Standard Operating Procedure:	General Testing Considerations
Target Audience:	All registered and unregistered Respiratory Physiologists/Clinical Scientists working within a Respiratory/Sleep Laboratory
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IQIPS Domain(s):	**Patient/Client Experience domain (PE1, PE2, PE3 and PE4)** • Ensure that service delivery is patient-focused and provides privacy, respect, dignity, and compassion to each individual patient regardless of age, gender, religion, culture, language, disability, circumstances, or other factors. • Ensure consent is obtained. • Allow for streamlined scheduling of appointments where appropriate • Ensure that patient identity is confirmed throughout their contact with the service. • Ensure that the service gives an opportunity for feedback and manages any complaints and feedback received. • Development of patient information. • Access to chaperones and interpreters. **Facilities and Resource (FR1, FR5, FR6)** • There must be sufficient space to deliver all aspects of the service, ensuring privacy, dignity, and appropriate access for users and staff who use wheelchairs, have impaired vision or hearing, or have other needs. • Ensure that there is a regular performance review and competence assessment for all staff.

	• Ensure that equipment is calibrated and maintained and that measurement verification is undertaken at defined intervals as required. **Safety and Risk Management Domain (SR1)** • The service must identify and manage all service risks. **Leadership and Management Domain (LM4)** • The service must establish and maintain a Quality Management System **Clinical domain (CL2, CL4)** • Systems are in place to ensure clinically relevant information is received from referrers and patients. • There are systems in place to ensure the vetting, justification, and prioritisation of referrals. • The service must ensure the clinical and technical quality of interpretations and reports.

Contents

1. Introduction

Before, during, and after testing, the Respiratory or Sleep physiologist, Clinical Scientist, student/trainee, assistant Physiologist, or locum must consider all elements involved with the patient's test. Some of these elements may directly or indirectly impact the test accuracy[1] and patient experience. This protocol aims to standardise the components that need to be considered.

This document aims to provide broad overall guidance regarding general testing considerations. It has been developed to highlight areas for consideration when developing a Standard Operating Procedure (SOP).

It is important to note that each NHS trust will already have a trust policy or guidance document relating to consent, data protection and data sharing, infection prevention, making a referral, patient leaflets and how to develop one, use of chaperones and interpreters, test reporting, and audit. **It is imperative that these are referred to locally when developing or using this SOP.**

2. Scope and aims

This Standard Operating Procedure (SOP) details what to consider before, during and after testing to minimise sources of bias and ensure risk management strategies are in place. The document can be used in conjunction with local induction processes for new staff, locums and students or trainees. Please note that contraindications and indications for the diagnostic test can be found in their specific Standard Operating Protocols (SOP).

3. Plan and prepare

All clinical staff working in the Respiratory Physiology laboratory environment, including Physiologists, Clinical Scientists, Assistant Physiologists, Trainees, Locums, Students, Healthcare Assistants and Clinical Support Workers, have a responsibility to follow the standards set out below. This will ensure a good patient experience, minimise risk to the patient and elimination of any potential sources of bias.

3.1. Referral information

When making a referral, the referrer should aim to give sufficient clinical information and allow the physiology team to answer the clinical question. The patient should be discussed with the physiologists to ascertain the tests that are the most appropriate to help you answer the clinical question.

Firstly, the referrer should consider the clinical question.

These might include the following:

- What is the cause of the patient's dyspnoea?
- Does the patient have COPD or Asthma?
- What is the surgical risk? Pre-op assessment/fitness for surgery?
- What is the treatment risk, i.e., Bleomycin?
- How impaired is the patient's lung function?

- Is the current medication/treatment affecting lung function?
- Is there a gas exchange problem?
- Cough?
- Does obesity affect lung function or cause dyspnoea?
- Excessive daytime tiredness, OSA?

Who is the patient? Birth gender, age (is it an adult or child?), ethnic origin, BMI. What additional information can be provided? i.e., resting SpO_2? BMI? What is the patient's haemoglobin (H_b) level?

Depending upon how much space the referral form allows will, of course, determine the amount of information that can be provided. The ideal referral would include a detailed history, as this also greatly improves the reporting of the result. In some Lung Function departments, the Physiologist may take a brief history as part of the testing process (see appendix 6.1 for an example of a history-taking sheet). Either way, it is important to ascertain the following information to assist with the reporting process.

- What are the presenting symptoms? SOB, wheezing, chest tightness, cough, etc.
- Are these symptoms worse when exercising or at different times of the day?
- What is the patient's perceived level of breathlessness? Is there a Medical Research Council (MRC) breathlessness score?
- Are the symptoms chronic, acute, or intermittent? Over what duration have they developed?
- If a cough is present, is it productive or dry? If productive, what colour, consistency, and volume of sputum is produced?
- Smoker? Pack year history? When was the last time the patient smoked?
- Previous medical history? Including recent surgery or trauma, cardiac history, recurrent chest infection, and allergies?
- Family history?
- What is the patient's occupation? Miner, Farmer, Baker, foundry worker, chemical plant operative, etc.?
- Any significant environmental or occupational exposures? i.e. coal dust, asbestos, pollen, spray paints, keeps birds etc.?
- Current medication: Is any inhaled medication currently prescribed? Are any medications with respiratory side effects?
- Any systemic symptoms? Fever, night sweats, weight loss?

The completed referral form may also alert services to possible test contraindications[1,2] (see appendix 6.2); ensure the clinical information provided by the referrer is reviewed thoroughly.

An incomplete test referral is a source of bias. Ultimately, it will result in the test operator not being able to address the clinical question posed by the referrer correctly. The referral information should be reviewed on a patient-by-patient basis to avoid inappropriate bookings. Questions such as: is the

referral appropriate? Is there sufficient clinical information? Is further discussion required with the referring clinician? This should be part of the vetting of the referral information. If you are unable to answer these questions, the Physiologist should take the initiative to either attempt to find out the required information via other sources (direct from the patient, previous clinic letters, previous test results, and the patient case notes) or return the referral form to the referrer as inappropriate or requiring further information *(See IQIPS standards, clinical domain CL2 Requests are vetted in advance of the appointment).*

A cleverly designed, simple-to-follow referral form can help referrers to provide sufficient information and avoid further time-consuming "detective" work from the physiology and administration staff. An electronic (e-referral) system is the ideal solution as this enables the form to be designed so that sending the form is only possible if specific fields are completed. Referrals can be received "instantly" for processing but also rejected and redirected back to the referrer. The e-referral form should also be linked to the hospital patient management IT system so that when an NHS number is entered, the patient details section can be automatically populated *(see IQIPS standards, Clinical domain CL2: C3 Request forms seek appropriate information)*.

3.2. Patient considerations and confidentiality

Patients may have very specific needs that should be accommodated by the attending staff member (where possible). This may be due to previous experiences, ethnicity, religion, gender, disability, learning difficulties, or cultural backgrounds. Interpreters should be organised prior to the appointment date. If the patient appears anxious or uncomfortable, anticipate their needs, be cordial, and communicate clearly. Interpreters, chaperones, friends, or relatives should accompany the patient to the testing room (space permitting). Ensure correct pronunciation of the patient's name, use correct titles (Mr/Mrs/Miss/Mx/Dr), and avoid addressing the patient by their first name (unless requested by the patient or after obtaining the patient's consent to do so).

Be respectful of the patient gender; this may differ from sex at birth. The gender of the subject is how the patient portrays themselves. For lung function testing birth sex and not gender is required to undertake the physiological measurement. Failure to address this may mean a transgender patient being incorrectly assessed or diagnosed. Address your patient using the correct identified gender rather than sex.

Test results and other sensitive clinical information should not be discussed with anyone other than the patient and other relevant healthcare professionals. The Data Protection Act (1998) should be adhered to at all times. Patients should also have access to leaflets or posters displayed in the department regarding data sharing and information governance. This is sometimes termed a privacy notice. An example of a privacy notice can be found in Appendix 6.3.

3.3. Staffing and time arrangements

All members of staff working in the laboratory environment must have an excellent theoretical and practical understanding of the physiological and technical principles related to the different types of clinical measurement. The laboratory manager is responsible for the patient's safety and the quality of the tests and should provide continuous training and supervision to all members of staff. Staff should, in return, undertake regular continual professional development (CPD) as well as an Individual Performance Review (IPR) or an Annual Staff Appraisal and have documented evidence of this. This

includes medical devices competency training (this may be trust-specific or locally mandated) and trusts mandatory training. Regular feedback on an individual's performance in all aspects of service delivery is essential. It should not be presumed that experienced individuals who qualified some time ago continue to be competent without ongoing assessment and peer review. Over time it has been shown that practitioners' performance can decline. Competency can be maintained by:

- Routine quality checks of all results/reports/interpretation.
- Peer review of staff and results.
- Interdepartmental comparison of results.

Time requirements vary considerably, depending on specific patient needs and the nature of the investigation being performed. A systematic approach to check referrals and the appropriateness of time allocated should be in place and performed on a regular basis. For more information regarding testing times- please refer to the ARTP Standards Committee testing times paper (www.artp.org.uk/reports).

3.4. Day of test

At the beginning of every testing session, all equipment should be subject to calibration/verification[1] and spot checks (connections, tubes, wiring, any leaks, gas cylinder levels, gas regulators, consumables, etc.) to avoid unnecessary delays during clinics. Good quality assurance systems will ensure a robust system of checks, leading to good repeatability of measurements and reproducibility between visits. Quality assurance systems ensure results are reliable as well as accurate and precise as possible. Equipment that repeatedly fails any quality assurance checks should be taken out of clinical service until repaired. All staff should be aware of the uncertainty of measurement (UOM) for each of the clinical tests that they perform, i.e.' factors that may affect the test result, and aim to minimise these at all times.

All patients should be greeted and ideally seen within 15 minutes of their appointment time. It is important to manage the patient's expectations if the clinic is delayed. Ensure the patient is kept informed and apologise for any delays when calling the patient through. The staff member should introduce themselves and name the test the patient is undertaking. The purpose of the test should also be explained. Any concerns or questions can be answered at this stage. Before any patient contact, please ensure effective infection prevention procedures are followed – i.e., hand hygiene, PPE, and bare below the elbows at all times. Adhere to your organisation's infection prevention policies.

All non-essential personnel present during testing must be formally introduced to the patient. Before allowing any medical students or trainees to observe the test verbal consent should be obtained from the patient. If a trainee is conducting the test, he or she must introduce themselves as a trainee. Please also advise the patient if a supervisor is assessing, as an assessment may take slightly longer to complete.

Before the start of the test, a three-way ID check should be performed, including name, date of birth, and address. As soon as this is confirmed, the patient's birth sex, ethnicity, height, and weight must also be recorded to determine and calculate all normal reference values. Patients should be asked to take off heavy outdoor clothing such as coats, as well as cardigans or jumpers that might add excess weight and restrict full chest and abdominal expansion. At this stage, the patient should also be asked to loosen any shirt collar buttons and loosen or remove ties[1]. Height and weight should be measured

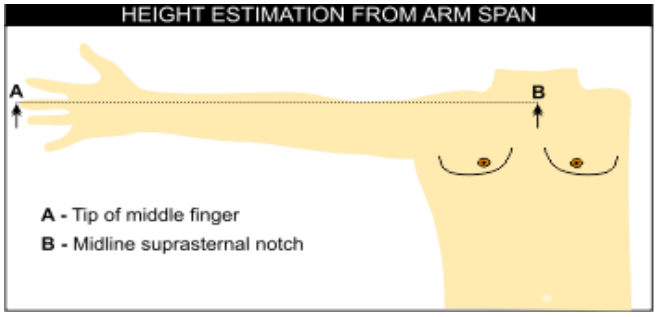
for each patient at the time of the test. Physiologists should not rely on the stated height and weight of the patient. Height increases with age during childhood and decreases as we get older; it is, therefore, imperative that height is measured on every attendance for lung function testing. Well-fitting dentures should be left in place.

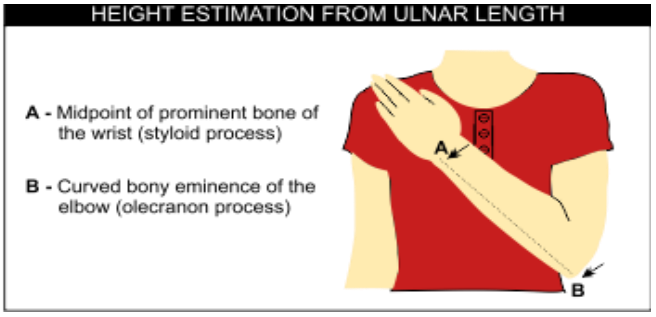
Height and weight should be recorded using an adequately calibrated weighing scale/stadiometer. Height should be recorded to the nearest 0.5 centimeter (cm), whilst weight should be noted to the nearest 0.5 kg[1]. A stepwise approach is described below:

Shoes are to be removed, feet together, heels and buttocks, and scapulae against the wall or stadiometer. Services may consider the use of a piece of paper towel for the patient to stand on (particularly if in bare feet), which is to be disposed of after use. However, this may also be deemed a slip hazard. Therefore, general health and safety should be considered, and a risk assessment should be completed. Clean the part of the stadiometer that rests on top of the patient's head using a suitable cleaning wipe.

Standing as tall as possible, head up, eyes looking straight ahead (Frankfurt plane) with chin perpendicular to the chest.

Care should be taken in patients with thoracic skeletal deformities and the elderly. Their standing height may be lower than expected, which may result in an overestimation of their pulmonary function status. Arm span, ulnar length, or knee height are alternative methods for estimating height.





When standing height cannot be measured (patient is immobile, unsteady on their feet, or has a history of falls), options such as arm span or ulnar length (if the patient is unable to extend their arms) should be used to estimate height[1].

If measuring arm span[1], for example, in patients with a deformity of the thoracic cage (kyphoscoliosis), explain the measurement to the patient. Using a flexible cloth tape measure- measure from the tip of the middle finger of the right hand to the tip of the middle finger of the left hand with arms held out horizontally, standing against a wall. Depending upon the patient size, consider measuring from fingertip middle finger to the centre of the sternum and multiply by 2 (as shown above). Apply a correction factor to arm span (Males/1.03, Females/1.01). It has recently been observed that there are differences in standing height and arm span related to ethnicity, sex, and age. There are programs available that estimate standing height from arm span, age, and ethnicity, see link below:

https://spirxpert.ers-education.org/en/download/armspan-to-height-software/

If measuring Ulnar length[1] (length of the forearm), explain the measurement to the patient. Using a flexible cloth tape measure, measure between the point of the elbow (olecranon process) and the midpoint of the prominent wrist bone (styloid process). Use the conversion chart below[3]. The report should clearly document which method was used to estimate height measurement if standing height was not used.

Height (m)	men (<65 years)	1.94	1.93	1.91	1.89	1.87	1.85	1.84	1.82	1.80	1.78	1.76	1.75	1.73	1.71
	men (≥65 years)	1.87	1.86	1.84	1.82	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.67
	Ulna length (cm)	32.0	31.5	31.0	30.5	30.0	29.5	29.0	28.5	28.0	27.5	27.0	26.5	26.0	25.5
Height (m)	Women (<65 years)	1.84	1.83	1.81	1.80	1.79	1.77	1.76	1.75	1.73	1.72	1.70	1.69	1.68	1.66
	Women (≥65 years)	1.84	1.83	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.66	1.65	1.63
Height (m)	men (<65 years)	1.69	1.67	1.66	1.64	1.62	1.60	1.58	1.57	1.55	1.53	1.51	1.49	1.48	1.46
	men (≥65 years)	1.65	1.63	1.62	1.60	1.59	1.57	1.56	1.54	1.52	1.51	1.49	1.48	1.46	1.45
	Ulna length (cm)	25.0	24.5	24.0	23.5	23.0	22.5	22.0	21.5	21.0	20.5	20.0	19.5	19.0	18.5
Height (m)	Women (<65 years)	1.65	1.63	1.62	1.61	1.59	1.58	1.56	1.55	1.54	1.52	1.51	1.50	1.48	1.47
	Women (≥65 years)	1.61	1.60	1.58	1.56	1.55	1.53	1.52	1.50	1.48	1.47	1.45	1.44	1.42	1.40

Knee height[1,4] is the distance between the lower edge of the heel and the upper part of the knee (just above the kneecap). It is measured with the subject seated, legs hanging over the chair bent at 90 degrees. The tape measure should be placed along the outside edge of the leg. Measure in centimeters (cm) the knee height of both legs and use the mean value.

Mean knee height (KH) is then used in the following Chumlea equation:

Stature (men) = (2.02 x KH cm) – (0.04 –age) + 64.19

Stature (women) = (1.83 x KH cm) – (0.24 – age) + 84.88

4. General Testing Considerations: Before the patient attends, during attendance, and on completion of the test

Service Managers may locally adopt specific elements of this protocol or add to its content. A summary of the different areas to be considered is discussed below:

4.1. Before the patient attends

The test referral is often the first and only piece of information that details relevant clinical information, infection/immunological status, and the investigations to be performed. It is good clinical practice to review all patient referrals, inpatient and outpatient-based, to ensure not only that there is a clinical need for the test, but also that the patient in question is able to perform the test (mobility issues, unwell, hypoxic on-air, etc.). If the referral is inappropriate, the referrer should be contacted to further discuss the referral and the reasons why it may be advisable not to perform the test or use an alternative method of investigation.

All patients attending for a planned investigation ideally should receive a patient information leaflet describing the test, how long it takes, what it involves, any associated risks, how the information will be used, what to avoid prior to the investigation[2] (see appendix 6.4), and how the patient will be informed about the test results. It should also include a map and laboratory contact details. All leaflets should abide by trust protocol, adhere to clinical governance policies, and be reviewed on a regular basis.

All administration and clinical staff involved in the booking of appointments should be familiar with all the investigations provided by the service. To avoid disclosing incomplete, incorrect, or misleading information, it is advisable to have a booking details document available for the portfolio of tests provided. This can act as a reference guide for non-clinical staff if a clinical staff member is unavailable to provide specific test advice or guidance. This enables non-clinical staff to understand the test and answer any simple questions they may receive from the patient regarding the test and any pre-test considerations. Any special needs should also be assessed at the booking stage; this can include chaperoning, interpreters, and any other specific patient requests (within reason). *The decision to allow non-clinical staff to answer any patient questions should be the responsibility/decision of the service lead. Formal training and competency evaluation should be adopted.*

In addition to the points above, further pre-test arrangements should also be considered. It should be clear whether the investigation is being performed to aid the diagnosis or monitor disease progression (follow-up). In ideal conditions, this information may imply the testing equipment being used, the time of day at which the test is performed, and if medication needs to be stopped prior to attendance[1] (see appendix 6.5). In terms of risk management, patients who are high-risk and clinically unwell should be booked at times when medical supervision or senior cover is available. All immunocompromised patients should be tested at the start of testing sessions or clinics, whilst patients with a positive infection status should be tested at the end of clinics. Please consult your local departmental policies for infection prevention and patient safety.

4.2. During the attendance

At the beginning of each testing session, all equipment should be subject to calibration and inspection to ensure optimal working conditions. Barometric pressure and temperature should be recorded. Stock control of priority consumables and expiry dates of medical gases/inhalers should also take place on a day-to-day basis. In view of the wide range of equipment available in Respiratory Laboratories, please refer to the respective apparatus clinical/technical manual.

Standard Operating Protocols (SOP) and procedural guides should detail the purpose, indications, and contraindications, as well as step-by-step instructions for the available portfolio of tests. If required, the latest versions should be available for reference (please refer to the department's standard operating protocols).

The Respiratory Physiology laboratory requires an enthusiastic, competent, and professional workforce that is well-trained in clinical measurement and skilled in communicating with patients[3]. Only qualified, trained staff members should be allowed to conduct the tests without supervision. (See IQIPs standard Facilities and Resource, FR6.7 The service must ensure regular review of performance and assessment of competence)

At the time of the appointment, the test operator should consider the following aspects, ensuring a standard approach where possible:

- **Explain and discuss details specific to the investigation being performed**
  - Relative risks and benefits
  - What will the test involve?
  - How and why the results will be useful
  - Approximately, how long the test will take
  - Answer any patient questions or concerns

- **Consent (refer to trust policy)**
  - Consent is only valid if it is both voluntary (i.e., made by the patient themselves and not influenced by clinical staff, friends, or family) and informed (the patient must be given all the information regarding benefits and also the risks and the potential outcomes if the test or treatment does not go ahead)
  - The patient must be capable of giving consent (capacity), meaning they understand the information provided to them to make an informed decision.
  - Patients over the age of 16 can give consent; this may be overruled in exceptional circumstances. Children under the age of 16 can also give consent if it is believed they have sufficient intelligence and understanding. If not, parental responsibility to consent is required.
  - If an adult patient can make an informed and voluntary decision to either consent to or refuse the test/treatment, then their decision must be respected.
  - Consent should be given directly to the healthcare professional undertaking the patient's test or treatment. The patient has the right to change their mind before or during the test/treatment, at which point the test should be stopped.
  - Please refer to the trust policy on consent for further detailed information.

- **Chaperones (refer to trust policy)**
  - Chaperones should generally be members of the clinical team who are familiar with the procedure being undertaken. This will enable the chaperone to reliably judge whether the Physiologist's actions are professionally appropriate and justifiable.
  - No family member or friend must be expected to undertake any formal chaperoning responsibility.
  - Availability and need for a chaperone (please remember to keep a record of when chaperones are offered and used, and when declined, record the name and designation of the chaperone)
  - Need and consideration for the test operator to be given the option of a chaperone to oversee their professional integrity and personal safety.
  - A chaperone must be provided in situations where the family and/or the child or young person have made prior allegations.
  - Please refer to the trust's chaperoning policy for further details.

- **Infection Risk and Prevention (refer to trust policy)**
  - Local policies, which include cleaning protocols and schedules, should be in place. These should have been reviewed and approved by the hospital infection prevention team.
  - Ensure correct hand washing is carried out in full view of the patient
  - Bare below the elbows; refer to your trust infection prevention and hand hygiene policy
  - Ensure a clean mouthpiece with a bacterial/viral filter is attached in full view of the patient
  - Be sure of infection risk and use correct Personal Protective Equipment (PPE) as necessary (in line with the trust health and safety policy)
  - Identify factors that may increase the susceptibility or infection risk of patients. In Cystic Fibrosis, it is essential to follow international or national guidance. In infectious or immunocompromised patients' additional precautions should be used, for example, barrier filters or testing them at the end of or the start of a measurement session, respectively.

- **Sources of Bias**
  - A list of contraindications (refer to test-specific SOP) and pre-test considerations (correlating to the patient information leaflet) that the test operator must thoroughly check prior to the start of measurements/treatment should be included.
  - Determine if the patient has been using inhalers, the drug, the dosage, the method of administration, and when they were last taken; record this on the report.
  - Document any other medicines prescribed to the patient and be aware of the possible impact on the test results (see test-specific SOP for more detail)
  - Obtain sufficient information to calculate pack year history (current smoking status; how long they smoked for; how many a day; when they quit). Document this in the report.
  - If applicable, document any smoking on the day of the test. Time last smoked prior to the test.
  - "Make Every Contact Count (MECC)": Discuss stopping smoking (if the patient would like any support, propose a referral to the smoking cessation service if available)

- **Conducting the Test**
  - The Physiologist, clinical scientist, or healthcare professional should manage the interaction between the patient and any accompanying carer, adult, and children to enable the procedure to be carried out to a competent standard.
  - Minimise interruptions as much as possible (only key personnel for the performance of the test should be in the testing room)
  - Communicate effectively, sensitively, and politely using non-technical language. Use correct professional and clinical terminology.
  - Be mindful of patients' privacy and dignity. Maintain confidentiality when other healthcare or nonhealthcare personnel are nearby.

4.3. On completion of the test

After the test is completed, aim to answer any patient questions or concerns. Also, advise on how the patient will be informed about the test results. Only discuss or disclose the test results or findings with the patient and/or carer if you are deemed competent to do so or if this is also a part of your role.

The test results should be presented in a report format with all the relevant clinical indices (please consult the SOP for each investigation for further information). Technical comments should be written in a standardised manner, focusing on patient cooperation, acceptability and repeatability criteria, and other relevant clinical information that may impair the accuracy of test results. Please follow site-specific record-keeping procedures.

Results should be checked and reported in line with local policy. Reports are to be sent or uploaded within the locally agreed reporting times (services should have agreed on locally agreed turnaround times for reporting). This agreed turnaround time for reports should also be audited to ensure standards are being met. The service should also have a protocol in place to alert referrers of any results that require urgent attention.

Using the correct PPE, dispose of any consumables, such as mouthpieces, bacterial/viral filters, nose clips, etc., in accordance with the trust's waste policy.

Remember to dispose of any confidential or patient-identifiable information in the appropriate manner. Do not leave medical notes or open computer screens with patient data/results in full view of patients or non-clinical personnel. If physical/paper medical notes are requested for the test, ensure they are returned or stored securely. Likewise, lock away any medications used or prescription pads. The trust may have particular protocols regarding prescription pads, so it is imperative that these are referred to.

Ensure all equipment (including height measure and weighing scales) is cleaned in accordance with local policy and return any equipment to its appropriate storage location. Please note that the equipment should be cleaned before another patient is tested, at the minimum, using the appropriate cleaning wipes found within the department. Please consult your local policies for equipment cleaning, infection prevention, and patient safety. A good practice point is to have 'equipment cleans' labels to identify them as ready for use.

4.4. Quality Management System and Service Audit

The service should develop and maintain a Quality Management System (QMS) to allow them to monitor their effectiveness and ensure continuous improvement of their service (See IQIPs standard LM4). There should be regular management reviews of the service, and the service must actively identify, manage, and eliminate non-conformities using preventative and corrective actions. The service must undertake regular audits that include an evaluation of the effectiveness of its Quality Management System and clinical activities. This should consist of an audit of referral practice (looking at referral source, appropriateness, referral numbers, how many were rejected, etc.), undertaking a patient satisfaction survey or commenting/collecting data on individual reporting times, and auditing test and report quality. This will enable services to identify what their current practices are and how improvements can be made. All of this will help develop a quality improvement program and a regular review and development of the service.

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6. Appendices

6.1. Example of a history taking form

Respiratory History

Hospital Number_____ Surname _____

Test Date _____ Referrer _____

Clinical details (from referral form)

_____

_____

_____

Hb _____ g/L BMI _____ Resting SpO2 _____ %

Smoking Status: Current / Never smoked / Ex smoker / Social smoker

Time of last cigarette prior to test_____ hrs/mins

Years smoked _____ yrs Number smoked per day_____

Quit smoking(date) _____ Pack years _____ yrs

1 pipe = 2.5 cigarettes, 2 pipes per day = 5 cigarettes per day

cigars 1 café crème = 1.5 cigarettes, 1 hamlet = 2.5 cigarettes per day, 1 havana = 4 cigarettes per day.

Roll up tobacco 25grams or 1 ounce = 50 cigarettes e.g. 1 ounce of tobacco per week = 50 cigarettes / 7 days = 7 per day.

Shortness of breath: Sudden onset <4 weeks Chronic >4 weeks

Ask: How far can you walk? Can you complete a flight of stairs? Does breathlessness vary from day to day? What makes it worse or better?

_____

_____

Symptoms: Cough/nocturnal cough/ cough after eating/ wheeze/ sputum (consistency, colour and amount)/ recent chest infection/ chest pain/ oedema/ finger clubbing

_____

_____

Medications (inhalers? – last used? Beta blockers, steroids, methotrexate, blood pressure meds)

_____

_____

Occupational exposures (main occupation – if now retired, ask about asbestos or volatile chemical exposure, mining?)

_____

Pets or organic dusts (birds? Farmer?)

_____

Past Medical History: recent trauma, surgery, MI, diabetes, hypertension, cardiovascular risk, stroke, rheumatoid arthritis etc.

_____

_____

6.2. Relative contraindications

Performing forced effort expiratory and inspiratory manoeuvres can be physically demanding, increasing intra-thoracic, intra-abdominal and intra-cranial pressures.

Potential risks are primarily related to maximal pressures generated in the thorax and their impact on abdominal and thoracic organs, venous return, systemic blood pressure and expansion of the chest wall and lung. Such risks are likely minimal[6] but they should be weighed up against the clinical benefit of performing the test.

Syncope is the most common cardiopulmonary incident. No adverse effects were reported in lung function tests in patients with abdominal aortic aneurysm (AAA)[7,8] from 5-13cm and in thoracic aneurysms[9] from 5-8cm in size.

Other potential contraindications:

- Haemoptysis of unknown origin.
- Pneumothorax.
- Unstable cardiovascular status – may worsen angina or cause changes in blood pressure or recent myocardial infarction or pulmonary embolus.
- Thoracic, abdominal or cerebral aneurysms.
- Recent eye surgery.
- Presence of an acute illness or symptom that might interfere with test performance (e.g. nausea and vomiting).
- Recent thoracic or abdominal surgery

6.3. Example of a Privacy notice

NHS
The Royal Wolverhampton
NHS Trust

Respiratory Privacy Notice

The Respiratory centre was opened in 2009 to provide Respiratory outpatient clinics as well as lung function diagnostics supported by respiratory physiology and specialist respiratory nursing teams. It is also home for the Wolverhampton Cystic Fibrosis, sleep and ventilation clinics and the Home Oxygen review and Assessment service (HOS-AR).

Consultant and Nurse led specialist respiratory clinics are ran and supported daily.

The centre is home for the respiratory nurse specialists, Lung cancer specialist nurses and the respiratory physiologists.

What information do we collect about you?

We use a number of locally built and 3rd party equipment/treatment specific patient databases to collect patient demographics and measurements recorded during lung function diagnostics, sleep and ventilation clinics, home oxygen assessments and for the review of treatment and compliance with sleep therapy. Namely Continuous Positive Airway Pressure devices or CPAP and Non-Invasive Ventilators (NIV).

Depending upon which clinic or diagnostic test you are attending will determine the data we may collect from you.

We will collect data such as your name, height and weight, date of birth, address, telephone numbers, GP details, next of kin, medical history, your current medication, smoking history, occupational history, alcohol intake, your collar size, driving status, family medical history. We may also ask you about your social circumstances and record this in your patient record.

We may also ask you to complete questionnaires as part of your clinic visit, the results of which will be recorded within our patient databases or in your patient record. For example we may ask you to complete an Epworth sleepiness questionnaire which gives us an idea of how sleepy you feel during the day. The results of which will be kept on your patient file within our databases.

We may also ask you about your current medication such as inhalers and other medications such as sleeping tablets, antidepressants, painkillers, steroids and other drugs known to have an impact on either respiratory function or your sleep.

Patient data is also collected for research purposes and audit but is anonymised. You will be asked to consent to your participation in any research and audit.

How do we use this and what is the legal basis

Type of processing

Direct Care and Administrative Purposes

The legal basis which allows us to process the personal data listed above for the purpose of providing you with care is covered under GDPR **Artide 6(1)(e) '...for the performance of a task carried out in the public interest or in the exercise of official authority...' and Article 9 9(2)(h) '...medical diagnosis, the provision of health or social care or treatment or the management of health or social care systems...'** for your special category personal data.

Research Purposes

The department may also conduct research which could involve your personal data. Should this be the case, we will rely upon **GDPR Artide 6(1)(f)'...legitimate interests...except where such interests are overridden by the interests or fundamental rights and freedoms of the data subject...'.**

Who do we share your information with?

- Data collected from patients undergoing an oxygen therapy assessment who are to be prescribed home oxygen therapy will have some of their data shared with the regional home oxygen provider. This includes the sharing of an oxygen prescription or home oxygen order form (HOOF).
- This is a company called Baywater Healthcare. Data is shared using a secure application called Oxyshop.
- We will ask patients to complete and sign a consent form allowing the sharing of this data with the oxygen provider.
- During oxygen assessments we may also request a home safety visit by the West Midlands fire service again we will ask for your consent to organise this for you. Your details will be forwarded onto the fire service so that they can arrange a home visit.
- The lung cancer nurse specialist team will share your information (patient demographics, medical problems and history as well as your current medication with social services, district nursing teams and palliative care providers.
- Information is also shared with West Midlands Asbestos Support if you are diagnosed with a condition called Mesothelioma. We will obtain written consent from you to do this. We will also complete medical forms on your behalf such as DS1500.

Who and where do we obtain your information from?

- Verbally from direct questioning/clinical history taking as well as from measurements recorded such as height and weight.
- Completion of questionnaires during clinic visits for example an Epworth sleepiness score
- Data is also collected from patient devices such as CPAP but this does not include patient identifiable information, the treatment data is linked to the patient within our secure database. The treatment data is obtained via an SD data card download from the medical device (i.e. CPAP, NIV).
- Referral letters are received from your GP and other healthcare professionals. This will include your information as well as your medical history and the reason for the referral.
- Referrals are received via email using NHS.net, this is a secure encrypted email system.
- Referrals into this service are also obtained from internal sources within the hospital from doctors, consultants and other healthcare professionals. This referral is sent to us electronically using a system called clinical web portal and the lung function referral administration system.
- From research and development if you are to be entered onto a research trial;
- Verbally over the telephone from doctors and other healthcare professionals;
- Via faxed referrals typically from your GP or community matrons, GP practice nurses.

information governance
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NHS
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NHS Trust

Respiratory Privacy Notice

What rights do I have in relation to my information?

Below is a list of the rights you have in relation to your data and when they apply. To make an application for any of the below rights please contact the Data Protection team rwh-tr.dataprotectionteam@nhs.net in the first instance. All rights should be considered within 30 calendar days from date of receipt, but may be extended if complex. What rights do I have in relation to my information?

The Right to Erasure

The right to erasure is also known as the 'right to be forgotten' introduces a right for you to have personal data erased. Generally this right is not available with health care data. Where this right is available for specific processing you will be notified.

The Right to Restrict Processing

The right to restriction allows you to request the restriction or suppression your personal data. This right is closely linked with the right to rectify and the right to object and will only apply if:

- you contest the accuracy of your personal data and the accuracy is being verified by the trust;
- the data has been unlawfully processed (i.e. in breach of the lawfulness requirement of the first principle of the GDPR) and you oppose erasure and requests restriction instead;
- the personal data is no longer needed but we need to keep it in order to establish, exercise or defend a legal claim.

The Right to Object

The right to object to processing means that data should cease to be processed. This right applies only where data is obtained with your consent. In most cases we rely on our legal basis to process your data and not consent and therefore for care purposes this right may not apply. If your data is used for any other reason this right may apply, but would have to be assessed on an individual basis.

If you believe your information may be inaccurate or incomplete you can make a request to have your information reviewed.

The Right of Access

You have the right to request a copy of any information held by the Trust as well as any supplementary information. See How do I request my information? for details on how to request your information.

How do I request my information?

You have a right to see or have copies of any information held by the Trust that relates to you free of charge. We have the right to charge an administration fee in situations where repeated requests are received for the same information or the request is excessive. You will be required to prove your identity when making requests.

Subject Access Requests under GDPR rules (post 25th May 2018) will be processed within 30 days. However, once our teams have established the volume of records requested there may be a requirement to extend this up to a further 2 months. We will contact you within 30 days should this be the case.

To request access to health records please complete a Subject Access Request form, link provided below and forward on to:

Data Protection Team
Health Records Library
Location B19
New Cross Hospital
Wednesfield Road
Wolverhampton
WV10 0QP

Email: rwh-tr.dataprotectionteam@nhs.net
Telephone: 01902 307999 Extension 5544

How long is my information kept for?

All our records are destroyed in accordance with the NHS Retention Schedule, which sets out the appropriate length of time each type of NHS records is retained. We do not keep your records for longer than necessary.

All records are destroyed confidentially once their retention period has been met, and the Trust has made the decision that the records are no longer required. For more information please see the **Record Management Code for Practice for Health and Social Care 2016, retention schedules.**

How long is my information kept for?
1. Adult health records standard retention period: 8 years
2. Clinical trial and research data retention period: up to 30 years

How to make a complaint

If you have any questions about your care or a complaint, please speak to the health professional with your care in the first instance. If this is not resolved to your satisfaction you can contact the Patient Advice and Liaison Service (PALS). If you have any concerns about how your information is being processed or any of the rights as detailed above, please contact the Trust in the first instance through:

Data Protection Team
Health Records Library
Location B19
New Cross Hospital
Wednesfield Road
Wolverhampton
WV10 0QP

Email: rwh-tr.dataprotectionteam@nhs.net
Telephone: 01902 307999 Extension 5544

You also have a right to complain directly to the Information Commissioner's Office if you feel the Trust has not responded effectively to any of the above.

Information Commissioners Office
Wycliffe House
Water Lane
Wilmslow
SK9 5AF

Telephone: 0303 123 1113

information governance
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6.4. Activities That Should Be Avoided before Lung Function Testing

- Smoking and/or vaping and/or water pipe use on day of testing. To avoid acute bronchoconstriction due to smoke inhalation refrain from smoking within 1 hr of testing.
- Consuming intoxicants within 4 h before testing (to avoid problems in coordination, comprehension, and physical ability).
- Performing vigorous exercise within 30mins before testing (to avoid potential exercise-induced bronchoconstriction).
- Wearing clothing that substantially restricts full chest and abdominal expansion (to avoid external restrictions on lung function).
- Refrain from eating a substantial meal for at least 2 hrs prior to testing.

6.5. Withholding bronchodilators

Currently the general accepted withhold times are those recommended in the ATS/ERS 2005 guidelines of:

- 4 hours for short acting beta-agonists
- 12 hours for long-acting beta-agonists

However, many new compounds have been introduced recently. The decision to withhold long- and short-acting bronchodilators before testing is a clinical one determined by the referring healthcare professional. If the study is performed to diagnose an underlying lung condition, then withholding bronchodilators before testing is useful. To determine a response to an existing therapeutic regimen, bronchodilator medications are generally not withheld.

There will be instances where withholding inhalers is clinically inappropriate or unsafe; this will need to be approved by the referring clinician. Local protocols should address this.

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Contributing Committees	ARTP Standards Committee
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