



Minimal clinically important difference for impulse oscillometry in adults with asthma

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Shareable abstract (@ERSpublications)

In patients with asthma, small airway function is a distinguished end-point that can be feasibly quantified using the proposed minimal clinically important difference for impulse oscillometry measures <https://bit.ly/3YjwZkp>

Cite this article as: Abdo M, Kirsten A-M, von Mutius E, *et al.* Minimal clinically important difference for impulse oscillometry in adults with asthma. *Eur Respir J* 2023; 61: 2201793 [DOI: 10.1183/13993003.01793-2022].

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Received: 14 Sept 2022
Accepted: 26 Jan 2023

Abstract

Background Impulse oscillometry (IOS) allows an effort-independent evaluation of small airway function in asthma. Unfortunately, well-determined minimal clinically important differences (MCIDs) for IOS measures are lacking. Here, we provide MCIDs for frequently used IOS measures, namely frequency dependence of resistance (FDR) and area of reactance (AX), in patients with asthma.

Methods We performed IOS at baseline and 1 year later in adult patients with mild-to-severe asthma (n=235). In a two-step approach, we first applied a distribution-based method to statistically determine the MCID. Next, we validated the proposed MCID according to patient-reported outcome measures (PROMs): Asthma Quality of Life Questionnaire (AQLQ), Asthma Control Questionnaire-7 (ACQ-7) and Asthma Control Test (ACT). We used multivariable analyses to investigate the proposed MCIDs as predictors for improvements in PROMs compared with the established MCID of forced expiratory volume in 1 s (FEV₁).

Results The proposed MCID was a decline of $\geq 0.06 \text{ kPa}\cdot\text{L}^{-1}\cdot\text{s}^{-1}$ and $\geq 0.65 \text{ kPa}\cdot\text{L}^{-1}$ for FDR and AX, respectively. Patients who had changes beyond the MCIDs for both FDR and AX showed greater improvements in all PROMs than those who had not. The mean improvements in PROMs were beyond the established MCIDs for ACQ-7 and AQLQ, and approximated the MCID for ACT. Multivariable analyses demonstrated the MCIDs for both FDR and AX as independent predictors for the MCIDs of all PROMs. The MCID for FDR was a stronger predictor of all PROMs than the MCID for FEV₁.

Conclusions This study provides MCIDs for IOS-derived measures in adult patients with asthma and emphasises that small airway function is a distinguished end-point beyond the conventional measure of FEV₁.

