

ATS 2023 Highlights

Respiratory Structure and Function Early Career Professionals

Get to know members of the RSF Assembly



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Is your research clinical, basic science or translational?

Clinical & Translational

Tell us about your research?

I research the microbiome in patients with airway diseases and have an interest in big data analysis. We have developed a large database of more than 300,000 PFTs and studied the impact that changes in reference equations have on PFT interpretations. With the goal of complementing our database with more clinical data, we aim to facilitate insightful studies in this field, employing advanced analytical tools and AI algorithms.

Where do you see yourself in 5 years?

I am interested in bronchiectasis. I plan to leverage my experience in microbiome and big data analysis to better understand and predict exacerbations and disease progression in patients with bronchiectasis.

What do you find is the major benefit of RSF Assembly Membership?

The RSF Assembly Membership connects me with other researchers, enhances my work, and provides opportunities to collaborate, learn, and share in our field.



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Application of GLI Global Spirometry Reference Equations to a Large Population Across a Multi-site Academic Healthcare System

Objective: To describe the direction and magnitude of change in predicted lung function measurements using GLI Global in place of the race-based GLI-2012 reference equations

Methods: A Mayo Clinic Enterprise PF database was used to reanalyze 166,065 spirometry tests using GLI Global reference equations. All tests performed for patients aged 5 to 95 years between January 2016 and May 2022 were included, except for lung transplant recipients. Percent (%) predicted measures using GLI Global were compared to values computed using GLI-2012, and changes in the interpretation of lung function across self-declared race/ethnicity groups were described.

Results: Use of GLI Global equations increased the mean FEV₁ and FVC (% predicted) in White and North East Asian groups, and decreased these values in Black, South East Asian and Mixed/Other groups. The change in FEV₁ and FVC was greatest in the Black group, where mean FEV₁ and FVC decreased by 8.2 and 8.4% predicted, respectively. The prevalence of obstruction increased in the White group (+8.6%), and the prevalence of possible restriction increased substantially in the Black (+43.5%) and South East Asian (+37.0%) groups. Overall, the change to GLI Global altered the interpretation of 13,080 (7.9%) spirometry tests. The highest proportion of changes occurred in the Black group (14.3%) and was associated with a 28.8% relative increase in abnormal interpretations.

Conclusion: While GLI Global offers an innovative approach to transition away from race-based reference equations, it is important to recognize the uncertainty that persists in our categorization of lung function near the lower limit of normal, and the continued importance of placing these data within the appropriate clinical context when making diagnoses and decisions.

Race / Ethnicity		Obstruction (FEV ₁ /FVC ≤ LLN)			Possible Restriction (FVC ≤ LLN + FEV ₁ /FVC > LLN)		
		GLI-12	GLI-G	Change	GLI-12	GLI-G	Change
White N = 153824	+4.1%	33989	36929	+ 8.6 %	25063	18862	- 24.7 %
Black N = 6666	-27.0%	1064	1041	- 2.1 %	1634	2344	+ 43.5 %
NE Asian N = 314	↓FEV ₁	33	28	- 15.2 %	66	39	- 40.9 %
SE Asian N = 2178	+7.4%	535	357	- 33.3 %	349	478	+ 37.0 %
Mixed / Other N = 3083	-19.5%	616	549	- 10.9 %	633	604	- 4.6 %

Table 1: Relative changes in the prevalence of Obstruction and Possible Restriction that will occur at Mayo Clinic with the transition from **GLI-2012** to **GLI-Global**, stratified by self-declared race/ethnicity. NE: North East; SE: South East; ↓FEV₁: indeterminate reduction in FEV₁ with preserved FVC & FEV₁/FVC



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