SOP number	**17.009**	Version	**5.0**
Title	**Obtaining Spirometry Measurements**		

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SOP category	17 NHS GG&C Clinical Research Facility – Clinical				
Staff category	**Staff Category**	**R**	**A**	**C**	**I**
	Nursing	X			
	GCRF Manager		X		
	GCRF Associate Director				X
	Senior R&I Manager				X

1. Scope

This procedure applies to all staff working within Glasgow Clinical Research Facility (GCRF).

2. Purpose

To describe the procedure used when performing spirometry, pulmonary lung function measure, on research participants to ensure accuracy and consistency of measurements.

3. Procedures

Research staff should be trained in the measurement of spirometry using the study specific or GCRF equipment supplied. All equipment is maintained as per manufactures instructions and/or GG&C Bio-engineering Policy.

3.1. Preparation of subject

Assess the patient for contra-indications to spirometry which must not be carried out if the participant has a history of the following:

Absolute

- Active infection e.g. AFB positive TB until treated for 2 weeks
- Conditions that may be cause serious consequences if aggravated by forced expiration e.g. dissecting / unstable aortic aneurysm, current pneumothorax, recent surgery including ophthalmic, thoracic abdominal or neurosurgery

Relative

- Suspected respiratory infection in the last 4-6 weeks

- Undiagnosed chest symptoms e.g. haemoptysis
- Any condition which may be aggravated by forced expiration e.g. history of prior pneumothorax; unstable vascular status such as recent (within 1 month) myocardial infarction, uncontrolled hypertension or pulmonary embolism or history of haemorrhagic event (stroke);
- previous thoracic, abdominal or eye surgery
- If the patient is too unwell to perform forced expiration
- Communication difficulties which would prevent comprehension of instructions

Wait **one hour** if the participant has carried out any of the following within the last hour (may vary depending on protocol)

- Smoked a cigarette or cigar
- Consumed coffee, tea, or a caffeinated drink
- Used an inhaler

3.2. Method

Prior to starting the participant should be asked to sit comfortably and loosen any tight clothing.

- Calibrate and prepare equipment as per manufactures instructions using a new disposable mouthpiece
- Measure the patient's height and weight.
- If a nose piece is to be used, explain to patient.
- Explain how the blow should be performed, and that there can sometimes be different types of blows. FEV 1, FVC and FEF 25-75% are the usual measurements obtained whilst undertaking spirometry. Refer to manufacturers instructions on how to display these values.
- Hand the spirometer to the patient, ask them to take a deep breath and to blow as hard and as fast as they can into the machine, fully covering the end of the mouthpiece with their lips.
- A minimum of three acceptable should be obtained. An acceptable manoeuvre should have all measurements correctly performed.
- Encourage the patient to keep blowing into the spirometer for as long as they can – at least 6 seconds.
- The patient should be given at least 1 minute to recover between readings.
- If the patient is seen to be visibly struggling, or coughing during attempts, testing should be stopped.
- Repeat procedure as described in protocol if readings are unsatisfactory, a maximum of 8 attempts should be made.
- Spirometry measurements should be recorded in the study-specific Case Report Form and participant health records.
- If the participant was unable to carry out the procedure accurately then document this in the study-specific Case Report Form and participant health records.

4. Referenced documents

- NHS GG&C Bio-engineering Policy
- A Guide to Performing Quality Assured Diagnostic Spirometry PCC 2013

5. Related documents

Manufacturer's Instructions

6. Document history

Version	Date	Description
Draft	10/10/07	Creation of SOP
1.0	22/11/07	Release of Version 1
1.1	19/05/08	Released to staff
1.2	30/09/09	General update
2.0	25/11/13	New template, change of author and moderate update to provide clearer guidance on performing spirometry.
3.0	15/07/16	SOP restructure Updated to template version 1.4. Minor admin changes Change to approved and released by
4.0	30/09/19	Update to contraindications Change of Author
5.0	27/09/23	Update to SOP template v2.0 Addition of RACI matrix Minor admin changes to section 3.2