

## Niche News February 2015

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**Professor Paul Enright has written a PFT (Pulmonary Function Testing) Interpretation White Paper which he presented in part at the TSANZSRS Conference in Adelaide in 2014.**

You can download the full White Paper at the bottom of this article.

The topics covered are:

- Office-based DLCO tests help Pulmonologists to make important clinical decisions.
- Spirometry and DLCO separate asthma from COPD and CHF in adult smokers with dyspnea.
- Body box tests rarely add diagnostic information to spirometry, DLCO, and a chest X-ray when evaluating patients with spirometric restriction.
- Body box tests add little or no diagnostic information to spirometry, DLCO, and a chest X-ray when evaluating patients with airway obstruction.
- How to optimize the quality and clinical value of DLCO tests.

**View the full White Paper here.....**



### **FeNO Impacts Asthma Treatment Decisions**

Recently a large allergy practice evaluated FeNO (Fractional exhaled Nitric Oxide) measurement with NIOX® by testing 50 asthma patients.

Initial treatment evaluation included a physical exam, spirometry and standard asthma assessments.1

**36% of treatment recommendations were substantially altered following the FeNO test. 1**

Study Design

- Single centre, single-visit, observational study of 50 subjects aged 7-60 years
- Following a standard asthma assessment, including history, physical exam, spirometry and asthma control test (ACT), health care providers (HCPs) were asked to estimate airway inflammation and make treatment recommendations
- FeNO results were then given to the HCPs and they were given the opportunity to modify treatment plans based on the FeNO results

**Regular FeNO\* testing of asthma patients with NIOX®, measures allergic airway inflammation (Th2 driven) and helps to:**

- 1. Reveal if your patient will benefit from ICS\*\* treatment.**
- 2. Optimise ICS dose and reduce exacerbations up to 50%. 2,3,4**
- 3. Detect patient non-adherence to ICS. 5**

**While improving asthma outcomes 2, 3, 4 and reducing costs. 6**

References:

1. LaForce et al, ERS Annual congress 2013, Abstract number 850479. Observational study in a single practice.
2. Powell H, Murphy VE, Taylor DR, et al. Management of asthma in pregnancy guided by measurement of fraction of exhaled nitric oxide: a double-blind, randomised controlled trial. *Lancet*. 2011;378(9795):983-990.
3. Peirsman E, Carvelli T, Hage P, Hanssens L, Pattyn L, Raes M, Sauer K, Vermeulen F, Desager K. Exhaled Nitric Oxide in childhood allergic asthma management a randomised controlled trial. *Pediatric Pulmonology*, 2013.
4. Syk J, Malinovsky A, Johansson G, Uden A, Andreasson A, Lekander M, Alving K. Anti-inflammatory Treatment of Atopic Asthma Guided by Exhaled Nitric Oxide: A Randomized, Controlled Trial. *J Allergy Clin Immunol* 2013.
5. Beck-Ripp J, Griese M, Arenz S, Köring C, Pasqualoni B, Bifulco P. Changes of exhaled nitric oxide during steroid treatment of childhood asthma. *Eur Respir J*. 2002;19(6):1015-1019.
6. Lester D, Mohammad A, Leach EE, Hernandez PI, Walker EA. An investigation of asthma care best practices in a community health center. *J Health Care Poor Underserved*. 2012;23(3 suppl):255-264.

**Watch a simple video explaining how doctors can use FeNO to manage patients with Asthma**



### **Lung Flute improves symptoms and health status in COPD with chronic bronchitis: A 26 week randomized controlled trial**

Authors: Sanjay Sethi, Jingjing Yin and Pamela K Anderson. Clinical and Translational Medicine 2014.

#### **Background**

Chronic obstructive pulmonary disease (COPD) is characterized by mucus hypersecretion that contributes to disease related morbidity and is associated with increased mortality.

The Lung Flute® is a new respiratory device that produces a low frequency acoustic wave with moderately vigorous exhalation to increase mucus clearance.

We hypothesized that the Lung Flute, used on a twice daily basis will provide clinical benefit to patients with COPD with chronic bronchitis.

#### **Methods**

We performed a 26 week randomized, non-intervention controlled, single center, open label trial in 69 patients with COPD and Chronic Bronchitis.

The primary endpoint was change in respiratory symptoms measured with the Chronic COPD Questionnaire (CCQ). Secondary endpoints included health status, assessed by the St. George Respiratory questionnaire (SGRQ), BODE (Body-Mass Index, Airflow Obstruction, Dyspnea, and Exercise Capacity) index score and exacerbation frequency.

#### **Results**

While the control patients did not demonstrate any significant changes in the primary endpoint (CCQ change at 26 weeks of +0.01,  $p = 0.08$ ), a trend ( $p = 0.08$ ) to decrease (improvement) in the CCQ (-0.23 at 26 weeks) was seen with the Lung Flute.

Furthermore, a significant improvement in the symptom domain of the CCQ was seen only with the lung flute (-0.42,  $p = 0.004$ ). Health status (SGRQ) improvement, was also only seen with the Lung Flute (-3.23,  $p = 0.03$ ).

The BODE score increased in the control group (3.31 at baseline, 4.14 at 26 weeks), however it remained stable in the Lung Flute arm (3.16 at baseline and 26 weeks), with the changes from baseline being significantly different between the 2 arms ( $p = 0.01$ ). There was a trend for less exacerbations in the Lung Flute group ( $p = 0.07$ ).

Adverse effects were minor, with only 1 patient discontinuing treatment because of lack of efficacy. Serious adverse effects seen were all determined to be unrelated to the device use.

#### **Conclusions**

The Lung Flute is a safe and effective treatment in COPD with chronic bronchitis, providing a wide array of benefits.

**[View the publication online here.....](#)**



### **Use of the lung flute for sputum induction in children with cystic fibrosis: A pilot study**

Authors: Doumit M, Jaffé A. *Pediatr Pulmonol.* 2014 Dec 8. doi: 10.1002/ppul.23126.

This study aimed to assess the effectiveness of the Lung Flute in obtaining a sputum sample from children with cystic fibrosis (CF) that were not productive of sputum with coughing alone.

Children attending an outpatient CF clinic who were not able to provide a sample with coughing alone were eligible. Each child used the Lung Flute on two occasions at least one month apart.

The primary outcome was expectoration of a sputum sample. Secondary outcomes were sputum microbiology, time taken for the procedure, and ease of use of the device as assessed by the patient using a visual analogue scale (VAS), with 0/10 representing very easy and 10/10 representing very hard.

Twenty-five children participated (15 males, mean age 12.7 range 6.5-17.9).

Overall, a sputum sample was obtained on 26/50 (52%) uses of the device. In children that presented with a moist cough, a sample was obtained on 17/17 (100%) occasions, compared to 9/33 (27%) occasions when a child presented with a dry cough.

A positive culture result for at least one known CF pathogen was found in 24/26 samples. Culture results from obtained samples resulted in management changes in 12 cases. Mean time taken to obtain a sample was 9.8 min (SD 2.2). Mean ease of use on the VAS was 1.5 (SD 1.6).

Conclusion: The lung flute appears to be a clinically useful and easy device for sputum induction in children with CF. Further research comparing its effectiveness to other sputum induction methods is warranted.

**[View the publication online here.....](#)**



### **NEW piCO Baby Smokerlyzer - Breath Carbon Monoxide Monitoring for Maternity**

The piCO Baby Smokerlyzer has been specifically designed for use in pregnancy with results shown instantly in exact ppm, %COHb (Carboxyhaemoglobin) and %FCOHb (Foetal Carboxyhaemoglobin) making recording and interpreting Patients' results quick and easy.

Oxygen is required by a foetus for healthy growth, but the supply of vital oxygen is reduced when the mother smokes. This increases the risk of low birthweight, birth defects and even Sudden Infant Death Syndrome.

A clinical study established a direct link between an expectant mother's breath CO level and the amount of COHb in their unborn baby's blood.

**Study: Expired air carbon monoxide concentration in mothers and their spouses above 5ppm is associated with decreased foetal growth**

**Authors: Conchita Gomez, Midwife, Ivan Berlin, M.D., Ph.D., Pierre Marquis, M.D., and Michel Delcroix, M.D. Preventative Medicine 40 (2005) 1-15**

**Background:** Smoking during pregnancy is associated with reduced birthweight; this relationship can be reversed by smoking cessation. Some but not all previous studies have shown that smoking reduction (measured as cigarettes per day or urinary cotinine) may also improve birthweight. The relationship between maternal and spouses' expired air carbon monoxide (CO) concentrations (EACO) on foetal growth has not yet been evaluated.

**Methods:** Eight hundred fifty-six smoking and non-smoking pregnant women were followed during their pregnancy. Their EACO was determined in the first trimester and during delivery. The spouses' EACO were also measured at delivery. The main outcome measure was the infants' birthweight.

**Secondary measures** included head circumference, Apgar score, and heart rate at delivery. Cord blood foetal carboxyhaemoglobin (FCOHb) served as internal control.

**Results:** Birthweight dose-dependently and significantly decreased with increasing levels of maternal (0 - 5: 3546 +-25; 6-10: 3048 +- 57; 11 - 20: 2858 +- 54; > 20 ppm: 2739 +- 34g, P , 0.0001) or spouses' EACO (0-5: 3546 +- 25; 6-10: 3484 +- 51; 11 - 20: 3309 +- 47; > 20 ppm: 3190 +- 57g, P < 0.0001).

Even the birthweight of newborns whose mother had EACO between 6 and 10 ppm was significantly lower than the birthweight of newborns whose mother had an EACO between 0 and 5 ppm. Spouses' EACO of delivering women with EACO of 0 - 5 ppm showed similar effect. Head circumference, Apgar score, and normal term gestational age decreased also significantly with increasing maternal or spouses' EACO.

**Conclusions:** Both maternal and spouses' EACO measured during delivery, a proxy of EACO during pregnancy, were dose-dependently and inversely associated with foetal growth. Even low maternal (6 to 10 ppm) or spouses' (11 to 20 ppm) EACO may be associated with significantly lower birthweight.

**View the piCO Baby Smokerlyzer on our website.....**



**Visit us at the TSANZSRS Conference to be held at the Gold Coast Convention Centre from 27 March to 1 April 2015.**

We will be displaying our products at Stand 12:

- EasyOne Pro LAB - Spirometry, Bronchial Provocation, DLCO and Multi-Breath Nitrogen Wash
- NIOX MINO - Fractional expired Nitric Oxide - What is your FeNO?
- LiteAire - Disposable Cardboard Spacers (MDI Holding Chambers)
- Lung Flute - Mucociliary Clearance Device
- Smokerlyzer Carbon Monoxide Monitoring for Smoking Cessation
- EasyOne and Easy on-PC Spirometers
- Ultrasonic Nebulisers
- Hans Rudolph Calibration Syringes
- Hans Rudolph DLCO Simulator

**TSANZSRS Gold Coast website.....**



## Get the latest EasyWare and EasyWare Pro Software

The EasyWare software for the EasyOne spirometer and the EasyWare Pro software for the Easy on-PC and the EasyOne Pro DLCO system are periodically upgraded and you can download the latest software free of charge from the manufacturer's (nidd Medical Technologies) website at <http://nidd.ch/index/downloads-software>

These software downloads are executable files so if you work in a Hospital or a Government agency please make sure you have an IT person present to download and install the software as these type of files require administrator permission.

Once you have downloaded and installed the latest EasyWare software you should then connect your EasyOne spirometer to your computer and run the EasyWare software as this will also update the internal software in your EasyOne Spirometer.

If you require any assistance please telephone us on 1300 136 855.

**Go to the EasyWare software page here.....**

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Sincerely,



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