Does a Single Measurement of Exhaled Nitric Oxide Predict Asthma Exacerbations?

**Visser CA, Brand PL. Arch Dis Child 2011;96(8):781–782**

**PURPOSE OF THE STUDY.** The ability to predict asthma exacerbations would be useful because it might be possible to intensify therapy and prevent the exacerbation. One proposed tool to predict asthma exacerbations is exhaled nitric oxide (FeNO). The study evaluated whether measurements of FeNO predict subsequent asthma exacerbations.

**METHODS.** The study included 103 children aged 6 to 16 years with asthma on daily inhaled corticosteroid controller therapy. At a scheduled follow-up visit, a single FeNO measurement was made (baseline). The children were then followed prospectively for 12 months for asthma exacerbations requiring systemic corticosteroids.

**RESULTS.** Ten patients (9.7%) had asthma exacerbations. The baseline FeNO was higher in children who went on to have exacerbations (median 41 ppb, interquartile range 33–71 ppb) than in those who did not (median 13, interquartile range 9–21 ppb, P < .001). However, there was complete overlap of FeNO values between groups.

**CONCLUSIONS.** The authors concluded that FeNO measurements are “useless in predicting asthma exacerbations.”

**REVIEWER COMMENTS.** Although the current study evaluated only a single FeNO measurement as a predictor of subsequent asthma exacerbations, many other studies have assessed using serial FeNO measurements to tailor asthma therapy. A meta-analysis published in 2012 (Petsky et al. Thorax 2012;67:199–208. doi: 10.1136/thx.2010.135574) concluded that “tailoring of asthma treatment based on FeNO levels has not been shown to be effective in improving asthma outcomes in children … there is insufficient justification to advocate the routine use of … FeNO in everyday clinical practice.” I believe FeNO has yet to prove itself to be a useful clinical tool.

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**Development and Validation of the Composite Asthma Severity Index—An Outcome Measure for Use in Children and Adolescents**


**PURPOSE OF THE STUDY.** To develop and validate a new instrument, the Composite Asthma Severity Index (CASI), which accounts for impairment, risk, and amount of medication to maintain control. Previous instruments do not take into account these measures in defining severity as outlined by the Expert Panel Report—3: For the Diagnosis and Management of Asthma.

**STUDY POPULATION.** Data from 546 children and adolescents in the Asthma Control Evaluation (ACE) trial were used initially to determine outcome domains of asthma. External validation of the severity index was achieved by using data from 419 children and adolescents in the Inner City Anti-IgE Therapy for Asthma (ICATA) trial, a double-blind, placebo-controlled multicenter trial of omalizumab versus placebo.

**METHODS.** Factor analysis was used to determine independent outcome domains of asthma using the data from the ACE trial. Next, 26 Inner City Asthma Consortium (ICAC) clinical investigators combined and weighted the domains into a final CASI score using a Delphi consensus process. The scale properties of CASI were then evaluated for construct validity (variability at different time points compared with variability of other asthma outcomes), internal consistency, and test-retest reliability. Finally, CASI was externally validated by using data from the ICATA trial.

**RESULTS.** Five independent asthma domains out of 11 outcomes were determined and in combination accounted
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