NHS
Dumfries
& Galloway

A Guide to IR(MER) for Referrers

Ionising Radiation (Medical Exposure) Regulations 2017

IR (ME) R

Radiology Department

Information for Staff

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The Ionising Radiation (Medical Exposures) Regulations 2017 (IR (ME) R) lay down basic measures for the protection of patients from unnecessary or excessive exposure to medical X-rays.

They also have specific guidance for Employers, Practitioners, Operators and Referrers in their responsibilities as Duty Holders.

This leaflet is intended to be a helpful guide to the practical applications of the regulations for Referrers.

Categories of Duty Holder

The regulations identify different categories of duty holder, each of whom has responsibility to ensure the safe administration of ionising radiation to patients undergoing medical exposures. The duty holders we are concerned with in this leaflet are:

- The Employer
- The Referrer
- The Practitioner/Operator

The Employer

The Employer (NHS Dumfries & Galloway) is responsible for putting into place a system of policies, protocols and procedures* which will govern referrals ensure that justification of exposures takes place, and **that a clinical evaluation of all radiographs is recorded.** The aim is to ensure that radiation doses to patients are kept as low as is reasonably practicable.

The Employer is responsible for ensuring that the diagnostic findings and clinical evaluation of each medical exposure is recorded in the patient's notes. If it is known *before* an exposure that no clinical evaluation will occur, then the exposure cannot legally be **justified** and therefore should not take place.

The Medical Exposures Directive requires that **each request for a medical X-ray must be justified by a practitioner or authorised by an appropriately entitled operator** prior to exposure being made.

**These procedures can be found on the Radiology pages of BEACON*

Justification

Practitioners and Operators are responsible for justifying and authorising individual medical exposures based upon assessment information supplied by the Referrer. The Practitioners and Operators must consider:

- The specific objectives of the exposure and the characteristics of the patient involved.
- The total potential or therapeutic benefits, including direct health benefits to the individual and society.

- Any potential detriment to the individual.
- The necessity of the exposure
- The efficacy, benefits and risks of available alternative techniques.
- The Practitioner must pay special attention to:
    - Pregnancy and potential pregnancy
    - Exposures of infants and children
    - High dose techniques
    - Non medical exposures being performed e.g. for legal purposes
    - Exposures that have no direct health benefit for the individual.
- The urgency of the exposure in cases involving a female where pregnancy cannot be excluded, in particular if the abdominal and pelvic regions are exposed.

If the Practitioner or Operator considers the request not to be compliant with IR (ME) R he or she **cannot legally justify and must refuse** the imaging request.

Practitioners and Operators

The role of the Practitioner (usually a Radiologist) and the Operator (usually a Radiographer) can appear to overlap. The Practitioner must be sufficiently knowledgeable to be able to **justify** an exposure before **authorising** it to take place. If, in certain circumstances it is not practicable to obtain justification from the Practitioner, suitably entitled Operators can authorise an exposure for some examinations under Practitioner protocols or guidelines.

Practitioners and Operators must follow departmental guidelines and protocols as authorised by the Employer.

Practitioners and Operators have a legal obligation to refuse to justify an exposure when insufficient or incorrect clinical information is provided.

Referrers

Medical and Non-medical Practitioners who wish to refer individuals for medical exposure to a Practitioner are classed as Duty Holders under IR(ME)R who must be entitled in accordance with the employer's procedures. They must be aware of their responsibilities under IR(ME)R before they may refer patients for examinations involving the use of ionising radiation.

Referrers have the legal obligation to provide all necessary clinical information relating to the patient and the examination.

In order to avoid an unintended radiation exposure or wrong imaging investigation on a patient, all imaging requests **must provide sufficient demographic information to allow the patient to be correctly identified.** Therefore, imaging request forms must bear at least three patient identifiers from the following list;

- Full name,
- Address
- Postcode
- Date of birth
- Hospital or CHI number if known.

Where the patient's identity is unknown, standard Trust identification procedures must be followed. (NHS Dumfries & Galloway Patient Identification Policy)

For follow-up /out-patient referrals, the patient's telephone number is also desirable.

Clinical information **must include** details of previous diagnostic examinations and/or medical records relevant to the medical exposure requested. Without this information the Practitioner or the Operator will be unable to consider the potential benefits or detriment of the x-ray request, and will therefore be legally unable to justify the exposure. In such cases the request will be sent back to the Referrer for more clinical information.

If the Practitioners consider a medical exposure cannot be justified, **they will not legally** be able to proceed. This decision will then be communicated to the Referrer.

Referrals for medical exposures should be made in accordance with documented referral criteria. The criteria used by NHS Dumfries & Galloway will be based on those provided in the **"iRefer - Making the best use of clinical radiology"**, published by the **Royal College of Radiologists***.

** iRefer is available for free through Quick Links on BEACON home page*

Referrals can be made to the Radiology Department electronically via SCI gateway, via written request or via Order Comms.

For more guidance on making a referral for diagnostic imaging please refer to: **Level 1 Employer's Procedure 4 Referral Procedure & Referral Criteria.**

Medical Referrers

Medical Referrers holding current GMC registration are deemed to have received this training prior to their registration. IR (ME) R Training for Medical and Non-Medical Referrers is available via the IRMER Radiographer.

NHS Dumfries & Galloway require all non-medical referrers to undergo training in radiation safety/IRMER awareness prior to being entitled to act as referrers.

Staff falling into this category are :

- Hospital Consultants
- Junior Doctors
- General Practitioners
- Dental Practitioners

Non-Medical Referrers

Referral protocols must be agreed in advance between the Radiology Department and the appropriate Directorate for all non-medical referrers.

Registered Nurses, Allied Health Professionals and other staff who wish to be entitled as Non-Medical Referrers must contact the Radiology Department for an application form if their job role requires them to refer patients for diagnostic imaging.

Application forms must include evidence of training and continuing professional development which demonstrates that the applicant is sufficiently competent in patient assessment, history taking and decision making, to supply pertinent medical data to enable the Practitioner to ‘justify’ the exposure.

Applications from Non-Medical Referrers will be considered virtually by the IRMER Approval Panel (IAP)

Non-Medical Referrers must understand their professional accountability arising from their professional code of conduct and any legal issues related to their scope of practice. They must also complete the IRMER awareness training session with the IRMER Radiographer to inform them of the risks associated with exposure to ionising radiation.

The Radiology department must have evidence of successful completion of the IRMER session before Non-Medical Referrers can be appointed as Duty Holders and entitled to act as 'Referrers' at NHS Dumfries & Galloway. Once entitled, the Referrer functions should be added to the individual’s job description and specified Scope of Practice.

It is the Referrer's responsibility to inform the radiology department of any change of name/ change in employment within NHS Dumfries & Galloway or leaving employment from NHS Dumfries & Galloway in order to be compliant with IR(ME)R procedures and regulations.

Responsibilities of Referrer

The Form:
The X-ray request form is a **legal document** and must be filled in accordingly. It is essential that correct patient identification details are recorded as well as giving sufficient clinical and medical data, the date of the LMP(where appropriate) and a provisional diagnosis. Referrers must provide a legible signature uniquely identifying the Referrer and a contact number for any queries.

Informing the Patient of the risk and benefit of Radiation Exposure:
Under IR(ME)R 2017 "wherever practicable, and prior to an exposure taking place, the patient or their representative is provided with adequate information relating to the benefits and risks associated with the radiation dose from exposure".

In the first instance this discussion should be had with the patient by the Referrer **prior** to referral for X-ray. This should include how the imaging will allow them to be able to make a diagnosis or monitor the progress of the patient's treatment, and how the benefits from having the X-ray, and making the right diagnosis or providing the correct treatment, outweigh the very low risk involved with the X-ray itself.

It should be emphasised that the risk of cancer induction is extremely low and an indication of approximate average UK background equivalent radiation time given; for example a chest X-ray should described as being equivalent to a few days of average UK background radiation, (UK Background equivalent radiation times are shown in the Appendix).

Posters detailing the risks/benefits of different types of imaging examinations are available from the Scottish Clinical Imaging Network (SCIN). These are on display in the imaging department and in the Out Patient bays. They can also be found in BEACON > Health Services > Radiology > IRMER > IRMER Guidance. Examples are found in the Appendix

The Possibility of Pregnancy:

The Referrer is also required to check the LMP (Last Menstrual Period) dates of all female patients aged 12 – 55 years before referring them for an X-ray of the abdominal, pelvic or upper femoral regions. This is especially important for patients who will be under anaesthetic when the X-ray is required. LMP DATES FOR THESE PATIENTS **MUST BE CHECKED BEFORE** THEY ARE ANAESTHETISED.

Failure to do so may result in the Radiographer being unable to carry out the examination until checks can be made. This might result in patients spending longer under anaesthetic and will interrupt the operative procedure.

Patients who have doubts about their dates, or could be pregnant, should be offered a pregnancy test before the anaesthetic.

Referrers should clearly indicate on the request form if it is known or suspected that a patient is pregnant at the time the request is made and the Radiological Practitioner will decide whether the clinical necessity of performing the examination overrides the question of possible pregnancy.

NMRs intending to refer patients known or suspected to be pregnant for X-rays should first seek advice from their Consultant/Clinical Lead in their area of work. If the patient is known to be pregnant the referral must be made by a Consultant.

For patients that are known to be pregnant there is a consent form available from the radiology department that must be completed with the patient by the referrer prior to referral and sent with the patient when they go to the radiology department for their imaging. There must be a discussion regarding the examination between the Referring Consultant and the Consultant Radiologist regarding risk/benefit first before a referral is made.

Recording of Clinical Evaluation:

A clinical evaluation of each examination must be recorded in the patient's case-notes. Where Radiologist reports are available, they are entered onto RIS where they are also visible on the PACS system. If the referrer is also to carry out a clinical evaluation then they **must** also be entitled as an Operator for Clinical Evaluation. This is the case in those referrals where No Report is Required (NRR) e.g. Orthopaedic referrals and dental referrals.

Failure to provide a written clinical evaluation can lead to clinical risks. If a report is not going to be provided by the Radiology department, then the referrer **must** arrange for a suitably entitled operator to carry out a clinical evaluation.

In the event of an unexpected finding the advice should be sought from a Radiologist or specialist in the required medical specialty.

It is also helpful:

If the referrer would consider the following when referring a patient for an X-ray:

- The need for pain relief and removal of radio-opaque objects prior to X-ray as this can prevent unnecessary repeat exposures due to patient movement, or obscuration of the area under investigation.

- Patients who are informed are generally more co-operative, so please tell them why you are requesting an x-ray, where they are going and what to expect.

Finally:

If any patient undergoes a procedure and is exposed to unnecessary radiation exposure as a result of mistaken identification, or other procedural failure, or who receives an exposure greater than that intended, then there must be an investigation into the circumstances that gave rise to that exposure.

The detailed investigation required by this regulation should be aimed at;

- Establishing what happened
- Identifying the failure
- Deciding on the remedial action required to minimize the chance of a similar failure in future.
- Estimating the doses involved and determining if it meets the criteria of a significant exposure as defined by statutory guidance.
- Informing the patient (or their representative) of the incident

If an accidental or unintended exposure is judged to be significant then it will need to be notified externally to the enforcement authority (Healthcare Improvement Scotland).

'ALARP'

The Legislation assumes that no radiation dose is entirely free from risk and Radiographers have a legal duty to ensure that doses are **'As Low As Reasonably Practicable'** - this includes refusing to carry out procedures if the risk /benefit is not clear.

"To x-ray or not to x-ray? - That is the question!"

Main criteria: Will this examination influence /affect the immediate management of the patient?

"Before you request a test, you should first ask yourself what you are going to do if the test is positive, then ask yourself what you are going to do if the test is negative. If the answer is the same, do not do the test."

Further Information

If you have any questions about radiation the best person to answer them is the Duty Radiographer. Please contact them on Extension 32050

Relevant Regulations, Policies and Procedures

Ionising (Medical Exposures) Regulations 2017 Statutory Instruments 2017 No 1322
http://www.legislation.gov.uk/uksi/2017/1322/made

Appendix

UK Average Background Radiation Equivalent Times for Radiological Exams

1. X-ray examinations

Diagnostic procedure	Typical effective doses (mSv)	Equivalent period of natural background radiation 1	Lifetime additional risk of fatal cancer per examination 2
Limbs and joints (except hip)	< 0.01	< 1.5 days	1 in a few million
Teeth (single bitewing)	< 0.01	< 1.5 days	1 in a few million
Teeth (panoramic)	0.01	1.5 days	1 in 2 million
Chest (single PA film)	0.02	3 days	1 in a million
Skull	0.07	11 days	1 in 300,000
Cervical spine (neck)	0.08	2 weeks	1 in 200,000
Hip	0.3	7 weeks	1 in 67,000
Thoracic spine	0.7	4 months	1 in 30,000
Pelvis	0.7	4 months	1 in 30,000
Abdomen	0.7	4 months	1 in 30,000
Lumbar spine	1.3	7 months	1 in 15,000
Barium swallow	1.5	8 months	1 in 13,000
IVU (kidneys and bladder)	2.5	14 months	1 in 8000
Barium meal	3	16 months	1 in 6700
Barium follow	3	16 months	1 in 6700
Barium enema	7	3.2 years	1 in 3000
CT head	2	1 year	1 in 10,000
CT chest	8	3.6 years	1 in 2500
CT abdomen/pelvis	10	4.5 years	1 in 2000

References

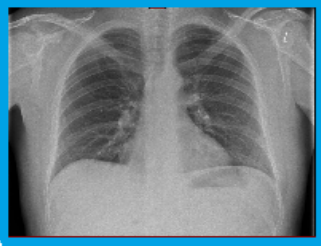
1. Patient dose information: guidance - GOV.UK (www.gov.uk)

NHS Dumfries & Galloway

NHS SCOTLAND

Your X-Ray and You

- Things you might like to know



Your Well-Being

- You are having an X-ray so that your doctor or health care practitioner can either make a diagnosis or monitor the progress of your treatment.
- Your doctor or health care practitioner can explain how the information gained will help to improve your diagnosis or treatment.
- Our overriding concern is to ensure that when you have an X-ray, the benefits from making the right diagnosis or providing the correct treatment outweigh the very low risk involved with the X-ray itself. We make sure that this is the case before you have an X-ray.

Our Standards

- Our X-ray equipment is regularly maintained and also subject to regular checks by our Radiographers and Medical Physics teams.
- This ensures that the amount of radiation we use is kept as low as possible to get the pictures we need. If there are any technical problems during the X-ray, we will tell you.

About X-Rays and Radiation

- X-ray machines use radiation to generate the "pictures" we need for your diagnosis and treatment.
- We are all exposed to natural background radiation every day of our lives. This comes from our environment, the air we breathe, the food we eat and even from outer space (cosmic rays).
- In Scotland, the largest contribution comes from natural radiation in the underlying rocks and building materials (granite). In any one year our exposure will vary according to where we've lived, where we may have flown to, and what we may have eaten.

Putting it in Perspective

- Each medical X-ray therefore gives us a small additional dose on top of this natural background radiation. The level of dose varies with the type of examination.
- Common X-ray examinations such as chest, the torso and the limbs, involve amounts of radiation that are equivalent to less than 3 months of natural background radiation.
- The X-ray you will be having today is one of those and carries a very low risk.

Scottish Medical Physics Network (MPNET)
Scottish Clinical Imaging Network (SCIN).

Did you know?
The correct term for your X-ray is a radiograph.

Did you know?
Over 10,000 radiographs are taken in Scotland every working day.

Age
The risks from X-rays are much lower for older people and a little higher for children. Extra care is taken with young patients.

Pregnancy
Please inform the radiographer if you are pregnant.

Consent
Please feel free to ask your doctor if you have any further questions or concerns.
You can refuse to have the X-ray if you do not feel you have sufficient information.

NHS Dumfries & Galloway

NHS SCOTLAND

Your CT Scan and You

- Things you might like to know

Your Well-Being

- You are having a CT scan so that your doctor can either make a diagnosis or monitor the progress of your treatment.
- Your doctor can explain how the information gained will help to improve your diagnosis or treatment.
- Our overriding concern is to ensure that when you have an X-ray, the benefits from making the right diagnosis or providing the correct treatment outweigh any risk involved with the CT scan itself. We make sure that this is the case before you have an X-ray.

Our Standards

- Our CT equipment is regularly maintained and also subject to regular checks by our Radiographers and Medical Physics teams.
- This ensures that the amount of radiation we use is kept as low as possible to get the pictures we need . If there are any technical problems during the scan, we will tell you.

About X-Rays and Radiation

- CT scanners use radiation to generate the 3D "pictures" we need for your diagnosis and treatment.
- We are all exposed to natural background radiation every day of our lives. This comes from our environment, the air we breathe, the food we eat and even from outer space (cosmic rays).
- In Scotland, the largest contribution comes from natural radiation in the underlying rocks and building materials (granite). In any one year our exposure will vary according to where we've lived, where we may have flown to, and what we may have eaten.

Putting it in Perspective

- Each medical X-ray gives us an additional amount of radiation on top of the natural background radiation. The amount varies with the type of examination.
- Common CT examinations are those of the chest, the skull and the abdomen. CT Scans will use several times more radiation than a typical X-ray. This is what you might be exposed to naturally over a three – four year period.
- The examination you will be having today carries a low risk.

Scottish Medical Physics Network (MPNET)
Scottish Clinical Imaging Network (SCIN).

Did you know?
A CT scan uses X-rays to obtain a 3 dimensional picture of your anatomy. CT stands for 'Computed Tomography'.

Did you know?
Over 1800 CT scans are performed in Scotland every working day.

Age
The risks from X-rays are much lower for older people and a little higher for children. Extra care is taken with young patients.

Pregnancy
Please inform the radiographer if you are pregnant.

Consent
Please feel free to ask your doctor if you have any further questions or concerns.
You can refuse to have the X-ray if you do not feel you have sufficient information.

NHS Dumfries & Galloway

Your X-Ray (Mammogram) and You

- Things you might like to know

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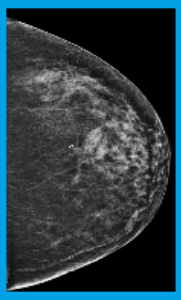
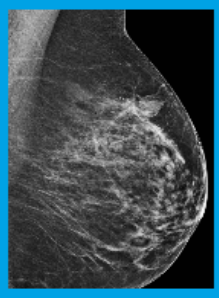


Your Well-Being

- As a follow up to your clinical assessment by the specialist breast care team you are having an X-ray of your breasts. This is known as a mammogram.
- Your breast care team health professional can explain how the information gained will help to improve your diagnosis or treatment.
- The risk to your health from not having the examination is much greater than any risk from the mammogram itself.

Did you know?
The correct term for your breast X-ray is a symptomatic mammogram.



Our Standards

- X-ray machines use radiation to generate the "images" we need for your diagnosis and treatment.
- Our X-ray equipment is regularly maintained and also subject to regular checks by our Radiographers and Medical Physics teams.
- This ensures that the amount of radiation we use is as low as possible to get the best images. If there are any technical problems during the X-ray, we will tell you.

About X-Rays and Radiation

- We are all exposed to natural background radiation every day of our lives. This comes from our environment, the air we breathe, the food we eat and even from outer space (cosmic rays).
- In Scotland, the largest contribution comes from natural radiation in the underlying rocks and building materials (granite). In any one year our exposure will vary according to where we've lived, where we may have flown to, and what we may have eaten.
- Each mammogram gives a small additional amount of radiation to the breast tissue, on top of this natural background radiation.

Putting it in Perspective

- Mammograms involve amounts of radiation that are equivalent to less than 3 months of natural background radiation.
- The X-ray you will be having today carries a very low risk.

Pregnancy
Please inform the radiographer if you are pregnant. Although there is no X-ray dose to your baby from a mammogram, pregnancy may cause changes to the appearance of the mammogram.

Consent
Please feel free to ask your breast care team if you have any further questions or concerns.
You can refuse to have the X-ray if you do not feel you have sufficient information.

Scottish Medical Physics Network (MPNET)
Scottish Clinical Imaging Network (SCIN)

NHS Dumfries & Galloway

NHS SCOTLAND

Your Fluoroscopy Exam and You

- Things you might like to know

Your Well-Being

- You are having a Fluoroscopy exam so that your doctor can either make a diagnosis or monitor the progress of your treatment.
- Your doctor can explain how the information gained will help to improve your diagnosis or treatment.
- Our overriding concern is to ensure that when you have an X-ray, the benefits from making the right diagnosis or providing the correct treatment outweigh any risk involved with the X-ray itself. We make sure that this is the case before you have an X-ray.

Our Standards

- Our X-ray equipment is regularly maintained and also subject to regular checks by our Radiographers and Medical Physics teams.
- This ensures that the amount of radiation we use is kept as low as possible to get the pictures we need. If there are any technical problems during the scan, we will tell you.

About X-Rays and Radiation

- Fluoroscopy units use X-ray radiation to generate the real time, moving "pictures" we need for your diagnosis and treatment.
- We are all exposed to natural background radiation every day of our lives. This comes from our environment, the air we breathe, the food we eat and even from outer space (cosmic rays).
- In Scotland, the largest contribution comes from natural radiation in the underlying rocks and building materials (granite). In any one year our exposure will vary according to where we've lived, where we may have flown to, and what we may have eaten.

Putting it in Perspective

- Each medical X-ray gives us an additional amount of radiation on top of the natural background radiation. The amount varies with the type of examination.
- Common Fluoroscopy examinations include the digestive system and checking the position of tubes, catheters and stents.
- A Fluoroscopy examination may require several times more radiation than a single X-ray. Typically, the amount of radiation you will receive is less than 1 year of natural background radiation. Some examinations may be equivalent to less than one day of natural background radiation.
- The examination you will be having today carries a low or very low radiation risk.

Scottish Medical Physics Network (MPNET)
Scottish Clinical Imaging Network (SCIN).

Did you know?
A Fluoroscopy exam uses X-rays to obtain moving pictures of your anatomy.

Did you know?
Over 50,000 Fluoroscopy exams are performed in Scotland every year.

Age
The risks from X-rays are much lower for older people and a little higher for children. Extra care is taken with young patients.

Pregnancy
Please inform the radiographer if you are pregnant.

Consent
Please feel free to ask your doctor if you have any further questions or concerns about Fluoroscopy.
You can refuse to have the X-ray if you do not feel you have sufficient information.

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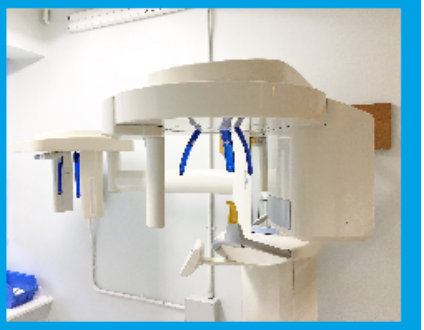
Your X-Ray and You

- Things you might like to know



Your Well-Being

- Dental X-rays are undertaken to investigate suspected problems with your teeth and gums and to plan treatments.
- Your dentist or dental care professional can explain how the information gained will help to improve your diagnosis or treatment.
- These X-rays allow for faster and more effective interventions and can save you discomfort and pain.
- Our overriding concern is to ensure that when you have an X-ray, the benefits from making the right diagnosis or providing the correct treatment outweigh the very low risk involved with the X-ray itself. We make sure that this is the case before you have an X-ray.

Our Standards

- Our X-ray equipment is well maintained and regularly checked by appropriately qualified staff.
- This ensures that the amount of radiation we use is kept as low as possible to get the pictures we need. If there are any technical problems during the X-ray, we will tell you.

About X-Rays and Radiation

- X-ray machines use radiation to generate the "pictures" we need for your diagnosis and treatment.
- We are all exposed to natural background radiation every day of our lives. This comes from our environment, the air we breathe, the food we eat and even from outer space (cosmic rays).

Putting it in Perspective

- Each dental X-ray gives us a very small additional amount of radiation on top of this natural background.
- The examination you will be having today carries a very low risk.

Did you know?
Over 5000 dental radiographs are taken in Scotland every working day.

Age
The risks from X-rays are much lower for older people and a little higher for children. Extra care is taken with young patients.

Pregnancy
Because the risk to a developing baby from a dental X-ray is negligible, we will not ask any intrusive questions about pregnancy.

Consent
Please feel free to ask your dentist or dental care professional if you have any further questions or concerns. *You can refuse to have the X-ray if you do not feel you have sufficient information.*

Scottish Medical Physics Network (MPNET)
Scottish Clinical Imaging Network (SCIN)