racial and ethnic differences in the burden of asthma as being *confounded* by SES and other factors rather than what *mediates* racial and ethnic differences. Focusing on *mediation* enables us to pay critical attention to the role that race—including a broad range of historical antecedents, contemporary policies, and everyday experiences—plays in the distribution of these factors, which may in turn catalyze poorer outcomes.⁵

Although we can all agree with their conclusion that there is a “high unmet need for this population” and “on the importance of improving outcomes for black patients with pediatric asthma,” focus on the biologic factors that underlie disparities in asthma outcomes obscures the modifiable factors that help us understand and address a large portion of these disparities.

Elizabeth C. Matsui, MD, MHS^a

Craig E. Pollack, MD^b

Roger D. Peng, PhD^c

Corinne A. Keet, MD, PhD^d

^aDepartments of Population Health and Pediatrics, Dell Medical School at University of Texas at Austin, Austin, Texas

^bDepartment of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, Md

^cDepartment of Biostatistics, Johns Hopkins Bloomberg School of Public Health, Baltimore, Md

^dDivision of Pediatric Allergy and Immunology, Johns Hopkins School of Medicine, Baltimore, Md.

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Corresponding author: Elizabeth C. Matsui, MD, MHS, Dell Medical School at University of Texas at Austin, 1701 Trinity St, Stop Z0500, Austin, TX 78712. E-mail: ematsui@utexas.edu.

REFERENCES

- Guilbert T, Zeiger RS, Haselkorn T, Iqbal A, Alvarez C, Mink DR, et al. Racial disparities in asthma-related health outcomes in children with severe/difficult-to-treat asthma. *J Allergy Clin Immunol Pract* 2019;7:568-77.
- LaVeist T, Pollack K, Thorpe R Jr, Fesahazion R, Gaskin D. Place, not race: disparities dissipate in southwest Baltimore when blacks and whites live under similar conditions. *Health Aff (Millwood)* 2011;30:1880-7.
- Braveman PA, Cubbin C, Egerter S, Chideya S, Marchi KS, Metzler M, et al. Socioeconomic status in health research: one size does not fit all. *JAMA* 2005;294:2879-88.
- Beck AF, Huang B, Simmons JM, Moncrief T, Sauers HS, Chen C, et al. Role of financial and social hardships in asthma racial disparities. *Pediatrics* 2014;133:431-9.
- Matsui EC, Adamson A, Peng RD. Time's up to adopt a biopsychosocial model to address racial and ethnic disparities in asthma. *J Allergy Clin Immunol* 2019;143:2024-5.

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Reply



To the Editor:

We thank Matsui et al¹ for their interest in our analysis from The Epidemiology and Natural History of Asthma: Outcomes and Treatment Regimens (TENOR) observational study.² The title, “Closing the Door on Social Determinants of Health and Asthma Disparities: Not So Fast” implies that our conclusions, albeit inadvertently, deemphasized the importance of social determinants in asthma disparities. This was certainly not our intention. Indeed, despite not being able to fully explain the black/white differences after accounting for socioeconomic status (SES) and other environmental factors as available in the TENOR database, we described other research that has examined individual risk factors and neighborhood qualities to determine the differences. Our general position is that all explorations to identify modifiable factors that bridge gaps in health outcomes are important, but we would like to address the specific concerns.

Matsui et al¹ state that our analysis suggests that differences between black and white children were substantially explained by fairly simplistic measures of SES and our own adjustments “reduced differences in the exacerbation score by approximately 40%.” Although we agree this is a substantial reduction, and perhaps should have been more greatly emphasized, asthma control scores outcome was reduced by only approximately 12% after adjustment.

We agree that our SES and environmental measures may not have captured all relevant variation by race. Health literacy and direct measures of environmental exposures are difficult to obtain and were not collected in TENOR. However, other robust measures were used, such as urban core area, geographic region, income, and insurance coverage. These “traditional” measures are consistent with previous studies, and additional measures, including medication adherence, treatment setting, comorbidities, atopic characteristics, and medications, were also examined. Interestingly, Matsui et al¹ cite a study examining the effect of SES and hardship,³ which used a less comprehensive assessment of SES (income and caregiver educational attainment) than our analysis. This study found that nearly half the disparity was explained by SES and hardships, and stipulated that “additional factors are also likely to affect and explain residual disparities,” including genetic impact, and that personalized management

“may benefit from complementing genetics with a focus on financial or social hardships....” This reminds us that drivers of disparities are not mutually exclusive and can be addressed holistically.

Matsui et al¹ finally suggest that our choice of “confounders” was an attempt to reframe social determinants. In our analysis, confounders were variables that might have alternatively explained observed differences. We used confounders for no other reason than it is widely adopted by the epidemiologic literature rather than the term “mediated” as suggested by Matsui et al.

We maintain that our report provided a comprehensive assessment of the black/white differences in pediatric severe asthma in a large cohort of patients within the limits of our data collection, but still applied a broad array of SES markers and other extrinsic and intrinsic factors. While acknowledging the importance of socioeconomic determinants, we suggest that other determinants may also exist among black children, as previously noted in black adults.⁴ Our intention was that our final remarks be appropriately circumspect and reflective of this important possibility.

Theresa W. Guilbert, MD, MS^a

Robert S. Zeiger, MD, PhD^b

Tmirah Haselkorn, PhD^c

Ahmar Iqbal, MBBS, MBA^d

Cynthia Alvarez, MS^e

David R. Mink, MS^e

Bradley E. Chipps, MD^f

Stanley J. Szefer, MD^g

^aCincinnati Children's Hospital & Medical Center, Cincinnati, Ohio

^bDepartments of Allergy and Research and Evaluation, Kaiser Permanente Southern California, San Diego and Pasadena, Calif

^cEpiMetrix, Inc, Los Altos, Calif

^dGenentech, Inc, South San Francisco, Calif

^eICON, San Francisco, Calif

^fCapital Allergy & Respiratory Disease Center, Sacramento, Calif

^gChildren's Hospital Colorado and University of Colorado School of Medicine, Aurora, Colo.

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Corresponding author: Theresa Guilbert, MD, MS, Division of Pulmonology Medicine, Cincinnati Children's Hospital & Medical Center, 3333 Burnet Ave, MLC 7041, Cincinnati, OH 45229. E-mail: Theresa.Guilbert@cchmc.org.

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