ARTP | Association for Respiratory Technology & Physiology

National Spirometry Certification

SPIROMETRY STANDARDS DOCUMENT

V6.2 July 2024

Association for Respiratory Technology & Physiology
c/o EBS Ltd
City Wharf
Davidson Road
Lichfield
Staffordshire
WS14 9DZ

01543 442 141
spirometry@artp.org.uk

CONTENTS

PAGE NO

1. Introduction 2
2. Standards for provision of Spirometry Training 2
3. Pre-Requisites for Spirometry Candidates 5
4. Levels of Spirometry Certification 5
5. Registration Process 5
6. Certification Registration Fee 6
7. Candidate Communication Information 6
8. Spirometry Portfolio Overview 7
9. Portfolio Contents 7
10. Multiple Choice Question (MCQ) Examination 10
11. The Objective Structured (OSCE) Examination 11
13. Certification Completion 13
14. National Spirometry Register 13
15. Re-accreditation of Spirometry Certification 14
16. Extensions and Deferrals 15
17. Complaints Process 15
18. Appeals Process 16
19. Appendices 19-

1. INTRODUCTION

The following document describes the standards set by the Association for Respiratory Technology and Physiology (ARTP) as the provider of spirometry certification. It outlines what to expect from a spirometry training provider/course and the minimum requirements candidates need to achieve to gain ARTP Spirometry Certification.

2. STANDARDS FOR PROVISION OF SPIROMETRY TRAINING

In order to successfully achieve ARTP Certification in Spirometry, candidates should undertake a period of theoretical and practical skills training with a suitably qualified training provider. ARTP recommends that all training providers meet the minimum standards outlined in this document.

2.1. Trainer requirements

2.1.1. Training providers must be familiar with the ARTP Spirometry Certification process to ensure that they can support and guide candidates through the process.

2.1.2. ARTP recommends that training providers demonstrate that trainers have achieved a minimum of ARTP Full Certificate in Spirometry or equivalent and have maintained their competency in the performance of quality assured diagnostic spirometry in a clinical setting.

2.1.3. Training providers should demonstrate that trainers have a recognised qualification in teaching or training relevant to healthcare.

2.1.4. ARTP recommends the following maximum trainer/candidate ratios:

2.1.4.1. For theoretical training the recommended student: teacher ratio is up to 30:1

2.1.4.2. For hands on practical training the recommended student: teacher ratio up to 5:1

2.1.5. Training providers must ensure that candidates receive adequate support and mentoring throughout the spirometry certification process. This may be via face-to-face contact, skills workshops, email, virtual platform or telephone support.

2.1.6. It is recommended that training providers ensure that their trainers attend an ARTP Spirometry Update session at least bi-annually to confirm that they are familiar with any changes to the spirometry certification process.

2.2. Course duration:

2.2.1. Practical skills: The minimum requirement for practical skills training is 4.5 hours using the candidate to trainer ratios stated above

2.2.2. Theoretical teaching: The requirement for theoretical training is 9-12 hours using the candidate to trainer ratios stated above

2.2.3. It is expected that candidates will undertake additional personal study using methods that may include distance learning and web-based tools to achieve the level of knowledge and understanding required to perform quality assured diagnostic spirometry

2.3. Course Content:

2.3.1. ARTP recommends that training providers demonstrate the training course covers appropriate information

2.3.2. Each section within the recommended course content should be targeted towards performance and understanding of quality assured diagnostic spirometry in either adult and/or paediatrics and the candidates understanding should correspond with the requirements of their job role. For example, if a candidate is undertaking paediatric only testing in their place of work, they should understand the sections as recommended for paediatric testing.

2.3.3. On completion of training candidates should be able to demonstrate understanding of:

2.3.3.1. Basic anatomy, physiology and pathophysiology of the respiratory system.

- Knowledge of the anatomy and physiology of the respiratory system

- Knowledge of pathophysiology of common respiratory disorders
- Knowledge of lung growth and development for paediatric candidates

2.3.3.2. Definitions of common spirometric values, and be able to describe:

- FEV_1, FVC, FEV_1/FVC
- PEF, $FEF_{25-75\%}$
- Quality indicators, which include FET, and BEV
- VC, IRV, ERV, IC
- Understand how to locate these on volume time curve and flow-volume loop

2.3.3.3. Spirometers, which includes:

- Describing the minimum recommendations for spirometers
- Understanding the different measurement principles when comparing different flow and volume measuring devices
- Recognise the advantages and disadvantages of different types of spirometer.
- Cleaning and maintenance of spirometers including basic fault finding and correction.

2.3.3.4. Infection control, which includes:

- Describing methods for prevention of infection from spirometers including universal precautions
- Explaining the processes and importance of regular cleaning

2.3.3.5. Quality control of spirometers (physical and physiological), which includes:

- Performing calibration or verification of spirometer using an appropriate syringe
- Defining and describing the purpose of calibration and verification
- Performing biological (physiological) quality control using a healthy subject
- Summarising the requirements for equipment quality control

2.3.3.6. Pre-test considerations, indications and contra-indications to spirometry, which includes:

- Stating the indications for spirometry
- Knowing and understanding the relative and absolute contraindications for spirometry testing.
- Recognising the need for effective communication to optimise spirometry tests
- Explaining the pre-test instructions that patients should adhere to
- Special considerations for those testing children

2.3.3.7. Reference Values, which includes:

- Defining and describing reference values in spirometry
- Stating the factors that influence reference values
- Demonstrating knowledge of different reference values that are routinely used and the recommended reference values for their population.
- Demonstrating a basic understanding of limitations of reference values
- Demonstrating a basic understanding of errors of using the percentage predicted and the advantages of using the lower limit of normal (LLN)
- Demonstrating the use of Z-scores and Standardised Residuals.

- Paediatric candidates should understand the particular importance of appropriate reference values during childhood growth and development

2.3.3.8. Performance of spirometry

- Candidates must be able to:
  - Prepare the spirometer for testing
  - Demonstrate height and weight measurement
  - Demonstrate appropriate infection control procedures
  - Demonstrate the correct use of the spirometer to the patient
  - Describe the correct position to perform spirometry
  - Record type, dosage and time of relevant medication
  - Record smoking history (in pack years) and time of last cigarette if appropriate
  - Ask relevant pre-test questions and contraindications and record/act upon any deviations.
  - Explain the spirometric testing procedure to patients in an appropriate manner
  - If possible, demonstrate the test procedure to the patient
  - Encourage and coach the patient throughout to optimise results
  - Obtain accurate spirometry measurement according to ARTP 2020 guidelines
  - Recognise improperly performed manoeuvres and communicate appropriate corrective actions
  - Document relevant events that occurred during the spirometric assessment
  - Paediatric candidates able to ensure optimal effort from children performing spirometry manoeuvres including use of incentive games

2.3.3.9. Assessment and review of spirometry results

- Identify if the results meet *acceptability* and *repeatability* criteria in line with ARTP Statement on Pulmonary Function Testing 2020 Guidelines
- Summarise test result selection and describe the selection of best curve
- Compare test results with reference values
- Evaluate change in individual subjects
- Report bronchodilator response
- Recognise and describe the normal pattern as well as restrictive and obstructive pattern in the volume time curve.
- Recognise and describe the normal pattern as well as restrictive and obstructive pattern in the flow volume curve.
- Record and report appropriate comments
- Understand where/how electronic data is stored
- Understand the use of quality grading in paediatrics

3. PRE-REQUISITES FOR SPIROMETRY CANDIDATES

ARTP recommends that candidates have the general knowledge and basic computer skills described below in order to successfully complete the certification process. It is the responsibility of the candidate to ensure that they are competent for each of the prerequisites.

3.1 General knowledge

- Understand and perform basic mathematical operations (multiplication, division, decimals and percentages)
- Demonstrate an understanding of calculating ratios
- Use basic functions of a calculator

3.2 Basic PC Skills

- Use the basic functions of a computer
- Have basic mathematics skills
- Demonstrate ability to use drop down menus, select and accept options, etc.

4. LEVELS OF SPIROMETRY CERTIFICATION

There are three levels of spirometry certification: **Full** (Perfroming & Reporting), **Performing** only and **Reporting** only. Certification may be obtained in adult testing, paediatric testing or both. More information is provided in Section 9 for those undertaking a combined portfolio, or candidates already on the spirometry register who wish to top up a pre-existing portfolio to cover both adult and paediatric testing.

4.1 The **Full** (Performing & Reporting) spirometry certification process is an assessment of competency in the performance and reporting of quality assured diagnostic spirometry. Candidates are required to complete:

- A portfolio of evidence
- An MCQ examination in reporting of spirometry results and relevant clinical questions
- An OSCE practical examination

4.2 The **Performing** spirometry certification process is an assessment of competency in the performance of quality assured diagnostic spirometry without clinical reporting. Candidates are required to complete:

- A portfolio of evidence
- An OSCE practical examination

4.3 The **Reporting** spirometry certification process is an assessment of an individual's ability to understand and report quality assured diagnostic spirometry results. Candidates are required to complete:

- A portfolio of evidence
- An MCQ examination in reporting of spirometry results and relevant clinical questions.

5. REGISTRATION PROCESS

Applications for spirometry certification are made online via the ARTP website. Registration information can be found on the Spirometry page: www.artp.org.uk/Spirometry-Certification. Once registration has been selected, the registrant will be asked to complete the on-line form for their personal details and select a method of payment.

6. CERTIFICATION REGISTRATION FEE

The registration fee includes spirometry certification and the candidates' registration on to the ARTP Spirometry Register for the first year. All aspects inclusive of the fee are fully explained throughout this document. Registration fees are as follows:

Individual Certification Registration Costs*

- Performing & Reporting (Full) spirometry certification: **£250**
- Performing spirometry certification: **£250**
- Reporting spirometry certification: **£195**
- Joint Adult and Paediatric (Full) certification: **£265**
- Joint Performing spirometry certification: **£265**
- Joint Reporting spirometry certification: **£210**
- 'Top Up' completed after primary portfolio: **£195**
- Recertification portfolio **£125**

*Certificate fees may be revised or subject to change; please see the ARTP website for the current fees.

Sliding scale Discount

For registration of multiple candidates, there are three levels of discount available per registration depending on the number of candidates registering:

- 10 to 50 candidates **£20 discount**
- 51 - 100 candidates **£45 discount**
- 101+ candidates **£70-75* discount**

**depending on portfolio type*

In order to receive the discount, the individual co-ordinating candidate registration must contact ARTP Spirometry Administration (spirometry@artp.org.uk) to receive a group booking form. Candidates registered in this manner will be grouped into a registration cohort.

Candidates must be made aware and agree to being enrolled onto an ARTP Spirometry Certification program **prior** to completing the booking form. Candidates must also give consent and agree to share their email address.

Should an organisation wish to take advantage of the higher discount rates without having to book all candidates at the same time please contact ARTP Spirometry Administration (spirometry@artp.org.uk). Please note a minimum of 10 registrations are required per cohort.

7. CANDIDATE COMMUNICATION INFORMATION

7.1. Upon registration, candidates will receive an automated email notifying them that registration has been successful.

7.2. A further email will be sent to the candidate on the day of their enrolment, which is on or around the 1st working day of the month, which will provide all the information needed to begin the certificate. A separate email will follow to provide them with their log in details to access the PebblePad e-portfolio system.

8. SPIROMETRY PORTFOLIO OVERVIEW

8.1. Portfolio requirements

8.1.1. The spirometry portfolio consists of several sections. The sections that must be completed will depend on the level of certification that the candidate has registered for.

8.1.2. All sections within the portfolio must be successfully completed to the defined minimum standard in order to complete the certification process.

8.1.3. When completing the portfolio, the candidate will be asked to answer questions and/or provide evidence of their competence.

8.1.4. When answering questions, the candidate will be required to write in the text boxes and tables provided or the candidate may have the option to upload a document or image.

8.1.5. When completing sections requiring evidence of competence, an upload option is provided for each piece of evidence required.

8.1.6. The candidate will be able to amend any part of their portfolio until it is submitted; once submitted no further amendments can be made.

8.1.7. There are two outcomes to the portfolio

- Pass
- Fail

8.1.8. In the case of a fail being awarded, the portfolio will be referred back to the candidate with appropriate standardised feedback outlining the amendments that are required to achieve a pass.

8.1.9. Following an initial fail, a further **two** portfolio submissions are permitted.

8.1.10. If further submissions are required to complete the portfolio, evidence of training, undertaken after the 3rd failed attempt, will need to be submitted to ARTP within 6 months of the 3rd failed attempt and an administration fee of £50 per additional attempt will apply.

9. PORTFOLIO CONTENTS

9.1. The PebblePad e-portfolio system outlines the portfolio content with appropriate instructions given where required.

9.2. The Full and Performing portfolio is comprised of the following sections for both adults and paediatrics. Where differences arise, these will be highlighted.

9.3. **Background Information** *(Full, Performing & Reporting levels)*

9.3.1. The background information section consists of six standard sections.

9.3.2. To successfully complete this section the candidate should describe:

- The range of tests that are performed in their place of work
- The frequency of testing per week/month
- The range of patients tested
- The group(s) of staff within the department who perform the tests
- The location where the tests are performed
- The method(s) of referral for lung function testing

9.4. Performance Criteria *(Full & Performing levels only)*

9.4.1. The candidate is required to demonstrate that standards and safety are adhered to when performing spirometry. To successfully complete this section the candidate is required to:

- Provide their local protocol for the performance of quality assured diagnostic spirometry. This may be an uploaded procedure/policy document or a written answer in the text box provided. It must include appropriate references.
- Complete two patient safety questions regarding contra-indications to performing spirometry and pre-test instructions to patients.

9.5. Calibration & Verification *(Full & Performing levels only)*

9.5.1. The candidate is required to demonstrate their understanding of calibration and verification. To successfully compete this section, the candidate is required to:

- Define calibration and verification and highlight the difference between the two terms.
- Describe the purpose of performing regular calibration or verification and the process followed in their place of work.
- Describe the acceptable range for calibration or verification and describe what actions should be taken should calibration/verification fail.
- Upload a fully completed calibration or verification log, which must meet validity requirements. Further guidance and information is provided in Appendix 2.

9.6. Physiological Control *(Full & Performing levels only)*

9.6.1. The candidate is required to explain the purpose of and demonstrate performance of regular physiological quality control. To successfully complete this section, the candidate is required to:

- Describe the purpose of performing quality assurance/quality control by using a biological control subject in relation to a spirometry service.
- Upload **ten** valid spirometry results obtained from a single biological control subject.
- Perform the spirometry traces over a minimum of a two-week period within the last 6 months.
- Tabulate and assess the variation of the results. Further guidance and information are provided in Appendix 3.

9.7. Infection Control *(Full & Performing levels only)*

9.7.1. The candidate is required to demonstrate that effective infection control procedures exist and are adhered to. To achieve this, the candidate is required to:

- Provide appropriate documentation and procedures for cleaning their spirometer (this must include appropriate references and follow manufacturers guidance).
- Provide appropriate documentation and procedures that are followed when testing patients with an infectious disease (this must include appropriate references and follow manufacturer's guidance).
- Produce evidence of a completed spirometer cleaning log. If a cleaning log in a tabulated format is not available, a template can be downloaded from the candidate's e-portfolio contents.

9.8. Patient Tests *(Full & Performing levels only)*

9.8.1. This section requires the candidate to produce evidence of competency in patient testing by uploading **ten** anonymised patient tests

- For the **Adult** portfolio, all patients must be aged 16 years old or over
- For the **Paediatric** portfolio, all patients must be younger than 16 years old with at least 3 patients younger than 10 years old
- For the **Joint** adult & paediatric portfolio, 5 patients must be younger than 16 years old and at least 1 must be younger than 10 years old
- For the **Top Up** portfolio, only **five** patients tests are required and all 5 patients must be younger than 16 years old, with at least 1 patient younger than 10 years old

9.8.2. For all examples, the candidate must have performed the test with a patient (it is not acceptable to upload spirometry test reports that the candidate did not perform themselves or were obtained from testing another member of staff).

9.8.3. Only use attempts that have been obtained within 18 months.

9.8.4. Ensure that all results meet acceptability and repeatability criteria (see Appendix 1).

- Provide technical comments outlining why the test meets the acceptability and repeatability criteria. This will enable candidates to receive focussed feedback should they fail achieve the standard.

9.8.5. Reversibility Assessments - Spirometry with reversibility is not a mandatory requirement. However, if the candidate submits a patient spirometry result inclusive of a reversibility study it will be marked in accordance with ARTP guidelines:

- Pre and post spirometry must both be performed in accordance with the acceptability and repeatability outlined in Appendix 1.
- Post spirometry should not be reduced compared to the pre-spirometry (<150mls [or <100mls if FVC is <1L] when comparing VC, FVC and FEV_1, and <40L/min or 0.67L/sec when comparing PEF).

9.8.6. Quality review of submitted test reports

- Spirometry test reports that do not meet acceptability and repeatability criteria will be referred back to the candidate with appropriate feedback outlining why the spirometry test report does not meet the criteria.
- In accordance with professional standards (NMC, RCP, HCPC), all submitted results must be fully anonymised, removing name, identifiable number, date of birth, address etc. If a breach of confidentiality occurs, the marker must immediately cease marking the portfolio. The portfolio will be returned to the candidate in its entirety for revision and amendment and the submission will be considered a fail attempt.
- For all examples, the candidate must have performed the test themselves, with a patient (it is not acceptable to upload spirometry test reports that the candidate did not perform themselves or were obtained from testing another member of staff).

9.9. Problems encountered during testing *(Full, Performing & Reporting levels)*

9.9.1. The candidate is provided with **five** technically unacceptable spirometry test reports which the candidate must review and correctly identify the technical error, how to rectify it and what effect this may have on the test result outcome.

9.10. **Declaration** *(Full, Performing & Reporting levels)*

9.10.1. All candidates are required to download and complete a self-declaration which confirm that all the work within the e-portfolio is that of the candidate.

9.10.2. The declaration form should also be countered signed by either a Head of Service, Deputy Head, GP, Senior Nurse, Supervisor or other senior member of staff.

9.11. **Top Up Portfolio** *For those topping up their Adult certificate to include Paediatrics*

9.11.1 Completing the Full/Performing Paediatric Top Up portfolio requires the completion of a:

- Shortened Portfolio – no background information and only **five** Patient Test uploads
- Shortened MCQ consisting of **ten** mutliple-choice questions

9.12 **Recertification Portfolio** *For those undertaking the Audit or whose certificate has lapsed*

9.12.1 Completing the Recertification portfolio requires the completion of a:

- Shortened Portfolio - no background information and only **five** Patient Test uploads
- Shortened MCQ consisting of **ten** mutliple-choice questions

10. MULTIPLE-CHOICE QUESTIONNAIRE (MCQ) EXAMINATION

10.1. **MCQ for the Full/Reporting Certificate**

The MCQ exam is mandatory for candidates undertaking the Full or Reporting level certificate only.

10.1.1. The MCQ consists of 20 spirometry test reports that may or may not include associated clinical information.

10.1.2. Candidates must complete the assessment under examination conditions defined as within a set time limit, without access to reference materials and under the supervision of nominated invigilator. An invigilator form must be sent to spirometry@artp.org.uk no later than 2 days before the booked MCQ date.

10.1.3. The examination time limit is 60 minutes.

10.1.4. The guidelines used to report results are pre-defined for each question; candidates must read and adhere to this reporting strategy when completing the MCQ examination. The reporting strategy is outlined in Appendix 4.

10.1.5. As part of the assessment, candidates must be able to determine abnormal spirometry results using the lower limit of normal (LLN) and in some cases by applying Z-scores.

10.1.6. Candidates will be required to grade the severity of airflow obstruction using both z-scores (for both adults and paediatrics), in line with ARTP 2020 guidelines and FEV_1 percent predicted using NICE 2010 guidelines (adults only).

10.1.7. Clinical questions include presenting patient concerns and spirometry results that require the candidate to determine a correct course of action and/or reporting based upon this information.

10.1.8. The candidate must correctly report **14/20** (70%) questions correctly to pass the examination.

10.1.9. Candidates will be notified of the outcome of their assessment within 5 working days of completing the assessment via email.

10.1.10. Should the pass mark not be achieved, the candidate will be provided with a further **two** attempts to pass.

10.1.11. If further submissions are required to complete the MCQ, evidence of training, undertaken after the 3rd failed attempt, will need to be submitted to ARTP within 6 months of the 3rd failed attempt and an administration fee of £50 per additional attempt will apply.

10.2. MCQ for the Top Up Certificate

10.2.1. Candidates undertaking the Top Up portfolio will complete a shortened MCQ in their additional/optional modality.

10.2.2. The candidate must answer 6/10 (70%) questions correctly to achieve a pass.

10.2.3. The questions will relate to the relevant population (adult or paediatric) and will be a series of questions relating to technical and clinical reporting of spirometry test data and test performance.

10.3 Special Requirements

10.3.1 Candidates who require additional time to complete their MCQ examination can apply using the special requirements form found at artp.org.uk/Resources/spirometry-special-requirements-form

11. THE OBJECTIVE STRUCTURED EXAMINATION (OSCE)

11.1. OSCE for the Full/Performing Certificate

The OSCE exam is mandatory for candidates undertaking the Full or Performing level certificate only.

11.1.1 The OSCE consists of 2 parts which are a:

1) Practical Assessment
2) Technical Viva

11.2. Practical Assessment

11.2.1. Due to implications of the COVID-19 pandemic, ARTP have taken the decision to use a virtual assessment process rather than face-to-face. The assessment is completed using a cloud-based video conferencing platform such as Zoom, Microsoft Teams or other available software.

11.2.2. The examiner will have a spirometer, which they will operate. The spirometer will connect to the computer that is being used to enable screen sharing. There is on an online video available demonstrating the process so candidates can familiarise themselves with it before the OSCE (https://youtu.be/i0F2Fsrl634).

11.2.3. The practical assessment comprises of the calibration/verification of the spirometer and performance of quality assured diagnostic spirometry. As this is a remote assessment, candidates are expected to tell the examiner what they are trying to achieve. For example, *'please press the button to perform a verification manoeuvre'*.

11.2.4. The candidate has 20 minutes to complete the whole practical assessment.

11.2.5. If the candidate fails to meet the required standard for an element of the assessment, a standardised question will be asked during the technical viva to provide the candidate with the opportunity to demonstrate competence in this area.

11.2.6. To achieve a pass in the OSCE, the candidate must pass the practical assessment.

11.2.7. If the candidate fails to meet any of the criterions, the assessor must use questions provided within the marking scheme to assess the candidate's knowledge.

11.2.8. If the candidate is unable to answer the follow up questions prompted by a failed criterion to a sufficient level, the candidate will fail the OSCE.

11.3. OSCE Process

Prior to starting the OSCE, the assessor will introduce themselves to the candidate and provide the candidate with the relevant instructions. This must include:

- The time allowed for all parts of the OSCE.
- The relevant information regarding the spirometer provided.
- The structure of the OSCE process.
- The assessor should ensure that all of the candidates' questions have been answered before commencing the assessment.

11.4. The Spirometer

- The spirometer provided may not be familiar to the candidate and the assessor is expected to assist the candidate with the function of the spirometer.
- Lack of familiarity with the spirometer will not prejudice the candidate in terms of their competence to perform technically acceptable spirometry manoeuvres.

11.5. The Test Subject

- This is a remote assessment and the candidate will 'test' the assessor as the patient.
- If the assessor is unable to act as the patient subject, they will provide a suitable replacement patient subject.

11.6. Technical Viva

- The candidate will be given 10 minutes to complete the technical viva.
- To achieve a pass in the technical viva, candidates undertaking the Performing spirometry certification must answer 3/4 questions correctly; candidates undertaking the Full spirometry certification must answer 5/7 questions correctly.
- The candidate will be asked a set number of pre-defined questions that either relate to the spirometry the candidate has performed or are general questions about technical aspects of spirometry.

11.7. Completion of the OSCE and notification of the outcome

11.7.1. On completion of the OSCE, the candidate will be thanked for their participation.

11.7.2. Candidates will not be notified of the outcome of their assessment on the day; they will be notified of the outcome of their assessment within 5 working days of completing the assessment via email.

11.7.3. Should the pass mark not be achieved, the candidate will be provided with structured feedback and will be provided with **1** further attempt to pass.

11.7.4. If further submissions are required to complete the OSCE, evidence of training, undertaken after the 2nd failed attempt, will need to be submitted to ARTP within 6 months of the 2nd attempt and an administration fee of £50 per additional attempt will apply.

12. CERTIFICATION COMPLETION

12.1. Spirometry certification is only awarded when the candidate has successfully completed all the required components of the certification level for which they have registered in either adult, paediatrics or both:

12.1.1. Performing spirometry certification

- E-portfolio
- OSCE

12.1.2. Full spirometry certification

- E-portfolio
- MCQ
- OSCE

12.1.3. Reporting spirometry certification

- E-portfolio
- MCQ

12.2. Allowances made due to failed attempts

12.2.1. In the event of a fail of any stage of the certification process further attempts may be made in order to complete each stage.

12.2.2. The initial spirometry registration fee allows the candidate a maximum of:

- 3 portfolio submissions
- 3 MCQ attempts
- 2 OSCE attempts

12.2.3. If further attempts are required, evidence of training, undertaken after the final failed attempt, will need to be submitted to ARTP within 6 months of the final failed attempt and an administration fee of £50 per additional attempt will apply.

12.2.4. Candidates undertaking the full certification who do not successfully complete either the OSCE or MCQ may wish to apply for a certification level change to performing or reporting only.

13. NATIONAL SPIROMETRY REGISTER

13.1. Upon certification completion, candidates will be automatically added on to the National Spirometry Register. Their details will be able to be searched unless the candidate has specifically requested that their name is not made available on the searchable feature.

13.2. Data held on the Register will be stored and used in accordance with GDPR requirements.

13.3. The Academy of Healthcare Science (AHCS) hosts the register on behalf of the ARTP. The AHCS is accredited to and regulated by the Professional Standards Authority (PSA).

13.4. Healthcare professionals held on the register are required to demonstrate their commitment to maintaining competency and high standards of conduct, providing assurance for employers and patients.

13.5. The fee for being added to the Register for the first year is inclusive of the spirometry certification registration fee for all new candidates.

13.6. To maintain registration status candidates must renew their registration annually. The annual fee per candidate is £40, payable to the ARTP. Re-accreditation of Spirometry Certification.

14. RE-ACCREDITATION OF SPIROMETRY CERTIFICATION

14.1. The AHCS are required to undertake continuing professional development (CPD) audits to re-accredit registrants in accordance with PSA regulations. This is performed on an annual basis (September), where approximately 5% of all spirometry registrants are selected at random for audit.

14.2. All candidates selected for audit are required to submit a portfolio of evidence of continued practice of quality assured diagnostic spirometry. Those undertaking the Full & Reporting certificate will need to complete an MCQ exam.

14.3. Assessments for the CPD Audit:

14.3.1. Portfolio Exam

All candidates will need to complete a portfolio

15.3.1.1 **Portfolio for Full & Performing certificate**

Those who hold a Full or Performing certificate must complete the following sections of the portfolio:

- **Syringe verification**
  - 10 syringe verifications
- **Physiological control**
  - 10 Physiological results
  - Tabulated results including calculation of the mean values, 5% upper and lower limit range
- **Infection control**
  - Spirometry cleaning procedure
- **Patient testing**
  - Adult certification
    - 10 Results
  - Paediatric certification
    - 10 Results
  - Adult and Paediatric (Joint) Certified
    - 5 Adult results & 5 Paediatric results
- **Problems Encountered**

  The candidate is presented with 5 problem traces that they will have to identify the following:
  - Description of the Problem
  - Implication this may have on the patients results
  - The Solution
- **Declaration**

15.3.1.2 **Portfolio for Reporting certificate**

Those who hold a Reporting certificate must complete the following sections of the portfolio:

- **Problems Encountered**
  The candidate is presented with 5 problem traces that they will have to identify the following:
  - Description of the Problem
  - Implication this may have on the patients results
  - The Solution
- **Declaration**

15.3.2 Multiple-Choice Questionnaire (MCQ) Exam

Full & Reporting spirometry certificate holders must complete an MCQ which consists of

- reporting on 10 Spirometry test reports that may or may not have associated clinical information

15. EXTENSIONS AND DEFERRALS

15.1. All candidates are required to submit all assessments and complete the certification process within a period of 9 months from registration.

15.2. There may be occasions, due to unforeseen circumstances, that make it difficult or impossible to achieve the agreed deadline. In this case, the candidate may wish to apply for either an extension or deferral

- Extension - 2 months
- Deferral - 6 months

15.3. Candidates wishing to apply for an extension/deferral must complete the ARTP Extension form and this can be found at www.artp.org.uk/extension-request-form

15.4. Deferral may only be granted in exceptional circumstance e.g. long-term sickness or a family bereavement. The candidate must provide supporting evidence with their application which can be a sick note or an email/letter from a senior member of staff.

15.5. A deferral of 12 months can be applied for maternity leave upon production of a MATB1

15.6. All requests must reach the ARTP Spirometry Administrator no later than two weeks before the candidate's deadline date.

15.7. Each candidate is eligible for two extensions or deferrals without charge. If the candidate requires a further extension or deferral, this will incur an administrative fee of £35.00 per request and this grants an additional 6 months on to their current deadline date (not the date from payment).

16. COMPLAINTS PROCESS

16.1. Should a candidate or another person feel dissatisfied and wish to raise a formal complaint regarding any part of the ARTP Spirometry Certification process they can do so in writing.

16.2. Complaints should be acknowledged by the ARTP Spirometry Administrator (spirometry@artp.org.uk) within 5 working days of receipt. The acknowledgement should say who is dealing with the complaint and when the person complaining can expect a reply. A copy of the ARTP complaints procedure should be attached.

16.3. Ideally, complainants should receive a definitive reply within four weeks of receipt. If this is not possible because for example, an investigation has not been fully completed, a progress report should be sent with an indication of when a full response will be given.

16.4. Whether the complaint is upheld or not, the reply to the complainant should describe the action taken to investigate the complaint, the conclusions from the investigation, and any action taken as a result of the complaint.

16.5. If the complainant feels that the problem has not been satisfactorily resolved, they can request that the complaint be reviewed at ARTP Council level. At this stage, the complaint will be passed to the ARTP President.

16.6. The request for Council level review should be acknowledged within 5 working days of receiving it. The acknowledgement should say who will deal with the case and when the complainant can expect a reply.

16.7. The ARTP President may investigate the facts of the case themselves or delegate a suitably senior person to do so. This may involve reviewing the paperwork of the case and speaking with the person who dealt with the complaint.

16.8. If the complaint relates to a specific person, they should be informed and given opportunity to respond.

16.9. The person who dealt with the original complaint at Stage One should be kept informed of the complaint progression.

16.10. Ideally, complainants should receive a definitive reply within four weeks. If this is not possible because for example, an investigation has not been fully completed, a progress report should be sent with an indication of when a full reply will be given.

16.11. Whether the complaint is upheld or not, the reply to the complainant should describe the action taken to investigate the complaint, the conclusions from the investigation, and any action taken as a result of the complaint.

16.12. The decision taken at this stage is final, unless the Council decides it is appropriate to seek external assistance with resolution.

16.13. External Stage

16.13.1. The complainant can complain to the Charity Commission at any stage.

16.13.2. Information about the kind of complaints the Commission is involved with can be found on their website at here.

17. APPEALS PROCESS

17.1. In the instance where a candidate feels they have been unfairly assessed or under graded in any aspect of their certification, they have the right to appeal that decision.

17.2. A candidate wishing to appeal must do so in writing to the ARTP Spirometry Administrator (spirometry@artp.org.uk) within two weeks of being notified of the outcome of their assessment. The ARTP Spirometry Administrator should acknowledge receipt of the appeal within 5 working days. A copy of the ARTP Appeals procedure should be attached to the acknowledgement.

17.3. The appeal will be submitted to the ARTP Spirometry Appeals Committee, which will include one or two Executive Board or Education Committee members and another two members who are not involved with ARTP committees but have knowledge of the relevant process. All members of the Appeals Committee must not be directly involved with the individual appeal case.

17.4. All relevant paperwork will be reviewed and re-evaluated by a second assessor following the standard assessment process. As the OSCE is an observed assessment, the Appeals Committee may contact the candidate and the assessor for further information before making a decision.

17.5. Candidates should receive a definitive reply within 8 weeks of receipt of their appeal letter. If this is not possible because for example, an investigation has not been fully completed, a progress report should be sent with an indication of when a full reply will be given.

17.6. Whether the appeal is upheld or not, the reply to the candidate should describe the action taken to investigate the appeal, the conclusions from the investigation, and any action taken as a result of the appeal.

APPENDIX 1: ACCEPTABILITY AND REPEATBILITY CRITERIA (ADULT & PAEDIATRIC)

For the purpose of ARTP Spirometry Certification, when submitting spirometry test reports (patient and biological quality control) candidates **must** adhere to the acceptability and repeatability criteria outlined in these appendices, which is supported by the ARTP Statement on Pulmonary Function Testing 2020 Guidelines. (download at https://www.artp.org.uk/Guidelines).

Adults - Acceptability criteria:

Acceptability criteria are met in the following circumstances:

- A minimum of three efforts for both forced and relaxed manoeuvres must be performed with the results of all efforts provided (SVC, FEV_1, FVC and PEF); the results must show:
- Good quality flow volume and/or volume time graphs, which includes:
  - Smooth start to the test without hesitation (back-extrapolated volume of <5% of the FVC or 0.1L if the FVC is less than 2.0L)
  - Rapid rise to a pointed/sharp peak flow (PEF achieved within 150ms)
  - Linear decline to the point of FVC/RV
  - No cough within the first one second of the manoeuvre or later if it is deemed to have interfered with the blow
  - Plateau in expiratory flow (flow is <0.025L over 1 second)
  - No glottis closure
  - All three graphs can be submitted, but as a minimum, the best graph must be provided

Adults - Repeatability criteria:

In addition, to being acceptable, the results must also meet the repeatability criteria. The repeatability criteria are met in the following circumstances:

- All three valid results should show a repeatable PEF (all three PEF results within 40L/min or 0.67L/s)
- For SVC, FVC and FEV_1, a minimum of three valid efforts should be obtained with two of the highest efforts within:
  - 150mls if FVC is more than 1L or 100mls if FVC is less than 1 L
- FVC should not exceed SVC >150mls

Paediatrics - Acceptability Criteria

Acceptability criteria are met in the following circumstances:

- A minimum of three efforts of forced manoeuvres must be performed with the results of all efforts provided (FEV_1^*, FVC and PEF); the results must show:
- Good quality flow volume and/or volume time graphs, which includes:
  - Smooth start to the test without hesitation (if >6 years old, back-extrapolated volume of <5% of the FVC or 0.1L, whichever is the greater; if <6 years old, back-extrapolated volume 10% of FVC or 0.075L, whichever is the greater)
  - Rapid rise to a pointed/sharp peak flow (PEF achieved within 150ms)
  - Linear decline to the point of FVC/RV
  - No cough within the first one second of the manoeuvre or later if it is deemed to have interfered with the blow

- Visually determined plateau in expiratory flow
    - The exception to this is in preschool children, where lung emptying is rapid, when the end of test criteria is successful if the volume curve is approaching a plateau on the volume–time graph
- No glottis closure
- All three graphs can be submitted, but as a minimum, the best graph must be provided

Paediatrics - Repeatability criteria:

In addition to being acceptable, the results must also be repeatable. This includes a minimum of three efforts performed with two of highest FEV1 and FVC within:

- 100mls or 5% (whichever greater), if school age (>6 years)
- 100mls or 10% (whichever is greater), if preschool age (<6 years)

* FEV_1 should not be reported if the forced expiratory time is <1 s and the $FEV_{0.75}$ should be used instead

APPENDIX 2: VERIFICATION OR CALIBRATION LOG

Candidates must submit a document of evidence demonstrating regular verification and/or calibration of their spirometer.

As part of this section, candidates must perform and document evidence of a minimum of 20 calibrations or verifications of their spirometer. These measurements must be performed regularly over a period of at least one month.

The document must contain a table of results consisting of:

- test date,
- volume measured,
- The difference (in % or volume) between the input value (3L) and the measured
- Specifying a pass or fail.
- All measurements must show acceptable results, which is defined as a measured volume within +3% of a 3L volume syringe

If the candidate does not have a method of recording the data, two templates can be downloaded and used for this purpose, depending on the specification of the individual's spirometer.

- Template 1 is for recording 1 verification measurement at one flow (download at https://www.artp.org.uk/spirometry-candidate-resources).
- Template 2 is for recording 3 verification measurements at 3 different flows (this should be used unless your spirometer is unable to perform 3 different flows), (download at https://www.artp.org.uk/spirometry-candidate-resources).

APPENDIX 3: RECORDING AND TABULATING PHYSIOLOGICAL CONTROL DATA

Obtaining the results:

- Results may be obtained from the candidate or an appropriate healthy person with normal lung function who does not have a diagnosis or suspicion of a respiratory condition
- The equipment, subject and the person performing the test on the subject should always remain the same
- A minimum of 10 valid quality control spirometry results should be provided
- Provided results **must** meet the acceptability and repeatability criteria (See Appendix 1)

Displaying the results:

All 10 results must be presented in a tabulated format. The table of results must include the following information:

- Date
- Time
- VC
- FEV_1
- FVC
- PEF

If required, a template is provided at https://www.artp.org.uk/spirometry-candidate-resources

Reporting the results:

Day to day variation must be calculated. To achieve this, candidates must:

- Calculate the **mean** value for VC, FEV_1, FVC and PEF, and
- The 5% upper and lower limit range from the mean value (mean value ± 5%) for VC, FEV_1 and FVC
- The 40L/min or 0.67L/sec upper and lower limit range from the mean value (mean value ± 40L/min or 0.67L/sec) for PEF
- Instructions/an example on how to calculate this are provided in Table. 1

Once calculated, any results that fall outside of the expected range (±5%) should prompt corrective action. The candidate **must** accompany such data with an explanation of the remedial action take.

Table 1. Example calculation for the mean and +/- 5% range for FEV_1

Calculating the mean FEV_1:		
The sum of 10 FEV_1 measurements	=	34.8L
34.8 / 10	=	3.48L
Mean FEV_1	=	**3.48L**
Calculating the 5% upper and lower limit of the mean value:		
Mean FEV_1	=	3.48L
0.05 X 3.48	=	**0.174**
5% Lower limit		
3.48 – 0.174	=	**3.306L**
5% Upper limit		
3.48 + 0.174	=	**3.654L**

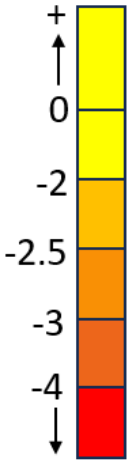
APPENDIX 4: REPORTING STRATEGY FOR MCQ'S

ARTP recognises that there are different recommendations when considering abnormality and lung function measurements.

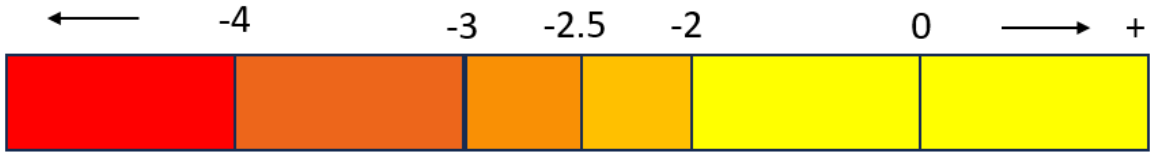
To ensure consistency in marking, candidates are expected where appropriate and instructed, to refer to the ARTP Statement on Pulmonary Function Testing 2020 Guidelines and NICE 2010 guidelines for COPD. For adults and paediatrics, ARTP 2020 guidelines refer to the lower limit of normal and z-score to define and quantify the severity of abnormalities. For adults only, candidates will also be required to grade the severity of diagnosed COPD in line with NICE 2010 guidelines.

- When asked to use Z-scores (or the lower limit of normal) candidates **must** use the **lower limit of normal** to define normal, obstructive, restrictive and mixed obstructive/restrictive spirometry results.
- When asked to use Z-scores to quantify the severity of airflow obstruction candidates should refer to the **FEV_1 Z-score** and ARTP 2020 guidance. For clarity, the table is outlined below:

Table 2: Severity grading based upon z-score thresholds (Adapted from ARTP (2020)



Threshold for z-score	Airflow obstruction severity grading
≥ -2.0	Mild
< -2.0	Moderate
< -2.5	Moderate severe
<-3.0	Severe
<-4.0	Very severe



For example: -1.82 is Mild

Furthermore, candidates will be expected to be able to apply a range of recognised guidelines, which includes, but is not limited to the ARTP 2020 guidance on pulmonary function testing, ATS/ERS 2005 and 2019 spirometry guidance, NICE 2017 asthma guidance and COPD 2010/2018 COPD guidance.