



## Purpose of this guide

This guide collates key findings and recommendations from the GIRFT programme which address priorities for diagnostics and elective recovery in the NHS.

The areas of focus for this guide are aligned with the priorities set out by the Elective Recovery Diagnostics team and in '[Diagnostics: Recovery and Renewal](#)', the report of the Independent Review of Diagnostic Services for NHS England led by Professor Sir Mike Richards and published in October 2020.

This document is a practical guide, providing actions for diagnostic services directly, as well as ways for primary care and acute services to help free up diagnostic capacity by reducing unnecessary diagnostic referrals.

The findings and recommendations collated in this guide have been identified from GIRFT documents and resources including: national reports, delivery guides and pathways. Where possible, this guide expands on those sources with updates on additional material or guidance, and comments on ongoing work on delivery and implementation both by the GIRFT programme and other teams in the NHS and the health sector.

The [GIRFT Pathology national specialty report](#) was published recently, with almost all its content relating directly to the priorities set out by the Elective Recovery Diagnostics team. For these reasons, excerpts from the pathology report have not been included in this guide and this report should instead be read in its entirety.

The GIRFT and Elective Recovery programme's work on gastroenterology and endoscopy continues to progress rapidly, and it has not been possible to reflect these ongoing developments in this guide.

## Who should read this guide?

This guide will be of interest to those working in leadership and management at regional, system and trust level and to clinicians, healthcare professionals and managers working in diagnostic services and clinical specialties.

## How to use this guide

References to GIRFT national reports are included in this document as 'NRp##' with the numbers indicating the relevant page for the content. Please note that GIRFT national reports are primarily available through the FutureNHS collaboration platform. You will need to be logged in to FutureNHS to access these links.

Key actions and updates on recommendations are highlighted in blue boxes throughout this guide.

# Contents

Purpose of this guide	2
Who should read this guide?	2
How to use this guide	2
Contents	3
Radiology national report	4
Respiratory Medicine	9
Lung cancer	17
Cardiology	26
Dermatology	30
Musculoskeletal	33
Diabetes	35
Neurology and associated specialities	39
Contributors	42

# Radiology national report

The GIRFT Radiology National Report was published in November 2020, which can be accessed here: <https://www.gettingitrightfirsttime.co.uk/wp-content/uploads/2020/11/GIRFT-radiology-report.pdf>. The report sets out overarching recommendations to be applied across all diagnostic areas which should be taken into consideration alongside the speciality specific recommendations in this guide. A summary of key areas of the radiology report is provided in this section.

The full set of GIRFT radiology recommendations can be accessed here: [NRp11](#)

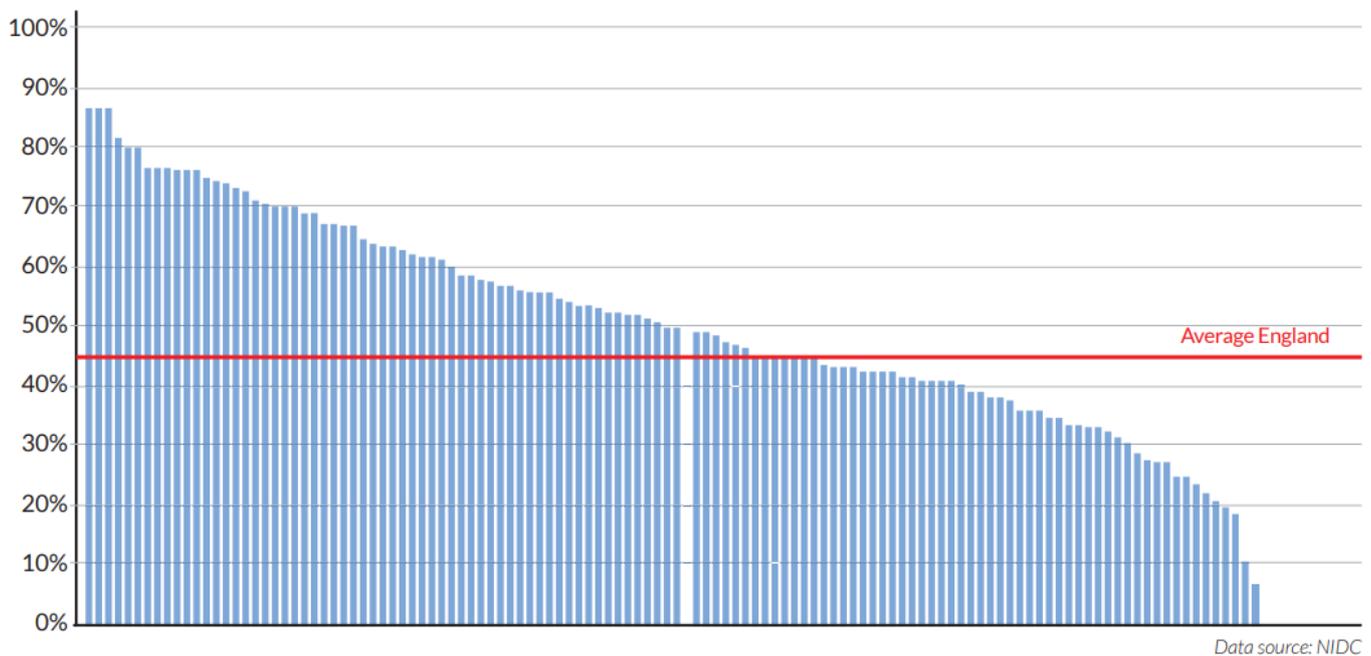
## Workforce

### Standardising job plans

There is a lack of consistency in trusts' understanding of what a radiologist's core activities are – and how much time should be dedicated to each of those tasks, as seen in Figure 1. This inconsistency makes it hard to plan and roster teams appropriately in the short term and affects long-term workforce planning. Therefore the introduction of standardised descriptions of activities, for use in job plans, and standard expectations for the volume of reporting that could be expected in a four-hour session is recommended ([NRp8](#)).

### Services to review and standardise the volume of reporting and other core radiologist activities per four-hour session.

Figure 1 - Proportion of consultant programmed activities allocated to reporting according to job plans, by trust, April 2017- March 2018



One major demand on radiologist time is attendance at multidisciplinary team (MDT) meetings. Because imaging is invariably required to support the MDT, radiologists have to attend large numbers of these meetings. As the use of MDTs has increased, this has had a substantial effect on radiologist time. Proposals for [streamlining MDT meetings](#) are welcomed to make MDTs as effective as possible, including appropriate admin support and case selection ([NRp8](#)).

**Adopt the streamlining Multi-Disciplinary Team meetings – Guidance for Cancer Alliances' recommendations.**

*Maximising capacity*

Extending and changing traditional roles within the workforce helps to maximise capacity, improve patient experience and, crucially, provides excellent opportunities for staff development. Appropriate role extensions (with the necessary training and support) can reduce reliance on consultants, helping to manage backlogs and report results faster, whilst freeing up senior members of the team to focus on more specialist tasks. From the workforce perspective, this kind of approach offers greater job satisfaction and can help with staff retention ([NRp34](#)).

A summary of examples of extending roles and responsibilities found during the radiology deep dives can be found in Table 1 ([NRp36](#)).

*Table 1 - radiology workforce extension opportunities*

<b>Workforce</b>	<b>Role extension</b>	<b>Benefits</b>
Radiographers	X-ray reporting skills	Shorter waiting time for results Maintain quality of reporting Releases radiologist time to focus on more complex CT and MRI scans
	Guiding vascular access in IR procedures	Releases Interventional Radiologist time Shorter waiting times for patients
	Consultant radiographer	Lead in research, innovation and training
	Conducting and reporting fluoroscopy	Releases Consultant time Shorter waiting times for patients and reporting Enhanced professional development
	Ability to discharge e.g. patients with suspected fracture	Releases emergency department staff Reduces waiting time in ED: Walsall Healthcare NHS Trust – reduced ED journey time by 47 minutes
	CT drainage	Reduces waiting time for CT drainage Releases interventional radiologist time: West Hertfordshire Hospitals NHS Trust – average wait reduced from 20 hours to <4
Sonographers	Image-guided drainage and biopsy	Improved access / shorter waiting times for patients
Assistant practitioners	Image acquisition	Releases radiographer time
Clinical support workers / imaging assistants	Cannulation / prepare patients for CT or MRI	Minimises delays and turnaround time between scanning
	Vet patients for ultrasound	Releases sonographer time: done at Queen Victoria Hospital NHS Foundation Trust

Workforce	Role extension	Benefits
Interventional radiology registered nurses	Pre-assessment / consent / discharge / follow-up	Improves patient throughput and patient experience
	Conduct procedures: arteriography, venography, venous access	Releases Consultant time Shorter waiting times for patients

**Review the existing radiology workforce and identify areas to develop extended roles to aid capacity, recruitment and retention.**

*Role of Advanced Clinical Practitioners within clinical specialities*

Within the clinical specialities, trusts should explore opportunities for Advanced Clinical Practitioners (ACP) to aid recruitment, retention and workforce planning. ACP roles offer the opportunity for healthcare professionals to acquire the skills and experience required to practice at an advanced level across traditional professional boundaries.

*Training and development of the workforce*

Longer term, there is a recognised shortage of training posts across the clinical specialities which will result in a skills shortage in years to come, placing further strain on services where demand is expected to rise. To address this in the short term, services have appointed junior staff to undertake basic investigations under supervision while gaining relevant qualifications.

**Appoint junior banded posts with a view to training and developing staff to achieve certification, enabling workforce progression and sustainability, as well as releasing senior staff to undertake complex tasks.**

*Network working*

A mobile workforce model is another effective way of utilising the existing workforce. The ability to work across hospital sites facilitates the delivery of network functions and also provides support in case of staff shortages when staff may be available to offer mutual support, as well as fostering a system culture - particularly in services like cardiology and spinal.

**Enable staff to work across hospital sites to facilitate network working, including any training needed for different equipment.**

**Imaging networks**

The NHS Long Term Plan set out a commitment that “*By 2023, diagnostic imaging networks will enable the rapid transfer of clinical images from care settings close to the patient to the relevant specialist clinician to interpret.*” Which was followed by the publication of [\*Transforming imaging services in England: a national strategy for imaging networks\*](#) (NHSEI, 2019).

Imaging networks improve equity of access, enable productivity gains through joint procurement of equipment and services, and harmonise working practices. Networks continue to be established although most are still in their infancy. Areas of good practice include Cheshire and Merseyside and the South West Peninsula which have networked on-call systems.

Consideration should also be given to the formation of speciality networks (e.g. vascular, cardiology) and the radiology requirements for these, to not impact the core radiology service.

**Ensure radiology services are consulted on network developments and service reconfigurations to ensure resource is aligned without impacting the core radiology service.**

#### *Smarter use of skills and resources*

Outside any specific networks, there is an opportunity for more effective use to be made of the skills and resources of specialist hospitals or hub sites. For example, developing systems that enable consultants from specialist hospitals to review, discuss and report on imaging undertaken locally at their referring trusts can reduce the need for patients to attend specialist centres for diagnosis. This in turn reduces the number of visits for patients, enables faster diagnosis and prevents the need for repeat imaging at specialist hospitals (improving patient experience whilst releasing much needed capacity).

To enable this, swift and reliable sharing of images and reports is essential – within radiology, between radiology and other departments, between hospitals and between the NHS and independent sector. One barrier to effective sharing of information and images is the use of older PACS platforms. One of the key criteria for purchasing any new system should be that it uses standardised approaches to image and report sharing.

**Systems to have plans in place to ensure seamless transfer of imaging and reports between all healthcare providers where not in practice already are in line with the RCR guidance:**

[Guidelines and standards for implementation of new PACS/RIS solutions in the UK | The Royal College of Radiologists \(rcr.ac.uk\)](#)

#### *Separation of acute and elective imaging including Community Diagnostic Centres (CDCs)*

One way to reduce the risk of cancelling or delaying outpatient imaging is by separating the radiology workload into 'hot' and 'cold' – using separate facilities for each. The hot scanners are primarily available at short notice for urgent requirements – such as those generated through the emergency – it can be beneficial to plan for a scheduled usage rate of 75-80% of all available slots – thus also helping provide flexibility in the trust's overall imaging capacity ([NRp27](#)).

#### **Exemplar practice: Northumbria Healthcare NHS Foundation Trust**

Northumbria Healthcare introduced a 'hot site' to provide radiology services to urgent and emergency care where this had previously been a bottleneck. Whilst the hot site improved waiting times for emergency patients, throughput of non-emergency patients on other hospital sites in turn improved.

Other trusts have created dedicated day case or intervention suites to improve throughput and flow for patients requiring interventional radiology procedures (including biopsies) which avoids admitting a patient to a bed. Good examples of these have found in Royal United Hospitals Bath NHS Foundation Trust and Royal Free London NHS Foundation Trust.

The ideal solution is the creation of community diagnostic centres, incorporating a range of diagnostic services for elective patients. This approach would need to be developed in partnership with primary and community care, but potentially offers a means of expanding diagnosis and providing a more patient-centred service, while reducing pressure on the main hospital sites ([NRp28](#)). Full integration with local services is required to avoid duplication and prevent delays in availability of images and reports.

## **Systems to scope the possibility of Community Diagnostic Centres to support trusts within the ICB.**

### **Equipment**

The UK has lowest numbers of CT and MRI scanners per capita than other European countries – a position that does not broadly seem to have changed over the last decade. Even with the additional funding commitments made in the Long Term Plan, many providers do not have the capital or the space available for new equipment, and even the process of securing funding itself can be hugely time-consuming.

Modern scanning equipment is more time efficient, therefore improving capacity and in some instances better for patients by using lower radiation doses (CT scanning). Given increasing demand and capacity constraints, many trusts are reliant on older equipment to address the current backlogs without a coherent and evidence-based future plan to replace these for newer models.

A plan can reduce the effort needed in each bidding cycle for capital, gain the support of other departments, and make provision for recruitment and staff training. Crucially, any plan must also include provision for equipment maintenance; allowing for the costs of maintenance and support contracts and scheduling maintenance windows to avoid times of likely peak demand.

# Respiratory Medicine

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## [Respiratory recommendation 1](#)

**Optimise respiratory outpatient services** by reducing DNAs, limiting unnecessary follow-up, considering increased virtual consultations, one-stop clinics and moving care closer to home.

Explore options to increase the proportion of patients discharged at first appointment, including through:

- ensuring sufficient consultant supervision, decision-making and leadership of outpatient clinics;
  - reviewing the referral letter and using an initial call with the patient to **pre-book diagnostic tests in advance of clinic attendance** where relevant;
  - considering 'one-stop' clinic models where feasible
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## [Respiratory recommendation 6](#)

Ensure **physiology outpatient activity** is accurately captured and remunerated using Treatment Function Code 341.

Ensure general physiology activity is set up and recorded as outpatient activity using TFC341.

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## [Respiratory recommendation 7](#)

Increase the use of **Cardiopulmonary Exercise Testing (CPET)** with interpretation by senior physiologists to manage breathlessness and determine patients' fitness for major or complex surgery.

Ensure access to CPET for managing complex and unexplained breathlessness.

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Review current levels of CPET activity and agree protocols to ensure preoperative testing is optimised.

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Review international evidence around CPET usage to inform a potential update of guideline NG45: routine perioperative tests for elective surgery.

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## [Respiratory recommendation 8](#)

Improve care for patients in sleep medicine by addressing delays in diagnosis of sleep problems and **CPAP** initiation, together with resolving gaps in infrastructure.

Model demand and expand provision of full polysomnography services in line with expanding referral base where appropriate.

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Deliver an optimal and expedited pathway with direct-to-test and, with appropriately trained physiologists in place, direct-to-**CPAP**-treatment.

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Ensure technology-enabled CPAP follow-up becomes normal practice.

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## [Respiratory recommendation 9](#)

Improve experience and outcomes for patients with **pulmonary embolism** by reducing unnecessary tests and ensuring respiratory or joint clinician-led follow-up where possible.

Establish a pulmonary embolism pathway to include seven-day access to the performing and reporting of **CT pulmonary angiography (CTPA)** and outpatient management

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Assess the clinical probability of all patients with suspected pulmonary embolism by using an appropriate likelihood score system in conjunction with D-Dimers, where indicated, prior to requesting a CT pulmonary angiogram (CTPA). Carry out a systematic review if variation is identified.

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## [Respiratory recommendation 10](#)

Reduce acute admissions and length of stay, and deliver a high quality **pleural service** which achieves the Best Practice Tariff by addressing workforce and infrastructure requirements

Ensure appropriate equipment i.e. pleural packs are available, together with a selection of drains and an appropriate specification ultrasound machine.

<a href="#">Respiratory recommendation 13</a>	Optimise care for <b>pneumonia</b> patients by ensuring the correct diagnosis (and that it is coded correctly), as well as reviewing patient pathways and infrastructure to enable care bundle delivery, reduce length of stay, readmissions, morbidity and mortality.	Ensure <b>chest x-rays</b> are formally reported for patients not managed by respiratory physicians to prevent underlying diagnoses being missed and reduce the likelihood of readmission. Agree clear processes for follow-up chest x-rays post-discharge with results being shared across primary, secondary and community care as appropriate.
<a href="#">Respiratory recommendation 16</a>	Review aspects of <b>respiratory care integration</b> and supporting infrastructure at system level to reduce variation in service provision; enable better care delivery and facilitate information flow between providers.	Consider how respiratory departments interface with diagnostic hubs and community services to deliver truly integrated care.
<a href="#">Respiratory recommendation 23</a>	Address variations in service delivery and meet the needs of the local population by staffing respiratory departments with the appropriate numbers and <b>skill mix of doctors, specialist nurses, physiologists and allied health professionals.</b>	Consider appointing more band 2 physiologists to conduct spirometry and support sleep diagnostics, with view to these staff developing into band 4 roles with experience. Where advanced diagnostics are required, ensure there is sufficient numbers / skill mix to deliver results in a timely way to achieve the 6-week RTT target. Appoint enough administrative staff to address clerical workload and reduce clinical time spent on administrative tasks in line with NHS People Plan ambitions.
<a href="#">Respiratory recommendation 26</a>	Ensure respiratory services are able to provide optimal care for patients with COVID-19 and post-COVID-19 syndrome by establishing respiratory support units, enabling remote treatment monitoring and optimising multidisciplinary expertise.	Procure <b>CPAP</b> devices with capability for remote monitoring where possible through co-ordinated discussions between respiratory and IT departments. Review tariff arrangements to support providers in offering CPAP treatments with remote monitoring to reduce departmental footfall. Prioritise restoration of <b>bronchoscopy</b> and <b>Endobronchial Ultrasound</b> , recognising the pressures on GI endoscopy

## Outpatient diagnostics

A variety of diagnostic tests are used for respiratory patients. For many, a plain chest x-ray (CXR) and simple blowing tests of spirometry are often sufficient to confirm the diagnosis. However, more detailed tests are often required including imaging, mainly CT thorax, and some procedures e.g. bronchoscopy, endobronchial ultrasound (EBUS), and exploring the pleura (the membrane enveloping the lungs) by ultrasound or actual visual inspection by thoracoscopy. Physiological investigations underpin most of the investigative process and in some examples, e.g. sleep, the whole diagnosis and often management is dependent upon physiological tests and interventions ([NRp29](#))

Doing tests on the day of the appointment in a “one stop service”, including pulmonary function tests and CT scans, is very effective for the patient but does need considerable organisation within the service and is only possible for a limited number of services and conditions ([NRp36](#)).

## **Diagnosis and management of pleural disease**

For pleural effusion, a common presentation of cancer, blind drainage (drainage without imaging guidance) and biopsy was the norm until a series of adverse events. Initially, imaging directorates took on the role of either inserting chest drains or marking the position for placement, but chest physicians rapidly learned the technique of TUS to allow safe placement of drains within a more convenient timeline. While reducing the workload on imaging departments, this shift has increased the work for chest physicians, although this has not necessarily been recognised in job plans.

The Best Practice Tariff (BPT) was introduced to incentivise day case care by paying a premium for managing patients with a pleural effusion as a day case over a non-elective admission. To fulfil the incentive’s requirements, patients need to have procedures performed by a respiratory physician in a day case setting and use ultrasound to guide the intervention, thereby reducing hospital attendances, cost, admissions and LOS, and ensuring the management of the disease is by the expert.

Given the procedure must be performed by a respiratory physician as a day case, a lack of a suitable venue is a major obstacle that leads to loss of funds via the BPT to support such developments.

### **To support this, the GIRFT national report recommends the following:**

- **A minimum of three medical sessions per 300 patients. Ideally these should take place on a Monday, Friday, and midweek to facilitate activity before and after the weekend. To cover annual or study leave, more than one person should be part of the service, trained to level two ultrasound. This activity should be recognised in job plans and one person should be recognised as the lead and have time allocated for service development.**
- **Dedicated nurse time is required (or in some organisations physicians associates). From clinical discussions on deep dives, we would suggest that a minimum Band 6 registered nurse is needed per 300 pleural procedures, pro rata.**
- **Greater clerical support is required, with ideally a dedicated phone line to allow emergency medicine, acute medicine, other wards, and primary care to book appointments.**
- **Pleural packs should be available together with an ultrasound machine of appropriate specification ([NRp61](#)).**

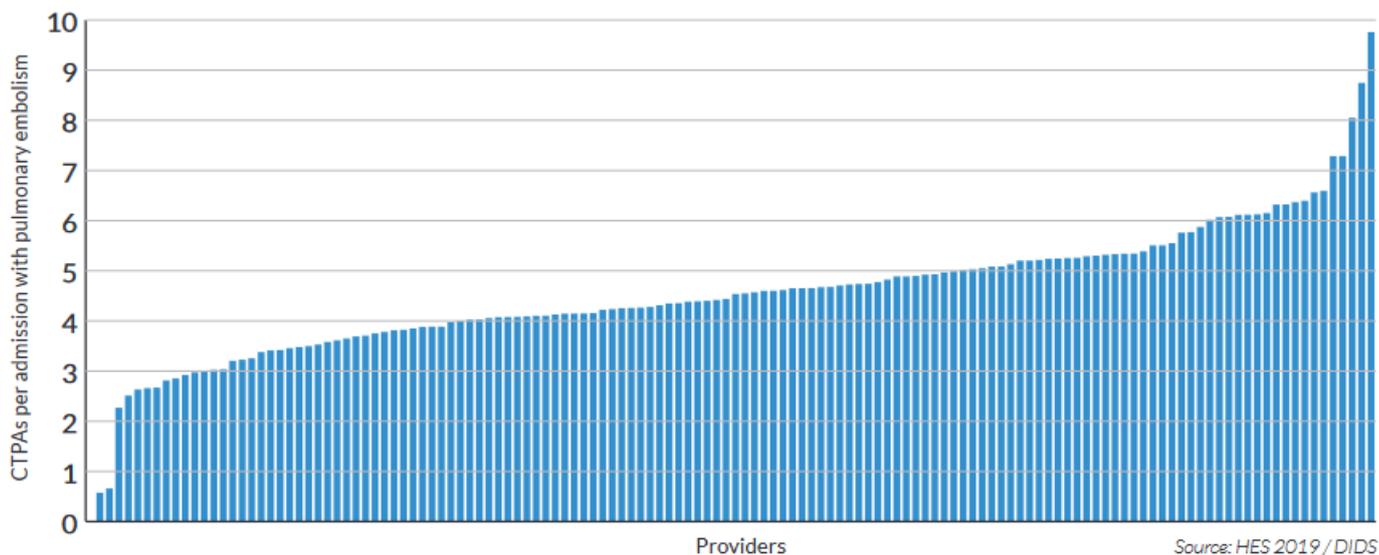
## **Managing pulmonary embolism: use of CT Pulmonary Angiograms (CTPA)**

CTPAs have revolutionised the management of pulmonary embolism, but there is a question about whether their use is excessive. Identifying patients at risk of having a pulmonary embolism by a pre-test scoring process is important to prevent unnecessary investigations which are time-consuming for the imaging department and may expose the patient to significant ionising radiation. A variety of different scoring processes have been identified to assess who should go forward for a CTPA, and the NICE

guidelines recommend using the [pulmonary embolism rule-out criteria \(PERC\)](#) to help determine whether further investigation for pulmonary embolism are needed.

Figure 2 demonstrates the wide variation in the number of CTPAs performed per pulmonary embolism diagnosed. In line with BTS guidelines ([2018](#)), 4-6 CTPAs per diagnosis would be expected. Low utilisation of CTPA may relate to some departments still performing isotope ventilation perfusion scanning ([NRp59](#)).

Figure 2 - Number of CTPAs undertaken per admission with pulmonary embolism



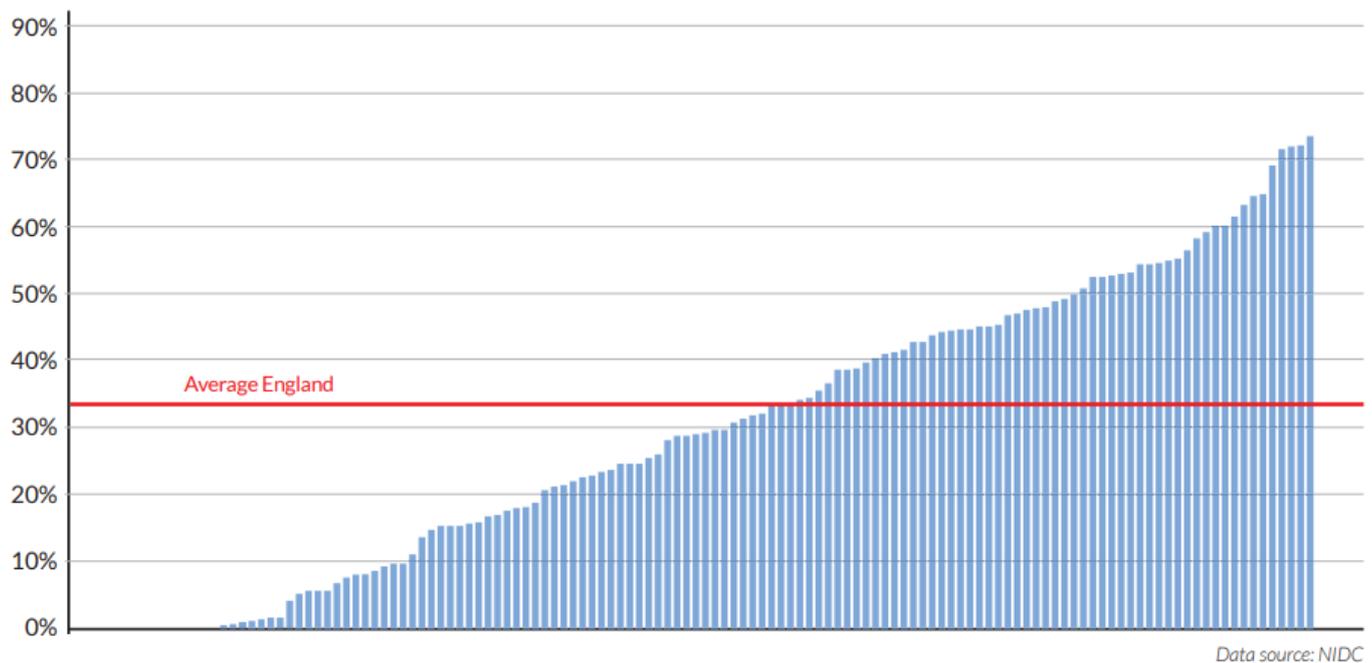
**Review use of CTPA and ensure it is in line with the [pulmonary embolism pathway](#) – this should be in the region of 4-6 CTPAs per diagnosis.**

## Pneumonia

Clear processes need to be in place for follow-up chest x-rays post-discharge to ensure resolution, with results communicated to all parties, including primary care teams, and only the occasional patient being recalled to clinic.

For those patients not managed by respiratory physicians, who ideally should be the minority, chest x-rays should be formally reported. In trusts where this practice has not been adopted, it is likely that in some cases underlying diagnosis may be missed, leading to potential readmission for other problems. The GIRFT Radiology National Report supports upskilling of radiographers to perform the reporting of X-rays, which in turn releases capacity of the radiologists to focus on the more complex CT and MRI scans. Figure 3 demonstrates the variation in the percentage of X-rays reported by radiographers – 15 trusts had no radiographer reporting at all ([NRp34](#)).

Figure 3 - Percentage of X-rays reported by radiographers, by trust, April 2019 - March 2019



The following processes should be in place for patients admitted with pneumonia:

- (under respiratory care) follow-up CXR post-discharge and communication with the whole healthcare team including primary and community care.
- (not under respiratory care) follow-up CXR post-discharge with formal CXR reporting done as soon as possible to identify any other underlying issues.

## Respiratory physiology

### *Respiratory workforce physiology*

In almost all areas of physiological science, across the specialities, the GIRFT National Reports have highlighted insufficient physiologist staff numbers, with particular attention to junior banded posts meaning more senior staff time is spent doing simple tasks.

Many departments have adopted an extended working day to as found in both the physiology and sleep departments at University Hospitals of North Midlands NHS Trust. This maximises the use of the equipment as well as increases capacity, however is limited by the staff available.

Trust should explore opportunities for Advanced Clinical Practitioner (ACP) to aid recruitment, retention and workforce planning, as well as options to work across trusts to share resources.

Longer term, there is a recognised shortage of training posts which will result in a skills shortage in years to come, placing further strain on physiology services where demand is expected to rise. Trusts should consider appointing Band 2 staff to undertake basic investigations under supervision while gaining relevant qualifications, such as the ARTP spirometry certificate to progress to Band 3 and then after an additional year of consolidating experience, progressing to Band 4 via the ARTP Associate Practitioner examination [NRp136](#).

**Appoint junior banded posts with a view to training and developing staff to achieve certification, enabling workforce progression and sustainability, as well as releasing senior staff to undertake complex tasks.**

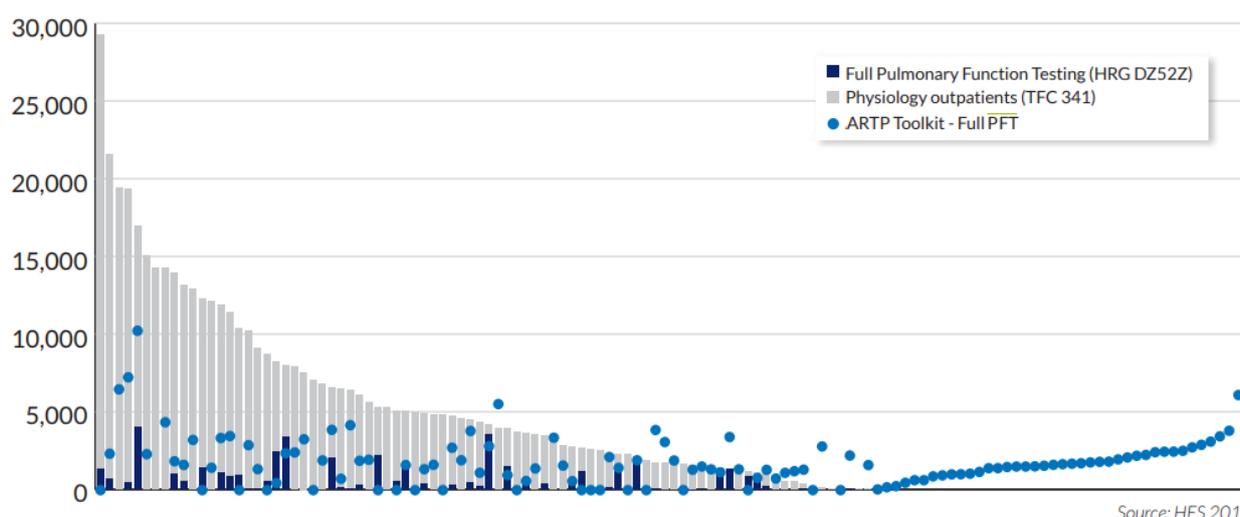
**Develop extended roles to aid recruitment and retention and increase capacity.**

Administrative staff are essential to supporting staff with essential paperwork, and enabling prompt communication. There are many examples where senior medical, nursing and physiological staff undertake routine band 2-3 clerical work: an inappropriate use of clinical expertise and resource. Where there is insufficient administrative resource, key areas such as the NACAP and other audits that form part of the trust's quality accounts not being submitted, leading to a lack of quality data, poor performance and loss of income ([NRp136](#)).

### *Full Pulmonary Function Tests (PFT)*

There are three different ways trusts might capture respiratory function tests: through an HRG code linked to a mandatory tariff, through a treatment function code and in the Association for Respiratory Technology & Physiology (ARTP) questionnaire – figure 4 demonstrates the differences in activity recording.

Figure 4 - Full pulmonary function test activity (spirometry lung volumes and gas transfer)



**Review PFT activity against the three datasets to ensure all activity is being captured and usage monitored.**

Full respiratory function tests are one of several respiratory physiological investigations that have their own specific HRG code (DZ52Z) that is also associated with a mandatory tariff. There are opportunities for trusts to highlight their potential loss of income (see Notional financial opportunities, [NRp156](#)) where activity is not being recorded through either the HRG or TFC but evident on the ARTP questionnaire. With many trusts now on 'block' contracts with their CCGs, accurate records and coding are integral to ensuring those contractual arrangements reflect true levels of activity and future demand, and that there is appropriate investment in staff and infrastructure from this income to deliver the required services in a timely way ([NRp51](#)).

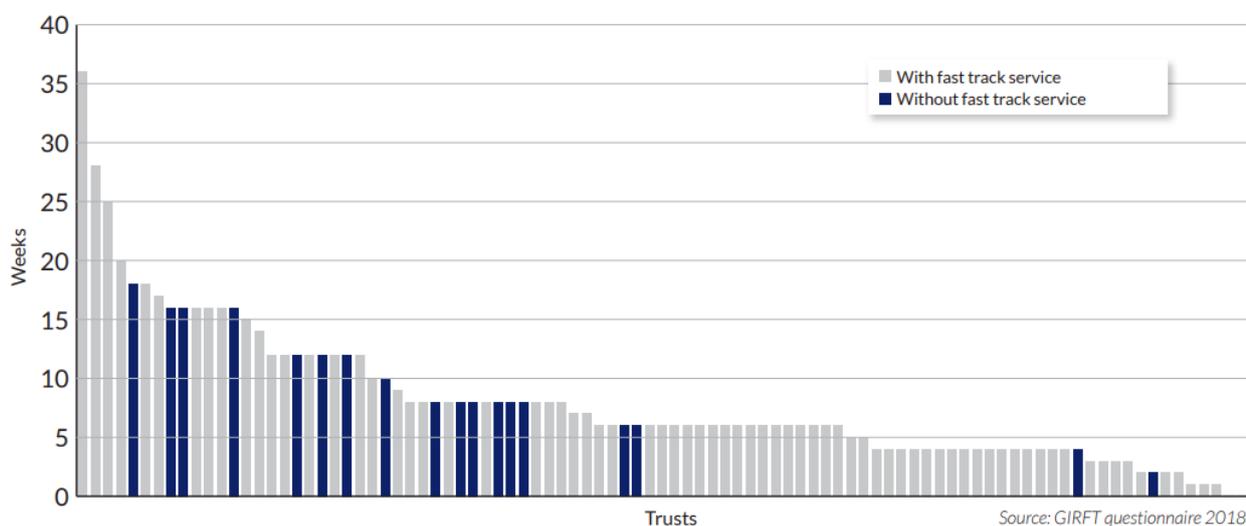
Most recent guidelines set out by the ARTP (2020) provide guidance on patient preparation, consent, contraindications, order of testing, infection control, quality assurance, equipment, facilities, leadership, operator competency and reference values for the commonly used tests to assess basic lung function in adults and paediatric patient groups.

## Trusts to work in line with or towards ARTP best practice guidelines.

### Sleep

One of the most common treatments of obstructive sleep apnoea is by the use of continuous positive airways pressure (CPAP). When sleep apnoea is diagnosed treatment should be started as soon as possible. However, the standard pathway of seeing the patient with the results before organising CPAP leads to significant delays. Having appropriately skilled physiologists who can undertake a clinical history and initiate treatment or refer for alternative treatments without seeing a medical practitioner speeds up the pathway. To aid diagnosis and ensure appropriate red flags are identified, computer-aided history taking and decision making are an advance and have been shown to work in both the face-to-face and virtual environments. Figure 5 highlights marked delays in initiating treatment, with only 27 trusts offering treatment within four weeks. This does not take into consideration any delays between referral and the sleep study as it appears there are some 37 trusts that breach the six-week referral to diagnostic time scale ([NRp57](#)).

Figure 5 - Time between diagnostic tests and initiation of CPAP treatment



Technology-enabled care has led to patients being able to have their adherence checked, leaks noted, and settings modified by remote monitoring for CPAP. While this saves footfall in the department, it is not a 'cheaper' option given the need to purchase the equipment, the time needed to download the results and then the virtual attendance, but is of clinical advantage and safer ([NRp58](#)), and should become the norm.

## National Report case study: Technology-enabled sleep services – Aintree University Hospital NHS Foundation Trust

**CPAP can be initiated by a physiologist without the need for a medical practitioner to shorten the clinical pathway to treatment.**

**Technology-enabled CPAP machines with remote monitoring to be issued as the norm.**

### *Cardiopulmonary Exercise Testing (CPET)*

With the increasing recognition of the management of complex breathlessness in the NHS Long Term Plan, the demand for CPET is expected to grow.

An additional and expanding role for CPET is in assessing a patient's fitness before major or complex surgery, for example for vascular surgery or colorectal surgery, as a useful indicator of perioperative risk. The role of CPET in this setting has been acknowledged by the [Perioperative Exercise Testing and Training Society \(POETTS\) guidelines](#) (2018), and [NICE lung cancer guidelines](#) (2019). Around half of all trusts were not using CPET for breathlessness investigation or perioperative risk at the time of the national report.

**CPET to be performed with interpretation by senior physiologists to manage breathlessness and determine patients' fitness for major or complex surgery.**

### **Integrated care**

Within the [Respiratory Long Term Plan](#) (LTP) many workstreams are community focused, aiming to improve early and accurate diagnosis of respiratory conditions through closer working with primary care networks. This development in system organisation will enable use of quality assured spirometry through staff training; supporting patient's self-management through digital offers; optimising medicines with a focus on inhaled therapy, enabling patients to function as well as possible by pulmonary rehabilitation and ensuring breathlessness is managed effectively ([NRp103](#)).

# Lung cancer

## [Recommendation 1](#)

Respiratory teams to immediately move to providing **proactive management of unexpected abnormal chest radiology** and work with radiology departments to implement pathways that **deliver a three working day turnaround** from abnormal chest X-ray or referral to CT scan report.

Establish local mechanism for coding of abnormal radiology, sharing of information with lung cancer team, and transfer of clinical responsibility for further investigation.

Implement mechanisms within radiology enabling **straight-to-CT for patients with abnormal CXRs**.

Provide adequate resources for changes to be made to existing pathways. This may require the introduction of **co-ordinator roles** to ensure effective and timely communication with patients by those with the appropriate skills to do so.

## [Recommendation 2](#)

Key **diagnostic investigations should be completed within 21 calendar days of the start of the pathway** by adopting best practice recommendations on service configuration and pathway planning.

Daily triage of patients should be undertaken by a clinician with expertise in lung cancer diagnostics, in order that patients can have their pathway planned in advance through the use of diagnostic bundles, and where appropriate without the need for a prior face-to-face appointment.

Triage should include the facility for patients without cancer evident on a CT scan to be moved into a more appropriate service.

Capacity for assessing patients, requesting, and reviewing tests should be spread across the working week and where possible carried out daily to avoid batching and undue delay.

All lung cancer teams should have an **administrative navigator post** integrated into their specialist nursing team.

## [Recommendation 3](#)

Renegotiate the national **PET-CT contract to include a five calendar day turnaround from request to report** and available imaging for initial investigations of new diagnoses of lung cancer.

Trusts and PET-CT providers should work together to ensure that the test images are available to clinical teams on the same day as the written radiologist report.

Local requirements for PET-CT scan requests to be supported by an MDT discussion should be abandoned when the indication sits within the diagnostic Standards of Care.

Use of PET-CT reporting templates should be considered best practice and adopted widely.

Diagnostic and staging EBUS for lung cancer should be done with the benefit of a reported PET-CT scan (if indicated) to prevent unnecessary or inappropriate biopsies being undertaken. g PET providers should reserve specified slots weekly for patients with lung cancer, with the facility for clinicians to book direct from clinic, to enable faster diagnosis.

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[Recommendation 4](#)

An **image-guided biopsy service should be available for all patients 52 weeks of the year**, with appointments for the procedure being available (notwithstanding issues such as anti-coagulation or anti-platelet therapy) within five working days of the request.

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Ensure that day case capacity for patients requiring recovery, monitoring and treatment after a biopsy is adequate and does not act as a barrier.

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Respiratory teams to identify individuals to upskill in performing a range of ultrasound-guided biopsies to release time from radiologists, with investment in appropriate specification point-of-care equipment.

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Where a local service lacks necessary capacity or skill, resources should be shared across the Cancer Alliance.

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All providers of EBUS to work towards full compliance with national service specifications.

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Clinical teams to improve their selection of patients for EBUS by following diagnostic standards of care and ensuring a reported PET scan is available where indicated.

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EBUS providers to regularly carry out audit of both diagnostic and staging procedures (separately), with the results being shared within the Cancer Alliance as specified in our recommendation on data collection (page 78).

[Recommendation 5](#)

**EBUS for lung cancer should be available within five calendar days of request** and must comply with the national service specifications, with regular monitoring of performance by local commissioners.

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EBUS providers to establish a demand and capacity model for staging and diagnostic EBUS and agree sharing of resources with neighbouring trusts if capacity to provide these tests within five calendar days of request is insufficient.

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Trusts to ensure that endoscopy facilities are made available to the lung cancer service, with appropriate prioritisation with regards to the NOLCP, in accordance with demand and capacity models.

## Referral to X-ray and CT for suspected lung cancer patients

There are a number of possible “optimal” pathways to a rapid CT scan in patients with suspected lung cancer and trusts will run more than one of these in parallel. Where a CXR is required, best practice is for the CXR to be ‘hot’ reported while the patient is still in the radiology department, or at least on the same day, often by increased use of radiographer reporting to compensate for radiologist staffing shortages. Some Trusts have successfully implemented pathways where the CXR step is skipped and all patients with suspected lung cancer go straight to CT scan.

In all scenarios, the aim should be for a CT scan to be taken and reported within 72 hours of the referral (pathway 1 and 2) or request (scenario 3 and 4).

### 1. Primary care straight-to-CT

If the patient has symptoms or signs of lung cancer, the primary care team refers the patient to the radiology department for a diagnostic assessment. It is very likely that the patient will require a CT

scan even if a CXR is normal, and so local agreements can allow the CXR step to be skipped and the patient booked directly for a CT scan. Otherwise, the patient is booked for a CXR with contingency to hot report and proceed to carry out a CT scan immediately afterwards. Radiologists should be empowered to proceed in this manner through local policies.

The primary care referrer retains the responsibility for receiving the imaging reports, informing the patient, and making onward referrals to the lung cancer team. However, abnormal imaging results should be flagged to the lung cancer team and by local agreement may trigger their input even before formal 2-week wait referral.

## **2. Secondary care straight-to-CT**

If the patient has symptoms or signs of lung cancer, the primary care team makes a 2-week wait referral to the secondary care lung cancer team for a diagnostic assessment. It is very likely that the patient will require a CT scan even if the CXR is normal, and so local agreements can allow for this pathway to operate even if there is no recent CXR available. The referral is triaged by senior member of the lung cancer team (usually a consultant Respiratory physician) on the day of receipt, and a CT scan is requested.

Where possible (especially where CXR is suggestive of cancer), a member of the lung cancer nursing team may meet the patient when they attend for their CT scan, to provide support and to obtain information that will help guide downstream investigation if required and can avoid the need for a subsequent out-patient appointment. The secondary care team retains the responsibility for receiving the imaging reports, informing the patient, and carrying out further diagnostic work-up. For those patients whose CT scans do not suggest lung cancer, they can be discharged back to primary care without the need for an out-patient appointment, or appointed to a more appropriate out-patient service.

## **3. Abnormal CXR**

For patients having a CXR where “possible lung cancer” is noted as an unexpected finding, the report should be flagged-to and triaged-by the secondary care lung cancer team immediately. Through local agreement with the primary care services, this should trigger the lung cancer team to take responsibility for further management of the patient. This will usually mean informing the patient of their abnormal imaging and organising an urgent CT scan as above. However, Radiologists should be empowered to proceed directly to a CT scan through locally agreed policies before the input of the lung cancer team.

## **4. Self-referral**

By local agreement, patients may refer themselves to a radiology department for a CXR. Ideally this is hot reported with contingency to proceed to carry out a CT scan immediately afterwards. In either case, the abnormal imaging should be flagged to the lung cancer team, who take on the responsibility for receiving, informing the patient, and carrying out further diagnostic work-up.

Barrier to implementation	Mitigation
Recent eGFR measurement unavailable	<ul style="list-style-type: none"> <li>• Point of care eGFR testing</li> <li>• Mandate result prior to referral</li> <li>• Reassurance of low risk of contrast-induced nephropathy</li> </ul>
Communication with patients	<ul style="list-style-type: none"> <li>• Provide simple information at all contacts to normalise the need for further diagnostic steps – <a href="#">see example here</a></li> </ul>
Competition with other cancers	<ul style="list-style-type: none"> <li>• Lung cancer patients have a particularly poor outcome and risk of deterioration when pathway is slow.</li> </ul>
Inappropriate referrals	<ul style="list-style-type: none"> <li>• Develop local guidelines and feedback issue to primary care or other referrers</li> </ul>
Resources needed for managing pathway and triage	<ul style="list-style-type: none"> <li>• Time for triage does not usually require additional resources but can be released from time saved not seeing patients with normal CT scan.</li> <li>• Appointment to navigator posts in radiology and/or the lung cancer team can facilitate and failsafe the pathway.</li> </ul>
Radiology capacity	<ul style="list-style-type: none"> <li>• Not doing additional scans, just scheduling them differently</li> </ul>

#### Exemplar practice:

- At **Royal Liverpool University Hospital**, all patients who have a thoracic imaging test that raises concern for lung cancer, have a code applied to the radiology report which triggers automatic entry onto an electronic spreadsheet. The respiratory medicine consultant team proactively check this list every day and take ownership of the next steps, contacting patients and organising the further tests as needed, without the need to wait for a 'referral' to their service.
- **Brighton and Sussex University Hospitals'** planning group involved all relevant parties including the five referring CCGs to set up a radiology-led pathway. The team created a dedicated CXR referral form that required a minimum dataset for entry into the pathway, and all patients were informed via a patient information leaflet that they may be recalled for a CT scan. CXR reporting was rationalised down from 31 to six reporters, fully trained in the pathway, and who are chest specialists. Subsequent assessments showed that patient experience had improved, GP feedback was positive and there was a significant shortening of the diagnostic pathway.

Carry out real-time monitoring of the time taken for the whole pathway and for the individual components using a tool such as the [National Optimal Lung Cancer Pathway Model](#). This allows benchmarking, identifies bottlenecks, and identifies deteriorating performance early.

## CT to MDT decision

The diagnostic phase of the pathway is usually undertaken by Respiratory Physicians alongside the specialist nursing team. Investigations should be carried out in parallel to minimise any delays, and as far as possible any tests and out-patient visits should be co-ordinated, including the use of telephone appointments, to minimise the number of individual hospital visits for the patient.

In all scenarios, the aim should be for a seamless pathway through a bundle of investigation, completed within 21 days, without any unnecessary delays, and with as few individual hospital visits as possible, leading to a single treatment MDT discussion of the results.

The following best practice points should be implemented:

- Patients referred on a cancer pathway must be informed of this and given an expectation of the next steps and likely timescales. This can be facilitated by written patient information leaflets available to primary care teams – [see example here](#)
- Daily triage of patients should be undertaken by a clinician with expertise in lung cancer diagnostics, in order that patients can have their pathway planned in advance through the use of diagnostic bundles, and where appropriate without the need for a prior face-to-face appointment. This must be recognised in job plans.
- Decision-making by the triage team is enhanced when adequate clinical information is provided. A minimum dataset of referral information should be expected from referrers.
- Where resources allow, it can be helpful for an assessment by a CNS to take place at the time of patient attendance for a CT scan. This can provide useful clinical information, highlight the need for smoking cessation/pre-habilitation, as well as providing information and support for the patient ([see example nursing checklist for urgent CT appointment triage form](#)). Local arrangements to highlight those patients most likely to have a lung cancer to the nursing team should be implemented to ensure the best use of specialist nursing time.
- Triage should include the facility for patients without cancer evident on a CT scan to be discharged without an out-patient appointment (can be done by letter or telephone) or moved into a more appropriate service – [see example template letter](#).
- Capacity for assessing patients, requesting, and reviewing tests should be spread across the working week and where possible carried out daily to avoid batching and undue delay. Use of telephone consultations is encouraged.
- Nationally agreed diagnostic bundles (standards of care) should be agreed locally and implemented robustly to ensure bundles of tests are carried out in parallel with minimal need for MDT input (<https://www.roycastle.org/app/uploads/2019/11/Lung-Cancer-NHSE-DSOC-Final-for-NHSEV2.pptx>).
- Schedule physiological tests such as lung function and echocardiogram to be done immediately before/after an out-patient visit to minimise visits to the hospital.
- Carved-out slots with the PET-CT provider can speed up the pathway and allows the lung cancer team to better co-ordinate downstream investigations.
- Ensure that day case capacity for patients requiring recovery, monitoring and treatment after an image-guided biopsy is adequate and does not act as a barrier.

- Members of the Respiratory team can train in ultrasound-guided neck-node biopsy that can allow same day sampling in some patients, and releases radiologist time for other activities.
- All lung cancer teams should have an administrative navigator post integrated into their specialist nursing team to facilitate the complex pathways. This can greatly improve communication with patients regarding next steps – avoiding misunderstanding, dissatisfaction or missed appointments.
- Ensure that supportive care is considered immediately from the point of referral – including smoking cessation prescribing/referral, dietician support, exercise prescription/rehab, and palliative care input.
- Carry out real-time monitoring of the time taken for the whole pathway and for the individual components using a tool such as the [National Optimal Lung Cancer Pathway Model](#). This allows benchmarking, identifies bottlenecks, and identifies deteriorating performance early.

Barrier to implementation	Mitigation
No time in job plan for triage	<ul style="list-style-type: none"> <li>• Triage reduces the number of patients seen face to face in clinic and so releases clinical time.</li> </ul>
Telephone consultations inappropriate in cancer patients	<ul style="list-style-type: none"> <li>• Results of patient satisfaction surveys suggests the opposite as long as these consultations are carried out appropriately and effectively. Inclusion of the nurse specialist in telephone consultations is recommended.</li> </ul>
Triage should be a multi-disciplinary exercise	<ul style="list-style-type: none"> <li>• Respiratory physicians who are members of the lung cancer team should be experienced and skilled enough to make a diagnostic plan in the vast majority of cases.</li> </ul>

#### Exemplar practice:

- Some organisations have introduced shared electronic diaries to enable pre-booking following on from triage or have enabled the radiology department to book directly into a clinic slot where lung cancer is evident.
- **Liverpool Heart and Chest NHS Foundation Trust** have abandoned the traditional outpatient clinic model and moved to a system whereby the majority of the diagnostic work-up is done virtually, using telephone assessment/consultation rather than using face-to-face appointments. When properly implemented and resourced, such a service can be efficient, timely and patient-centred.

**It is recommended against routinely seeing patients in the lung cancer clinic if CT scan does not suggest lung cancer.**

**It is recommended against routinely requiring an MDT discussion of a CT scan in order to progress patients through the rest of the pathway.**

## PET-CT imaging

Where an initial CT scan has not excluded cancer, PET-CT is recommended in most scenarios to provide risk assessment, resolve diagnostic uncertainty, to accurately stage disease and to guide the most appropriate biopsy site. A reported PET-CT scan should be available to the clinical team within 5 calendar days of the request.

The following best practice points should be implemented:

- There should be a rapid and seamless process between the request, the scan being taken, the report being issued, and the report becoming available to the requesting clinical team (often at a separate trust). PET-CT providers should monitor these timescales, report them to their commissioners, and work to reach the 5 calendar day ambition.
- Having “protected” scans available to the lung cancer team allows patients to be booked into these slots directly which reduces the time to scan. Moreover, this allows the clinical team to work through availability and transport issues and to better plan downstream tests and follow-up.
- There should be no requirement for a patient to be discussed in an MDT to allow a PET-CT to be requested.
- All requests for PET-CT should be made electronically, and reports sent electronically to speed up the process and provide an audit trail.
- Sharing capacity across a region or clinical network can make best use of existing capacity and reduce the time to scan for patients able to travel.
- Process mapping the pathway may reveal bottlenecks that can be addressed.
- Carry out real-time monitoring of the time taken for the whole pathway and for the individual components using a tool such as the [National Optimal Lung Cancer Pathway Model](#). This allows benchmarking, identifies bottlenecks, and identifies deteriorating performance early.

Barrier to implementation	Mitigation
Lung cancer patients should not be prioritised with protected scans	Lung cancer patients have an especially poor prognosis, and a risk of deterioration during the diagnostic phase that is not the same for some other tumours. The lung cancer diagnostic pathway is complex and an early PET-CT is needed to plan other downstream tests.
MDT discussion is needed to ensure PET-CT scans are used appropriately	Experienced Respiratory physicians are able to determine this in most cases, especially if they use diagnostic bundles.

### Exemplar practice:

- **Greater Manchester Cancer Alliance** have pooled their PET-CT capacity across the region, using Infoflex to act as an availability and booking system. This allows clinicians and patients to choose a date for their scan from a range of providers, making best use of the available capacity, while also providing patient choice and reducing the time to scan for some patients.
- Some PET-CT providers give protected scan slots to referring lung cancer teams, allowing the specialist nurses at local trusts to discuss the available dates/times with patients face to face in the clinic or over the telephone. This provides patients and family with immediate certainty as to when their scan will take place and allows the nurses to also agree dates for other downstream tests or appointments all at the same time.

### Endobronchial ultrasound (EBUS)

In order to achieve a high quality EBUS service, the following best practice points should be implemented:

- All providers of EBUS should ensure full compliance with national service specifications (<https://www.roycastle.org/app/uploads/2020/12/NHSE-EBUS-Service-Specification-Final-Oct-19DRB.pdf>).
- This includes regular assessment of diagnostic and staging accuracy to ensure performance is adequate, with the results being shared within the Cancer Alliance.
- Clinical teams should improve their selection of patients for EBUS by following national diagnostic standards of care (<https://www.roycastle.org/app/uploads/2019/11/Lung-Cancer-NHSE-DSOC-Final-for-NHSEV2.pptx>) and ensuring a reported PET scan is available where indicated. It is particularly important that EBUS is not “rationed” to cope with a lack of capacity.
- Systems should be implemented to allow real-time booking of EBUS procedures, and such bookings should specify clearly whether a diagnostic or a staging procedure is required.
- It is recommended that trusts set an ambition of providing the test within five working days of the request rather than the seven days suggested in the national service specification.
- EBUS providers to establish a demand and capacity model for staging and diagnostic EBUS and agree sharing of resources with neighbouring trusts if capacity to provide these tests within five calendar days of request is insufficient.
- This will include cross-cover for annual leave and sickness, support for ongoing training and professional development and allowing patients to transfer into another service where access times cannot be met within their local service.
- Trusts must ensure that endoscopy facilities are made available to the lung cancer service, with appropriate prioritisation with regards to the NOLCP, in accordance with demand and capacity models.

- All trusts should ensure they have access to GA/deep sedation for those patients unable to tolerate the procedure under light sedation.

**Exemplar practice:**

- Greater Manchester Cancer Alliance have developed a regional network of EBUS providers who have pooled their capacity, and provided access to a real-time booking system allowing patients to choose the most convenient time and place for their procedure.

The full series of Lung Cancer Best Practice Guides and resources can be accessed on the [GIRFT Best Practice Library](#).

# Cardiology

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[Cardiology Recommendation 15](#)

Networks should ensure that all hospitals admitting acute cardiology patients have 24/7 access to **emergency echo** including the facility for immediate remote expert review as required. **Elective/urgent echo** should be routinely undertaken 7/7. Urgent **TOE** should be available 7/7 and delivered on a network basis).

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[Cardiology Recommendation 16](#)

Networks should ensure that all hospitals have ready access either on site or at network level to **CTCA including CT-FFR**, with all of the images reported by appropriately trained cardiologists and/or radiologists.

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[Cardiology Recommendation 17](#)

Networks should ensure that all hospitals have ready access on a network basis to dedicated sessions of **CMR**, including stress CMR, with all of the images reported by appropriately trained cardiologists and/or radiologists.

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[Cardiology Recommendation 18](#)

Nuclear cardiology services, including **PET and PET-CT**, should be available at a regional level.

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## Cardiology workforce

Training and upskilling are key to meeting growing demand and delivering care in the most efficient and cost-effective way. Advanced Clinical Practice (ACP) roles offer the opportunity for healthcare professionals from a variety of backgrounds to acquire the skills and experience required to practice at an advanced level across traditional professional boundaries. The development of ACP roles within cardiac physiology, cardiac scientists, nursing, pharmacy are just a few examples for the development of such roles in cardiology.

Whilst shortage of workforce is recognised we support the concept of a mobile workforce through the implementation of 'digital staff passports'. The ability to work across hospital sites facilitates delivery of network functions and also provides support in case of staff shortages when staff maybe available to offer mutual support. Examples are included throughout the report but include delivery of on-call rotas, weekend ward rounds, outpatient diagnostic services and emergency temporary pacing ([NRp21](#)).

The shortage of trained staff to perform and report echoes is a major concern for cardiology services. Whilst efforts should be made to increase capacity within existing resources, longer term strategies and national training initiatives such as the echocardiography training programme are essential to address the shortfall. For cardiac CT and CMR there is a national shortage of suitable scanners and a significant shortfall in the number of radiographers, cardiologists and radiologists trained to perform and report studies.

## Managed clinical networks and improving access to imaging

**Essential diagnostic requirements for a functioning network are:**

- 1. A multidisciplinary workforce that utilises digital 'staff passports' to allow working across multiple sites within a network.**

2. Access for all hospitals admitting acute cardiology patients to emergency echocardiography 24/7 and urgent/elective echocardiography 7/7, and urgent access 7/7 to a TOE service
3. Seven-day access for all hospitals to cardiac CT, including CTCA and to CMR.
4. Pathways to access PET and nuclear medicine imaging.
5. Coronary angiography with 'proceed' performed in a PCI enabled lab by a PCI-trained operator.

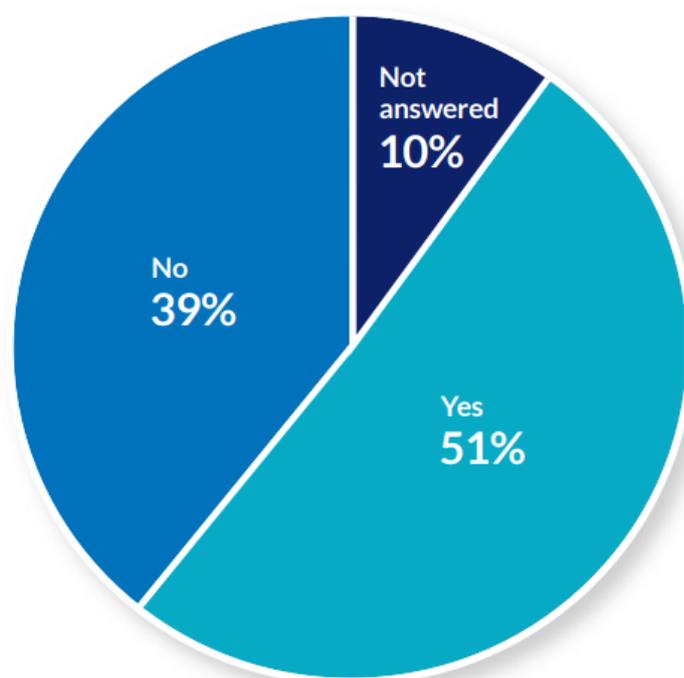
Cardiac imaging has a vital role to play in improving early diagnosis and on-going treatment of cardiovascular disease (CVD), and as a tool to support clinical decision-making. Currently, patient access to certain imaging modalities – in particular CT and CMR – varies considerably between trusts, as does reporting time. This is having a negative impact on patients, who face longer waiting times and delays in diagnosis.

### Echocardiography

Networks should ensure that all hospitals with an acute medical take admitting acute cardiology patients can provide 24/7 emergency echocardiography. All hospitals should ensure there is a rota to provide emergency echo cover to at least BSE Level 1. This should be linked to network provision for the immediate remote expert review of scans 24/7. This will require the facility for secure image sharing and a network on call rota. Digital solutions may help in the future. Urgent Transoesophageal echocardiogram (TOE) must also be available on a network basis 7/7.

Echocardiography services should be provided seven days per week to facilitate patient flows and to maximise throughput. Currently, only just over half (51%) of trusts are doing so, as shown in figure 6.

Figure 6 - Percentage of trusts providing 7/7 echo on site (107 respondents)



Source: GIRFT questionnaire data

**Trusts to have a dedicated cardiac physiology department supporting inpatient and outpatient activity that complies with current requirements for accreditation by Improving Quality in Physiological Services (IQIPS) (NRp23).**

## **Cardiac computerised tomography (CT)**

All hospitals require access to cardiac CT, including CT Coronary Angiography (CTCA), either on-site or within a network. CTCA is the default first investigation for all but high-risk patients on the stable chest pathway and should be available to all chest pain clinics within six weeks for routine referrals. All sites delivering CTCA should meet British Society of Cardiovascular Imaging (BSCI) requirements for volume and accreditation for all reporting cardiologists and radiologists. Within a network, CTCA should be available on a 7/7 basis.

Fractional Flow Reserve CT (CT-FFR) adds functional imaging to the anatomical information provided by CTCA and reduces the need for secondary investigations. CT-FFR needs to be more widely available and should be planned as part of the provision of CTCA within all networks.

CTCA is best delivered by teams performing high volumes of scans either in dedicated sessions or on a dedicated scanner. Heart rate control is key. Where required, beta blockers should either be prescribed and taken in advance, or prescribed and administered by ACPs or radiographers trained to do so.

CTCA can be independently reported by either cardiologists or radiologists with appropriate training and accreditation at a minimum of BSCI level 2 (or equivalent). Local arrangements must be in place to ensure appropriate review of any concerning extra-cardiac findings.

### **Exemplar practice: Mid Cheshire Hospitals NHS Foundation Trust**

Crewe Hospital is a small district general hospital with a well established CTCA service at a non-surgical centre. The development of the service is an exemplar of what can be achieved by collaboration between cardiology and radiology services. Rather than setting up a cath lab, the cardiology service developed strong links with the radiology department to create a high volume, well-functioning, on-site CTCA service which enables the service to provide inpatient CT scans within 24 hours from request. The service performs 1,600 CTCAs per annum, delivered by two consultants and linked into the cardiac centre. All CT images are jointly reported by suitable accredited cardiologists and radiologists.

## **Cardiac magnetic resonance imaging (CMR)**

CMR imaging is an important investigation for patients with ischaemic heart disease, heart failure and cardiomyopathy, and for some patients with valve disease. It is delivered most efficiently on high volume dedicated cardiac scanners working 7/7 and should be provided by teams meeting the standards set by the British Society of Cardiovascular Magnetic Resonance (BSCMR).

CMR scans can be independently reported by appropriately trained cardiologists or radiologists with at least BSCMR/European Association of Cardiovascular Imaging (EACVI) level 2 accreditation (equivalent training and ongoing experience).

### **Exemplar practice: South Tees Hospitals NHS Foundation Trust**

The South Tees CMR service began as a collaboration of radiology and cardiology teams at James Cook Hospital in Middlesbrough in 2011. Cardiology provided service leadership and reporting, radiology provided access to scanner hardware. Radiographers were recruited and trained from both the general MRI and cardiac catheter lab teams. The service was later joined by a cardiologist from neighbouring Trust, University Hospital of North Tees, who supervised and reported scans at South Tees and later introduced a service at the Stockton-on-Tees site. Reinforced by further cardiologist and radiologist recruitment at both sites, cross-Tees collaboration has remained a core principle. Service development, scanning and reporting protocols and quality assurance are a shared endeavour.

The Tees CMR service now delivers scans at three sites – Middlesbrough, Stockton-on-Tees and Northallerton – and will begin scanning at Hartlepool within the next year. Waiting lists are combined to ensure equity of access across Teesside and North Yorkshire and there are plans to amalgamate reporting lists thereafter.

## **Nuclear cardiology**

Demand for functional imaging, including Myocardial Perfusion Scanning (MPS), on chest pain pathways will change with the growth of CTCA but it remains a useful test for the investigation of chest pain in those patients not suitable for other imaging modalities.

PET-CT for the investigation of myocardial viability, cardiac sarcoidosis and device-related infect and “Bone” scintigraphy for cardiac amyloidosis should be available on a network basis.

**National Report case study: Seven Day cardiac physiology services: a tertiary model – Manchester University NHS Foundation Trust**

## **Cath labs with angiography but not PCI**

There has been a marked reduction in the need for standalone diagnostic coronary angiography and there is no longer a requirement for cath labs that perform angiography without PCI.

The future of cath labs that are not performing PCI should be reviewed on a network basis as there may be opportunities to develop network pacing and device hubs by redirecting patient flows away from tertiary centres, subject to minimum volume requirements being met ([NRp48](#)).

# Dermatology

[Dermatology Recommendation 10](#)

Improve access to **dermatopathology**.

Develop dermatopathology training (requires implementation of other recommendations to address workforce shortfalls).

Promote the development of AI and digitisation of slides to support the work of clinicians in dermatology histopathology reporting.

[Dermatology Recommendation 19](#)

Review **teledermatology** services to inform trust-level investment and resourcing decisions.

NIHR to fund studies evaluating the efficacy, safety and efficiency of teledermatology with full health economic assessment.

Assess teledermatology services based on the points described in our report when considering whether to invest.

Support services keen to innovate in this area, in line with the recommendations in 19B and 19C.

Prepare teledermatology services and other clinical services for the introduction of AI and machine learning.

## Histopathology

Dermatology services rely on histopathology for important tissue diagnoses that are needed to help manage patient care. Rapidly increasing rates of skin cancer are adding greatly to the histopathology workload. In some histopathology departments, almost half of the cancer workload relates to skin cancers. Even though melanoma deaths may not be increasing greatly, overall rates of melanoma are increasing. Therefore, clinicians usually opt to remove borderline lesions to reduce the risk of missing a skin cancer. This is understandable when early diagnosis of a melanoma means being able to treat the patient, whereas missing it could result in their death. Consequently, patients, GPs and specialists should err on the side of caution, which increases referrals to hospital and the removal suspicious lesions for histopathology examination. Many trusts told us that this increasing workload comes at a time when they were finding it increasingly difficult to recruit histopathology consultants.

There is wide variation between trusts in the speed of histopathology reporting (see Table 2 and 3 below), because of dermatology and pathology workforce shortages. These shortages should be addressed to minimise delays in histopathology reporting ([NRp77](#)).

Table 2 - Histopathology: average waiting times

Histopathology waiting times	Source and year	Mean	Median	England range	Responses
How many weeks on average do you currently wait for routine histopathology from your department?	GIRFT questionnaires 2018	3.5	3.0	0 to 14	117 responses
	GIRFT questionnaires 2019	3.7	3.0	0 to 14	123 responses
	Change in % response between 2018-20: (17.1%)	0.2	0.0	-	21 responses updated

Data source: GIRFT questionnaire, 2019.

Table 3 - Histopathology: longest waits

Histopathology waiting times	Source and year	Mean	Median	England range	Responses
How many weeks are the longest waits for routine histopathology from your department (not counting samples sent for tertiary opinions)	GIRFT questionnaires 2018	5.7	4.0	1 to 28	117 responses
	GIRFT questionnaires 2019	5.8	4.0	1 to 28	123 responses
	Change in % response between 2018-19: (18.7%)	0.2	0.0	-	23 responses updated

Data source: GIRFT questionnaire, 2019.

## Artificial Intelligence (AI) in histopathology and skin cancer diagnosis

A number of histopathology AI applications are being developed, including using AI to look at margins and count stained cells. Applications such as these offer the potential to improve and speed up histopathology reporting in dermatology. It seems likely that AI will play an increasing role in the future of histopathology.

AI applications are also being developed to help with diagnosis of melanoma from digital images. If used unwisely, such applications could result in increases in histopathology workload with little benefit. The challenge will be to utilise new technologies in a way that enhances expert decision-making to ensure the right lesions are removed ([NRp78](#)), however, caution should be exercised where regulation is lacking and studies are ongoing, leading to unsubstantiated or inflated claims of the use of new products.

**The procurement and evaluation of any AI products should be independently assessed to ensure they meet the needs of the service ([BADs, 2022](#)). NHSX’s “[AI’s buyer’s guide assessment template](#)” can be used to do this.**

## Dermatopathology

Some dermatologists specialise in histopathology, reading their own slides and those of colleagues. This group, together with histopathologists who specialise in the skin, belong to the British Society for Dermatopathology (BSD). The society promotes the knowledge and teaching of dermatopathology and organises educational events.

**[National Report case study: Dermatologists providing histopathology reports to local departments – Dorset County Hospital NHS Foundation Trust](#)**

**Dermatology consultants and trainees who wish to develop histopathology skills should be supported to do so with time and resources to complete training in anticipation of increasing workload and skills shortages.**

## Teledermatology

The use of images is integral to teledermatology. High-definition medical photography with appropriate clinical history is used to help clinicians carry out remote diagnosis and management of dermatological

conditions, and to support the triage of referred patients to the correct clinical setting. To support teledermatology services, Advice and Guidance systems should be in place to provide baseline access.

There is wide variation in access to teledermatology access:

- 30% of trusts said their local teledermatology services are adequately and safely integrated with their services;
- 52% of trusts said their local teledermatology services are not adequately and safely integrated with their services;
- 18% of the 117 departments who responded to the GIRFT questionnaire had no local teledermatology service at all.

(GIRFT questionnaire, 2019).

The following trusts are amongst those that have reported being satisfied with their teledermatology systems:

- University Hospitals Bristol NHS Foundation Trust (Dr David De Berker)
- Leeds Teaching Hospitals NHS Trust (Dr Wal Hussein – who is piloting use in pigmented lesions)
- Brighton and Sussex University Hospitals NHS Trust (Dr Paul Farrant)
- East Kent Hospitals University NHS Foundation Trust (Dr Saul Halpern)
- Luton and Dunstable University Hospital NHS Foundation Trust (Dr Berni De Silva)
- Royal Devon and Exeter NHS Foundation Trust (Dr Carolyn Charman)
- East Sussex Healthcare NHS Trust (Dr Jan von der Worth)
- Chelsea and Westminster Hospital NHS Foundation Trust (Dr Lucy Thomas)
- Gloucestershire Hospitals NHS Foundation Trust (Dr James Milne and Dr Alan Gwynn)

[NRp102](#)

**National Report case study: Teledermatology service to support management of two-week wait patients – Chelsea and Westminster Hospital NHS Foundation Trust**

**National Report case study: Teledermatology: increasing the use of Advice and Guidance in primary care – Gloucestershire Hospital NHS Foundation Trust**

**National Report case study: Teledermatology to assess patients for two-week wait referrals – Leeds Teaching Hospitals NHS Trust**

**National Report case study: Using a teledermatology service to facilitate a successful off-site dermatology department – Luton and Dunstable University Hospital NHS Foundation Trust (Now Bedfordshire Hospitals NHS Foundation Trust)**

**Trusts should ensure that teledermatology services are adequately funded and PAs allocated. Trusts and ICSs should ensure that Advice and Guidance, and tele-triage are used to reduce face to face clinics and waiting lists and are not untapping unmet demand to increase overall workload and increase waiting lists. Virtual clinics by telephone can be useful for some follow ups on long term systemic drugs for and by video for some patients unable to travel to hospital.**

# Musculoskeletal

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## [Spinal services Recommendation 3](#)

Trusts to follow SBNS and BASS guidance on the management of patients with suspected cauda equina syndrome, including urgent referral by a senior decision-maker to a **24-hour MRI** scanning service performed locally in the hospital of presentation, ensuring no delay. Radiologists must prioritise these patients in light of the syndrome's severity and the time-critical nature of effective treatment.

Trusts to ensure provision of out of hours radiography to ensure alignment with SBNS/BASS guidance

## Routine primary care X-ray requests

Requests for spinal X-rays should only be requested by the spinal/MSK team – patients displaying red flag symptoms as seen in figure 7 should be referred as an emergency or priority to the spinal team for review.

Figure 7 - Emergency spinal red flags

### **Emergency Spine Referral - As a guide to be seen the same day by emergency department/spinal team**

- Suspected Spinal cord neurology (gait disturbance, multi-level weakness in the legs and/or arms, brisk reflexes)
- Suspected Cauda Equina Syndrome
- Major motor/radiculopathy
- Suspected Spinal Infection

### **Priority Spine Referral - As a guide to be seen within 2 weeks by spinal interface service or spinal team**

- Past history of cancer (new onset spinal pain)
- Recent unexplained weight loss and significant spinal pain
- Objectively unwell with spinal pain (thoracic, band-like or persisting non-mechanical)
- Raise inflammatory markers with new spinal pain
- Possible immunosuppression with new spinal pain (IVDU, HIV, Chemotherapy, Steroid use)
- Known osteoporosis, with new severe spinal pain
- Age <15, or >60 years first onset axial back pain

## Routine primary care MRI requests

MRI is rarely indicated for back or neck pain, and should only be organised after assessment by a musculoskeletal practitioner with spinal expertise via the virtual triage review as outlined in the [GIRFT neck/back and radicular pain pathway](#).

**Direct access to MRI should only be permitted to clinicians who attend the virtual triage review.**

## Access to MRI for suspected cauda equina syndrome (CES)

A common, widespread example of the need for a more formalised network approach for specific patient groups we encountered was spinal care. Disinvestment in local spinal services is creating a dilemma when spinal emergencies are admitted - particularly in the case of suspected cauda equina syndrome. Patients admitted to local trusts that have no dedicated spinal service out of hours or at weekends, very often do not have access to emergency MRI scanning services. This can delay the transfer and treatment of the patient to a hospital with a dedicated spinal team, despite the existence of a contracted pathway. Commissioners need to make emphatic contractual requirements with the spinal hubs to

provide robust cover and pathway of care across the region so that patients are not exposed to gaps in out of hours service. Local assessment expertise and radiological investigation has been degraded by centralisation and needs to be addressed by commissioners. Failure in this pathway leads to significant risk for negligence claims, each of which is very costly for the NHS (Orthopaedics [NRp52](#)).

Since the publication of the national report, the BestMSKHealth Collaborative, in conjunction with the GIRFT team and Royal College of Radiologists (RCR) have set out the [National Suspected Cauda Equina Syndrome \(CES\) Pathway](#) guidance.

#### *Service standards of CES pathway*

1. Cauda Equina syndrome is a time dependant clinical emergency and all acute imaging services supporting Type I emergency departments should have policies in place for managing these patients.
2. Every acute imaging service should provide access to a 24/7 MRI imaging service for acute Cauda Equina Syndrome.
3. Imaging should be undertaken urgently within four hours of request with reserved slots at specified timepoints during the day.
4. Where an MRI service can't be provided locally, the acute service should have a networked service agreement with other local or regional providers.
5. However all acute services should aim to have onsite 24/7 MRI by April 2024
6. Where a transfer of patients is necessary there should be protocols in place documenting the patient pathway including the decision to transfer, process for referral, agreed responsible clinical teams at both sites, protocols for imaging, communication of the final report, treatment and repatriation.
7. The MRI scans should be undertaken by staff who are appropriately trained in MRI imaging including MRI safety.
8. The final report should be issued by an appropriately trained professional within 1 hour of the MRI scan.

**Systems should review their CES pathways and identify steps to align to the new guidance.**

**Emergency MRI should be available onsite in all acute hospitals dealing with these patients with a target date of April 2024.**

Further resources:

[GIRFT Spinal Pathways](#)

[BestMSK – Transforming musculoskeletal and orthopaedic elective care services](#)

[MRI spinal leaflets for clinicians and patients](#)

# Diabetes

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## [Diabetes Recommendation 2](#)

Access to **diabetes technology** should be available to all people with **type 1 diabetes** who need it in their local area in line with the NHS Long Term Plan and NICE guidelines. Relevant staff should be trained to support patients using these technologies and given the time they need to complete this training, which should form part of their annual appraisal process.

GIRFT will work with the Diabetes Technology Network and NHSE/NHSI on improving access to technology.

GIRFT will work with NHSE/NHSI, the Diabetes Technology Network, trusts and local commissioners to identify training modules that ensure trusts are able to meet requirements for technology uptake. GIRFT will track the uptake of these modules and review improvements.

## [Diabetes Recommendation 7](#)

All trusts should have a robust system to identify all people with diabetes on admission to hospital, including emergencies and elective and non-elective surgery, and a triage system to identify those at risk and rapidly refer them to the diabetes team. This should be an electronic system, integrated **with web-linked blood glucose meters** which provide an alert system for staff when any out-of-range reading is recorded.

GIRFT will support trusts in highlighting appropriate specification and procurement of web-linked glucose meters for staff.

GIRFT will work with trusts to ensure that all trusts have web-linked meters that can pick up all out of range results.

## [Diabetes Recommendation 14](#)

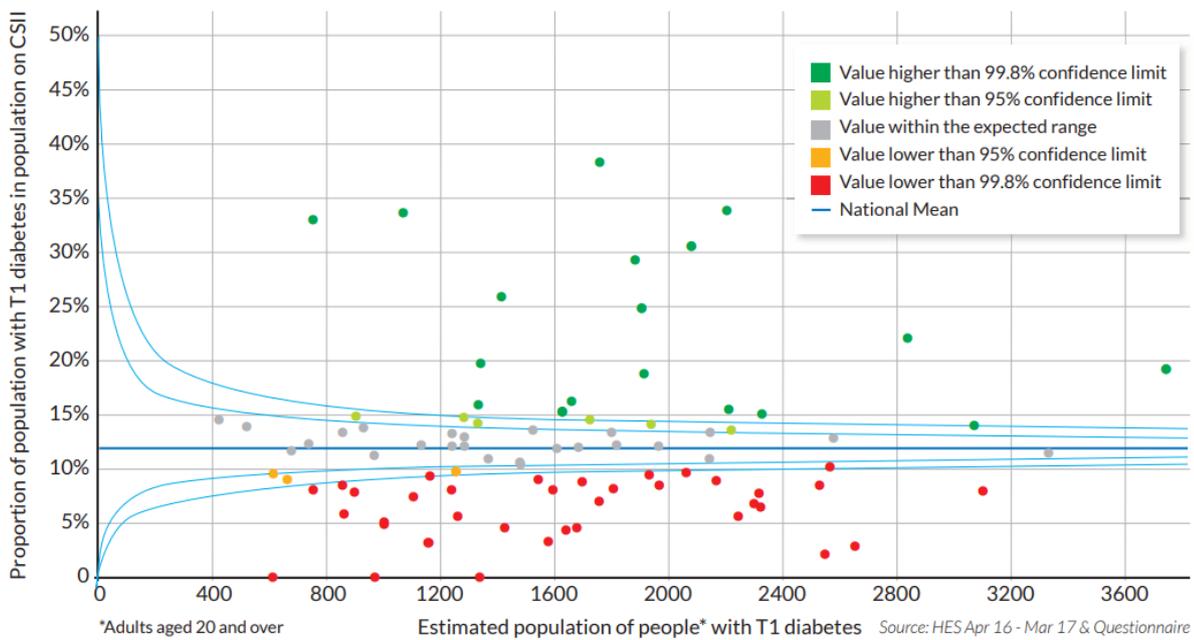
GIRFT and partner organisations should work together to assess the financial and clinical case for novel approaches to the procurement of **insulin pumps, blood glucose testing strips**, oral anti-diabetic agents and diabetes footwear, which may reduce costs and support increased uptake of continuous glucose monitoring and closed loop technology. This should be done in a way that maintains reasonable choice for people living with diabetes.

Glucose testing strips: The NHSE/NHSI diabetes team to complete investigations on use of strips, and to assess quality to deliver a standard specification for the NHS. NHS category towers or other centralised procurement function to use this standard specification with the NHS having power to drive down prices and reduce variation across the NHS.

## Type 1 Diabetes Mellitus (T1DM) - Glucose testing

The GIRFT Diabetes National Report found wide variations in the provision of T1DM technologies – figure 8 shows that CSII pumps are provided to up to 40% of people with type 1 diabetes in some trusts, and less than 5% in others ([NRp20](#)).

Figure 8 - Proportion of people\* with T1 diabetes in population on CSII, by trust



In some trusts where pump services are not well developed, patients have historically migrated to larger teaching centres who were willing to accept patients outside their catchment area to help establish their services. However, in some areas where the larger teaching centres and smaller referring hospitals are close to each other, a hub and spoke service could be an option. This would allow ‘local’ support at the spoke, while retaining expertise at the hub, without the need to travel long distances ([NRp21](#)).

Since the publication of the GIRFT National Report, NHS Supply Chain have developed a national framework for the procurement of insulin pumps to ensure greater patient choice, value for money and minimise variation in T1DM care. All systems should ensure they are utilising this framework as this will be needed for closed-loop artificial pancreas which will be available in 2023.

**All systems to sign up to the insulin pumps national framework**  
 Details can be found here: [Insulin Pumps, Continuous Glucose Monitoring and Associated Products \(supplychain.nhs.uk\)](https://supplychain.nhs.uk)

Work is also due to start to review the quality of continuous glucose monitors, including ensuring interoperability between clinical devices to ensure data can be usefully utilised in clinical decision making.

**Diabetes information standards**

GIRFT is working with the Professional Record Standards Body (PRSB) to ensure that all patients admitted with a diagnosis of diabetes are identified to the diabetes team. The PRSB has published two information standards for diabetes to support the sharing of information related to a person’s diabetes ([Diabetes standards – PRSB \(theprsb.org\)](#)). These standards cover:

- information that could be recorded by health and care professionals or the person themselves that is relevant to the diabetes care of the person and should be shared between different care providers

- information that could be recorded by the person (or their carer) at home (either using digital apps or medical devices) and shared with health and care professionals.

Information standards are essential as they ensure that everyone has the same understanding of the information, and the information can be shared safely between digital systems with no loss of meaning to support safe, high-quality care. Ensuring they are adopted in health and care practice is important. To support this the PRSB is now working with NHS Digital on terminology, to specify how the information is coded, and technical standards (based on FHIR UK Core), to specify how information is to be held or moved between systems. This will support the consistent recording of information and will enable information to be sent and received between clinical systems (and digital apps and medical devices). We will be publishing the technical standards in due course.

In the meantime, Integrated Care Systems and individual care providers should consider the change and transformation required to implement the diabetes information standards. There will be considerable work to do with staff and people with diabetes in particular in sharing data from people's devices for glucose monitoring and insulin delivery with health and care professionals. Changes will also be required to clinical systems to ensure that data can be recorded and shared as set out in the standards. Please discuss this with your clinical systems suppliers.

**Systems to check conformance with the diabetes standards or plan for future conformance with clinical systems.**

### **Capillary Blood Glucose and Ketone monitoring systems**

The NHS spends an estimated £167.5m - £200m each year on glucose testing strips and meters. In 2018/19 the spend on diagnostic and monitoring devices for diabetes was around £165 million in primary care and £16.7 million in secondary care. In primary care the strips are routinely made available over-the-counter at pharmacies through the NHS Drug Tariff. In secondary care, the data shows that many trusts do not routinely supply systems via the pharmacy department and are procured via the NHS supply chain. Patients on flash glucose sensing devices and continuous glucose monitors should continue to be prescribed blood glucose testing strips, however it is important existing prescriptions are reviewed as less than 2-4 test strips are required per day.

Although many CCGs have already implemented cost-effective use of blood glucose testing strips, there is still uncertainty around quality of strips. As a result, the NHS England and NHS Improvement diabetes team are investigating as part of NHS England's Low Priority Prescribing team recommendations.

The cost of strips available on the Drug Tariff varies from 10p to 30p per strip, and there are 86 different brands and types, reflecting the multitude of meters currently available on the market. The current CCG-led arrangements are not cost effective and lead to wide and unfair variation in provision. If these variations could be reduced by moving towards nationally coordinated product assessments and recommendations, coupled with action on unnecessary prescribing (approximately £15m is spent in areas of type 2 diabetes where the use of strips is not recommended by NICE) whilst encouraging

greater use of those meters and test strips that offer the best combination of quality and cost, we believe there is a significant opportunity for savings which could be reinvested in other appropriate areas.

By taking a national approach, NHSE expect to deliver by April 2023:

- A national, clinically driven specification, that sets minimum standards and clear requirements, against which products can be assessed. This would include systems for people with type 2 diabetes as well as for those with type 1 diabetes who require systems that incorporate ketone testing.
- An assessment of all current products and a process to assess and incorporate future products;
- An opportunity for suppliers to confirm / update their value proposition;
- A single national set of recommendations about which products offer best value (quality & cost) for defined patient cohorts;
- A single repository of information about all available products (e.g. product information, training, patients leaflets, etc);
- ICB level dashboards to report adoption of the recommendations and enable further opportunities to be identified.

**Systems to ensure glucose test strips are being prescribed in line with NICE guidance:**

**[Surveillance decision](#) | [Evidence](#) | [Type 2 diabetes in adults: management](#) | [Guidance](#) | [NICE](#)**

**The development of standards for glucose strips is underway and procurement to include this to ensure quality of the strips once available. Contact [scm.procurements@nhs.net](mailto:scm.procurements@nhs.net) for further details.**

# Neurology and associated specialities

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## [Neurology](#) [Recommendation 22](#)

Improve integration of neurology and neurophysiology services, in turn improving prompt patient access to neurophysiology and new technologies.

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Ensure neurophysiology services are accessible at all large DGHs with inpatient services.

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Deploy new technologies to enhance service delivery – including ensuring that neurophysiology services are available at all large DGHs with inpatient services. These would include remote reporting of EEGs, home video telemetry services (to reduce the need for inpatient video telemetry) and improved access to prolonged EEG. Remote supervision consultant clinical supervision would allow neurophysiology to be developed at more sites. This requires appropriate IT support.

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Increase the numbers of trainee healthcare scientist support workers, practitioners, clinical scientists and consultant clinical scientists to support neurophysiology services.

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Enable clinical physiologists to perform more sophisticated peripheral nerve studies within appropriate clinical governance through appropriate training.

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Enable clinical physiologists to report studies, including normal EEGs and some peripheral nerve studies, within an appropriate clinical governance structure.

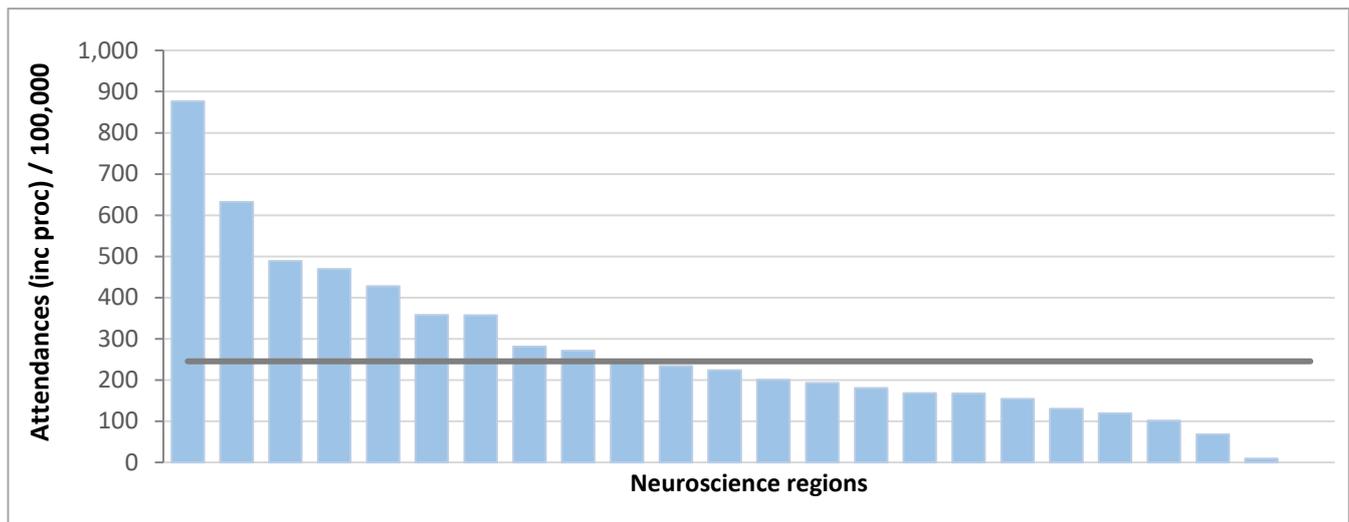
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Increase the number of consultant clinical neurophysiologists and credentialed neurologists to allow service delivery.

## Neurophysiology

Neurophysiology is an important diagnostic service for patients with both acute and chronic neurological disorders so needs to be accessed by inpatients and outpatients. It is available at 64% of acute hospital sites; almost all neuroscience and neurology centres and half of other acute hospital sites. This access is distributed very unevenly across the country as shown in figure 9.

Figure 9 - the number of neurophysiology outpatients per 100,000 total elective population, by neuroscience region, April 2017 - March 2018



Source: Hospital Episode Statistics

The number of consultant neurophysiologists varies from 1.3-4.8 per 1 million population in different regions of the country. This reflects a national shortage. Neurophysiology is one of the shortage specialties that can be dependent on immigration.

Clinical physiologists are an important part of the workforce and perform many neurophysiological investigations. There is significant variation in clinical physiologists' involvement in performing different types of investigations and there is also variation in their involvement in reporting the findings of these investigations. The delivery of services will be improved if staff are working at the 'top of their license' (that is, their routine activities utilise the full extent of their training and experience); at some sites clinical physiologists are enabled to do more within appropriate clinical governance, which, given the limited capacity of the service, will improve access for patients.

A minority of sites were undertaking training of clinical physiologists, despite their being a shortage of trained clinical physiologists nationally.

## Recommendations to improve neurophysiology

*Ensure access to neurophysiology services:*

**Neurophysiology services to be available at all large DGHs and arrange cover for all sites with acute medical admissions. Ensure services are within easy access for all outpatients.**

*Develop the clinical staff and provide them with the skills needed to deliver the services:*

An increase in the numbers of clinical neurophysiologists and consultant clinical scientists would enable expansion of the service, improving access in a safe manner. An increase in the number of trainee clinical physiologists is recommended to support the service. The current long-term shortage of consultant neurophysiologists also reflects low trainee numbers. This would need to be increased to address the long-term vacancies within the specialty.

Clinical physiologists should be trained to perform nerve conduction studies for entrapment neuropathies and enabled to report studies, including normal EEGs and some peripheral nerve studies. This should

take place through an appropriate training scheme and be supported by a suitable clinical governance structure and linked consultant neurophysiologist supervision.

*Optimise technology to facilitate the delivery of services:*

Newer technologies should be employed to enhance service delivery. These would include provision of IT systems to allow remote reporting of EEGs, so that a consultant could cover a wider network of hospital sites, and the development of home video-telemetry services to reduce the need for inpatient video telemetry and improve access to prolonged EEG. Remote consultant supervision would allow neurophysiology to be developed at more sites. This will require appropriate IT infrastructure; remote reporting has increased significantly during the COVID-19 pandemic, which has also highlighted those areas with inadequate IT systems. Improved IT infrastructure would facilitate sharing of expertise, supervision at remote sites, multidisciplinary assessments and development of services across more sites within a neuroscience region.

**Utilise IT to facilitate network and remote working, to facilitate access to neurophysiology.**

## About GIRFT and the GIRFT Academy

Getting It Right First Time (GIRFT) is an NHS programme designed to improve the quality of care within the NHS by reducing unwarranted variation. By tackling variation in the way services are delivered across the NHS, and by sharing best practice between trusts, GIRFT identifies changes that will help improve care and patient outcomes, as well as delivering efficiencies such as the reduction of unnecessary procedures and cost savings.

The GIRFT Academy has been established to provide easily accessible materials to support best practice delivery across specialties and adoption of innovations in care.

Importantly, GIRFT Academy is led by frontline clinicians who are expert in the areas they are working on. This means advice is developed by teams with a deep understanding of their discipline, generated by the management of services on a daily basis.

The GIRFT programme is one element of the government's response to the recommendations of Lord Carter's report on operational productivity and performance in NHS acute trusts in England, published in 2016. The Carter Report highlighted the GIRFT programme within its theme on quality and efficiency, outlining the orthopaedic GIRFT pilots which identified the scale of benefit to tackling unwarranted variation.

**For more information on the GIRFT programme, visit our website at:**

**[www.gettingitrightfirsttime.co.uk](http://www.gettingitrightfirsttime.co.uk)**

**If you have any comments, please send these to: [girft.academy@nhs.net](mailto:girft.academy@nhs.net)**

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