

Principles of Safe Staffing for Radiography Leaders

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Contents

1	Summary	4
2	Introduction	5
3	Principles of safe staffing	7
	3.1 The legal requirements	7
	3.1.2 Regulatory bodies in healthcare	8
	3.1.3 Useful websites	8
4	The Royal College of Radiologists and the College of Radiographers: Quality Standard for Imaging (QSI)	9
5	Operational Matters	9
	5.1 Calculating safe staffing levels	9
	5.2 Staffing to account for annual leave and levels of sickness (in line with individual service averages)	10
	5.3 Team leadership and across-team skills mix	10
	5.4 Workforce planning	11
	5.5 Operational hours	12
	5.6 Sources for national standards	13
	5.7 Equipment	14
	5.8 Types of procedures/treatments within a centre	15
	5.9 Ongoing requirements for CPD, education and training	15
	5.10 Service development	16
6	Professional Obligations	16
	6.1 The Society and College of Radiographers guidance	17
7	Other factors	17
8	Safe staffing models	18
	8.1 Workforce Planning and tool resources	19
9	Conclusion	20
	References	21

1. Summary

The Society and College of Radiographers (ScR) issues this updated guidance on principles of safe staffing for radiography leaders. This replaces the first published document of May 2015.

This document aims to provide principles which should be considered when reviewing staffing models for clinical imaging or radiotherapy/oncology services. It outlines the legal considerations that must be considered, members' professional obligations and the principles contained in the [Quality Standard for Imaging](#) and includes key reference texts and resources. It does not recommend a formulaic approach to staffing or a ratio of patients to staff as it is felt this type of 'one size fits all' approach is not appropriate for the work members do, and staffing figures determined using this approach could too easily be adopted as the norm, rather than the minimum. Full details of resources embedded throughout this document can be found in the references section. Staffing models have been incorporated into this document that have been utilised in diagnostic radiography departments and these could be adapted for radiotherapy services.

Application to radiotherapy

While this document gives an overview of the principles of safe staffing it does not cover the granular detail and levels of competency required for safe radiotherapy service delivery.

Building on the SoR [Education and Career Framework](#) and work of the [UK Radiotherapy Board](#) to support service leads and Operational Delivery Networks (ODNs) and devolved nations in developing their own regional radiotherapy workforce strategies, the SoR Radiotherapy Advisory Group is working with radiotherapy service leads to develop an updated vision for therapeutic radiography. This will be a key document with respect to staffing, skill mix and the various factors that need to be accounted for in terms of optimal staffing within the radiotherapy setting.

2. Introduction

This document aims to provide principles which should be considered when reviewing staffing models for clinical imaging, radiotherapy/oncology or nuclear medicine services. It includes key reference texts (but these are not exhaustive) and the principles contained in the Quality Standard for Imaging (QSI). Although QSI is aimed at services providing imaging, many of the principles within the domains apply to radiotherapy services. The Quality Standard for Imaging (QSI) can be viewed [here](#).

Staffing levels are dependent on multiple factors: the skills mix across the patient pathway, amount and complexity of equipment, number, and type (condition) of patients, types of procedures and activities, number of students or trainees, and the opening/operational hours of a service.

There is not a simple formula that can be applied to calculate staffing levels, but the factors and example models detailed within this document should be considered by managers and organisational decision makers, to assist in determining the correct staffing for their service. The principles outlined in this guidance apply equally to both out of hours and routine service provision. The Quality Standard for Imaging (QSI) covers staffing requirements within XR-2 'Imaging Workforce standard'. Details can be found in the associated standards within XR-2.

Contextual application to the localised environment should be considered prior to any quantitative/theoretical application to support workforce planning. Individual and collective capability is of critical importance when considering the safe and effective staffing of clinical services. Capability can be understood as the capacity of an individual, such as their associated knowledge, internal processing and cognitive framing, added to their ability, the associated skill and behaviour application. Service managers can use capability frameworks, such as the [CoR Education and Career Framework \(2022\)](#) to support their staffing decisions concerning appropriate individual skills mix, appropriate education, training and development routes, and safe working practices. In addition to individual capability, services must consider how collectively competent a service is, ensuring that there is appropriate expertise, experience, and individual capability within and across teams delivering care.

All staffing in clinical imaging and radiotherapy facilities should be configured in teams, with the appropriate mix of support workers, assistant practitioners, practitioners, enhanced practitioners, advanced clinical practitioners, consultant clinical practitioners, sonographers, radiologists/clinical oncologists, medical physicists and technical personnel, and nursing staff, to support the specific needs of the patient pathways within the service.

In addition, other appropriately trained support personnel will be required within a team to ensure effective and efficient delivery of the clinical imaging or radiotherapy/oncology service, e.g. administrative support, porters, coders, pathway navigators, and IT support.

Staff are required in both clinical imaging and radiotherapy/ oncology services to underpin service delivery e.g. administration, audit, quality assurance, quality improvement governance, management, staff, finance, equipment, service, regulatory compliance, public health duties, patient engagement, radiation protection, safeguarding, assessment of mental capacity, social prescribing and delivery of unexpected news, and continuing education for staff CPD, and student or trainee education. This includes practice educators: clinical staff offering didactic teaching and support for clinical training programs. Staffing to support service development, audits and research must also be considered and capacity for these activities included within the overall team.

It is also important to enable activities for regulatory requirements such as IR(ME)R governance, radiation protection CPD for all staff working with ionising radiation and the role of the radiation protection supervisor (RPS) who must be allowed specific time to carry out their duties.

Rapid changes in technology result in the requirement for team members to contribute to a highly dynamic process in which techniques are introduced and refined continuously. Thus, staffing levels across teams must take account of the requirement for time to learn and undertake formal (and less formal) education to meet these specific needs. A College of Radiographers' accredited practice educator(s) is recommended within services to support learning for all clinical imaging and radiotherapy staff and students. Details of the College of Radiographers' Practice Educator Accreditation Scheme can be found [here](#).

Policy and guidance documents issued by the Society and College of Radiographers are available from the [Society and College of Radiographers policy and guidance document library](#).

3. Principles of safe staffing

There are some fundamental areas to be considered when determining the correct staffing level for a service. Workforce profiles required in all services will be dependent upon a mixture of legal and operational requirements, as well as other factors, including:

3.1 The legal requirements

Legal obligations must be complied with. Where legislation is breached, members responsible could find themselves personally accountable for the breach and their employer may face criminal proceedings and financial penalties. Where contracts of employment are breached members will be able to seek redress through the employer's grievance procedure and, in some circumstances, through application for an employment tribunal.

Managers must therefore be mindful of the legal and contractual obligations that employers have to their staff. Staffing levels should be set to ensure that individual contracts of employment, which set out the hours people work and their place of work are complied with as is the [Working Time Regulations 1998](#), which limits (through legislation) the number of hours people can work over a given time period and stipulates the maximum hours of work before a break is required.

It is important, however, to recognise that the Working Time Regulations are designed to protect patients as much as employees. It is also important to recognise that as the factors detailed in this guidance document change, for example operational hours, that staffing levels must then be reviewed to ensure they reflect the changing demands on the service.

Ionising radiation regulations	The Ionising Radiation (Medical Exposure) Regulations 2017 The Ionising Radiation (Medical Exposure) Regulations (Northern Ireland) 2017 The Ionising Radiation (Medical Exposure) (Amendment) Regulations 2018 Ionising Radiations Regulations (IRR) 2017 SoR
Contractual agreements	Contracts of employment Working Time Regulations 1998 Maximum weekly working hours
Work equipment regulations	Provision and Use of Work Equipment Regulations (1998)
Codes of conduct	Code of Conduct for NHS Managers (2002)

Health and safety regulations	The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 The Safety Representatives and Safety Committees Regulations 1977 Manual Handling Operations Regulations 1992 The Management of Health and Safety at Work Regulations 1999 The Management of Health and Safety at Work Regulations 1999 Approved Code of Practice & guidance The Health and Safety at Work Act 1974 Health and Care (Staffing) (Scotland) Act 2019
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3.1.1 Regulatory bodies in healthcare

[Care Quality Commission England Healthcare](#)

[Improvement Scotland](#)

[Healthcare Inspectorate Wales](#)

[The Regulation and Quality Improvement Authority Northern Ireland](#)

[HCPC](#) – Health and Care professions council.

[HSE](#) – Health and Safety Executive

3.1.2 Useful websites

NHS Employers: <https://www.nhsemployers.org/>

Health and Safety Executive [HSE: Information about health and safety at work](#)

[Healthcare Staffing Programme – Healthcare Improvement Scotland](#)

[Scottish Terms and Conditions Committee](#)

[Home – NHS Scotland Staff Governance](#)

4. The Royal College of Radiologists and the College of Radiographers: the Imaging Standard

The Quality Standard for Imaging (QSI) can be viewed in full [here](#) and provides the following information to support safe staffing.

- The Quality Standard for Imaging (QSI) requires evidence of the recruitment process to ensure staff (including agency, bank, and locum) competency and adequate training for the role being undertaken.
- The Quality Standard for Imaging (QSI) requires evidence of ongoing staff competency and training defining support mechanisms to ensure staff maintain competency and develop new competencies.

The above statements have been summarised from criteria set out in XR-2 with detail found in XR2-4 service competencies and training plans.

- The Quality Standard for Imaging (QSI) expects there to be evidence of workforce planning, review, and development, including working with Institutes of Higher Education to ensure sufficient staffing numbers.

The statement above has been summarised from criteria set out in XR-2 Imaging Workforce.

5. Operational Matters

5.1 Calculating safe staffing levels

When reviewing staffing models for clinical imaging or radiotherapy/oncology services, the following subsets will help in calculating safe staffing levels. It will be important to consider service delivery hours, e.g. 12 hour extended day and 24/7 emergency care. When looking at the subsets it may be useful to keep in mind the various scenarios that are common to many services:

- Calculating safe staffing numbers and any additional costs for waiting time initiatives.
- Calculating safe staffing levels for new initiatives or service developments.
- Calculating safe staffing levels for business cases requiring increased diagnostic/therapeutic input.

- Calculating safe staffing levels for research initiatives.
- Calculating the ‘tipping point’ of safe staffing levels where an increase may be needed, due to several small initiatives having been absorbed into the service.

It is important to remember to include annual leave, study leave and sick leave in any calculation. For example, it may be that a service works with an average of 42 working weeks per year, at 40 hours per week for consultant radiologists, and 44 working weeks per year at 37.5 hours per week for qualified radiographers (this may be amended according to local circumstances).

5.2 Staffing to account for annual leave and levels of sickness (in line with individual service averages)

Quality Standard for Imaging (QSI) requires that sufficient staff, with appropriate competences, are available for the expected number of diagnostic and interventional procedures for the usual case mix of patients within expected timescales. Staffing needs to account for annual leave and levels of sickness in line with individual service averages. This requirement can be found in XR-2 Imaging Workforce and further details can be found in associated standards within XR-2.

5.3 Team leadership and across-team skills mix

The table below provides details of the Quality Standard for Imaging (QSI) criteria relating to team leadership and skills mix across a team. Key publications relating to these criteria are also signposted.

QSI criteria	Details
XR-201 Service Leadership	“The leadership of the service is clearly identified.”
XR-202 Local Modality-specific Service Leadership (XR-2 Imaging Workforce)	“Leads for key areas of the service are clearly identified”
XR-203 Staffing Levels and Skill Mix (XR-2 Imaging Workforce)	“Sufficient staff, with appropriate competences, are available for the expected number of diagnostic and interventional procedures for the usual case mix of patients within expected timescales.”

Resource	Details
<i>Achieving World-Class Cancer Outcomes: The Vision for Therapeutic Radiography</i> (SCoR, 2016) Updated document due 2024	<u><i>Achieving World-Class Cancer Outcomes: The Vision for Therapeutic Radiography</i></u>
<i>Implementing the career framework in radiotherapy - policy into practice</i> (SCoR, 2009)	<u><i>Implementing the career framework in radiotherapy – policy into practice</i></u>
<i>Team working in clinical imaging</i> (Royal College of Radiologists and SCoR, 2012)	<u><i>Team working in clinical imaging</i></u>

5.4 Workforce planning

The table below provides details of Quality Standard for Imaging (QSI) criteria relating to the labour market, available expertise and skills, and workforce planning. Helpful websites providing various resources and tools for workforce planning are also listed.

QSI criteria	Details
XR-203 Staffing Levels and Skill Mix	“Sufficient staff, with appropriate competences, are available for the expected number of diagnostic and interventional procedures for the usual case mix of patients within expected timescales”
XR-204 Service Competences and Training Plan	“A competency framework is in place defining roles and tasks within the service”
XR-205 Agency, Bank and Locum Staff (XR-2 Imaging Workforce)	“Before an individual starts work in the service, local induction and a review of competence for the expected role in diagnostic and interventional procedures are completed for all agency, bank and locum staff.”
XR-207 Administrative and Clerical Support	“The service can demonstrate an appropriate level of trained administrative and clerical workforce in order to support clinical functions.”
XR-209 Supporting Staff in Training (XR-2 Imaging Workforce)	“Staff in training within the service are supported by the service during their training programme.”

Resource	Details
Skills for Health integrated workforce planning tool	Six Steps Methodology to Integrated Workforce Planning
NHS Long Term Workforce Plan (NHS England, 2023)	NHS Long Term Workforce Plan
Non Medical Job Planning Operational Toolkit (NHS England, 2022)	Non Medical Job Planning Toolkit
E-rostering the clinical workforce (NHS England and NHS Improvement, 2020)	E-rostering the clinical workforce
E-job planning the clinical workforce (NHS England and NHS improvement, 2020)	E-job planning the clinical workforce

5.5 Operational hours

The table below provides details of the Quality Standard for Imaging (QSI) criteria relating to operational hours. Key resources relating to these criteria are also signposted.

QSI criteria	Details
XR-208 Supporting Staff and Staff Wellbeing (XR-2 Imaging Workforce)	“People employed by the service are supported in their work by the organisation and their colleagues.”
XR-206 On-call and Out-of-hours (Non-core) Working (XR-2 Imaging Workforce)	“Staff with appropriate competences are available outside planned sessions to respond to urgent and emergency requests.”
Associated commentaries document FR5 – The service implements and monitors systems to engage in service and workforce review, planning and development	“Systems in place to manage any and all out-of-hours service provision.”

Resource	Details
The Working Time Regulations 1998	The Working Time Regulations 1998
Gov.UK website	Maximum weekly working hours
<i>Guidance on Out of Hours Working and your Personal Scope of Practice</i> (SCoR, 2013)	Guidance on Out of Hours Working and your Personal Scope of Practice

5.6 Sources for national standards

The table below provides details of the Quality Standard for Imaging (QSI) criteria relating to national standards. Key resources relating to national standards are also listed.

QSI criteria	Details
XR-203 Staffing Levels and Skills Mix (XR-2 Imaging Workforce)	“Sufficient staff, with appropriate competences, are available for the expected number of diagnostic and interventional procedures for the usual case mix of patients within expected timescales.”
XR-204 Service Competences and Training Plan (XR-2 Imaging Workforce)	“A competence framework is in place defining roles and tasks within the service.”
XR-205 Agency, Bank and Locum Staff (XR-2 Imaging Workforce)	“Before an individual starts work in the service, local induction and a review of competence for the expected role in diagnostic and interventional procedures are completed for all agency, bank and locum staff.”
XR-206 On-call and Out-of-hours (Non-core) Working (XR-2 Imaging Workforce)	“Staff with appropriate competences are available outside planned sessions to respond to urgent and emergency requests.”
XR-207 Administrative and Clerical Support (XR-2 Imaging Workforce)	“Administrative, clerical and data collection support are available.”
XR-209 Supporting Staff in Training (XR-2 Imaging Workforce)	“Staff in training within the service are supported by the service during their training programme.” Associated commentaries (including all indicative inputs and notes) XR-2 Imaging Workforce

Resource	Details
RCR, SCoR and Institute of Physics and Engineering in Medicine (IPEM)	UK Radiotherapy Board
RCR, SCoR & IPEM	Clinical Imaging Board
Standards of proficiency for radiographers (Health and Care Professions Council, 2023)	The standards of proficiency for radiographers

5.7 Equipment

Staff must be adequately trained in order to operate any equipment. Equipment should be appropriately matched to the needs of the service considering advice from service leads, expert users, medical physics experts and, where appropriate, the radiation protection advisor.

The Quality Standard for Imaging (QSI) criteria relating to equipment age, technical ability and infrastructure are covered by XR-3 Scientific, technical and support for equipment standard and XR-4 Facilities and equipment specifically, by:

QSI criteria	Details
XR- 302 Equipment Management	“Arrangements for equipment management are in place.”
XR-303 Equipment Quality Control and Quality Assurance	“The service will follow national guidance on quality control (QC) and quality assurance (QA) for equipment.”
XR-401 Facilities and Equipment	“Appropriate facilities and equipment are available to deliver the expected number of diagnostic and interventional procedures for the usual case mix of patients within expected timescales.” Associated commentaries (including all indicative inputs and notes) XR-3 Scientific, Technical and Support for Equipment and XR-4 Facilities and Equipment.

Key publications relating to equipment are detailed in the table below.

Resource	Details
<i>Managing high value capital equipment in the NHS in England</i> (National Audit Office, 2011)	Managing high value capital equipment in the NHS in England
Magnetic resonance imaging (MRI) equipment, operations and planning in the NHS (Clinical Imaging Board, 2017)	Magnetic resonance imaging (MRI) equipment, operations and planning in the NHS

Resource	Details
<i>CT Equipment, Operations, Capacity and Planning in the NHS</i> (Clinical Imaging Board, 2015)	<u>CT Equipment, Operations, Capacity and Planning in the NHS</u>

5.8 Types of procedures/treatments within a centre

Quality Standard for Imaging (QSI) criteria relating to types of procedures or treatments within a centre are covered in XR-5 Guidelines, Policies and Clinical Safety. Additional requirements can be found in XR-1 Information and Support for Patients and Carers; XR-5 Guidelines, Policies and Clinical Safety; XR-6 Service Organisation and Liaison with other Services; XR-7 Governance and modality specific standards CT/IR/MR/NM/US-8

5.9 Ongoing requirements for CPD, education and training

Quality Standard for Imaging (QSI) criteria relating to continuing professional development, education and training are detailed in the table below. Key publications for this topic have also been listed.

QSI criteria	Details
LM1C6 (Leadership and Management Domain)	<p>“Systems in place to ensure agreed appraisals and/or personal development reviews are conducted for all staff.”</p> <p>Associated commentaries document LM1 – Roles, responsibilities, authorities and interrelationships</p>
FR4C7 (Facilities Resources and Workforce Domain)	<p>“Systems in place to ensure that all staff are supported to maintain necessary skills, knowledge and levels of competence, and to develop new competencies”</p> <p>Associated commentaries document (including all references) FR4 – The service implements and monitors systems to ensure staff are competent to deliver the service</p>

Publication	Details
<i>Continuing Professional Development: Professional and Regulatory Requirements</i> (SCoR, 2008)	Continuing Professional Development: Professional and Regulatory Requirements
<i>Principles for continuing professional development and lifelong learning in health and social care</i> (Interprofessional CPD and Lifelong Learning UK Working Group, 2019)	Principles for continuing professional development and lifelong learning in health and social care
Education and Career Framework for the Radiography Workforce (CoR, 2022)	Education and Career Framework for the Radiography Workforce

5.10 Service development

Quality Standard for Imaging (QSI) criteria relating to service development, are covered in XR-605 and research in XR-706. Audit requirements is embedded throughout the standard. Relevant commentaries and requirements are available for each section (including all references).

Quality Standard for Imaging (QSI) criteria specifically relating to safety in Magnetic Resonance Imaging is covered by section MR-8 In addition, the following publications are relevant to research, and safety in Magnetic Resonance Imaging.

Resource	Details
<i>The College of Radiographers' Research Strategy 2021–2026</i> (CoR, 2021)	CoR Research Strategy 2021–2026
<i>Safety in Magnetic Resonance Imaging</i> (SCoR and The British Association of MR Radiographers, 2019)	Safety in Magnetic Resonance Imaging

6. Professional Obligations

The [HCPC Standards of conduct, performance and ethics](#) set out the duties required of all registrants and must be always complied with. Staffing levels must be set to ensure there is no compromise of these requirements.

The HCPC also sets Standards of proficiency for radiographers and Standards for continuing professional development. Staffing levels must allow all radiographers to continue to practice

at the level of proficiency set out in these standards and to allow for the process of continuing professional development.

6.1 The Society and College of Radiographers guidance

The following guidance concerning professional obligations has been published by SCoR.

Publication	Details
<i>Code of Professional Conduct</i> (2013)	<u>Code of Professional Conduct</u>
<i>Guidelines for Professional Ultrasound Practice</i> (SoR and British Medical Ultrasound Society, 2023)	<u>Guidelines for Professional Ultrasound Practice</u>
<i>Guidance and recommendations for running an effective, high-quality obstetric ultrasound service and supporting obstetric sonographer career development</i> (SoR, 2023)	<u>Guidance and recommendations for running an effective, high-quality obstetric ultrasound service and supporting obstetric sonographer career development</u>
<i>Raising concerns in the workplace: guidance for SoR members</i> (SoR, 2015)	<u>Raising concerns in the workplace: guidance for SoR members</u>

7. Other factors

Other factors that should be considered and further resources for evaluating safe staffing levels are listed below.

- Geographical location/formal links to other clinical sites: where staff are working across multiple employers, they must be clear whose operating procedures they are working under at any site. The same staffing levels and skills mix considerations apply at all times. Patients at satellite sites and community diagnostic centres should experience the same standard of safety and care as they would at hub sites.
- IT infrastructure within a centre and links across networks – streamlining practice
- The extent of network-wide protocol standardisation, governance arrangements and staff cover arrangements

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- Processes in place to allow for raising concerns for all staff members regarding safe staffing levels.
 - Quality Standard for Imaging (QSI) requirements for safe staffing, not included above. Relevant commentaries are available for each section (including all references): XR-1, XR-3, XR-4, XR-5, XR-6, XR-7, CT-8, IR-8, MR-8, NM-8, and US-8 [BS EN ISO 9001](#) quality standard for radiotherapy. This international standard provides the requirements for a quality management system, which is a framework used by organisations to control processes and achieve objectives such as customer satisfaction, regulatory compliance, and continual improvement.
 - NHS England [service specifications](#)
 - [Lone working arrangements](#)
 - NHS Employers website [Improving the personal safety of lone workers](#)

8. Staffing models for Radiography and workforce tools.

There is no one size fits all for safe staffing in Imaging or Radiotherapy departments. The SoR have researched good practice within the UK and have collated examples of staffing models that have been tried and tested. These models are summarised below, these could be utilised and adjusted to fit specific service requirements.

1. [Staffing Model 1](#) – *Mid and South Essex NHS Foundation Trust Radiographer Safe Staffing Check List* (2023)
2. [Staffing Model 2](#) - Scottish Radiology Transformation Programme Workforce Plan. (2023)
3. [Staffing Model 3](#) – North Imaging Alliance Safe staffing tool (2024).
 - a. [Safe staffing tool user guide](#)
 - b. [Indirect and associated workloads](#)
 - c. [Safe staffing tool_rev](#)
4. [Staffing model 4 – Owens P \(2024\)](#)

[Staffing Model 4](#) can be used to check overall staffing levels in existing services, support business cases for new services or identify the staff needed for service expansion.

It provides a ball-point figure of staff needed, including all the relief capacity requirements. It can be used for both radiographers and associated professionals as well as separately for the support workforce requirement. Numbers per machine should be agreed upon using professional judgment to consider the skill mix, workflow, acuity and exam throughput.

It allows for variation in the amount of leave, sickness, CPD, etc arrangements within that employer to calculate the overall staffing need.

The downsides are that the skill mix, acuity and exam throughput are not managed in this model and professional judgement is required. It is a calculator purely of machine hours and the workforce required to operate it.

8.1 Workforce Planning and Tools resources

The NHS England Imaging Transformation Team have published resources for Imaging Demand & Capacity and Workforce Planning Tools. These tools have been developed with a range of key stakeholders from Imaging services.

The planning tools support individual Trust services, imaging networks and system level plans to be co-ordinated and ensure a consistent approach is used across all levels.

There are three tools that vary in scope:

- Operational tool - Trust level detail.
- Strategic tool - National/Network view.
- Network tool - ability to import Operational tool inputs across a network.

Each tool has its own Excel workbook and comprehensive user guide. The tools support and promote a unified way of demand, capacity and workforce planning across imaging at different levels, with the ambition to support business planning for capital, network-level management and forward planning of imaging services. The tools follow and support ambitions from the [NHS Long Term Plan](#), the [Independent Review of Diagnostic Services](#) (Richards, 2020) and [diagnostic imaging network guidance](#). The imaging workforce demand and capacity resources support the wider suite of [NHS England Demand and Capacity tools](#).

9. Conclusion

It is recognised that in the current climate achieving optimal staffing levels is challenging. Nevertheless, employers must ensure legal obligations are complied with. Individuals must also ensure they comply with HCPC Standards outlined in [section 6](#), above. The experience and outcomes of patients using diagnostic and treatment pathways should be the primary consideration underpinning workforce planning. This applies to the management of appointments and results as well as procedures.

It is also particularly important to consider issues such as sick leave averages, ongoing CPD requirements, skills mix, staff demographics, equipment age and the safe deployment, implementation and validation as well as post-implementation surveillance of artificial intelligence systems. Although they are unlikely in themselves to lead to legal action, should appropriate allowance not be made, failure to take proper account of these factors will potentially lead to unsustainable staffing levels, which in turn will increase the likelihood of failure to adhere to legal obligations. Services must also consider the resources required to ensure that a quality service is provided, and that quality improvement initiatives and service developments are integral factors when planning staffing levels.

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