

(In accordance with ARTP Quality Assured Diagnostic Spirometry Guidance)

1. Purpose

To ensure spirometry testing is performed safely, accurately, and consistently in accordance with ARTP standards, producing reliable and reproducible lung function measurements for diagnosis and monitoring of respiratory disease.

2. Scope

This protocol applies to all healthcare professionals performing spirometry within the clinic, including:

- Respiratory physiologists
- Nurses
- Allied healthcare professionals
- Trained spirometry technicians

All operators must hold recognised spirometry competency aligned with ARTP certification standards.

3. Responsibilities

Clinical Lead

- Ensure governance and compliance with ARTP standards
- Approve training and competency
- Oversee quality assurance programme

Spirometry Operator

- Perform testing according to protocol
- Ensure patient safety
- Maintain equipment hygiene and calibration
- Recognise unacceptable manoeuvres

Administrator

- Confirm patient preparation instructions
- Manage appointment timing and documentation

4. Equipment Requirements

- ARTP-compliant spirometer meeting ISO standards
- Daily calibration syringe (3L)
- Disposable bacterial/viral filters
- Nose clips
- Single-use mouthpieces
- PPE according to infection control policy

Equipment must comply with manufacturer guidance and ARTP recommendations.

5. Infection Prevention & Control

Operators must:

- Perform hand hygiene before and after testing
 - Use single-use filters and mouthpieces
 - Clean spirometer surfaces between patients
 - Use PPE where respiratory infection risk exists
 - Postpone testing if patient has suspected acute respiratory infection unless clinically urgent
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6. Patient Preparation

Patients should be advised:

Requirement	Instruction
Smoking	Avoid ≥ 1 hour before test
Alcohol	Avoid ≥ 4 hours
Heavy meals	Avoid ≥ 2 hours
Vigorous exercise	Avoid ≥ 30 minutes
Tight clothing	Avoid
Bronchodilators	Withhold if clinically appropriate
Bronchodilator Withholding (unless contraindicated)	

Medication Type Withhold Time

SABA	4–6 hours
LABA	12–24 hours
LAMA	24–36 hours
Theophylline	As clinically advised

Document if medications were taken.

7. Contraindications

Absolute

- Recent pneumothorax
- Recent thoracic/abdominal surgery
- Active haemoptysis of unknown origin
- Recent myocardial infarction
- Unstable cardiovascular status

Relative

- Severe hypertension
- Pregnancy (risk assessment required)
- Recent eye surgery
- Acute respiratory infection

Clinical judgement must be applied.

8. Patient Identification & Consent

1. Confirm patient identity (name, DOB).
 2. Explain procedure and purpose.
 3. Obtain verbal consent.
 4. Assess contraindications.
 5. Record height (without shoes) and weight.
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9. Spirometry Procedure

Position

- Patient seated upright
 - Feet flat on floor
 - Nose clip applied
 - Dentures left in place if comfortable
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Demonstration

Operator demonstrates:

- Full inspiration
 - Tight seal around mouthpiece
 - Explosive start
 - Continue blowing until lungs empty
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Forced Vital Capacity Manoeuvre

Patient instructed to:

1. Inhale fully to total lung capacity.
 2. Seal lips tightly.
 3. Blast air out as hard and fast as possible.
 4. Continue exhaling ≥ 6 seconds (adults) or until plateau.
 5. Perform rapid full inspiration at end (if device requires).
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10. Acceptability Criteria (ARTP)

Each blow must demonstrate:

- Rapid start (minimal hesitation)
 - No coughing in first second
 - No early termination
 - No leak or obstruction
 - Smooth continuous exhalation
 - Adequate duration with volume plateau
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11. Repeatability Criteria

Minimum:

- ≥ 3 acceptable manoeuvres
- Best two FEV₁ values within 150 mL
- Best two FVC values within 150 mL

Maximum attempts: **8 manoeuvres**

Stop earlier if repeatability achieved.

12. Bronchodilator Reversibility Testing (If Indicated)

1. Record baseline spirometry.
2. Administer:
 - Salbutamol 400 mcg via spacer (unless alternative prescribed).
3. Wait 15 minutes.
4. Repeat spirometry.

Significant Reversibility

Increase in:

- FEV₁ $\geq 12\%$ AND ≥ 200 mL from baseline.
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13. Quality Grading

Grade test quality according to ARTP grading system (A–F):

- A–C = acceptable for interpretation
- D–F = limited clinical value

Grade must be recorded on report.

14. Documentation

Record:

- Patient demographics
- Height, weight, ethnicity
- Medication withholding status
- Contraindication screening
- Number of attempts
- Quality grade
- Operator name

- Calibration confirmation

15. Calibration & Quality Assurance

Daily

- 3L syringe calibration check

Weekly

- Biological control (if applicable)

Monthly

- Review quality grades
- Audit unacceptable tests

Annually

- Device servicing and validation

Maintain calibration logs.

16. Interpretation

Interpretation must be performed only by trained clinicians using:

- FEV₁/FVC ratio
- Severity grading where appropriate
- Diagnosis must be used in relation to the national guidelines, BTS/NICE/SIGN/GOLD

17. Incident Management

Stop testing immediately if patient develops:

- Chest pain
- Dizziness/syncope
- Severe breathlessness
- Cyanosis

Follow clinic emergency protocol and document incident.

18. Training & Competency

All operators must:

- Complete accredited spirometry training

- Maintain ARTP-recognised competency
 - Participate in ongoing CPD
 - Undertake annual performance review
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19. Audit & Review

Protocol reviewed:

- Annually
 - Following ARTP guideline updates
 - After clinical incidents or audit findings
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20. References

- Association for Respiratory Technology & Physiology (ARTP). *Quality Assured Diagnostic Spirometry Guidance*.
- NICE COPD and Asthma diagnostic guidance.
- https://goldcopd.org/wp-content/uploads/2025/11/GOLD-Pocket-Guide-2026-v1.0-11-Nov2025_DRAFT_WMV.pdf
- <https://www.nice.org.uk/guidance/ng245>

Policy Review

This policy is reviewed annually or following changes to legislation or guidance. Legislation and guidance links are checked and updated as part of the annual policy review.

Last review date: 04/02/26

Next review date: 03/02/27