

## **Spirometry Factsheet – November 2023**

The following factsheet has been designed to support you as you progress through your spirometry learning. This factsheet will be provided to you every month after each tutorial.

### **New to the programme?**

Please ensure that you have viewed the meet and greet video for those of you working through the Spirometry Online blended learning with ARTP and the Spirometry Refresher Programme with ARTP.

### **Support Available**

We know that you may have administrative questions as you progress through the course. Please can we ask that you access the following link and complete the form rather than emailing us. A member of the team will contact you.

Alternatively, you can use the form if you would like a particular topic to be covered at the monthly tutorial.

[https://forms.office.com/Pages/ResponsePage.aspx?id=VsTAAthQqkWkgjh96Vc-WY9ZFgW\\_JFBDmuyqYm8\\_KopUMTBUNIIJMVVVRTZXSDY3R0JJCQ0xJUDZKVC4](https://forms.office.com/Pages/ResponsePage.aspx?id=VsTAAthQqkWkgjh96Vc-WY9ZFgW_JFBDmuyqYm8_KopUMTBUNIIJMVVVRTZXSDY3R0JJCQ0xJUDZKVC4)

[u](#)

### Your monthly tutorial

We are continually looking to review the way in which we deliver the course. We want to ensure that each monthly tutorial is catered to the learning needs of our learners. Therefore, we are changing the names of the tutorial so that you can be really clear around which tutorial you would like to attend. These will now be:

- **Performing**

These sessions are designed to provide you with an overview of how to perform spirometry. Here we will be discussing key components such as calibration and verification as well as providing some key hints and tips to support your patient getting ready to undertake spirometry.

- **Performing and Reporting (interpreting)**

These sessions are designed for those learners who will be involved in performing spirometry and reporting (interpreting) on spirometry traces. We will cover a step-by-step process on how to report (interpret) a basic spirometry trace. You should attend this tutorial if you are confident on performing spirometry and are ready to report (interpret) a spirometry trace.

- **Reporting and getting ready to undertake your ARTP certification**

These sessions are designed for those learners who are nearing completion of their spirometry eLearning and are ready to apply for their ARTP certification (assessment). Within this tutorial we will be covering how to report (interpret) more complex traces and providing you with hints and tips to the ARTP certification process.

Please ensure that you have attended the performing and performing and reporting tutorials.

### Which tutorial to attend?

These tutorials are rolling and therefore as you work through your programme, you can move from one tutorial to another so for instance you can attend the performing tutorial initially. Once you are confident with performing spirometry then you can attend the performing and reporting tutorial and so on.

## **Spirometry Factsheet – November 2023**

There will be an opportunity to ask questions during the monthly tutorials; any questions that may come in advance and are not covered on the rolling programme, will be addressed on the day.

### **How to work through the Spirometry Online blended learning programme?**

The Spirometry online blended learning programme consists of eLearning units and monthly tutorials. We encourage you to work through the chapters in a linear format so that you gain a thorough understanding of the spirometry process. Depending on your role in spirometry you may wish to spend more or less time on some chapters versus others. Please check your welcome pack for further details. **Please note this does not apply to those of you on the Spirometry Refresher programme.**

### **I am completing the Spirometry Blended Online Programme with ARTP certification. Do we have to complete the eLearning before we access the ARTP certification?**

Education for Health's learning is independent of the ARTP assessment. We would recommend that you apply for your ARTP once you have completed all the eLearning chapters and have undertaken practical training in your area of practice.

### **Frequently Asked Questions (FAQs):**

The Association for Respiratory Technology and Physiology (ARTP) have put together a number of FAQs: <https://www.artp.org.uk/Spirometry-FAQs> **These were updated by the ARTP in February 2023 so please do access them.**

### **Spirometers**

If you have any questions around spirometers, we encourage you to contact the manufacturers in the first instance. Education for Health does not endorse any particular spirometer for use in the clinical situation. For advice re: suitability of spirometers, please refer to the manufacture's website for detail of the variety and performance of their products.

**Questions from November 2023 on-line Tutorial**

**Q 1. If FEV<sub>1</sub>/FVC ratio (z score) is low (i.e., implies obstruction) but FEV<sub>1</sub> z score is normal what is implied?**

Severity classification in airflow obstruction is a two-stage process:

1. The FEV<sub>1</sub>/FVC (or FEV<sub>1</sub>/VC) must be below the LLN (z-score <-1.645) to be classified as obstructive.
2. Severity grading is then based on the FEV<sub>1</sub> z-score.

**Q 2. How do we diagnose obstruction using the LLN?**

Please see above.

**Q 3. How do z-scores translate into post bronchodilator results?**

Please see above.

**Q 4. How does LLN and min / max of predicted reading compare?**

LLN is usually applied to the z-score and -1.645. Minimum/maximum and predicted values usually refers to the ECCS (1993) reference equations.

**Q 5. If z-scores more reliable why use GOLD references at all?**

The choice of reference equations that are applied, rely on the healthcare professional reporting the results, knowledge, and expertise in how to interpret the results, following appropriate training and assessment. It also depends on the functionality of the spirometer (not all provide a z-score, though newer spirometers should). GOLD recognise that spirometry is one part of the assessment process, no diagnosis will be made in isolation of the clinical history and examination.

**Q 6. Please can you clarify how reversibility is defined? I am using improvement of 8% predicted FEV<sub>1</sub>.**

BTS/SIGN (2019) In adults with obstructive spirometry, an improvement in FEV<sub>1</sub> of 12% or more in response to either  $\beta$ 2 agonists or corticosteroid treatment trials, together with an increase in volume of 200 ml or more, is regarded as a positive test, although some people with COPD can have significant reversibility. An improvement of greater than 400ml in FEV<sub>1</sub> strongly suggests underlying

## **Spirometry Factsheet – November 2023**

asthma. In children, an improvement in FEV1 of 12% or more is regarded as a positive test.

### **Q 7. I am confused with the different guidelines in reversibility. NICE is 400ml and 12% but GOLD 200ml. Which do we use??**

Please see above.

### **Q 8. Please discuss what is a significant post bronchodilator improvement in FVC - sometimes this is much higher without significant change in FEV1. Thank you.**

The post bronchodilator results refer to the FEV1 improvement. For some patients, who may have significant air trapping, their capacity increases after bronchodilation, and in some cases, this changes the ratio. So careful observation of the results. Always refer back to the clinical picture.

### **Q 9. Can you clarify reversibility with base line is done to establish COPD or asthma diagnosis post bronchodilator is done for COPD without baseline?**

Post bronchodilator spirometry for establish an obstructive pattern, therefore no base line spirometry, reversibility for suspected asthma, therefore baseline and post bronchodilator.

### **Q 10. why do we do post bronchodilator only?**

GOLD (2024) “the degree of reversibility in a single patient varies over time”. What needs to be established in the context of the clinical history and examination is that airflow limitation remains following bronchodilation with an obstructive pattern.

### **Q 11. How can we communicate inhaler wash out times to patients - so much information to put on a patient information leaflet which is likely to lead to confusion- any way to simplify it?**

Please see ARTP Standard Operating Procedure (SOP) which details the recommended washout period for bronchodilation medication, taken from ATS/ERS (2019) guidelines.

**Q12 . Do you need to do reversibility if a spiro is normal?**

The decision is a clinical one. It depends why you are choosing to do spirometry. Remember, the results are against predicted values, therefore the patients best results may be much greater than predicted.

**Q 13. Should clinicians suspect obstruction request reversibility as standard? Even if COPD more likely?**

For supporting a diagnosis of COPD, after a carefully structured history and clinical examination, post bronchodilator spirometry is required, not reversibility.

**Q 14. When you upload patient tests to ARTP what additional info do you need to provide, just interpretation or full history?**

Upload only what is requested such as 10 quality assured spirometry results. If there are any idiosyncrasies with the results, then a comment as to why they have been used is appropriate.

**Q 15. Do we still progress to interpretation of reversibility if inhaler wash out times haven't been adhered to?**

Ideally, the patient should be prepared as per recommendations in the ARTP Statement on pulmonary function testing (2020) or ARTP SOP (May 2023). If, however, there are inconsistencies and it is not appropriate to rebook the patient, then careful and clear recording of the variances should be recorded in the patient's medical records, for the person who will be reporting and interpreting the results to see. It is always in the context of the clinical rationale for the spirometry and the requesting clinician should be made aware of any variations to protocol and recommendations.

**Q 16. Can you clarify the criteria for an overlap asthma/copd. I have a patient with significant reversibility of 390ml is this an overlap??**

**and**

**Q 17. If someone has asthma already diagnosed but "cough" is productive and, has significant obstruction with reversibility of 390%. Would you suggest COPD and asthma?**

It is not possible to comment on the findings of a particular result. It is assumed you mean 390mls not 390%. In general, GOLD (2024) no longer use the

## Spirometry Factsheet – November 2023

terminology Asthma/COPD overlap, emphasising instead that asthma and COPD are different disorders, that may share some common treatable traits. Asthma and COPD may coexist in an individual patient. If a concurrent diagnosis of asthma is suspected, pharmacotherapy should primarily follow asthma guidelines (GOLD 2024).

### **Q 18. How frequently does spirometry with reversibility support a diagnosis of asthma in patients who are asymptomatic at the time of testing?**

The actual number is not quantifiable, though if there is an absence of bronchoconstriction due to the variability of asthma, it could be argued, that spirometry reversibility could be deferred, and other objective tests used. Remember always, spirometry in the context of the clinical presentation.

### **Q 19. FVC should not exceed VC >150mls. Does this apply to all 3 blows?**

Yes, all 3 blows.

### **Q 20. Can/are HCA's performing spiro?**

Operator competency is key. In the ARTP Statement on Pulmonary function testing (2020) it states, "it is expected that all healthcare professionals performing measurements of spirometry and/or full lung function testing have an appropriate qualification of competency or can demonstrate equivalence". HCA's have a valuable role.

### **Q 21. I have already started my ARTP registration, but I am finding it hard to find the help in answering the problems on the case studies nothing on the graphs I have been able to find look the same as these problems.**

In order to familiarise yourself with different spirometry findings, you could use a test patient and trial different errors; you will then start to recognise the source of the problems.

### **Q 22. For COPD diagnostic spirometry- how shortly before the test should they take their inhalers?**

QADS (2013) The standard:

- Administer bronchodilator (usually 4 x 100mcg salbutamol as single puffs via spacer or 2.5mg via nebuliser)

## Spirometry Factsheet – November 2023

- Perform spirometry after 15 minutes.

ARTP Statement on pulmonary function testing 2020:

- An appropriate delay after administration must occur to allow the drug to achieve maximum effect.
- 15 minutes for SABA.
- 30 min for an anticholinergic agent.

### **Q 23. Re SOP do you need to redact your clinical details i.e. anonymise?**

The ARTP has confirmed that for your portfolio, the surgery details do not have to be redacted. The only criteria is absolute confidentiality re: patient details.

### **Q 24 When we do our portfolio, do we need to observe a certain amount of Spiro's being done?**

You are not required to confirm that you have observed x amount of spirometry procedures. Performing spirometry is about competence and demonstrating you have met the standards for quality assured spirometry. How you plan and prepare for performing spirometry is for each candidate to decide, however, it is often very helpful to visit a clinic to observe how to perform quality assured spirometry.

### **Q 25 I have just recently completed my biological control 10-day testing, all criteria meet when testing (150ml maximum) I just noticed that I completed the testing quickly not leaving longer than a minute in certain places. Do you think the ARTP will fail my portfolio for this, I will make sure when testing on patients I allow enough time before taking the three readings?**

The ARTP recommended wait between attempts is a minimum of 30s to allow the patient, particularly those with airflow obstruction, to recover. We cannot comment on whether the ARTP will fail the portfolio.

### **Q 26. For post bronchodilator spirometry do you do a baseline VC and FVC first then give SABA and repeat?**

This would be a bronchodilator reversibility test. Post bronchodilator spirometry is performed after an appropriate dose of SABA has been given, with enough time after taking the SABA for it to work, no sooner than 15 minutes post bronchodilator. It does not include baseline spirometry.

**Q 27. For a COPD diagnosis, does the patient have to have post broncho dilator spirometry or can you just do a spirometry test without any broncho dilators?**

GOLD (2024) states “spirometry showing the presence of a post -bronchodilator FEV<sub>1</sub>/FVC <0.7 is mandatory to establish the diagnosis of COPD.”

**Q 28. Can you have a normal spiro with COPD?**

No. Some patients will have structural changes such as emphysema without obstruction, labelled “pre-COPD”. Term PRISm (Preserved Ratio Impaired Spirometry) is proposed by GOLD. They are at risk of developing airflow obstruction, but not all do.

**Q 29. For that FVC and VC amount of less than 150ml- can you confirm that you take the FVC amount and minus the VC amount from it?**

FVC should not exceed SVC >150mls. It is not a subtraction but an absolute.

**Q 30. Do we need to be able to interpret DLCO for restrictive disease?**

Not for the ARTP Spirometry certification.

**Q 31. Does the MCQ include asking you to use GOLD guidelines to interpret?**

The MCQ will use the most appropriate guidelines relevant to the question.

**Q 32. It was mentioned that we need to be using BOTH Bacterial filters AND One-way mouth pieces. However, I have got the mouth pieces out & they don't actually all fit together. Can I just use the Bacterial filter? As I would imagine the hospital clinics are just using the one filter.**

It is important that Bacterial/Viral one-way mouth pieces are used. Contact the manufacturer of the spirometer, there details are also available online. We need to ensure all equipment is compatible with your spirometer to ensure a proper fit.

**Q 33. Do we verify just with 3L syringe or biologic testing too?**

The ARTP Statement on pulmonary function testing confirms when to verify the accuracy of your machine. The biological control testing will depend on your local protocol. Some areas check weekly.

**Q 34. When we're tested, will you come and watch us do a spirometry, or is it just examination/ test on-line?**

The OSCE is a virtual on-line examination now, using for instance, Teams. The assessor will provide the questions and will perform the tests as per your instructions. You may find the following link very helpful; it includes a video showing how the virtual OSCE is conducted.