A Qualitative Audit of Spirometry Standards in General Practice



Spirometry is an accurate, objective and reproducible measurement of lung volume and flow rate, however, it is a difficult test to perform and patients require significant guidance from a trained operator if the test is to be performed to an acceptable standard. High quality, properly interpreted spirometry is fundamental to making a respiratory diagnosis. Poorly performed spirometry can result in incorrect diagnosis, leading to inappropriate management of the condition and inappropriate use of resources.

The Academic Health Science Network for North East and North Cumbria (AHSN NENC) was requested to conduct a qualitative audit of spirometry standards in one Clinical Commissioning Group (CCG) where there is no current access to quality assured spirometry and very few primary care based, appropriately qualified practitioners.

# Does routine spirometry performed on respiratory patients in primary care achieve nationally recommended standards?

## Overview

Five GP surgeries were selected to participate in the audit. Practice selection aimed to capture variation between practices; selection was based upon patient list size, COPD prevalence and COPD admission rates. The combined COPD register of the five participating practices included approximately 1130 patients.

The audit was conducted in three parts:

1. Practice pharmacists collected information on the spirometry of all patients conducted within a three month period.

2.Two specialist nurses, both trained to Association for Respiratory Technology and Physiology (ARTP) standard, then assessed the quality standard of the spirometry tracings, collating accuracy, and reproducibility.

3. Each practice was asked to complete a short questionnaire on staff training, patient preparation and cleaning and maintenance of equipment.

201 spirometry tracings were identified for assessment.

## Assessment criteria: supplementary information

1. Spirometry performed as part of the annual review should always be performed post bronchodilator.
2. Calibration should be verified prior to each clinic/session or after every 10th patient (whichever comes first).
3. Reproducibility criteria are met when there is no more than 100mls ideally (or 150mls in the occasional highly variable patient) between each blow (1).

##

## Criteria assessed

**REASON FOR TESTING % of patients**

Annual Review 37%

Diagnosis 30%

Unspecified 33%

**TYPE OF TEST**

Pre bronchodilator 20%

Post bronchodilator 6%

Pre & Post bronchodilator 26%

Unspecified 48%

Annual Review (Pre- bronchodilator) 64%

**TEST PERFORMANCE**

Calibration checks recorded 35%

Evidence of reproducibility 49%

**INTERPRETATION OF SPIROMETRY TESTING**

Spirometry consistent with stated diagnosis 35%

FEV1/VC ratio considered 37%

**RECOMMENDATIONS**

Tracings for which specific recommendations

were made 64%

Results from practice questionnaire:



Background summary

Although spirometry may appear to be a simple test to perform, the ability to produce an accurate and reproducible tracing depends on many factors relating to both the technician and the patient. Interpretation of the results relies on the adequate test performance, which must be considered together with clinical information. There is significant evidence to suggest that there is often misdiagnosis of respiratory disease leading to sub-optimum or inappropriate treatment for patients. Interpretation should not be attempted on non-reproducible spirometry. “Improving the Quality of Diagnostic Spirometry in Adults”(2) was published in 2016, providing a competency assessment framework and a national register for certified professionals. This provides the system through which healthcare professionals undertaking and/or interpreting diagnostic spirometry will be assessed and certified as competent.

## Audit findings

Only one HCP (20%) has completed formal spirometry training; the remainder have received no recognised training or assessment.

60% of the equipment is neither serviced nor calibrated, therefore the results of any tests performed cannot be guaranteed to be accurate.

"The audit identified a significant variation in accurate spirometry results. This will inform our development of options to ensure delivery of a quality assured diagnostic service and has identified training needs we can now work to address, to ensure patients receive a more accurate diagnosis which in turn shall result in cost saving."

CCG Commissioning Manager

## Support provided by AHSN

This audit was funded and conducted by the AHSN-NENC:

ARTP trained specialist nurses, Sue Hart & Jenny Rasmussen, assessed the quality standard of the spirometry tracings, collating accuracy and reproducibility.

## Benefits

Improving the quality of diagnostic spirometry will improve clinical diagnosis and the long term monitoring of the one in five people in the UK affected by respiratory disease.

It will avoid potential mis-diagnosis and inappropriate treatment for patients.

## Impact

Efficiency in diagnostics to ensure optimisation of medicines in line with NICE and other guidance forms a significant part of the Five Year Forward View. Diagnostic efficiency is also an integral part of personalised care and essential for improving patient outcomes in the future.

## Next steps and plans for the future

The results of this audit will inform:

* The business case for the commissioning of a quality assured diagnostic spirometry service in this CCG.
* The development of future training plans for all relevant staff required to perform routine spirometry at annual review.
* Recommendations to introduce Standardisation of Infection Prevention and Control policies and Standardisation of Maintenance and Calibration Policies.

Contact

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References

1. A guide to performing quality assured diagnostic spirometry www.pcc-cic.org.uk/sites/default/files/articles/attachments/spirometry

2. Improving the Quality of Diagnostic Spirometry in Adults [https://www.brit-thoracic.org.uk/document-library/delivery-of-respiratory-care/spirometry/improving-the-quality-of-diagnostic-spirometry-(2016)](https://www.brit-thoracic.org.uk/document-library/delivery-of-respiratory-care/spirometry/improving-the-quality-of-diagnostic-spirometry-%282016%29)