



Using FeNO to assist diagnosis & management of Asthma

Measuring airway inflammation with NObreath[®] can help monitor the effectiveness of medication and can be used to predict the risk of Asthma attacks^{1*}.

Aid in diagnosis using the NObreath[®] FeNO monitor

| FeNO (ppb) Levels | LOW <25ppb (<20ppb in children) | INTERMEDIATE 25-50ppb (20-35ppb in children) | HIGH >50ppb (>35ppb in children) or rise in FENO of >40% from previously stable levels |
|---|---|--|---|
| Symptomatic (chronic cough and/or wheeze and/or shortness of breath during past 6 wk) | **Allergic airway inflammation unlikely Unlikely to benefit from ICS | Be cautious Evaluate clinical context Monitor change in FeNO over time | Allergic airway inflammation present Likely to benefit from ICS |
| Possible Diagnosis | <ul style="list-style-type: none"> • Non-allergic asthma • Rhinosinusitis • Reactive airways dysfunction syndrome • Bronchiectasis • Cystic fibrosis, primary ciliary dyskinesia • Extended post-viral bronchial hyperresponsiveness syndrome • Vocal cord dysfunction • Non-pulmonary/airway causes: • Anxiety-hyperventilation • Gastroesophageal reflux disease • Cardiac disease/pulmonary hypertension/pulmonary embolism <p>Confounding factors:</p> <ul style="list-style-type: none"> • Smoking • Obesity | Evaluate clinical context | <ul style="list-style-type: none"> • Allergic asthma • Atopic asthma • Allergic bronchitis • COPD with mixed inflammatory phenotype |

Aids in the diagnosis & management of asthma, one breath at a time.



Monitoring (in patients with diagnosed asthma) using the NObreath[®] FeNO monitor

| FeNO (ppb) Levels | LOW <25ppb (<20ppb in children) | INTERMEDIATE 25-50ppb (20-35ppb in children) | HIGH >50ppb (>35ppb in children) or rise in FENO of >40% from previously stable levels |
|--|--|---|---|
| Symptomatic (chronic cough and/or wheeze and/or shortness of breath during past 6 wk) | Possible alternative diagnosis (see below) Unlikely to benefit from increase in ICS | Persistent allergen exposure Inadequate ICS dose Poor adherence Steroid resistance | Persistent allergen exposure Poor adherence or inhaler technique Inadequate ICS dose Risk for exacerbation Steroid resistance |
| Possible Diagnosis | <ul style="list-style-type: none"> • **Non-allergic asthma (probably steroid unresponsive) • Vocal cord dysfunction • Anxiety-hyperventilation • Bronchiectasis • Cardiac disease • Rhinosinusitis • Gastroesophageal reflux disease | Evaluate clinical context | <ul style="list-style-type: none"> • Allergic asthma • Atopic asthma • Allergic bronchitis • COPD with mixed inflammatory phenotype |
| Asymptomatic | Implies adequate dosing and good adherence to anti-inflammatory therapy ICS dose may possibly be reduced (repeat FeNO 4 week later to confirm this judgment; if it remains low then relapse is unlikely). | Adequate ICS dosing Good adherence Monitor change in FENO | ICS withdrawal or dose reduction may result in relapse Poor adherence or inhaler technique |

References:

1. J. Saito et al, European Respiratory Journal; Domiciliary diurnal variation of fractional exhaled nitric oxide for asthma control. August 15 2013, v.43, iss.4, pp 474-484.
2. R Dweik et al, Respiratory and Critical Care Medicine; An Official ATS Clinical Practice Guideline: Interpretation of Exhaled Nitric Oxide Levels (FENO) for Clinical Applications. September 1 2011, v.184, iss.5, pp 602-615.

*FeNO is not a definitive indication of asthma and should be used in conjunction with (but not limited to) spirometry, patient history, symptoms.

**Allergic = Eosinophilic / Non- Allergic = Non-Eosinophilic

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