### Primary Care Respiratory **UPDATE**



## **TOOLS TO SUPPORT DIAGNOSIS OF RESPIRATORY DISEASE**

COPD management.

### **INDICATIONS FOR USE**

Peak expiratory flow rate (PEFR) measures

the maximum speed of expiration. It can be

used to monitor asthma, and can be used to

demonstrate evidence of variability in lung

Spirometry measures the amount a person

can breathe out and the time taken to do so.

is performed annually to monitor decline in

lung function as part of the diagnostic

It can also be used to monitor chronic

pathway.

lung function.

function when diagnosing asthma.

### WHEN NOT TO USE

Peak expiratory flow rate is not relevant in

Do not perform spirometry if the patient has any

#### **APPLICATION OF RESULTS** IN CLINICAL PRACTICE

Recorded variability of serial peak expiratory flow rate can strengthen the case for diagnosis of asthma in adults but current guidelines do not support this in children.<sup>1</sup> Variability can be demonstrated comparing a period when the person is symptomatic to when a person is well. It is important to establish what is 'normal' for an individual when they are well, ideally during the annual review, as a comparator to determine how unwell they have become during an exacerbation or acute attack of asthma.

## **SPECIAL PRECAUTIONS**

Peak expiratory flow rate must be measured with a flow meter using the EU scale in the United Kingdom and all measurements for the individual patient must use the same scale. Results are user- and effort-dependent and can be influenced by incorrect technique or poor effort.

#### CARE, CLEANING, CALIBRATION

Always use a new disposable one-way valved mouthpiece for each person. If the meter is marked 'single patient use only' it must not be used for more than one patient. For cleaning and disinfecting, follow manufacturers' instructions.

FLOW PEAK

**SPIROMETRY** 



It is a test used to establish the person's best aortic aneurysm, pneumothorax or surgery within 3 months on eyes, brain, chest or respiratory conditions such as COPD when it until this has been treated for 2 weeks. performing spirometry if the patient has had an infection within 4–6 weeks, has undiagnosed pneumothorax, myocardial infarction within a month, uncontrolled hypertension, pulmonary months). In these cases, clinical judgement needs to be exercised in deciding the risk of undertaking the test versus the value and necessity of the results at that time.<sup>2</sup> it should not be performed, or if there are

condition that may have serious consequences by performing a forced expiration – unstable abdomen. If the patient has active infection such as AFB positive for TB, do not perform spirometry Serious consideration needs to be given before chest symptoms such as haemoptysis, or has any condition that would be aggravated by performing forced expiration – past history (but not current) embolus or history of stroke, previous surgery on eyes, brain, chest or abdomen (but not within 3 If the patient is too poorly to perform spirometry communication difficulties - confusion or learning difficulties, for example – and the patient cannot understand what is required of them, then spirometry will need to be delayed or abandoned.

Results need to be considered as part of a structured clinical assessment – review of medical records, history taking and physical examination – and taken in clinical context. Spirometry results can be interpreted into normal, obstructive, restrictive or mixed pattern but in isolation will not result in a diagnosis. Normal spirometry results do not rule out asthma if the patient is asymptomatic at the time of the test.

Obstructive results can be seen in asthma but will be reversed to normal after administration of inhaled bronchodilator medication, or after a longer course of inhaled or oral corticosteroids. Obstructive results are seen in COPD but are not reversed to normal with medication although some improvement may be seen

Other conditions that result in obstructive spirometry results are bronchiectasis, and bronchial carcinoma will also sometimes result in an obstructive pattern. Neither of these conditions would reverse to normal with medication.

Restrictive traces are seen in interstitial lung disease, pulmonary oedema, neuromuscular conditions, parenchymal tumours, obesity, pregnancy, thoracic cage deformity or following surgical excision of part or all of the lung.

Mixed spirometry traces are seen in very severe COPD, advanced bronchiectasis, cystic fibrosis or a combination of respiratory disease and another condition such as osteoporosis. Diagnosis relies on the performance of quality assured spirometry. Spirometry is very user- and operator-dependent. The introduction of the National Register of certified professionals and operators<sup>3</sup> seeks to address variation in care by setting national standards of performance. All healthcare professionals performing spirometry and those interpreting results should be assessed as competent in their role.



A log should be kept of cleaning procedures. Immunocompromised patients should be tested on newly disinfected equipment. A disposable one-way valved mouthpiece and disposable nose clip must be used for each patient. A delay of at least 5 minutes should be allowed between subjects to allow settling of previously aerosolised particles in the measuring device. Perform a visual inspection at the end of testing. If there is visible contamination to the flowhead or elsewhere on the device, clean and disinfect as per manufacturer's instructions. Clean and disinfect all parts of the equipment which have come into contact with patients once a week. An accuracy check should be performed using a 3 litre syringe at the beginning of each spirometry session or after every 10 patients. A biological control, using the same healthy volunteer, should be performed weekly. The spirometer and accuracy syringe should be

returned to the manufacturer annually for calibration and service and a certificate obtained. All software updates and repairs should be documented.4

MICROSPIROMETRY



Microspirometry is not suitable for use in diagnosis. If abnormal results are found, full diagnostic spirometry is required.

During screening, if normal results are found, MECC (Make Every Contact Count). Use as a health promotion opportunity for smoking cessation, activity, healthy diet and weight, mental health.

If obstructive, refer for full diagnostic spirometry. At annual review in established COPD, if results are obstructive and as expected, use the consultation time with the patient on high value interventions - for example, smoking cessation, activity, inhaler technique. If results show accelerated decline, consider referral. If results are normal (not obstructive), review the diagnosis.

Most microspirometers do not require verification checks, therefore the accuracy cannot be guaranteed. The monitors are hand-held without a paper printout or computerised integration into medical records so transcription errors can occur.

Use a new one-way valved mouthpiece for each patient. Clean and service as per manufacturer's instructions.

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An exhaled CO level gives an indication of CO that has been inhaled in the previous 8–12 hours. This is usually due to active tobacco smoking but can also be due to passive inhalation from smoked tobacco but also other domestic and environmental sources. It is a motivational tool and a conversation starter where the cause is smoked tobacco and should always be used according to NICE when monitoring a quit smoking treatment plan. (http://www.londonsenate.nhs.uk/wp-content/uploads/2015/04/Helping-Smokers-Quit-Programme-The-expired-carbon-mono xide-CO-test.pdf

infection control measure.

Avoid use in undiagnosed haemoptysis as an

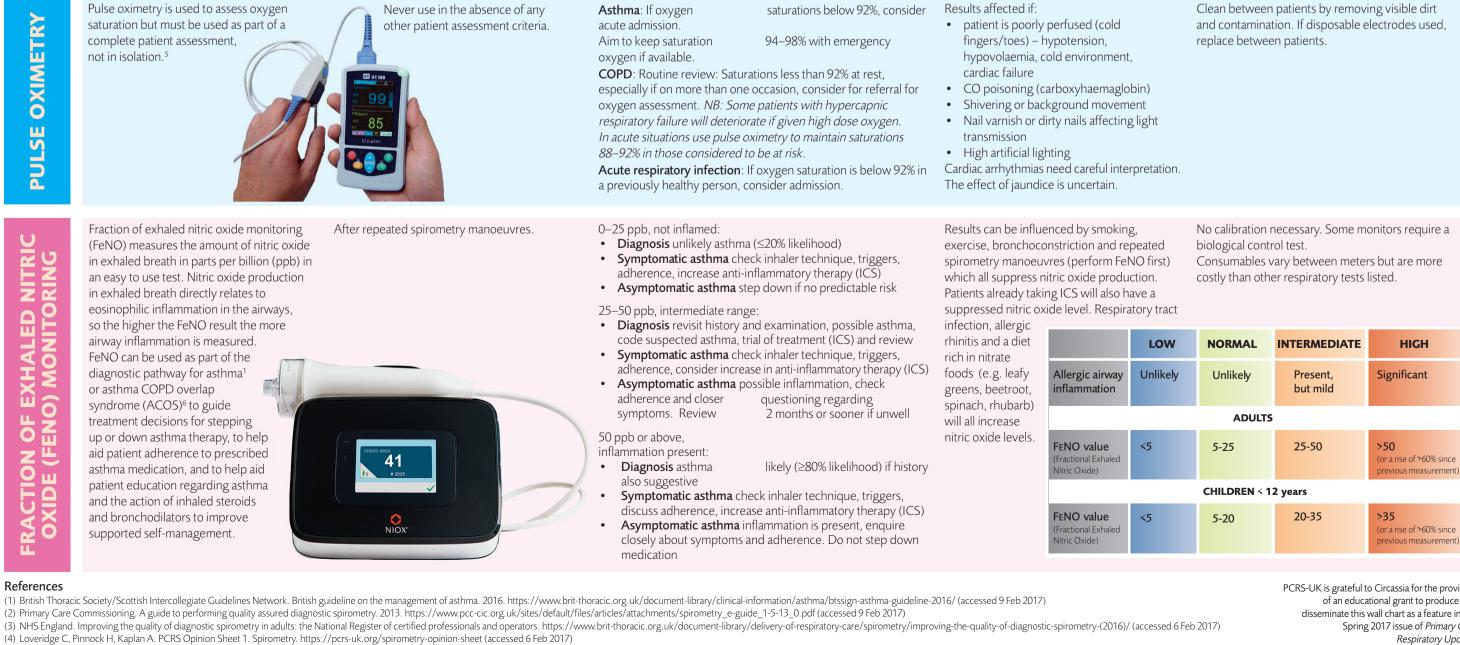
A result of 0–4 ppm (parts per million) indicates the person is unlikely to have smoked in the last 24 hours. A level of 5–9 ppm suggests recent exposure to a moderate level of CO - the person may be a non-smoker or a light smoker. A reading of 10 ppm or above indicates exposure to a higher level of CO



Single use mouthpiece for each person. 6–12-monthly calibration required using CO calibration gas cylinder.

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and the person is almost certainly a smoker (NICE guidelines)



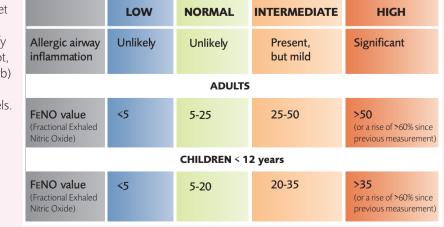
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# http://www.pcrs-uk.org

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# Applying Science With a Single Breath

## **NIOX VERO® Gives You Knowledge in Numbers**

Quick and Easy FeNO Measurement at the Point of Care

Using NIOX VERO with other monitoring tools can provide greater insight to guide assessment and treatment of Th2-driven airway inflammation.<sup>1-4</sup>

It helps to identify ICS-responsive patients,<sup>2,5</sup> optimize ICS dosing, 3,4,6-8 monitor patient **adherence**<sup>9,10</sup> as well as to improve cost efficiency.<sup>11-14</sup>

FeNO measurement with NIOX<sup>®</sup> is reliable, and provides an accurate result in a single measurement.<sup>15</sup>

#### IMPORTANT INFORMATION REGARDING NIOX VERO®

IMPORTANT INFORMATION REGARDING NIOX VERO® NIOX VERO is a portable system for the non-invasive quantitative simple and safe measurement of Nitric Oxide (NO) in human breath. Nitric Oxide is frequently increased in some inflammatory processes such as asthma and decreases in response to anti-inflammatory treatment. FeNO measurements should be used as part of a regular assessment and monitoring of patients with these conditions. NIOX VERO is suitable for patients age 4 and above. As measurement requires patient cooperation, some children below the age of 7 may require additional coaching and encouragement. NIOX VERO can be operated with 2 different exhalation times, 10 seconds and 6 seconds. The 10 second mode is the preferred mode. For children who are not able to perform the 10 second test, the 6 second is an alternative. The 6 second test should be used in caution with patients over the age of 10. It should not be used in adult patients. Incorrect use of the 6 second exhalation may result in falsely low FeNO values, which can lead to incorrect clinical decisions.

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## PCRS-UK National Primary Care Conference 2017

# Beyond the respiratory consultation: inspiring lifelong change

29-30th September 2017 **Telford International Centre** 

### The premier respiratory conference for primary, community and integrated care health professionals

Embedded in day-to-day clinical practice, this year's PCRS-UK conference will explore how we can work with patients in the consultation to help them bring about long term sustainable improvements not only in their respiratory condition but also their overall health and well being, through active participation in their care.

#### A holistic programme

The programme, designed by a multi-disciplinary team of primary, community and integrated care respiratory experts, will provide thought-provoking, interactive and inspiring keynote plenary presentations, patient-centred, essential clinical updates, key service development and commissioning sessions, real-world research presentations and practical workshops.

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**OPEN AND PULL OUT**