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Effects of adopting the Global Lung Function Initiative 2017 reference equations on the interpretation of carbon monoxide transfer factor

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Adoption of GLI T_{LCO} reference equations in adults will result in altered interpretation depending on the equations previously used and to a greater extent in adult females. The effect on interpretation in children is less significant. <http://bit.ly/3cmRzsY>

Cite this article as: Brazzale DJ, Seccombe LM, Welsh L, *et al.* Effects of adopting the Global Lung Function Initiative 2017 reference equations on the interpretation of carbon monoxide transfer factor. *Eur Respir J* 2020; 55: 1901905 [<https://doi.org/10.1183/13993003.01905-2019>].

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ABSTRACT The recently published Global Lung Function Initiative (GLI) carbon monoxide transfer factor (T_{LCO}) reference equations provide an opportunity to adopt a current, all-age, widely applicable reference set. The aim of this study was to document the effect of changing to GLI from commonly utilised reference equations on the interpretation of T_{LCO} results.

33 863 T_{LCO} results (48% female, 88% Caucasian, n=930 aged <18 years) from clinical pulmonary function laboratories within three Australian teaching hospitals were analysed. The lower limit of normal (LLN) and proportion of patients with a T_{LCO} below this value were calculated using GLI and other commonly used reference equations.

The average T_{LCO} LLN for GLI was similar or lower than the other equations, with the largest difference seen for CRAPO equations (median: -1.25, IQR: -1.64, -0.86 mmol·min⁻¹·kPa⁻¹). These differences resulted in altered rates of reduced T_{LCO} for GLI particularly for adults (+1.9% *versus* MILLER to -27.6% *versus* CRAPO), more so than for children (-0.8% *versus* KIM to -14.2% *versus* COTES). For adults, the highest raw agreement for GLI was with MILLER equations (94.7%), while for children it was with KIM equations (98.1%). Results were reclassified from abnormal to normal more frequently for younger adults, and for adult females, particularly when moving from ROCA to GLI equations (30% of females *versus* 16% of males).

The adoption of GLI T_{LCO} reference equations in adults will result in altered interpretation depending on the equations previously used and to a greater extent in adult females. The effect on interpretation in children is less significant.