Spirometry Factsheet – October 2022

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.

Accessing the factsheet

To access this factsheet, you will notice that we will be uploading this factsheet to your programme every month no later than the 20th of the month. You will receive an email notification to let you know when this is uploaded.

ARTP Certification

For all of you that have registered for your ARTP certification from 1st November, the ARTP are providing **nine months** to complete the certification rather than six months.

Support Available

We are changing the way you can contact us to ensure your questions and queries are managed effectively. If you have a question or query, 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_KopUMTBUNIlJMVVVRTZXSDY3R0JCQ0xJUDZKVC4u

Which Tutorial?

To ensure we cater for your learning needs we have introduced several tutorials to support you on your journey. Details of what is covered on each tutorial is stipulated below:

- **Occupational Health and Military**

For those of you operating outside of general practice, we want to ensure that your learning is tailored according to your area of practice. So, if you are operating in the occupational health space or military, please register onto these tutorials monthly.

- **Newcomer and Healthcare Assistant**

This session is designed to provide you with an overview of your learning journey and how you can use these monthly tutorials to support you. We will also be discussing performing spirometry in great depth.

If you are new to the programme, then we suggest that you attend this tutorial first.

- **Beginner – Intermediate**

This session is designed to cover elements of performing and reporting (interpreting) traces. Here we will look at what the different spirometry parameters mean and what steps you need to undertake to interpret a trace.

- **Intermediate to Advanced**

This session builds on the beginner to intermediate sessions and are to support learners interpret complex traces.

For details on how to access these sessions please check your welcome pack. These tutorials are rolling and therefore as you work through your programme, you can move from one level to another.

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 September so please do access them.**

Repeatability criteria:

Regarding repeatability criteria, whilst the guidelines from the PCC (2013) QADS (Quality Assured Diagnostic Spirometry in Primary care document) suggest that we should aim for 3 blows to be within 100ml of each other, the ARTP (2020) Statement on Pulmonary Function standard for repeatability, is that the chosen values for FVC and FEV1 should not differ from the next best values for FVC and FEV1 by more than 150mls. In subjects with a FVC < 1L this difference should not be greater than 100mls.

Spirometers

If you have any questions around spirometer, we encourage to contact the manufacturers in the first instance.

Further FAQs

Q. How to I 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.

Q. What do the spirometry measures mean?

Spirometry measures include the following.

- Forced expiratory volume in 1 s (FEV1)

- Forced vital capacity (FVC), the maximum amount of air that can be exhaled when blowing out as fast as possible

- Vital capacity (VC), VC: maximal amount of air exhaled steadily from full inspiration to maximal expiration (not time-dependent) (VC conventionally referred to as relaxed vital capacity (RVC)

- FEV1/FVC ratio

- Peak expiratory flow (PEF) is the maximum flow achievable from a forced expiration starting at a full inspiration with an open glottis.

- The forced expiratory flow between 25% and 75% of vital capacity (FEF (25-75))

- Inspiratory vital capacity (IVC), (IVC) is the maximum volume of gas that can be inspired into the lungs during a relaxed but complete inspiration from a position of full expiration

Q. I understand the 150ml criteria for ARTP but outside this, if patients fail to meet this criterion what do you suggest we do?

The ARTP (2020) Statement confirms the following for clinical practice "ensuring a patient achieves the best results possible on the day of their test. If a patient does not meet all these it does not invalidate any of the results obtained. It may just mean that those results may not be a reliable indicator of what the patient might be able to achieve. However, the results produced may still provide sufficient information to support any clinical decision-making with the proviso that a repeat test at another test session might yield a different result."

Q. As Spirometry in primary care is recommencing – how do we do it?

A. The ARTP has issued a joint document on risk minimisation in spirometry re-start. The document provides areas which need to be looked at to support the restoration of spirometry in primary care. This includes, looking at risk minimisation for the transmission of COVID-19, including the time between seeing patients and also details around the minimum number of air exchanges. Please visit: https://www.brit-thoracic.org.uk/document-library/quality-improvement/covid-19/restarting-spirometry/

You can also read Ventilation for Clinical Areas to Minimise COVID-19 Transmission found on: https://www.artp.org.uk/News/ventilation-for-clinical-areas-to-minimise-covid-19-transmission

You can also see the following document *International consensus on lung function testing during the COVID-19 pandemic and beyond* available on: https://www.artp.org.uk/Resources/baddb4d4-d28e-4f29-8b55-e7a546ce48a1 as further reading.

Q. What do I do if I need an extension for my education for health learning programme?

A. If you need an extension on your learning course, then please email learner support with the reason you need an extension. This will then be taken to the Academic Review Panel and a decision will be communicated to you. Please note you have six months from the date you had access to the programme.

Q.I am completing the Spirometry Blended Online Programme. Do we have to complete the eLearning before we access the portfolio?

Education for Health's learning is independent of the ARTP assessment. You can apply for the ARTP assessment when you feel ready but remember this must be completed at the end of your spirometry learning with Education for Health.

Q. What are z-scores?

- Z-score is a numerical measurement that describes a value's relationship to the mean of a group of values

- It is possible to obtain mean value for a given age and height.

- When the mean of the z-score is calculated, it is always zero, the standard deviation (SD) is in increments of one.

- When the z-score is -1.645, it means that the value is exactly on the Lower Limit of Normal (LLN). In other words, only 5% of the healthy population of the same age, sex, height, and ethnicity has a lower value.

- Including the z-score for a result gives a sense of how 'normal' or 'abnormal' the result is.

- 95% of values from normal subjects should be ≥ −1.64 SD from the mean (centre of the bell curve)

- In pulmonary function testing the fifth percentile of all normal values (z-score of −1.64) is defined as the lower limit of normal (LLN)

- A spirometry value at the LLN would be observed in only 1 in 20 (5%) normal subjects

- In other words, a value at or below the LLN is an unusual finding for a subject with normal lungs

Remember:

- When a patient has a risk factor (e.g., smoking history) and has value at or below the LLN, it should be concluded that there is a greater chance of disease than health
- Similar values from patients with a low probability of disease should prompt diagnostic caution since 1 in 20 subjects with disease-free lungs have a value at the LLN
- Diagnostic confidence of health or disease should rise when values are further away from the LLN

Q. How can I calculate a z-score?

Online calculators can be used to obtain the z-score for a given value if your spirometer does not provide this: http://gli-calculator.ersnet.org/index.html

The ARTP statement on pulmonary function testing 2020 also discusses the severity grading and probability of a result being found within a normal healthy population for various z-score thresholds. This can be seen on page 11 of the document:

https://bmjopenrespres.bmj.com/content/bmjresp/7/1/e000575.full.pdf.

==This is important if you are undertaking, you are the MCQ component of the ARTP certification. We will be releasing further learning materials to support you convert Z scores.==

Q. Reference values, there seems to be guidelines that suggest different values to use e.g., LLN, Z scores, % predicted- are we definitely supposed to use the lower limit of normal to analyse the FVC/VC/FEV1

GOLD (2022) favours the use of the fixed ratio; NICE guideline (ng115) states "It is recommended that GLI (2012) reference values are used, but it is recognised that these values are not applicable for all ethnic groups. [2004, amended 2018]" ARTP (2020) recommends the use of GLI values in most subjects.

Q. Am I allowed to perform Spirometry myself for biological control in COVID?

This is a workplace decision and will be dependent on your local lockdown arrangement and local risk assessment policies.

Q. Should we be setting our spirometers to lower limits of normal for performance rather than midline predictive values?

ARTP has confirmed the following: "The FEV1 /FVC (or FEV1 /VC) must be below the LLN (z-score <-1.645) to be classified as obstruction. Please see page 11 of the ARTP Statement on Pulmonary Function Testing 2020 for further information re: severity grading using z-score.,

Q. Physiological Control (BioQC) What should I do if I am not in the same place of work each day?

Equipment, subject, and person performing the test on the subject should always remain the same. All ten examples must meet acceptability and repeatability criteria.

Q. I have been advised that a colleague can perform spirometry for occupational purposes after local in-house training by a consultant. What is the position?

Quality control and quality improvement are fundamental aspects of healthcare provision. It is essential that all healthcare workers can demonstrate best practise and work within their scope of practice. Having registration with the ARTP enables healthcare workers to demonstrate a level of performance which has been assessed against standards, promoting excellence in practice.

Updates on the ARTP assessment

The following section is relevant for those that have purchased the spirometry learning programme with ARTP assessment. The ARTP updated their FAQs https://www.artp.org.uk/Spirometry-FAQs on the 21st of September – please ensure you have checked this.

The following link provides useful information around the spirometry assessment: https://www.artp.org.uk/spirometry-assessment-information

In addition, it is important that you take time to review the ARTP standards document which can be found on: https://www.artp.org.uk/Resources/Spirometry-Standards

Should dates of birth be removed from traces as well as names and patient numbers?

Yes, all patient data should be removed as sharing this is a breach of GDPR and will result in an instant failure.

Q. My surgery is currently not performing Spirometry do I register for the assessment now?

A. It is very much up to you. You can complete the assessment at a time that is suitable for you. If you apply for the assessment now, you can then defer your assessment with the ARTP at a later date. depending on your circumstances.

Q. How do we submit a protocol as part of the portfolio?

A. This is embedded on page 19. in the Portfolio section of the National Spirometry Certification guidelines.

Q. I am really struggling with my portfolio, with regard to gathering ten spirometry results with graphs. The reason for this, is that when we perform spirometry within my practice the results are only saved as figures and not the actual flow chart. How do I get around this please?

A. The traces are particularly important as they will be able to demonstrate patient patterns and support the interpretation of the spirometry readings. We would suggest that you speak to the manufacturer of your spirometry machine to confirm the package you have purchased.

Q. Do you know if the evidence traces are not GLI 2012 ref value will the ARTP fail us?

A. ARTP has confirmed the following: No if they use ECCS they will be accepted

Q. Is there any way of knowing what is required to submit to ARTP before we register? So, I can plan my work and exposure to spirometry ahead of registering for the ARTP assessment.

National Spirometry Certification guidelines provides you with an overview of what components you will need to complete as part of your assessment. For further details please click here: https://www.artp.org.uk/Resources/Spirometry-Standards

You can also visit the following link which will provide you with an overview of the assessment: https://www.artp.org.uk/spirometry-assessment-information

MCQ Mock Exam

The ARTP has provided a mock exam around the MCQ. Please click on the following link to access the mock exam. Please click: https://www.artp.org.uk/mcq-bookings