

# ATS publishes clinical practice guidelines on interpretation of FENO levels

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The American Thoracic Society has issued the first-ever guidelines on the use of fractional exhaled nitric oxide (FENO) that address when to use FENO and how to interpret FENO levels in different clinical settings. The guidelines, which appear in the September 1 *American Journal of Respiratory and Critical Care Medicine*, are graded based on the available evidence in the literature.

"There are existing guidelines to measure FENO but none to interpret the results," noted Raed A. Dweik, MD, chair of the guideline writing committee and professor of medicine and director of the Cleveland Clinic's Pulmonary Vascular Program. "The use of FENO is currently sporadic. While the measurement is standardized, the interpretation is not. This document gives a framework for the interpretation of FENO in the appropriate clinical setting."

"We hope that these guidelines will provide an easy-to-use reference for practitioners to use FENO in the clinic and interpret it appropriately depending on the clinical context," Dr. Dweik continued. "The guidelines provide a practical approach to use and interpret FENO in daily clinical practice, and will standardize the approach by which physicians and other [healthcare providers](#) utilize FENO to manage patients with [airway disease](#)."

With [chronic diseases](#) such as asthma, conventional tests such as [FEV1](#) and reversibility or [provocation](#) tests are only indirectly associated with [airway inflammation](#), Dr. Dweik explained. "Properly employed, FENO

can offer added advantages for patient care," he continued. "It can detect eosinophilic airway inflammation, determine likelihood of corticosteroid [responsiveness](#), monitor airway inflammation to determine the need for corticosteroid, and reveal patient non-adherence to corticosteroid therapy."

While the recommendations set forth in the guidelines are unlikely to contain any surprises to those already using FENO in clinical practice, they emphasize the importance of the clinical context for the correct interpretation of FENO and highlight the utility of clinically significant cut points instead of normal values.

"Although normal values are important for population studies, they are not very useful in the management of an individual patient due to the considerable overlap between mean FENO levels in healthy and stable asthmatic populations," explained Dr. Dweik. "Cut-off values, on the other hand, can be useful in making individual treatment decisions. For example, levels above 50 parts per billion (ppb) suggest the presence of eosinophilic airway inflammation and likely responsiveness to corticosteroids, while levels below 25 ppb suggest that eosinophilic airway inflammation is unlikely and that the individual is not likely to respond to treatment with (or increasing the dose of) corticosteroids depending on the clinical context."

The guidelines also separate the use of FENO for diagnosis from the use for monitoring patients with known asthma.

The guidelines recommend that FENO be used to:

- Diagnose eosinophilic airway inflammation;
- Determine the likelihood of corticosteroid responsiveness in individuals with chronic respiratory symptoms possibly due to

- airway inflammation;
- Support the diagnosis of asthma in situations where objective evidence is needed; and
- Monitor airway inflammation in patients with asthma.

The writing committee also proposes a series of cut-points to help make clinical decisions:

- FENO 35ppb in children) indicates that eosinophilic inflammation and, in symptomatic patients, responsiveness to corticosteroids are likely; and
- FENO values between 25ppb and 50ppb (20-35ppb in children) should be interpreted cautiously with reference to clinical context.

Finally, guidelines suggest that clinicians consider FENO increases of 20 percent or more for values over 50 ppb (or 10 ppb more for values less than 50ppb) a significant increase from one visit to the next, and, conversely, reductions of 20 percent or 10ppb indicate significant response to anti-inflammatory therapy.

"It is important to remember that the field and associated technology are moving fast, which requires that these guidelines be regularly updated," said Dr. Dweik.

Rapid technological advances are one reason that more research is needed. "We need to have more appropriately designed clinical trials evaluate the use for FENO in different [clinical settings](#) and to include FENO as an end point in clinical trials," he concluded.

**More information:** To read the guidelines in full, please visit [www.thoracic.org/media/press-r ... s-document-final.pdf](http://www.thoracic.org/media/press-r...s-document-final.pdf)

Provided by American Thoracic Society

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