

To further put these changes into clinical context, we previously measured IOS in response to propranolol-induced bronchoconstriction in patients with asthma where there was a $0.05 \text{ (kPa/L)} \cdot \text{s}$ increase in R5 – R20 corresponding to a 104.1% (95% CI, 22.6 to 185.6%) change, along with a subsequent bronchodilator response to salbutamol of $-0.17 \text{ (kPa/L)} \cdot \text{s}$ and -115.6% (95% CI, -55.6% to -175.7%), respectively (2). Moreover, in a health informatics evaluation of 302 patients with asthma, there was a 45% increased risk for worse control in relation to oral corticosteroid use, and 47% in relation to inhaled albuterol use measured during a 2-year period when comparing cohorts of patients with asthma, using a cutoff value for R5 – R20 of less than or greater than $0.07 \text{ (kPa/L)} \cdot \text{s}$ (3).

Hence, the small airway asthma phenotype reflected by abnormal R5 – R20 is associated with poorer control. We believe the findings of Foy and colleagues (1) are important in further validating the use of IOS in determining effects of treatments on small airways of patients with asthma. ■

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Brian Lipworth, M.D.*
Chris RuiWen Kuo, M.B. Ch.B.
University of Dundee
Dundee, United Kingdom

*Corresponding author (e-mail: b.j.lipworth@dundee.ac.uk).

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Reply to Lipworth and Kuo

From the Author:

I thank Prof. Lipworth and Dr. Kuo for their comments on our manuscript (1). Our attempt is the first of its kind to link patient-based computational models of the small airways with patient outcome measures. In line with the comments made by Prof. Lipworth with respect to resistance at 5 Hz (R5) – resistance at 20 Hz (R20) and asthma risk in cross-sectional studies, I and others recently reported the

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results of the ATLANTIS (Assessment of Small Airways Involvement in Asthma) study, a large multinational study evaluating the association of small airway disease with adult asthma outcomes (2).

ATLANTIS clearly identified that the oscillometry measure R5 – R20 was one of the strongest predictors of both asthma control and prior asthma exacerbations among all the potential small airway indices.

The combination of our findings (1) with the ATLANTIS study results (2) should now enable investigators to test interventions that target the small airways, with R5 – R20 as an outcome measure. ■

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Salman Siddiqui, B.M., F.R.C.P., Ph.D.*
University of Leicester
Leicester, United Kingdom

*Corresponding author (e-mail: ss338@le.ac.uk).

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Not All Home-based Exercise Programs Are Home-based Pulmonary Rehabilitation Programs

To the Editor:

I read with great interest the article by Bhatt and colleagues entitled, “Video Telehealth Pulmonary Rehabilitation Intervention in Chronic Obstructive Pulmonary Disease Reduces 30-Day Readmissions” (1).

The authors delivered pulmonary rehabilitation (PR), using two-way live videoconferencing on a smartphone to 80 patients after hospitalization for a chronic obstructive pulmonary disease (COPD) acute exacerbation (AE), and compared them with 160 matched patients. They report 30-day readmission rates, either all-cause or for COPD AE, in the patients who participated in video PR that are approximately three times lower than in the comparison group.

This study highlights the question of whether issues of access and adherence to conventional in-center PR can be safely addressed by using technology to bring a program directly to patients in their

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