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The case for impulse oscillometry in the management of asthma in children and adults

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Table 1: Population Based IOS Reference Values in Healthy Adults

Ref	Study Site	Age	# of subjects	IOS Values	
				R ₅ [kPa/L/s]	X ₅ [kPa/L/s]
(50)[§]	Australia	45* (25-74)	132	0.20*	-0.11*
(51)	Europe	45* (45-89)	397	0.22*	-0.07*
(30)		45* (18-84)	368	0.23*	-0.09*
(52)		40.5 (27-66)	12	0.29 (0.07)	-0.09 (0.03)
(53)		43 (24-73)	12	0.31 (0.13)	-0.11 (0.04)
(54)		37 (2)	18	0.38 (0.02)	-0.11 (0.01)
(55)		48.3 (3.9)	18	0.32 (0.03)	-0.10 (0.01)
(56)		North America	NA	29	0.28 (0.05)
(57)	Asia	18-65	21	0.29 (0.08)	-0.08 (0.05)
(58)		47.6 (2.5)	29	0.26 (0.10)	-0.10 (0.01)
(59)		69.8 (1.3)	29	0.27 (0.2)	-0.10 (0.01)

[§] Commercially utilized

NA: Not available

Table 2 IOS inhaled therapy response studies in Adult Asthma

Study	Effect Size Δ R5-R20 (kPa/L/s)	Standard Deviation of R5-R20 (where reported)
<p>Hoshino M; Allergolint 2010 ciclesonide 200 microg once daily or fluticasone propionate 100 microg twice daily for 8 weeks. [N=36]; GINA Step 2 @ baseline</p>	0.02	0.06-0.07
<p>Hozawa S et al PulmPharmacolTher 2011 twice daily BUD/FM 320/9 µg or FP/SM 250/50 µg, and treatment efficacy was compared after 4 weeks [n=40]</p>	0.04	0.02-0.03
<p>Hozawa S et al PulmPharmacolTher 2014 Two inhalations twice-daily BUD/FM 160/4.5 µg plus as-needed BUD/FM (SMART group, n = 15) or one inhalation twice-daily FP/SM 250/50 µg plus as-needed procaterol (FP/SM group, n = 15) for 8 weeks.</p>	0.04	0.02-0.03
<p>Manoharan A et al, JACI 2016. 4 weeks of open label crossover study salmeterol 50 mcg DPI bid vs extra fine 12mcg HFA-formoterol bid.</p>	% change reported	SD of % change reported
<p>Hozawa S, PilmPharmacolTher 2016 4 Weeks, BUD/FM 160/4.5 +PRN (SMART) or FF/Vilanterol 100/25 + PRN Procaterol in poorly controlled on moderate dose ICS and FENO high asthma. Randomised open label</p>	0.03	0.02-0.03