Allergy & Asthma NETWORK

American College of Allergy, Asthma & Immunology

USAsthma SUMMIT 2024

Spirometry and Race Neutral Parameters: The Impact on Communities of Color with Asthma

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SPIROMETRY AND RACE NEUTRAL PARAMETERS

THE IMPACT ON COMMUNITIES OF COLOR

USASTHMA SUMMIT
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DISCLOSURES

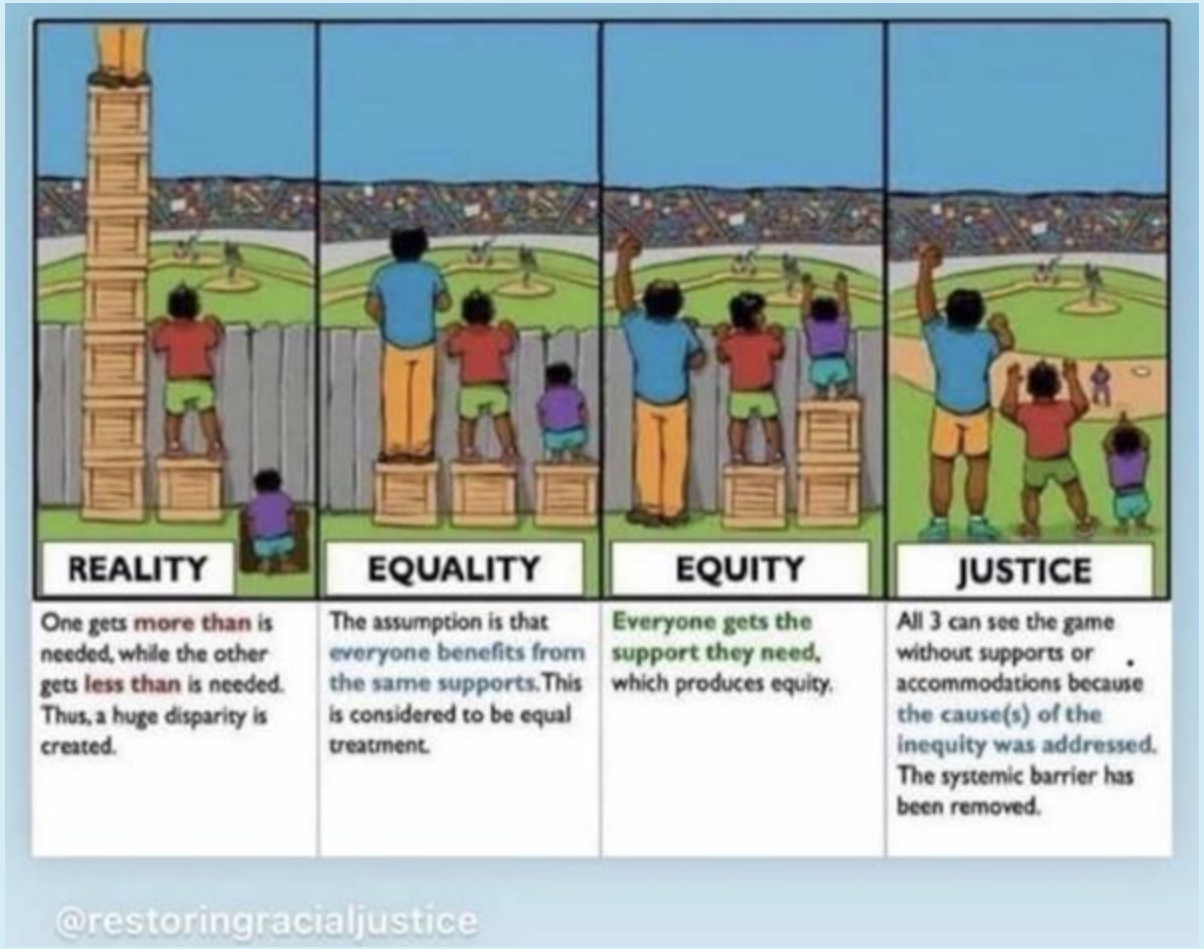
- No pertinent disclosures

OBJECTIVES

Understand	the role of social determinants of health in asthma disparities and health inequities
Review	basis for changes from race adjusted to race neutral spirometry equations and impact on communities of color
Address	considerations when adopting race neutral spirometry
Shift	to race-conscious medicine

HEALTH EQUITY: DEFINITION

- Everyone has a fair opportunity to be healthy
- "The absence of unfair, unavoidable or remediable differences among groups of people..." (WHO)
- "Achieving this requires focused and ongoing society efforts to address historical and contemporary injustices" (CDC)



https://www.who.int/health-topics/health-equity#tab=tab_1, access 7/2023.
https://www.cdc.gov/nchhstp/healthequity/index.html, accesed 7/2023.

SHIFT TOWARDS HEALTH EQUITY

Immense evidence that health inequities exist

Limited research to support development of effective strategies to reduce disparities

Shift emphasis towards health equity

- Development, implementation, and dissemination of strategies at community, regional, and national levels

HOW CAN WE ACHIEVE HEALTH EQUITY?

We need to think about Social Determinants of Health (SDOH)

Defined as the "**conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life**." (WHO)

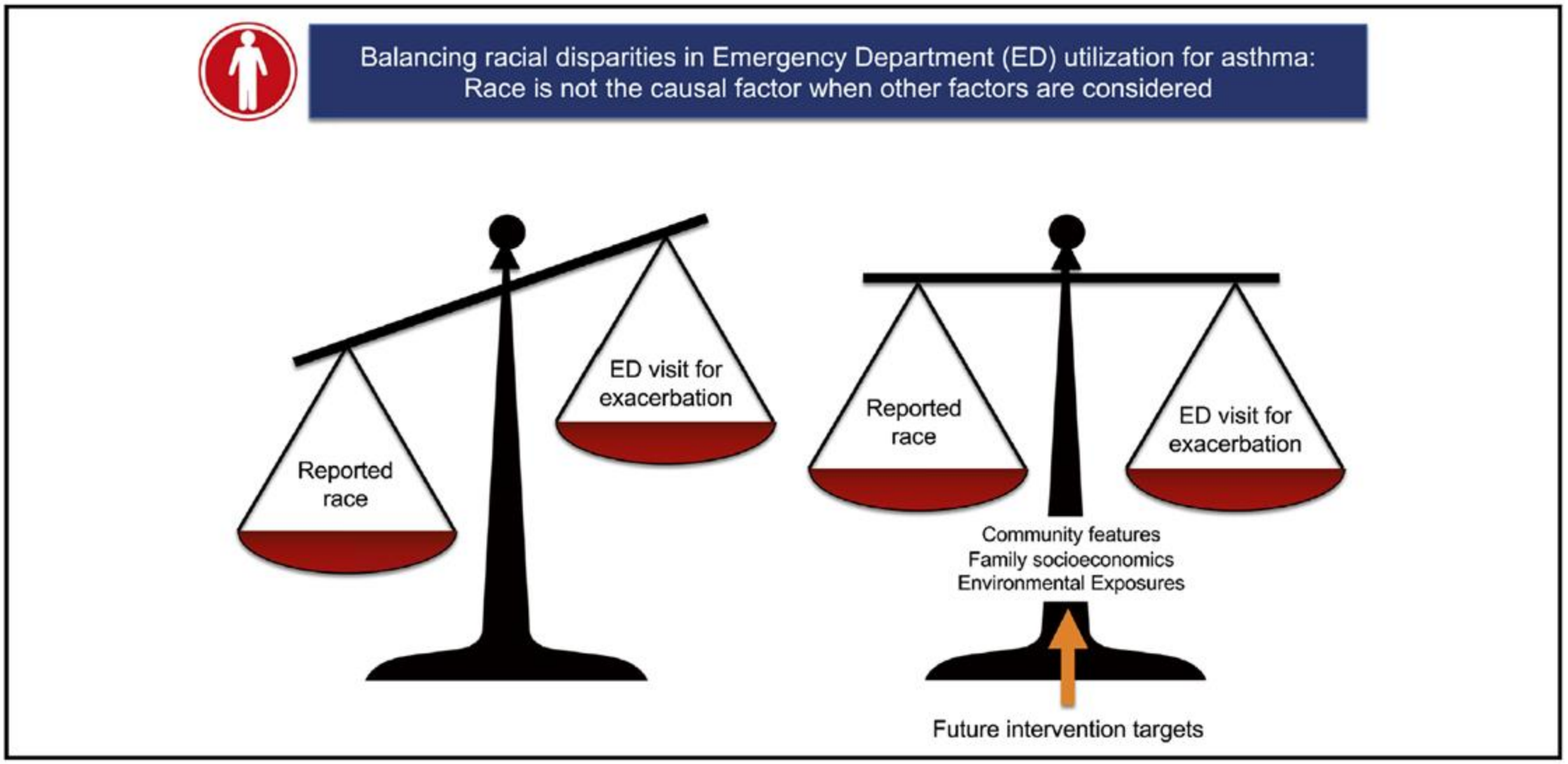
"Addressing SDOH appropriately is **fundamental for improving health and reducing longstanding inequities in health**, which requires action by all sectors and civil society." (WHO)

https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1

HEALTHY PEOPLE 2030

Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved 7/2023 from https://health.gov/healthypeople/objectives-and-data/social-determinants-health

RACIAL DISPARITIES EXPLAINED BY SDOH



Fitzpatrick AM, et al. J Allergy Clin Immunol. 2019 Jun;143(6): 2052-2061.

SYSTEMIC AND STRUCTURAL RACISM

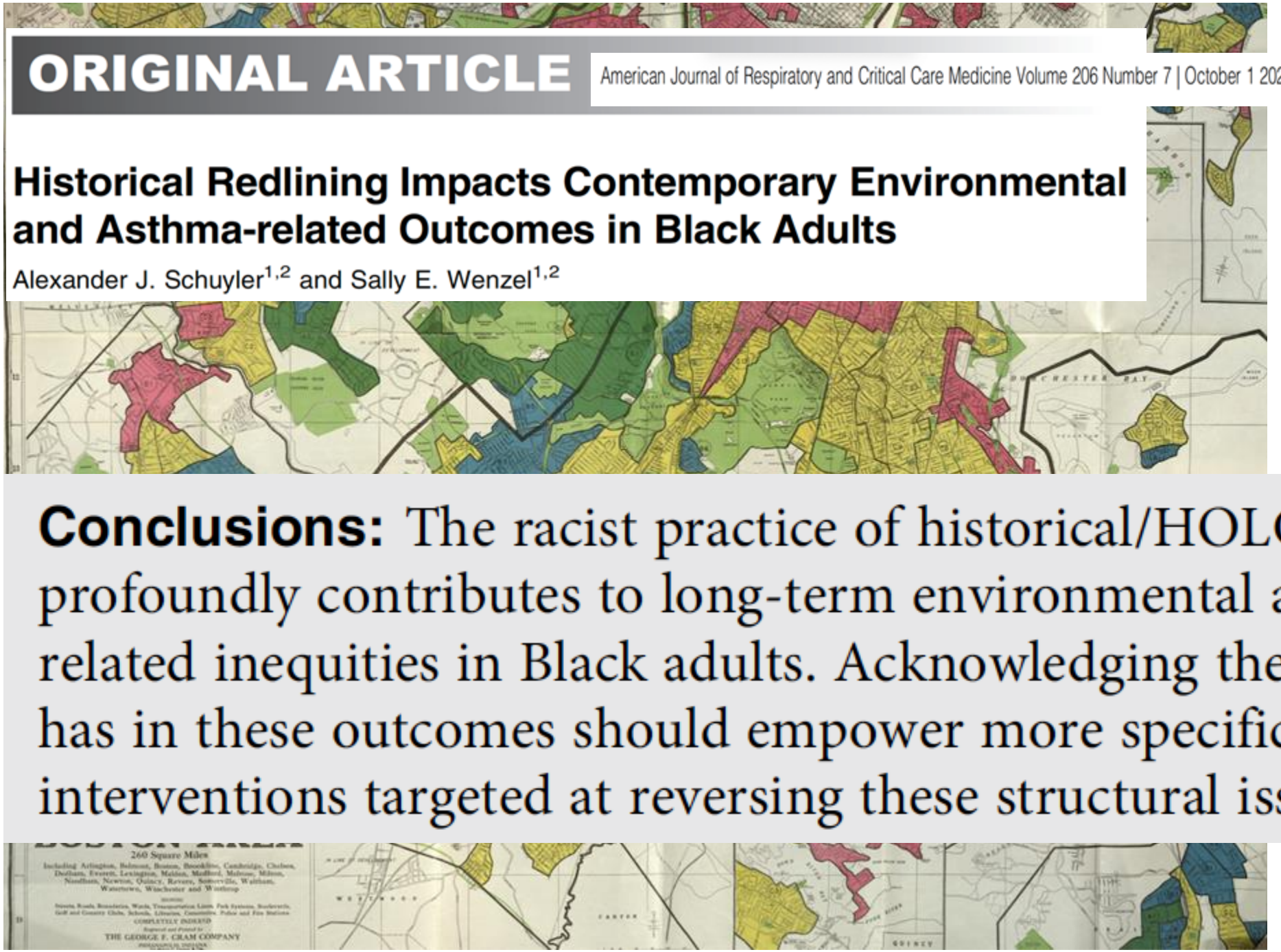
Structural Racism

- The ways in which society facilitates discrimination through the creation and reinforcement of inequitable systems, policies, and sanctioned practices

Pathways

- Residential segregation
- Physical and social hazards
- Chronic psychosocial stress
- Historical practices

Martinez A, et al. Structural racism and its pathways to asthma and atopic dermatitis. J Allergy Clin Immunol. 2021 Nov;148(5):1112-1120.



ORIGINAL ARTICLE

American Journal of Respiratory and Critical Care Medicine Volume 206 Number 7 | October 1 2022

Historical Redlining Impacts Contemporary Environmental and Asthma-related Outcomes in Black Adults

Alexander J. Schuyler[1,2] and Sally E. Wenzel[1,2]

Conclusions: The racist practice of historical/HOLC redlining profoundly contributes to long-term environmental and asthma-related inequities in Black adults. Acknowledging the role racism has in these outcomes should empower more specific and novel interventions targeted at reversing these structural issues.

HISTORICAL REDLINING

https://dsl.richmon

HOW SHOULD WE ADDRESS RACE AND ETHNICITY?

Race/ethnicity are social constructs

- Poor reflection of biology

What about genetics?

- Genetic variation within race > genetic variation between populations
- Genetic ancestry is more predictive but genetic ancestry does not equal race

Jorde, L., Wooding, S. *Nat Genet* **36** (Suppl 11), S28–S33 (2004).

RACE/ETHNICITY AND SPIROMETRY

How race is used	Rationale for race-based management	Potential harm	Race-conscious approach
• Reference values for pulmonary function are adjusted for race and ethnicity	• Racial and ethnic minoritized groups are presumed to have varied lung function on the basis of epidemiological data	• People of color might experience increased difficulty obtaining disability support for pulmonary disease • Poorer recognition of worsened lung function	• Use unadjusted measures (race neutral) of lung function for all patients • Counteract existing biases that harm patients of color because of racial essentialist beliefs about variation in lung capacity

Adapted from Cerdeña JP, et al. Lancet. 2020.

PULMONARY FUNCTION TESTS

"To be clear, we do not believe that physicians should ignore race. Doing so would blind us to the ways in which race and racism structure our society. However, when clinicians insert race into their tools, they risk interpreting racial disparities as immutable facts rather than as injustices that require intervention. Researchers and clinicians must distinguish between the use of race in descriptive statistics, where it plays a vital role in epidemiologic analyses, and in prescriptive clinical guidelines, where it can exacerbate inequities."

– Vyas DA, et al. NEJM. 2020

IMPACT OF RACE ADJUSTED SPIROMETRY

Leads to underdiagnosis or misdiagnosis

- Reduced access to therapeutics to include biologics
- Worsened health outcomes
- Decreases eligibility for Workers' Compensation, disability, and other services

Moffett AT, et al. *JAMA Netw Open.* 2023;6(6):e2316174.
McCormack M, et al. *Am J of Resp and Critical Care Med*. 2022;205(6): 723-726.

POLL QUESTION

Which approach do you believe is more effective for spirometry measurements?

A) Race-neutral spirometry
B) Race-adjusted spirometry
C) Both are equally effective
D) Unsure

RACE NEUTRAL IS EQUAL OR SUPERIOR TO RACE ADJUSTED SPIROMETRY

Studies show that using race neutral approach:

- Better reflects risk of mortality across races
- Better matches symptom burden, airway disease, and physical function

.
Bhakta RN, et al. *Am J of Resp and Critical Care Med*. 2023;207(8): 978-995.
Baugh AD, et al. *Am J Respir Crit Care Med* . 2022;205:819–829.

ERS/ATS UPDATE 2021

ERS/ATS technical standard on interpretive strategies for routine lung function tests

EUROPEAN RESPIRATORY JOURNAL
ERS OFFICIAL DOCUMENTS
S. STANOJEVIC ET AL.

- "The historical approach of fixed adjustment factors for race is not appropriate and is unequivocally discouraged."
- "More emphasis on incomplete understanding of role of race/ethnicity on lung function."
- "There are ongoing efforts to better understand the geographical, environmental, genetic and social determinants of health that play a role in explaining these observed differences."

Stanojevic S, et al. *Eur Respir J* 2022; 60: 2101499

2005 TO 2021

2005

- Based on National Health and Nutrition Examination Study (NHANES) III
- Racial/ethnic specific equations
- Bronchodilator response: > 12% and 200 mL in FEV1 or FVC

2021

- Based on Global Lung Function Initiative (GLI)
- No racial/ethnic specific equations and emphasis on incomplete understanding of role of race/ethnicity on lung function
- Bronchodilator response: > 10% FEV1 or FVC
- Clarification that biological sex, not gender, should be used to interpret lung function

NHANES VS GLI

NHANES III 1999

- Based on 7429 patients
- Ages 8-80
- All patients from the US

GLI 2012

- Based on 74,157 patients
- Ages 3-95
- Patients from 77 centers in 33 countries

EXAMPLE: USING SAME NUMBERS

Race adjusted for African American

Index	Measured	Predicted	Z-Score	LLN	ULN	% Predicted
FEV1	2.2	2.530	-0.934	1.944	3.095	86.963

Race adjusted for Southeast Asian

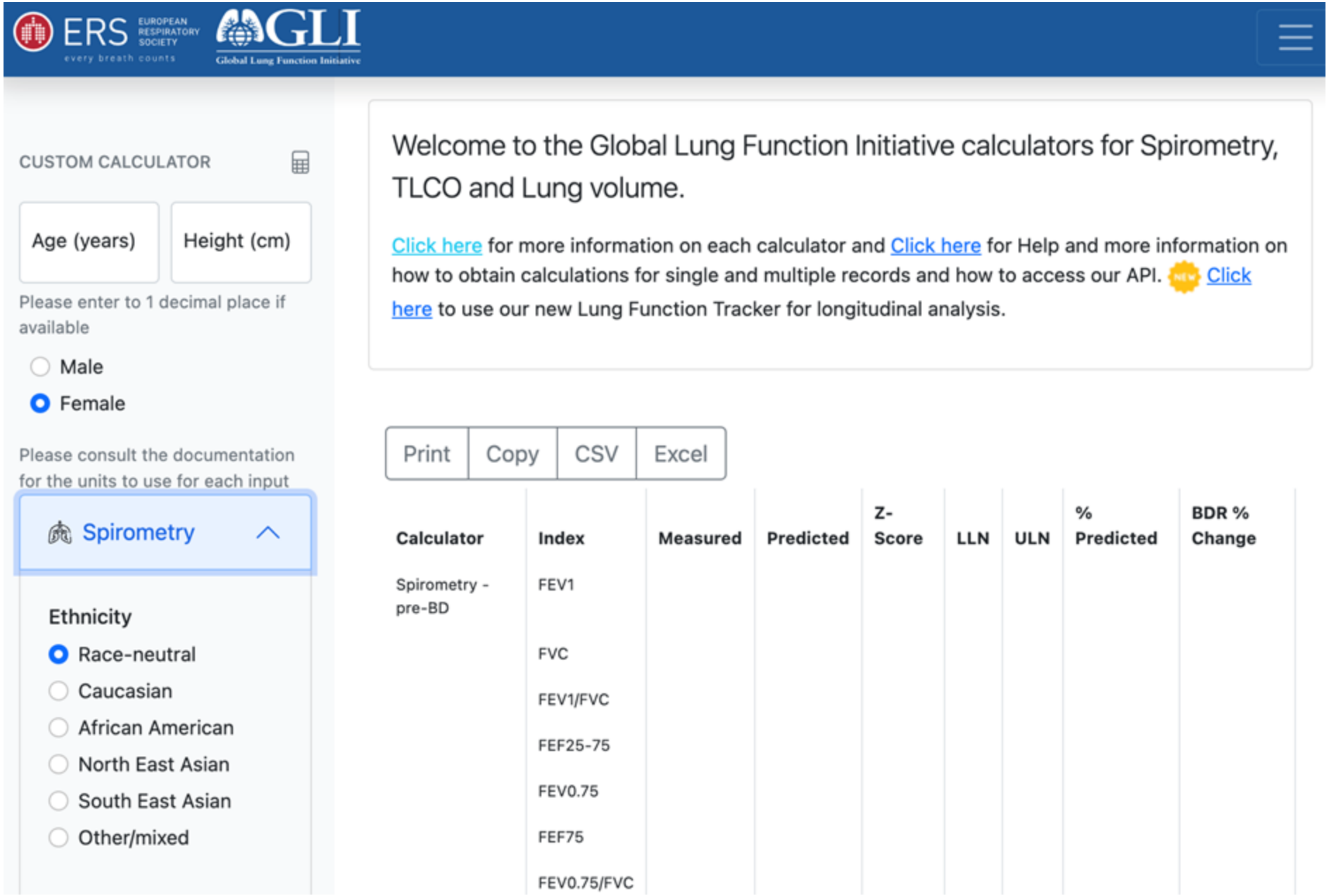
Index	Measured	Predicted	Z-Score	LLN	ULN	% Predicted
FEV1	2.2	2.601	-1.133	2.015	3.166	84.596

Race adjusted for Caucasian

Index	Measured	Predicted	Z-Score	LLN	ULN	% Predicted
FEV1	2.2	2.935	-1.965	2.322	3.528	74.970

Race neutral

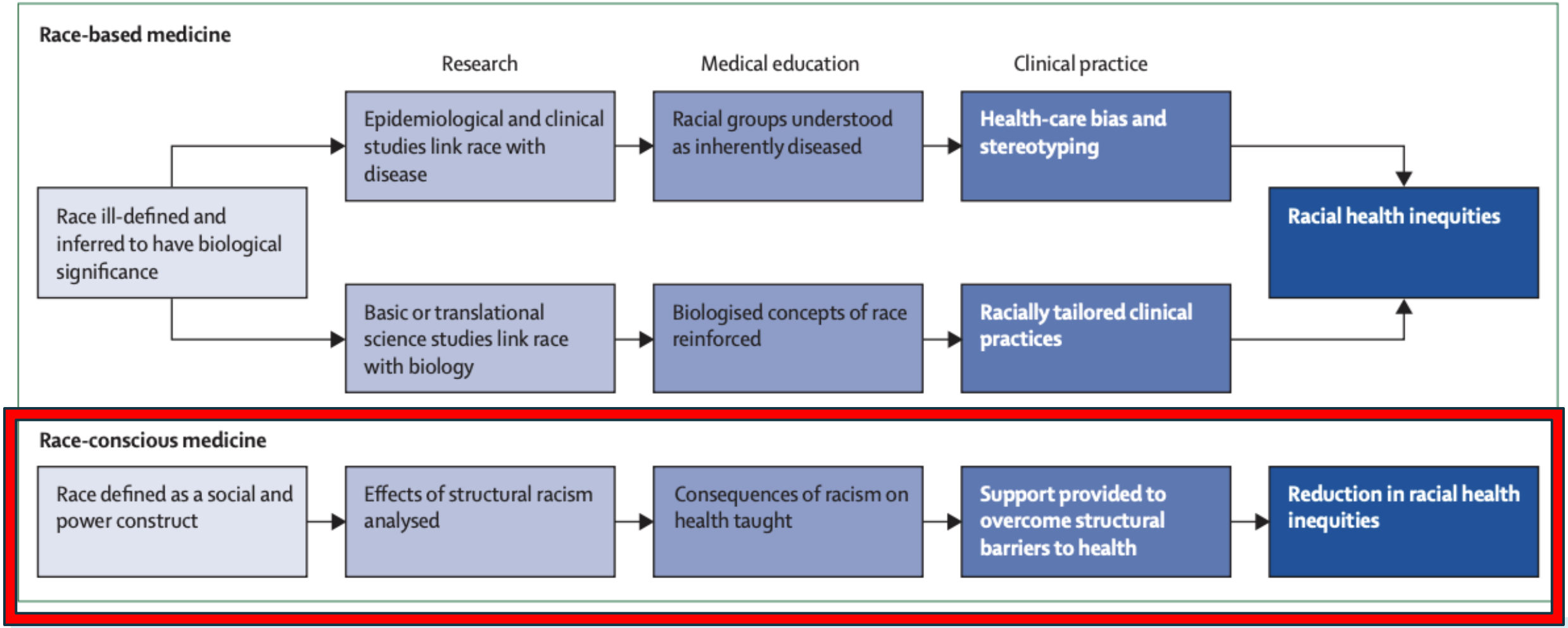
Index	Measured	Predicted	Z-Score	LLN	ULN	% Predicted
FEV1	2.2	2.795	-1.407	2.096	3.458	78.717



GLI CALCULATOR

https://gli-calculator.ersnet.org

SHIFTING TO RACE-CONSCIOUS MEDICINE



Cerdeña JP, et al. Lancet. 2020.

MOVING FORWARD

Compare absolute values but take into consideration there is an age-related decrease in lung function

Alerting and explaining rationale as to why there are differences

- This may impact diagnoses and “categories” of their asthma
- Utilizing statements or alerts on all spirometry interpretations

Community outreach

- Spread the word, advocate for race neutral

Need to consider impact of shifting to race neutral equations and continued research for better understanding

- Increased diversity of research participants
- Role of community-based participatory research

KEY POINTS

- Disparities have been explained by social determinants of health
- Impacts of structural racism are pervasive and we need to shift to race conscious medicine
- Rationale for race neutral spirometry and impact on communities of color
- Importance of open discussions and transparency regarding rationale for changes, community outreach and partnerships
- Need for further research to understand effects along with greater diversity of research participants

QUESTIONS?