



Healthcare  
Improvement  
Scotland

Inspections  
and reviews  
To drive improvement

# Announced Inspection Report – Ionising Radiation (Medical Exposure) Regulations 2017

St John's Hospital  
NHS Lothian

10-11 March 2020

Healthcare Improvement Scotland is committed to equality. We have assessed the inspection function for likely impact on equality protected characteristics as defined by age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation (Equality Act 2010). You can request a copy of the equality impact assessment report from the Healthcare Improvement Scotland Equality and Diversity Advisor on 0141 225 6999 or email [contactpublicinvolvement.his@nhs.net](mailto:contactpublicinvolvement.his@nhs.net)

© Healthcare Improvement Scotland 2020

First published October 2020

This document is licensed under the Creative Commons Attribution-Noncommercial-NoDerivatives 4.0 International Licence. This allows for the copy and redistribution of this document as long as Healthcare Improvement Scotland is fully acknowledged and given credit. The material must not be remixed, transformed or built upon in any way. To view a copy of this licence, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/>

**[www.healthcareimprovementscotland.org](http://www.healthcareimprovementscotland.org)**

# Contents

<b>About our IR(ME)R inspections</b>	<b>4</b>
<hr/>	
<b>Summary of inspection</b>	<b>6</b>
<hr/>	
<b>What we found during our inspection</b>	<b>8</b>
<hr/>	

# About our IR(ME)R inspections

## Our approach

Healthcare Improvement Scotland has a statutory responsibility to provide public assurance about the quality and safety of healthcare through its inspection activity.

The quality of care approach and the quality framework together allows us to provide external assurance of the quality of healthcare provided in Scotland.

- **The quality of care approach** brings a consistency to our quality assurance activity by basing all of our inspections and reviews on a set of fundamental principles and a common quality framework.
- **Our quality of care framework** has been aligned to the Scottish Government's Health and Social Care Standards: My support, my life (June 2017). These standards apply to the NHS, as well as independent services registered with Healthcare Improvement Scotland. They set out what anyone should expect when using health, social care or social work services.

We have aligned the Ionising Radiation (Medical Exposure) Regulations 2017 to the quality of care framework.

## How we inspect services that use ionising radiation for medical exposure

The focus of our inspections is to ensure each service is implementing the Ionising Radiation (Medical Exposure) Regulations (IR(ME)R) 2017. Therefore, we only evaluate the service against quality indicators that align to the regulations.

## What we look at

We want to find out:

- how the service complies with its legal obligations under IR(ME)R 2017 and address the radiation protection of persons undergoing medical exposures, and
- how well services are led, managed and delivered.

After our inspections, we publish a report on how well a service is complying with the Ionising Radiation (Medical Exposure) Regulations and its performance against the Healthcare Improvement Scotland quality of care framework.

More information about the quality framework and quality of care approach can be found on our website:

[www.healthcareimprovementscotland.org/our\\_work/governance\\_and\\_assurance/quality\\_of\\_care\\_approach.aspx](http://www.healthcareimprovementscotland.org/our_work/governance_and_assurance/quality_of_care_approach.aspx)

# Summary of inspection

## About our inspection

We carried out an announced inspection to the St John's Hospital, NHS Lothian, on 10 and 11 March 2020. We spoke with a number of staff including the IR(ME)R policy lead radiologist, sector radiology manager, head of radiation protection and radiographers. The inspection team was made up of two inspectors.

St John's Hospital offers plain film, computerised tomography (CT) mammography and nuclear medicine. The focus of this inspection is the imaging department.

## What we found

### What the service did well

- All staff were fully aware of their roles and responsibilities in relation to radiation protection of persons undergoing medical exposure.
- A variety of committees and groups were in place that had a role in sharing learning and driving improvement, such as the Lothian radiology IR(ME)R committee and the IR(ME)R Board.

### What the service needs to improve

- The service should ensure that employer's procedures reflect standard practice when contacting out-of-hours radiologists and the recording of information.

Detailed findings from our inspection can be found on page 8.

## What action we expect NHS Lothian to take after our inspection

This inspection resulted in three requirements and four recommendations. Requirements are linked to compliance with IR(ME)R 2017. See Appendix 1 for a full list of the requirements and recommendations.

An improvement action plan has been developed by the NHS board and is available on the Healthcare Improvement Scotland website.

[www.healthcareimprovementscotland.org/our\\_work/inspecting\\_and\\_regulating\\_care/independent\\_healthcare.aspx](http://www.healthcareimprovementscotland.org/our_work/inspecting_and_regulating_care/independent_healthcare.aspx).

NHS Lothian must address the requirements and make the necessary improvements

We would like to thank all staff at the radiology department, St John's Hospital, for their assistance during the inspection.

# What we found during our inspection

## Outcomes and impact

This section is where we report on what key outcomes the service has achieved and how well the service meets people's needs.

### Domain 1 – Key organisational outcomes

High performing healthcare organisations identify and monitor key measures that help determine the quality of service delivery and the impact on those who use the service or work with the service.

IR(ME)R requires that those who refer for a patient to be exposed to medical radiation, those who operate equipment and those healthcare professionals (medical and non-medical) who justify that the procedure is necessary, must be adequately trained and entitled to do so. Entitlement is given to each person involved in the process by the employer.

### What we found - fulfilment of statutory duties and adherence to national guidelines

#### Entitlement

NHS Lothian employer's procedures EP1 and EP2 provide guidance on how the entitlement process is managed in the NHS board. As entitlement is a process required by the regulations, we saw individual's scope of practice set out in a formal letter. An individual's scope of practice can change over time, such as following additional training.

Individuals who are a registered health care professional who can take responsibility for an individual's exposure are entitled as a practitioner. Individuals can also be entitled as an operator. Clinical evaluations is one aspect of an operator task.

All NHS Lothian medical staff registered with the General Medical Council are entitled to make diagnostic referrals. All dental staff are registered with the General Dental Council. The General Dental Council is an organisation that regulates dental professionals.

A radiologist is a doctor who is specially trained to interpret diagnostic images such as X-rays and CT scans. Radiologists who are Fellows of the Royal College of

Radiologists are practitioners and are entitled to carry out justifications and clinical evaluations.

Radiographers are entitled as operators and their scope of practice depends on their training. In order to act as an operator of equipment, all radiographers must be trained, and carry out justifications, on plain film x-rays.

Another group of staff that are entitled to make referrals are non-medical referrers, healthcare professionals who are not doctors or dentists. Departments can request an individual be entitled to make referrals. Requests are submitted to the radiology governance committee who will approve non-medical referrers if appropriate. Employer's procedure EP2/RAD/01 (The identification of non-medical or non-dental healthcare professionals entitled to act as Referrer) details this process. Staff must complete training prior to entitlement being approved. Training includes modules on IR(ME)R and clinical decision making. Once entitled as a non-medical referrer, the member of staff will receive written confirmation with their scope of practice. Their details are added to a spreadsheet so radiographers can check their scope of practice. The electronic referral system is also updated to allow them to make referrals. The list is accessible to radiographers and any others who need to check the scope of entitlement of any referral.

## Referral

A referral can only be made by a person who is entitled to do so. Referrals to the radiology department come from a variety of sources, such as doctors and non-medical referrers within the hospital and from the community, including GPs. Internal referrals are received through the electronic referral system. External referrals are made electronically and transferred onto the electronic referral system.

Paper referrals are received from dentists and some GPs, which are also transferred onto the electronic referral system. If the written information is not clear, the referrer would be contacted for clarification.

Referrals are made in accordance with guidance published by the Royal College of Radiology and the Royal College of Surgeons. The IR(ME)R lead is responsible for ensuring that the most recent guidance is being used.

Anyone with access to the electronic referral system is able to make a referral to NHS Lothian radiology services. No controls are in place to ensure referrals are being submitted by appropriate person. The main control is trying to ensure staff do not make referrals if they are not entitled to do so. The referral system relies on radiographers and radiologists identifying if someone is not entitled to make a referral. Radiographers told us that they could access a list of non-

medical referrers to check their scope of practice, if required to do so, prior to carrying out a procedure.

During the inspection we reviewed a number of records that contained the initial referral. While we were able to identify some referrers as a doctor or non-medical referrer, we saw some instances where staff could not identify the referrer.

### Justification

We reviewed the employer's procedure EP2/RAD/02: The identification of individual entitled to act as practitioners or operators for all medical exposures to x-rays. The policy detailed the competencies required for radiographers and radiologists. In order to be entitled to carry out CT and general radiography exposure, radiologists are required to be a Fellow of the Royal College of Radiologists. They also require specialist practice for some specific services, such as mammography.

Radiologists review all referrals, other than routine plain film, to ensure sufficient information is available to justify the referral. Justification is the process of weighing the potential benefit of the exposure against the risk of exposure to that individual. They would also choose the correct protocol for the medical exposure of ionising radiation. Radiologists will undertake clinical evaluations of the images and report their findings. The report is uploaded onto the electric referral system for the referrer to access. There are a small number of areas where specialist doctors can undertake clinical evaluations, such as cardiologists. They will be entitled for that specialist areas.

We were told that if a referral had insufficient information, the radiologist would contact the referrer to request further information. The additional information would then be added to the referral to allow a justification to be made. If no contact could be made, the radiologist would email the doctor and postpone the exposure. All radiographers we spoke with confirmed they would reject any referrals that did not contain sufficient information to enable it to be justified.

Radiologists provide cover for CT services 24 hours, 7 days a week. Referrers can contact on-call radiologists over the weekend to discuss their referral. The radiologist does not record their decision on the electronic referral system during out of hours. The referrer, based on the conversation, will record the outcome and attribute the justification to the on call radiologist.

We were told that the current system used by radiologists could be improved with better control and connectivity. For example, the system did not work as well when time pressures are a factor, such as in the emergency department.

Radiographers are entitled, depending on their training, to approve justifications as the practitioner of plain film x-rays and undertake clinical evaluations. In CT, radiographers act as a practitioner for some exposures and are authorised under protocol for others. Someone who is entitled under protocol will authorise an exposure following guidelines but the radiologist remains responsible for the justification. The scope of clinical evaluations a radiologist in training will undertake is linked to their training programme. To enable radiographers to act as practitioners, NHS Lothian carry out an assessment of competence as detailed in their employer's procedure. Part of the assessment of a radiographer includes case based discussions on 20 justifications. This is reviewed during annual reviews.

## Records

During our inspection, we looked at the information recorded on the electronic referral system and noted the following had been documented:

- patient details
- details of the referrer and operator
- identity checks
- pregnancy checks
- the dose
- Justification, and
- clinical evaluation.

Radiography staff could describe the checks undertaken prior to exposure. They were all confident and clear about what to do in the event that there was any doubt about the patient identity, pregnancy status, part of the body to be x-rayed or the possibility of duplication (if a similar exposure had recently taken place). The radiographers are the final check to ensure that the right patient gets the right exposure. They are positively encouraged in this aspect of their role and encouraged to be vigilant.

## What needs to improve

The employer's procedure must be reviewed and updated to include how competencies to act as a practitioner to carry out justifications will be applied to all radiographers, not only those entitled from 2019 on (requirement 1).

When a referral is received by the out-of-hours CT service, the referrer records the radiologist's decision on justification. We were told this was an accepted

way of working and audit trails were available for all decisions. However, the employer's procedures we viewed did not reflect this practice (requirement 2).

The current electronic referral system does not consistently provide information required for radiographers to identify whether a referrer is a doctor. Non-medical referrers are listed on a spreadsheet, which is easily accessible by radiographers and radiologists is available (recommendation a).

The electronic referral system has no controls in place to prevent access to anyone who is not entitled to make a referral (recommendation b).

### **Requirement 1**

- NHS Lothian must be able to demonstrate that radiographers entitled under IR(ME)R before 2019, and act as a practitioners to justify exposures, have been assessed as competent to do so.

### **Requirement 2**

- NHS Lothian must ensure that employer's procedures reflect standard practice when contacting out-of-hours radiologists and the recording of information.

### **Recommendation a**

- NHS Lothian should provide a mechanism that allows the referrer to be identified as a doctor who is entitled to make a referral within their scope of entitlement.

### **Recommendation b**

- NHS Lothian should introduce controls to the electronic referral system limiting access to individuals who have been entitled to make a referral.

## Service delivery

This section is where we report on how well the service is delivered and managed.

### Domain 5 – Safe, effective and person-centred care delivery

High performing healthcare organisations are focused on safety and learning to take forward improvements, and put in place appropriate controls to manage risks. They provide care that is respectful and responsive to people's individual needs, preferences and values delivered through appropriate clinical and operational planning, processes and procedures.

NHS Lothian has a duty under IR(ME)R to develop written procedures commonly referred to as employer's procedures. These are intended to provide a framework under which professionals can practice.

#### What we found - safe delivery of care

NHS Lothian's executive medical director is responsible to the chief executive for the implementation and overseeing of IR(ME)R policies. We reviewed the Policy for the implementation of the Ionising Radiation (Medical Exposure) regulations 2017 and saw it clearly set out organisational arrangements for implementing IR(ME)R. This policy is authorised by the chief executive.

The executive medical director delegates the role of IR(ME)R lead to the medical director for acute services. The IR(ME)R lead liaises with the clinical teams and is supported by the medical physics expert. The IR(ME)R lead:

- is responsible for the practical implementation of IR(ME)R
- authorises clinical directors to provide assistance in the implementation of the regulations, and
- supports the interpretation of the IR(ME)R legislation and provides advice and guidance for the clinicians.

The IR(ME)R lead appoints an IR(ME)R Board to provide assurance on the compliance of the implementation of IR(ME)R. The IR(ME)R lead chairs this Board. The Board meets regularly to discuss a variety of issues including:

- audit results and how to address the outcomes
- past inspections
- radiology incidents
- dose audits

- dose reference levels
- approve level 1 employer's procedures
- support consistency
- equipment faults, and
- where to focus medical physics expert resources.

The dose optimisation team reports to the IR(ME)R Board.

The Lothian radiology IR(ME)R committee (LRIC) meets every 2 months and is attended by the principle radiographers, a medical physics expert and team leaders from each hospital site. We were told these meetings provide a place to share learning, discuss incidents and drive consistency. In 2018, the IR(ME)R Board asked the committee to review all employer's procedures to identify where consistency could be applied across NHS Lothian. The committee is also responsible for all level 3 employer's procedures (relevant specifically to St John's Hospital). Staff we spoke with described this as a positive group that worked well. Minutes from the meeting are circulated to the radiology staff.

The IR(ME)R lead and clinical directors attend the NHS Lothian radiation protection committee. This committee connects to the NHS Lothian health and safety committee, which in turn reports to the chief executive through the healthcare governance committee. The IR(ME)R lead reports annually to this group to provide assurance that NHS Lothian is meeting its legal obligations in terms of IR(ME)R. The IR(ME)R lead also provides information on any notifiable incidents and audit activity and results. This provides a mechanism for any concerns to be escalated through the committee structure to the chief executive.

The radiology governance committee is attended by radiologists, a representative from the radiographers and a medical physics expert. The group discusses a variety of issues including IR(ME)R.

In addition, radiologists from St John's Hospital meet every month and attend monthly management meeting for the whole of NHS Lothian. They also attend discrepancy meetings every 3 months to discuss any incidents and share learning to reduce similar incidents occurring elsewhere.

### Safety culture

The IR(ME)R lead described the culture as open and honest and told us that learning is shared where possible. Such as, learning that has been incorporated from two previous incidents in radiotherapy.

The lead radiologists described the culture as positive and supportive to learn and the reporting of incidents was encouraged.

The radiographers described the culture as 'getting better'. They felt relationships in the team were good and agreed they were encouraged to report any incidents. Any learning was shared through staff meetings.

We saw a PAUSE poster prominently displayed in the radiology department to remind staff to take time when carrying out the appropriate checks before patient exposure.

### Employer's procedures

All NHS boards have a duty, under IR(ME)R, to develop written procedures. These procedures are commonly referred to as 'employer's procedures'. NHS Lothian has three levels of employer's procedures:

- level 1 applies to the whole NHS Lothian, including all modalities
- level 2 are modality specific across various sites, and
- level 3 are called department protocols, which are usually site specific within a hospital.

The responsibility for the development of employer's procedures is detailed in the Policy for the implementation of the Ionising Radiation (Medical Exposure) regulations 2017. Employer's procedure 15: Quality assurance of written procedures and protocols also provides details of the process for developing employer's procedures.

We were told when employer's procedures are developed, guidance from professional bodies such as Society of Radiographers, Royal College of Radiologists and any government guidance will be considered. All employer's procedures are reviewed every 2 years.

Approved employers procedure are uploaded to the intranet. All staff in NHS Lothian can access level 1 and level 2 employer's procedures, staff from within each department can access their specific level 3 procedures. All staff we spoke to confirmed they could access the employer's procedures and we were show how this was done.

The implementation of the employer's procedures is monitored through a variety of routes, including audit and observation.

## Risk benefit conversations

We discussed the information provided to patients on the risks and benefits of an exposure to ionising radiation and the employer's procedure EP2/RAD/09: The provision of information relating to the benefits and risks of a medical exposure. A risk based approach has been adopted and information posters were clearly displayed in a variety of areas about low risk exposure. Radiographers' told us that they discuss any exposure with the patient if asked.

An interpreter could be arranged in advance if an appointment had been arranged. We were told that staff have access to a telephone language line if interpreter was needed for unplanned appointments.

When an exposure requires a higher dose, it is expected the referrer will discuss the risk versus benefits of the exposure with the patient. Everyone we spoke to confirmed that conversations were taking place.

All the radiographers we spoke were familiar with the employer's procedure EP2/RAD/06: Establishing whether female patients may be pregnant. The employer's procedure includes a diagram detailing when to seek clinical justification. An advice note for referrers was also available to the support risk benefit discussion with pregnant patients. We were told that anyone of child bearing capacity aged between 12 and 55, for exposures where the lower diaphragm and upper thigh are directly in the primary beam, would be asked the pregnancy status questions. All the records we reviewed confirmed that these discussions took place with the appropriate patients.

If a patient was confirmed to be pregnant, the lead radiologist told us that they would speak to the referrer and try, where possible, to use a non-radiation imaging technique. While we were told the radiologist may record that this discussion had taken place when vetting the referral as part of the justification, it was normal practice to record this at clinical evaluation following exposure.

Radiographers told us if a patient was pregnant and to be exposed, they would check the patient record for confirmation that exposure had been discussed and ask the patient to confirm this. Alternatively they would contact the referrer to discuss the exposure.

## Carers and comforters procedures

We spoke with radiographers who all confirmed every effort is made not to have a carer or comforter in the room when an exposure is taken. Should it be necessary, the reasons are recorded in the processing notes, the relationship to the patient and if the person could be pregnant. Radiographers would provide a lead apron for any carer or comforter and we saw these are available in the radiology department. The employer's procedure was in place for the exposure

of comforters and carers and included dose constraint limits for this group of people.

### General duties in relation to equipment

We saw an equipment inventory list was in place in accordance with employer's procedure 16. The list contains information on:

- each piece of equipment in line with the regulatory requirements
- any planned preventative maintenance by the manufacturer and scheduled replacement dates, and
- make, model, date of installation and serial number.

The list is used to support decisions to replace equipment and given a priority rating. NHS Lothian has a long standing equipment replacement group for all hospital equipment, where decisions on the replacing of equipment are made. The information from the equipment inventory is used to help decide which request for equipment replacement are presented to this group.

An NHS Lothian-wide quality control program is in place for all radiological equipment as detailed in employer's procedure EP22: Equipment Quality Assurance Programme. Quality control teams within St John's Hospital ensure quality control. A team is responsible for the equipment in each different room and a set of operator procedures for quality control is also available in each room. Further information on quality control was available in the quality control handbook.

Radiographers carry out the daily, weekly and monthly quality control checks. All radiographers we spoke to were clear on their role and responsibilities within quality control. They knew where to record information, what to do in the event of equipment failed the checks and who to get support from. When equipment is to be serviced by an outside contractor, a quality control check will be carried out before it is used on patients. We visited the radiology department and confirmed that the quality control checks were in place and up to date.

In addition to these regular quality control checks, the medical physics experts also undertakes equipment checks every year. We saw the quality control records when we visited the radiology department.

Before any new equipment is put into service the medical physics expert will undertake acceptance and commission checks to review, for example, the baseline dose levels and safety parameters.

## Optimisation

Dose optimisation is the balance between the lowest dose and the image quality that is clinically suitable. A dose reference level provides guidance on the expected dose from an exposure. A variety of UK dose reference levels are available. These are calculated from all the data submitted across the UK or Scotland. A more accurate measure of dose is a local dose reference level that is developed using the data from one NHS board.

All radiologists we spoke with described how they calculate image quality with as low as dose as was reasonably practical when justifying an exposure. They also told us they would always consider if there is an alternative to ionising radiation.

NHS Lothian uses dose audit information to set local dose reference levels. Where local dose reference levels are not available, NHS Lothian can compare their levels with other NHS boards that use the same equipment for the same procedures. Scottish and UK dose reference levels are also available that provide a reference point on what the expected dose from an exposure should be. A local dose reference level is then set for each room in the diagnostic department in St John's Hospital. We saw the dose reference levels displayed in each of the rooms we visited.

The equipment used to expose patients to ionising radiation has a variety of pre-set protocols that help deliver standardised exposures. These can be modified for adults and children and take account of different body sizes. All operators we spoke with could describe how they would select the correct protocol for the intended purpose. Should the recorded value of an exposure be outside agreed limits, an investigation will be carried out. The investigation would consider the patient details, the quality of the image taken, the protocol used and scan range.

An imaging optimisation team was created in 2017, chaired by the lead radiologist. The group membership includes the medical physics expert, radiographers, radiologists and a representative from the paediatric optimisation team. The focus of the group has been on the higher dose procedures such as a head CT to ensure the appropriate quality of image at as low as dose as possible.

## What needs to improve

The IR(ME)R lead is due to leave after many years in post. While this role is clearly described, an induction programme would benefit future post holders to take on their full range of responsibilities (recommendation c).

While we were told benefit and risk discussions were taking place and employer's procedure were in place when exposing patients who may be pregnant, there was a lack of clarity on the who should record that this discussions had taken place (recommendation d).

- No requirements

### Recommendation c

- NHS Lothian should introduce an induction programme, or similar, to support future recruitment for the role of IR(ME)R lead. This will support familiarisation with the roles and responsibilities of the post and have an awareness of the legislative requirements of IR(ME)R.

### Recommendation d

- NHS Lothian should provide clarity on the recording of the discussions of the risks and benefits of exposure of ionising radiation, who and when these discussions should take place and where the evidence of the discussion should be recorded.

## Domain 6 – Policies, planning and governance

High performing healthcare organisations translate strategy into operational delivery through development and reliable implementation of plans and policies, and have effective accountability, governance and performance management systems in place.

### What we found - risk management, audit and governance

#### Outsourced services: governance arrangements

NHS Lothian does not use outsourced radiology services.

#### Clinical audit

A quality improvement team provides advice on carrying out clinical audits. The team links with the clinical governance group and radiology managers. Each directorate develops an annual audit program based on input from the quality improvement team. NHS Lothian also carries out annual audits to review compliance with the provisions of IR(ME)R and employer's procedures levels 1 and 2. The completed annual audits are reviewed by the IR(ME)R Board.

The scope of the monthly audits are described in employer's procedure 14: Provisions for IR(ME)R Audit and cover the following areas:

- compliance with employer's procedures entitlement process

- entitlement of operators and practitioners
- patient referral and justification, and
- diagnostic reference level.

We saw outputs from the monthly and annual audits that demonstrated good compliance with IR(ME)R.

The lead radiologist described the arrangements for reviewing discrepancies in images. The radiology department has a discrepancy co-ordinator who supports this process and holds meetings with radiologists and radiographers to discuss any discrepancy identified.

- No requirements.
- No recommendations.

## Domain 7 – Workforce management and support

High performing healthcare organisations have a proactive approach to workforce planning and management, and value their people supporting them to deliver safe and high quality care.

### What we found - staff recruitment, training and development

#### Expert advice

Medical physics experts are appointed by letter by the IR(ME)R lead and provide advice in relation to compliance with IR(ME)R. They are involved in a variety of areas including:

- commissioning of new equipment
- ensuring the quality assurance of equipment
- dose monitoring
- training and analysis of events, and
- optimisation.

The medical physics experts provide advice on whether an incident requires to be reported to Healthcare Improvement Scotland. Staff told us the medical physics experts were easily contactable and available for advice and support. NHS Lothian's medical physics experts' role are fully compliant with the requirement under IR(ME)R.

An annual summary report of incidents is sent to the IR(ME)R Board by the medical physics experts. They also present to the clinical management group, chaired by the radiology director. They also issue a summary report to referring departments and to GP practice every 3 months on near misses and incidents to support improvements and reduce the number of inappropriate referrals.

We were told that no specific workforce plans are in place for medical physics experts. Staffing levels have remained consistent following a review carried out in 2011. Additional information on staffing levels can be found at the European Federation of Organisations for Medical Physics radiation protection N° 174 European guidelines on physics expert Annex 2, Medical Physics Expert Staffing Levels in Europe.

### Training

We found comprehensive training records in place for staff involved in medical exposure to radiation.

Radiologists go through an induction period and a structured training program as part of their professional qualification. When they progress with their training, their scope of practice also increases. Throughout their training, radiologists will gain experience in different procedures. Once the training period is complete, a specialist area is chosen. All qualified radiologists can report on plain film and general CT and a specialist area. There is a dedicated radiologist for mammography. Radiologist training and continual professional development is managed through their annual appraisals and medical revalidation process.

Radiographers will also go through an induction programme and receive ongoing training once qualified. We saw records demonstrating that relevant training had been provided. Clear training records for operators of equipment in the department included CT and plain film equipment. Student radiographers are only able to work under the supervision of a qualified radiographer. A radiographer's training record is closely linked to their entitlement. We reviewed a sample of records and saw the entitlement records matched the training records.

We were told operators must be trained on each piece of equipment as every machine is different. All the radiographers we spoke with said they had received appropriate training and all training records inspected were up to date. NHS Lothian have different levels of competencies for equipment. An individual can be an operator, supervisor and trainer.

It is the responsibility of the radiographer to maintain their own continual professional development as part of their professional registration. If a

radiographer is away from the role for any period of time, they will be re-evaluated.

NHS Lothian use agency staff from within its 'bank' system. All agency staff are required to meet the same level of training as full time staff. They will only work in the main department and are always supervised.

NHS Lothian have a good system in place to support awareness of IR(ME)R and have developed a mandatory IR(ME)R online training module. All relevant staff must complete the training module every 2 years. Additional training is provided when required.

### **What needs to improve**

While we saw evidence of continual education for radiologists and radiographers, it was not always possible to identify the training that related specifically to IR(ME)R (requirement 3).

### **Requirement 3**

- NHS Lothian must develop guidance on the continual education requirements for all staff who work within the scope of IR(ME)R.
  
- No recommendations.

## Appendix 1 – Requirements and recommendations

The actions that Healthcare Improvement Scotland expects the independent healthcare service to take are called requirements and recommendations.

- **Requirement:** A requirement is a statement which sets out what is required of a service to comply with the Regulations. Requirements are enforceable at the discretion of Healthcare Improvement Scotland.
- **Recommendation:** A recommendation is a statement that sets out actions the service should take to improve or develop the quality of the service but where failure to do so will not directly result in enforcement.

Domain 1– Key organisational outcomes	
<b>Requirements</b>	
<b>1</b>	NHS Lothian must be able to demonstrate that radiographers entitled under IR(ME)R before 2019, and act as a practitioners to justify exposures, have been assessed as competent to do so (see page 12).  <i>Regulation 17(1)</i> <i>Ionising Radiation (Medical Exposure) Regulations 2017</i>
<b>2</b>	NHS Lothian must ensure that employer’s procedures reflect standard practice when contacting out-of-hours radiologists and the recording of information (see page 12).  Regulation 6(4) <i>Ionising Radiation (Medical Exposure) Regulations 2017</i>
<b>Recommendation</b>	
<b>a</b>	NHS Lothian should provide a mechanism that allows the referrer to be identified as a doctor who is entitled to make a referral within their scope of entitlement (see page 12).
<b>b</b>	NHS Lothian should introduce controls to the electronic referral system limiting access to individuals who have been entitled to make a referral (see page 12).

<b>Domain 5 – Safe, effective and person-centred care delivery</b>	
<b>Requirements</b>	
None	
<b>Recommendations</b>	
<b>c</b>	NHS Lothian should introduce an induction programme, or similar, to support future recruitment for the role of IR(ME)R lead. This will support familiarisation with the roles and responsibilities of the post and have an awareness of the legislative requirements of IR(ME)R (see page 19).
<b>d</b>	NHS Lothian should provide clarity on the recording of the discussions of the risks and benefits of exposure of ionising radiation, who and when these discussions should take place and where the evidence of the discussion should be recorded (see page 19).

<b>Domain 7 – Workforce management and support</b>	
<b>Requirement</b>	
<b>3</b>	NHS Lothian must develop guidance on the continual education requirements for all staff who work within the scope of IR(ME)R (see page 22).  Regulation 6(3)(b) <i>Ionising Radiation (Medical Exposure) Regulations 2017</i>
<b>Recommendations</b>	
None	

## Complaints/Concerns

If you would like to raise a concern or complaint regarding any aspect of the inspection then please discuss this with the lead inspector in the first instance.

If there is a concern or complaint about the conduct of an inspector please contact Kevin Freeman-Ferguson, Head of Service Review, [kevin.freemanferguson@nhs.net](mailto:kevin.freemanferguson@nhs.net) in the first instance to discuss your concerns in more detail.

Alternatively, Healthcare Improvement Scotland has a complaint and feedback service that can be contacted directly. Details can be found on our webpage.

[http://www.healthcareimprovementscotland.org/about\\_us/contact\\_healthcare\\_improvement/complaints.aspx](http://www.healthcareimprovementscotland.org/about_us/contact_healthcare_improvement/complaints.aspx)

Our contact details are:

**Healthcare Improvement Scotland**

Gyle Square  
1 South Gyle Crescent  
Edinburgh  
EH12 9EB

**Telephone:** 0131 623 4300

**Email:** [comments.his@nhs.net](mailto:comments.his@nhs.net)

You can read and download this document from our website.  
We are happy to consider requests for other languages or formats.  
Please contact our Equality and Diversity Advisor on 0141 225 6999  
or email [contactpublicinvolvement.his@nhs.net](mailto:contactpublicinvolvement.his@nhs.net)

#### Healthcare Improvement Scotland

Edinburgh Office  
Gyle Square  
1 South Gyle Crescent  
Edinburgh  
EH12 9EB

0131 623 4300

Glasgow Office  
Delta House  
50 West Nile Street  
Glasgow  
G1 2NP

0141 225 6999

[www.healthcareimprovementscotland.org](http://www.healthcareimprovementscotland.org)