INTRODUCTION

The following clinical standards and audit templates have been prepared by the Audit and Standards Subcommittee of the ESR’s Quality, Safety and Standards Committee and endorsed by the ESR Executive Council.

The ESR believes that all radiology departments should have a Clinical Audit Programme in order to assure users of the quality of the service and to promote continual quality improvement.

To support departments in establishing an effective programme the ESR Audit and Standards Subcommittee suggests that areas for clinical audit should be categorised into three broad headings:

Level 1 Basic Audits - These audits should be the starting point for any audit programme and are focused on ensuring the safety of the patient throughout their journey through the service.

Level 2 General Service Audits - These audits should be performed in addition to the Level 1 Audits once the programme is established.

Level 3 Focused Audits - These audits would form part of a final comprehensive programme in departments seeking true excellence in service provision.

The ESR Audit and Standards Subcommittee suggests that these 3 headings should be used as a guide and should be adapted to local circumstances taking into consideration such issues as the services provided, the population served and local quality considerations.

This document should be used as a starting point and lists a set of clinical standards and associated audit templates for which fall into the first category of Level 1 Basic Audits.

We would suggest this document is read in combination with the ESR Audit Tool.
1. AUTHORITY OF REQUESTOR POLICY

STANDARD
There should be a local policy that clearly defines who has the authority to request imaging investigations and there should be a clear system in place for identifying that all referrals accepted for imaging are initiated by an authorised referrer (and the request has the appropriate form and content).

IMPORTANCE
Patients should be protected from inappropriate investigations requested by those who do not have the necessary qualifications/competencies.

2. JUSTIFICATION POLICY

STANDARD
Radiology departments should have a current policy that defines the process of justification including who is responsible for the process and any appropriate competencies/training requirements. It should also include the use of clear evidence based guidelines that avoid unnecessary radiation.

IMPORTANCE
Patients should be protected from inappropriate investigations and should be directed to the most relevant investigation for their condition taking into consideration potential risks of exposure to irradiation and electromagnetic fields.

3. JUSTIFICATION POLICY FOR WOMEN OF CHILD BEARING AGE

STANDARD
There is a clear local policy on justification for women who could be pregnant, which is up to date and available to all relevant staff and there is clear assurance of its correct use.

IMPORTANCE
The fetus should be protected from inappropriate exposure to the potential risks of exposure to irradiation and electromagnetic fields.

4. RELIABLE SYSTEM OF RECORDING THE PREGNANCY STATUS IN EXAMINATIONS INVOLVING IONISING RADIATION

STANDARD
There should be a clear record of the pregnancy status in 100% of females of childbearing age undergoing X-ray or CT examinations from chest to knees.

IMPORTANCE
The fetus should be protected from inappropriate exposure to the potential risks of exposure to irradiation.
5. CT RADIATION DOSE RECORDS

STANDARD
All patients having a CT scan should have a permanent record of the dose received for future reference.

IMPORTANCE
There is a need to optimize radiation dose to avoid unnecessary radiation to the patient. The documentation of the dose for each patient scanned will allow a department to be able to review its radiation dose by patient, machine and area scanned.

6. RADIATION DOSE IN HEAD CT IN CHILDREN

STANDARD
There should be no more than 25% variation in dose between operators using the same scanner and no more than 25% variation between different scanners.

IMPORTANCE
Children’s brains are more sensitive to the effects of radiation. Departments should have agreed standards for optimisation of dose.

7. DOSE OPTIMISATION IN CT POLICY

STANDARD
Radiology departments should have a policy to determine the most appropriate (“personalized”) examination protocol based on the patient’s presenting clinical condition and this should be implemented in the department.

IMPORTANCE
Patients should be protected from unnecessary irradiation in CT, especially those who regularly undergo CT examinations (e.g. oncology patients). The examination protocol should be optimised to obtain the necessary diagnostic information utilising the lowest appropriate dose.

8. POLICY FOR PATIENT IDENTIFICATION PRIOR TO PROCEDURE

STANDARD
There should be a local policy that clearly defines a reliable process for identifying the correct patient is being investigated with the correct test and this policy is understood and implemented by staff.

IMPORTANCE
It is essential to have a clear implemented policy that ensures the right patient has the correct examination to avoid inappropriate risks and potential error of diagnosis.
9. PREVENTION OF MRI HAZARDS POLICY

STANDARD
All patients (and their guardians), prior to entering an MRI scanning room, should have been informed of the potential dangers of MRI under certain conditions and should have clearly stated whether they could be at risk due to the presence of pacemaker, metallic implants, metallic foreign body, pregnancy or recent surgery. There should be a clear policy on who has the responsibility for making sure that the safety questions have been asked, and the answers checked prior to MRI exposure.

IMPORTANCE
It is essential that the radiographer (MRI operator) protects all patients and their guardians) from the potential harm of exposure to magnetic fields.

10. PROCESS FOR CONSENT FOR INTERVENTIONAL RADIOLOGY PROCEDURES OF NON-EMERGENCY PATIENTS

STANDARD
All patients undergoing interventional radiology procedures should have access to appropriate information regarding the potential benefits and risks of the procedure including alternative treatments. The patients should also have access to an appropriately trained healthcare professional, who has knowledge of the procedure and can explain and answer any concern. This should be evidenced by a signed consent form.

IMPORTANCE
Patients must have a clear understanding of the risks and potential benefits of the procedure, as well as other options for treatment so that they can make a clear informed decision on whether they wish to proceed with the intervention.

11. REDUCTION OF THE RISK OF HYPERSENSITIVITY REACTIONS TO CONTRAST MEDIA

STANDARD
There should be a clear policy on contrast administration, which includes appropriate questioning of the patient in advance of administration and proposed strategies to identify and diminish the risk of such reactions, and all staff should be familiar with that policy.

IMPORTANCE
Hypersensitivity reactions to contrast media can result in life-threatening conditions and require appropriate measures to reduce such risks.
12. POLICY ON THE PREVENTION OF CONTRAST INDUCED NEPHROPATHY (CIN)

STANDARD
There should be a clear written policy in place, which defines how patients undergoing contrast administration should be identified as being at risk of, and protected from potential kidney damage, and this policy should be effectively implemented.

IMPORTANCE
CIN is a widely recognized and clinically significant problem in patients undergoing radiological examinations, and is the third most common cause of hospital-acquired renal failure, having significant prognostic implications on patient outcomes.

13. APPROPRIATE CARE OF ACUTE CONTRAST MEDIA REACTIONS

STANDARD
All healthcare professionals in the radiology department must understand the clinical features of a contrast reaction and know how to manage the patient including fundamentals of basic life support techniques and the internal procedure and policy to assure an effective resuscitation to the patient.

IMPORTANCE:
Adverse reactions to contrast media can potentially cause life-threatening situations which requiring immediate and appropriate management.

14. RESUSCITATION POLICY/TRAINING

STANDARD
There should be a local policy that clearly defines which personnel should be trained in appropriate level of resuscitation training. This should include evidence of training records of all staff with regular updates.

IMPORTANCE
It is important that staff know how to manage critically ill patients who are under their care whilst in the department.

15. INFECTION CONTROL POLICY

STANDARD
All departments of radiology should have an infection control policy which clearly defines the appropriate procedures to reduce the risk of hospital acquired infection and identifies the individual responsibilities of all staff within the department (and individuals in the department comply with this policy).

IMPORTANCE
It is essential to minimise the risk of healthcare-associated infections within the department of radiology. This should cover general issues of infection control (e.g. hand washing) as well as actions specific to radiology (e.g. probe cleaning).
16. POLICY ON COMMUNICATION OF EMERGENCY AND Unexpected Findings

STANDARD
There should be a clear policy in place that defines how emergency and unexpected findings are communicated to referring clinicians.

IMPORTANCE
It is essential for patient management that clinicians have timely and accurate reports on relevant imaging.

17. CLINICAL INCIDENT REPORTING SYSTEM

STANDARD
There should be a clear system in place that defines the responsibility of individuals to report any events where there has either been harm to a patient or where in their opinion there was a “near miss”. The system should include a process for investigating such incidents and sharing the learning within the department and with the patients involved where appropriate.

IMPORTANCE
It is essential that radiology departments have up to date information on the safety of their systems and can learn and adapt to protect patients.

18. CLINICAL AUDIT SYSTEM

STANDARD
There should be a clear system in place that defines a programme of Clinical Audit that informs the department of their current compliance with the Patient Safety Standards.

IMPORTANCE
It is essential that radiology departments have up to date information on the safety of their systems and can learn and adapt to protect patients.
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AUTHORITY OF REQUESTOR POLICY

AUDIT DESCRIPTION
An audit of the presence of a local policy that clearly defines who has the authority to request imaging investigations

Standard
There should be a local policy that clearly defines who has the authority to request imaging investigations and there should be a clear system in place for identifying that all referrals accepted for imaging are initiated by an authorised referrer (and the request has the appropriate form and content).

SOURCE OF STANDARD
Legislation

IMPORTANCE
Patients should be protected from inappropriate investigations requested by those who do not have the necessary qualifications/competencies

TARGET
Comprehensive local policy in place

THE INDICATOR
Not applicable

DATA TO BE COLLECTED
Not applicable

SAMPLE
Not applicable

METHOD
Review policy

SUGGESTED ACTIONS IF TARGET NOT MET
• Analysis of inappropriate requesters
• Review policy
• Effective dissemination of policy to requesters and those who justify requests

REFERENCES
AUTHORITY OF REQUESTOR POLICY IMPLEMENTATION

AUDIT DESCRIPTION
An audit of the effective use of a local policy that clearly defines that all requests come from identifiable authorised referrers.

Standard
There should be a local policy that clearly defines who has the authority to request imaging investigations and there should be a clear system in place for identifying that all referrals accepted for imaging are initiated by an authorised referrer (and the request has the appropriate form and content).

SOURCE OF STANDARD
Legislation

IMPORTANCE
Patients should be protected from inappropriate investigations requested by those who do not have the necessary qualifications/competencies

TARGET
100% of referrers are authorized to request the specific imaging test in line with the local policy

THE INDICATOR
The percentage of imaging requests where the requestor can clearly be identified as an individual who has referral rights for the specific examination requested and the request has the appropriate form and content

DATA TO BE COLLECTED
The request forms or electronic requesting records of a sample of all imaging procedures within the department

SAMPLE
100 requests randomly selected (either electronic or written)

METHOD
Analysis against database of approved referrers

SUGGESTED ACTIONS IF TARGET NOT MET
• Analysis of inappropriate requesters
• Review policy
• Effective dissemination of policy to requesters and those who justify requests

REFERENCES
• Triantopoulou Ch et al (2005) Analysis of radiological examination request forms in conjunction with justification of X-ray exposures. EJR 53:306-311
JUSTIFICATION POLICY

AUDIT DESCRIPTION
An audit of the presence of a local policy that clearly defines the process of justification of imaging investigations prior to examination with particular reference to those tests involving ionising radiation and safety in MRI.

Standard
Radiology departments should have a current policy that defines the process of justification including who is responsible for the process and any appropriate competencies/training requirements. It should also include the use of clear evidence based guidelines that avoid unnecessary radiation.

SOURCE OF STANDARD
Legislation

IMPORTANCE
Patients should be protected from inappropriate investigations and should be directed to the most relevant investigation for their condition taking into consideration potential risks of exposure to irradiation and electromagnetic fields.

TARGET
Comprehensive local policy in place.

THE INDICATOR
Not applicable.

DATA TO BE COLLECTED
Not applicable.

SAMPLE
Not applicable.

METHOD
Review policy.

SUGGESTED ACTIONS IF TARGET NOT MET
• Produce policy that clearly defines the justification process.

REFERENCES:
JUSTIFICATION POLICY IMPLEMENTATION

AUDIT DESCRIPTION
An audit of the implementation and documentation of a local policy that clearly defines the process of justification of imaging investigations prior to the examination, with particular reference to those test involving ionising radiation.

Standard
Radiology departments should have a current policy that defines the process of justification including who is responsible for the process and any appropriate competencies/training requirements. It should also include the use of clear evidence based guidelines that avoid unnecessary radiation.

SOURCE OF STANDARD
Legislation

IMPORTANCE
Patients should be protected from inappropriate investigations and should be directed to the most relevant investigation for their condition taking into consideration potential risks of exposure to irradiation and electromagnetic fields.

TARGET
100% of requests for tests involving ionising radiation and MRI are justified prior to the test being performed.

THE INDICATOR
The percentage of imaging requests where there was a clear justification process in place.

DATA TO BE COLLECTED
The request forms or electronic requesting records of a sample of all imaging procedures within the department.

SAMPLE
100 requests randomly selected (either electronic or written).

Method
Documented evidence that justification had taken place.

SUGGESTED ACTIONS IF TARGET NOT MET
- Review policy
- Effective dissemination of policy to requesters and those who justify requests
- Include in induction and update training.

REFERENCES
JUSTIFICATION POLICY FOR WOMEN OF CHILD BEARING AGE

AUDIT DESCRIPTION
Audit of the presence of a comprehensive and up to date local policy on the process of justification of all women of child bearing age

Standard
There is a clear local policy on justification for women who could be pregnant, which is up to date and available to all relevant staff and there is clear assurance of its correct use.

SOURCE OF STANDARD
Legislation

IMPORTANCE
The fetus should be protected from inappropriate exposure to the potential risks of exposure to irradiation and electromagnetic fields

TARGET
Up to date policy in place

INDICATOR
Not applicable

DATA TO BE COLLECTED
Presence of policy

SAMPLE
Not applicable

METHOD
Review of policy

SUGGESTED ACTIONS IF TARGET NOT MET
• Illustration of the local policy by posters / brochures raising awareness of both staff and patients

REFERENCES
RELIABLE SYSTEM OF RECORDING THE PREGNANCY STATUS IN EXAMINATIONS INVOLVING IONISING RADIATION

AUDIT DESCRIPTION
Audit of a reliable system for recording the pregnancy status of patients undergoing examinations involving ionising radiation where a fetus may be at risk of irradiation.

Standard
There should be a clear record of the pregnancy status in 100% of females of child bearing age undergoing X-ray or CT examinations from chest to knees.

SOURCE OF STANDARD
Legislation

IMPORTANCE
The fetus should be protected from inappropriate exposure to the potential risks of exposure to irradiation.

TARGET
All female patients of child bearing age should be asked about the possibility of pregnancy and their response clearly recorded. In cases where it is not possible to confidently ascertain this by questioning, the status should be investigated using laboratory tests.

INDICATOR
There is a clear record of the pregnancy status of 100% of females of child bearing age who have undergone an examination involving Ionising radiation.

DATA TO BE COLLECTED
Review of request forms / scan records / documentation

SAMPLE
100 patients selected randomly collected retrospectively

METHOD
Review of local data

SUGGESTED ACTIONS IF TARGET NOT MET
• Include this item within the request forms
• Reminder letters to the requesters
• Signage in the departments to make patients aware
• Include this item within standardised reports
• Clear statement in all patient information

REFERENCES
CT RADIATION DOSE RECORDS

AUDIT DESCRIPTION
An audit of the reliability of recording the radiation dose received by a patient in a CT examination

Standard
All patients having a CT scan should have a permanent record of the dose received for future reference.

SOURCE OF STANDARD
Legislation

IMPORTANCE
There is a need to optimize radiation dose to avoid unnecessary radiation to the patient. The documentation of the dose for each patient scanned will allow a department to be able to review its radiation dose by patient, machine and area scanned

TARGET
100% of all patients who have CT scans have a clear documented record of the dose of each examination

INDICATOR
The percentage of CT scans that have a clear dose record

DATA TO BE COLLECTED
Review of scan record/documentation

SAMPLE
100 consecutive patients collected retrospectively

METHOD
Review of local data

SUGGESTED ACTIONS IF TARGET NOT MET
• Review of dose documentation policy
• Ensure all staff involved in CT scanning are aware of the policy and implementing it appropriately

REFERENCES
• Frush D et al (2013) Radiation protection and dose monitoring in medical imaging: a journey from awareness, through accountability, ability and action…but where will we arrive? Journal of Patient Safety. doi: 10.1097/PTS.0b013e3182a8c2c4
RADIATION DOSE IN HEAD CT IN CHILDREN

AUDIT DESCRIPTION

• An audit of the dose received per Head CT scan in children*

Standard

There should be no more than 25% variation in dose between operators using the same scanner and no more than 25% variation between different scanners.

SOURCE OF STANDARD

Consensus – may need to be modified depending on local circumstances

IMPORTANCE

Children’s brains are more sensitive to the effects of radiation. departments should have agreed standards for optimisation of dose

TARGET

Less than 25% variation in dose between individual operators on the same scanner.
Less than 25% variation in dose between scanners for the same operator

THE INDICATOR

The range of doses received for a sample of children’s head scans of all operators for an individual scanner
The range of doses of a sample of children’s head scans for different scanners performed by the same operator

DATA TO BE COLLECTED

The dose records of children’s head CT scans

SAMPLE

25 consecutive children’s head scans per CT scanner

METHOD

Review of inter-operator dose variation
Review of inter-scanner dose variation

SUGGESTED ACTIONS IF TARGET NOT MET

• Training of operators
• Scanner protocol optimization
• Technical evaluation of scanner

REFERENCES

• Mathews JD et al (2013) Cancer risk in 680,000 people exposed to computed tomography scans in childhood or adolescence: data linkage study of 11 million Australians. BMJ. 346:f2360

*A child is considered to be a person below the age of eighteen years old. Childhood ages could be divided as follows: neonatal (birth to 28 days); infant (1 to 12 months); toddler (1 to 2 years); early childhood (2 to 5 years); middle childhood (6 to 11 years); adolescence (12 to 18 years)
DOSE OPTIMISATION IN CT POLICY

AUDIT DESCRIPTION
An audit of the presence of a local policy* that clearly defines the examination protocols for CT of the chest, abdomen and pelvis

Standard
Radiology departments should have a policy to determine the most appropriate (“personalized”) examination protocol based on the patient’s presenting clinical condition and this should be implemented in the department.

SOURCE OF STANDARD
Legislation

IMPORTANCE
Patients should be protected from unnecessary irradiation in CT, especially those who regularly undergo CT examinations (e.g. oncology patients). The examination protocol should be optimised to obtain the necessary diagnostic information utilising the lowest appropriate dose.

TARGET
Local policy for CT optimisation in place

THE INDICATOR
Not applicable

DATA TO BE COLLECTED
Evidence of local policy

SAMPLE
Not applicable

METHOD
Review of policy

SUGGESTED ACTIONS IF TARGET NOT MET
• Develop appropriate policy

REFERENCES

* The policy should cover
• the regions to cover according to clinical presentation
• the combination of the phases necessary
• utilisation of low dose protocols
IMPLEMENTATION OF DOSE OPTIMISATION IN CT POLICY

AUDIT DESCRIPTION
An audit of the implementation of a local policy* that clearly defines the examination protocols for CT of the chest, abdomen and pelvis

Standard
Radiology departments should have a policy to determine the most appropriate (“personalized”) examination protocol based on the patient’s presenting clinical condition and this should be implemented in the department.

SOURCE OF STANDARD
Legislation

IMPORTANCE
Patients should be protected from unnecessary irradiation in CT, especially those who regularly undergo CT examinations (e.g. oncology patients). The examination protocol should be optimised to obtain the necessary diagnostic information utilising the lowest appropriate dose.

TARGET
100% compliance with local policy

THE INDICATOR
% of CT scans utilising appropriate protocols

DATA TO BE COLLECTED
Protocols for CT scans of patients with presenting conditions in line with local policy on CT optimisation

SAMPLE
100 CT cases of chest, abdomen and pelvis randomly selected

METHOD
Compare protocols used with agreed policy

SUGGESTED ACTIONS IF TARGET NOT MET
- Review policy
- Analyse reasons for variation and implement improved communication of policy

REFERENCES

* The policy should cover
- the regions to cover according to clinical presentation
- the combination of the phases necessary
- utilisation of low dose protocols
POLICY FOR PATIENT IDENTIFICATION PRIOR TO PROCEDURE

AUDIT DESCRIPTION
An audit of the presence of a local policy* to ensure the correct identification of patients prior to procedure

Standard
There should be a local policy that clearly defines a reliable process for identifying the correct patient is being investigated with the correct test and this policy is understood and implemented by staff.

SOURCE OF STANDARD
The Joint Commission
World Health Organization
National radiological societies recommendation

IMPORTANCE
It is essential to have a clear implemented policy that ensures the right patient has the correct examination to avoid inappropriate risks and potential error of diagnosis

TARGET
Local policy for patient identification in place

THE INDICATOR
Not applicable

DATA TO BE COLLECTED
Evidence of local policy

SAMPLE
Not applicable

METHOD
Review of Policy

SUGGESTED ACTIONS IF TARGET NOT MET
• Produce local policy

REFERENCES

* The local policy should describe:
• the personal responsibility of health workers and reception staff in the process of correct identification
• the identity traits that have to be gathered to collect a reliable identity
• the recommendations to get evidence of the patient identity
• the actions to be taken in order to prevent misidentifications and error at the different steps of the patient pathway
• the protocols for identifying patients who lack identification or with whom communication is difficult or impossible
• the identity matching rules and procedures
• the education and training methods used in the department
IMPLEMENTATION OF POLICY FOR PATIENT IDENTIFICATION PRIOR TO PROCEDURE

AUDIT DESCRIPTION
An audit of the effective implementation of a local policy* to ensure the correct identification of patients prior to procedure

Standard
There should be a local policy that clearly defines a reliable process for identifying the correct patient is being investigated with the correct test and this policy is understood and implemented by staff.

SOURCE OF STANDARD
The Joint Commission
World Health Organization
National radiological societies recommendation

IMPORTANCE
It is essential to have a clear implemented policy that ensures the right patient has the correct examination to avoid inappropriate risks and potential error of diagnosis

TARGET
Local policy for patient identification in place

THE INDICATOR
% of staff involved in patient identification understand and use the policy

DATA TO BE COLLECTED
Questionnaire results

SAMPLE
Random sample of all staff groups involved in patient identification

METHOD
Review results of appropriately designed questionnaire

SUGGESTED ACTIONS IF TARGET NOT MET:
• Analyse questionnaire results for potential areas of concern
• Observational audits at the point of care
• Educational Induction and staff update package

REFERENCES

* The local policy should describe:
• the personal responsibility of health workers and reception staff in the process of correct identification
• the identity traits that have to be gathered to collect a reliable identity
• the recommendations to get evidence of the patient identity
• the actions to be taken in order to prevent misidentifications and error at the different steps of the patient pathway
• the protocols for identifying patients who lack identification or with whom communication is difficult or impossible
• the identity matching rules and procedures
• the education and training methods used in the department
PREVENTION OF MRI HAZARDS POLICY

AUDIT DESCRIPTION
An audit of the presence of a local policy that clearly defines the personal responsibilities and procedures to prevent the patient (and potential accompanying persons), from MRI hazards

Standard
All patients (and their guardians), prior to entering an MRI scanning room, should have been informed of the potential dangers of MRI under certain conditions and should have clearly stated whether they could be at risk due to the presence of pacemaker, metallic implants, metallic foreign body, pregnancy or recent surgery. There should be a clear policy on who has the responsibility for making sure that the safety questions have been asked, and the answers checked prior to MRI exposure.

SOURCE OF STANDARD
ACR recommendations

IMPORTANCE
Lack of appropriate risk prevention may result in serious injuries or even death, and considerable material damage

TARGET
Local policy in place

INDICATOR
Not applicable

DATA TO BE COLLECTED
Evidence of local policy

SAMPLE
Not applicable

METHOD
Review of policy

SUGGESTED ACTIONS IF TARGET NOT MET
• Produce local policy

REFERENCES
IMPLEMENTATION OF PREVENTION OF MRI HAZARDS POLICY

AUDIT DESCRIPTION
An audit of the knowledge and implementation of a local policy that clearly defines the personal responsibilities and procedures to prevent the patient (and potential accompanying persons), from MRI hazards.

Standard
All patients (and their guardians), prior to entering an MRI scanning room, should have been informed of the potential dangers of MRI under certain conditions and should have clearly stated whether they could be at risk due to the presence of pacemaker, metallic implants, metallic foreign body, pregnancy or recent surgery. All staff must be familiar with the details of the local policy.

SOURCE OF STANDARD
ACR recommendations

IMPORTANCE
Lack of appropriate risk prevention may result in serious injuries or even death, and considerable material damage.

TARGET
All healthcare professionals working within the MR area are fully aware of the local policy.

INDICATOR
% of staff able to complete an appropriate questionnaire based on the policy.

DATA TO BE COLLECTED
Completed questionnaire.

SAMPLE
All healthcare professionals working in the MRI area.

METHOD
Review of questionnaire results.

SUGGESTED ACTIONS IF TARGET NOT MET
- Review issues raised in questionnaire results
- External observational audit
- Departmental induction and annual refresher sessions

REFERENCES
MRI PATIENT SAFETY CHECK

DESCRIPTION
An audit of documentation of a pre MRI scan checklist for patients undergoing MRI

Standard
All patients (and their guardians), prior to entering an MRI scanning room, should have been informed of the potential dangers of MRI under certain conditions and should have clearly stated whether they could be at risk due to the presence of pacemaker, metallic implants, metallic foreign body, pregnancy or recent surgery. There should be a clear policy on who has the responsibility for making sure that the safety questions have been asked, and the answers checked prior to MRI exposure.

SOURCE OF STANDARD
Legislation

IMPORTANCE
It is essential that the radiographer (MRI operator) protects all patients and their guardians) from the potential harm of exposure to magnetic fields

TARGET
All patients (or their legal guardians) should have signed an appropriate form listing their responses to the following safety questions
• presence of pacemaker
• presence of metallic implants
• presence of metallic foreign body
• pregnancy
• recent surgery

INDICATOR
% of all patients who have had an MRI scan have a clear stored form documenting that there is no contraindication to MRI exposure

DATA TO BE COLLECTED
Review of documented signed pre procedure safety form

SAMPLE
50 consecutive patients collected retrospective

METHOD
Review of local data

SUGGESTED ACTIONS IF TARGET NOT MET
• Root cause analysis of non-compliant cases to understand, learn and disseminate learning
• Ensure that knowledge of the safety checks forms part of the induction and regular update programme of all relevant staff

REFERENCES
PROCESS FOR CONSENT FOR INTERVENTIONAL RADIOLOGY PROCEDURES OF NON-EMERGENCY PATIENTS

DESCRIPTION
An audit of the reliability and basic validity of the consent procedure in interventional radiology of the non-emergency patients

Standard
All patients undergoing interventional radiology procedures should have access to appropriate information regarding the potential benefits and risks of the procedure including alternative treatments. The patients should also have access to an appropriately trained healthcare professional, who has knowledge of the procedure and can explain and answer any concern. This should be evidenced by a signed consent form.

SOURCE OF STANDARD
National legislation / European guidelines

IMPORTANCE
Patients must have a clear understanding of the risks and potential benefits of the procedure, as well as other options for treatment so that they can make a clear informed decision on whether they wish to proceed with the intervention.

TARGET
There should be either a copy of the signed consent form in the records of every patient or a clear documentation of an oral explanation of the procedure to a patient in the health care records.*

INDICATOR
% of patients who have undergone an interventional radiology procedure who have a signed consent form in their health records or have a clear documentation of an oral consent for the proposed procedure in their health records

DATA TO BE COLLECTED
Consent forms in the health care records of patients who have undergone an interventional radiology procedure will be evaluated.

SAMPLE
50 consecutive patients undergoing IR procedures - retrospective survey

METHOD
Review patients’ healthcare records for appropriately completed consent form

SUGGESTED ACTIONS IF TARGET NOT MET
• Analysis of those cases where compliance is not met to inform further action
• Review consent policy
• Ensure appropriate induction and update training for all healthcare professionals involved in the consent process
• Definition of clear responsibility between the persons performing the informed consent procedure is highly recommendable
• If needed, designated education of special nurses to perform the consent procedure is recommended and the use of their expertise is appreciated
• The role of the interventional radiologists and the specialist nurses in the informed consent process should be openly defined. The content of each informed consent forms / checking lists for the oral explanation of the corresponding interventional radiology procedure should be evaluated and updated if needed

REFERENCES

* The informed consent should be obtained at least 24 hours prior the procedure in order to give the patient enough time to make his final decision. The consent form / checking list for an oral consent should have a proper explanation of the potential risks and benefits of the proposed procedure.
REDUCTION OF THE RISK OF HYPERSENSITIVITY REACTIONS TO CONTRAST MEDIA

AUDIT DESCRIPTION
An audit designed to reduce the risk of allergic reactions to contrast media

There should be a clear policy on contrast administration which includes appropriate questioning of the patient in advance of administration and proposed strategies to identify and diminish the risk of such reactions and all staff should be familiar with that policy.

SOURCE OF STANDARD
National and international guidelines

IMPORTANCE
Hypersensitivity reactions to contrast media can result in life-threatening conditions and require appropriate measures to reduce such risks

TARGET
All healthcare workers in radiology department area aware of the procedures to follow to reduce the risk of contrast media reactions and understand their personal responsibilities

INDICATOR
% of staff aware of the department guidance on contrast media reactions

DATA TO BE COLLECTED
Results of questionnaire to all relevant staff

SAMPLE
Random sample of staff from all relevant staff groups

METHOD
Review results of questionnaire

SUGGESTED ACTIONS IF TARGET NOT MET
• Analysis of questionnaire to understand areas of concern
• Appropriate induction and annual update sessions for all relevant staff

REFERENCES
POLICY ON THE PREVENTION OF CONTRAST INDUCED NEPHROPATHY (CIN)

AUDIT DESCRIPTION
Audit of the presence of a policy on the protection of patients from contrast induced nephrotoxicity (CIN) following radiological examinations, using intra-venous (iv) iodinated contrast media

**Standard**
There should be a clear written policy in place, which defines how patients undergoing contrast administration should be identified as being at risk of, and protected from potential kidney damage, and this policy should be effectively implemented.

**SOURCE OF STANDARD**
Radiological and nephrological international guidelines and literature

**IMPORTANCE**
CIN is a widely recognized and clinically significant problem in patients undergoing radiological examinations, and is the third most common cause of hospital-acquired renal failure, having significant prognostic implications on patient outcomes

**TARGET**
Local policy in place

**INDICATOR**
Not applicable

**DATA TO BE COLLECTED**
Evidence of local policy

**SAMPLE**
Not applicable

**METHOD**
Review of policy

**SUGGESTED ACTIONS IF TARGET NOT MET**
- Produce local policy

**REFERENCES:**
IMPLEMENTATION OF POLICY ON THE PREVENTION OF CONTRAST INDUCED NEPHROPATHY (CIN)

AUDIT DESCRIPTION
Audit of evidence of implementation of effective policy of protection of patients from contrast induced nephrotoxicity (CIN) following radiological examinations, using intra-venous (iv) iodinated contrast media.

Standard
There should be a clear written policy in place, which defines how patients undergoing contrast administration should be identified as being at risk of, and protected from potential kidney damage, and this policy should be effectively implemented.

SOURCE OF STANDARD
Radiological and nephrological international guidelines and literature

IMPORTANCE
CIN is a widely recognized and clinically significant problem in patients undergoing radiological examinations, and is the third most common cause of hospital-acquired renal failure, having significant prognostic implications on patient outcomes.

TARGET
100% of patients at risk of CIN should be correctly identified and appropriately managed

INDICATOR
% of patients at risk of CIN appropriately managed

DATA TO BE COLLECTED
Retrospective review of radiological and biochemical records of patients undergoing contrast injections in radiology department and medical records correlation where necessary

SAMPLE:
100 consecutive in-patients undergoing a iv contrast media radiological examination. Data may be collected prospectively or retrospectively

METHOD
Review of local data

SUGGESTED ACTIONS IF TARGET NOT MET
• Amend departmental procedure so patients at risk of CIN can be identified early and management adjusted accordingly
• A management protocol/proforma could be designed for all patients admitted for radiological contrast media examinations including the risk factors and necessary management plan implemented
• Appropriate induction and update educational sessions for relevant staff

REFERENCES
APPROPRIATE CARE OF ACUTE CONTRAST MEDIA REACTIONS

AUDIT DESCRIPTION
An audit to ensure that all healthcare professionals in a radiology department know how to manage contrast media reactions

Standard
All healthcare professionals in the radiology department must understand the clinical features of a contrast reaction and know how to manage the patient including fundamentals of basic life support techniques and the internal procedure and policy to assure an effective resuscitation to the patient.

SOURCE OF STANDARD
National and international guidelines

IMPORTANCE
Adverse reactions to contrast media can potentially cause life-threatening situations which requiring immediate and appropriate management.

TARGET
All healthcare workers in the radiology department understand the procedures in the case of adverse contrast reactions and their personal responsibilities

INDICATOR
% of healthcare workers in the radiology department who understand the procedures in the case of adverse contrast reactions and their personal responsibilities

DATA TO BE COLLECTED
Results of local questionnaire

SAMPLE
All healthcare workers in the radiology department

METHOD
Review of results of questionnaire

SUGGESTED ACTIONS IF TARGET NOT MET
• Induction/annual educational updates
• Local signage in clinical areas

REFERENCES
• ENDA; EAACI interest group on drug hypersensitivity (2005) Management of hypersensitivity reactions to iodinated contrast media. Allergy 60:150-158
RESUSCITATION POLICY/TRAINING

AUDIT DESCRIPTION
An audit of the implementation of an effective policy defining the basic principles and local organization to ensure resuscitation of patients

Standard
There should be a local policy that clearly defines which personnel should be trained in appropriate level of resuscitation training. This should include evidence of training records of all staff with regular updates.

SOURCE OF STANDARD
Legislation and national medical societies best practice recommendations

IMPORTANCE
It is important that staff know how to manage critically ill patients who are under their care whilst in the department

TARGET
100% of health care workers in the radiology department are aware of the local policy, know their personal responsibilities and have been trained appropriately

INDICATOR
% of staff with evidence of attendance at annual resuscitation training

DATA TO BE COLLECTED
Personnel records of attendance at resuscitation training

SAMPLE
All relevant healthcare workers

METHOD
Review training records

SUGGESTED ACTIONS IF TARGET NOT MET
• Establishment of a written policy
• Induction and annual programme in both theoretical and practical training courses

REFERENCES
INFECTION CONTROL POLICY

DESCRIPTION
An audit of whether there is a policy and related written guidelines describing infection control and hygiene procedures at a department of radiology

<table>
<thead>
<tr>
<th>Standard</th>
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<tbody>
<tr>
<td>All departments of radiology should have an infection control policy which clearly defines the appropriate procedures to reduce the risk of hospital acquired infection and identifies the individual responsibilities of all staff within the department (and individuals in the department comply with this policy).</td>
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SOURCE OF STANDARD
National legislation / European guidelines

IMPORTANCE
It is essential to minimise the risk of healthcare-associated infections within the department of radiology. This should cover general issues of infection control (e.g. hand washing) as well as actions specific to radiology (e.g. probe cleaning)

TARGET
There is a written policy in place

INDICATOR
Not applicable

DATA TO BE COLLECTED
Evidence of local policy

SAMPLE
Not applicable

METHOD
Review of policy

SUGGESTED ACTIONS IF TARGET NOT MET
• Produce local policy

REFERENCES
IMPLEMENTATION OF INFECTION CONTROL POLICY BY STAFF

DESCRIPTION
An audit of the effective implementation of an infection control policy and related written guidelines by staff in the department of radiology.

Standard
All departments of radiology should have an infection control policy which clearly defines the appropriate procedures to reduce the risk of hospital acquired infection and identifies the individual responsibilities of all staff within the department (and individuals in the department comply with this policy).

SOURCE OF STANDARD
National legislation / European guidelines

IMPORTANCE
It is essential to minimise the risk of healthcare-associated infections within the department of radiology. This should cover general issues of infection control (e.g. hand washing) as well as actions specific to radiology (e.g. probe cleaning).

TARGET
There is evidence that all staff comply with the infection control policy.

INDICATOR
% of staff complying with guidance on such activities as:
- Hand-washing
- Ultrasound probe cleaning
- Contrast injection
- Venflon insertion
- Interventional procedures

DATA TO BE COLLECTED
Observational audits of the activities listed above and other relevant processes relevant to the local department.

SAMPLE
Random unannounced sampling of procedures (10 per procedure).

METHOD
Analysis of results of observational audits against agreed elements of infection control.

SUGGESTED ACTIONS IF TARGET NOT MET
- Review written policy
- Induction and annual training updates
- Appropriate signage
- Appropriately placed hand washing gel stations

REFERENCES
COMPLIANCE OF FACILITIES WITH INFECTION CONTROL POLICY

DESCRIPTION
An audit of whether the radiology department facilities are compliant with the infection control policy.

**Standard**

All departments of radiology should have an infection control policy which clearly defines the appropriate procedures to reduce the risk of hospital acquired infection and identifies the individual responsibilities of all staff within the department (and individuals in the department comply with this policy).

**SOURCE OF STANDARD**
National legislation / European guidelines

**IMPORTANCE**
It is essential to minimise the risk of healthcare-associated infections within the department of radiology. This should cover general issues of infection control (e.g. hand washing) as well as actions specific to radiology (e.g. probe cleaning).

**TARGET**
All facilities are compliant with the policy.

**INDICATOR**
% of areas compliant with the policy.

**DATA TO BE COLLECTED**
Observational audit of all areas to review presence of appropriate resources to ensure infection control, including signage, washing facilities, protective aids (e.g. gloves), sterile packs, probe cleaning materials.

**SAMPLE**
Review of all areas on a planned programme.

**METHOD**
Analysis of results of observational audits against agreed elements of infection control.

**SUGGESTED ACTIONS IF TARGET NOT MET**
- Review of written policy
- Implement appropriate changes as informed by analysis of audit

**REFERENCES**
POLICY ON COMMUNICATION OF EMERGENCY AND UNEXPECTED FINDINGS

AUDIT DESCRIPTION
An audit of whether there is a policy in place that clearly describes the process for dealing with emergency and unexpected findings in an imaging report.

Standard
There should be a clear policy in place that defines how emergency and unexpected findings are communicated to referring clinicians.

SOURCE OF STANDARD
ESR best practice guidance

IMPORTANCE
It is essential for patient management that clinicians have timely and accurate reports on relevant imaging.

TARGET
There is a policy in place that clearly defines the type of emergency findings and the method of communication.

INDICATOR
Not applicable

DATA TO BE COLLECTED
Relevant up to date policy on communication of emergency and unexpected findings.

SAMPLE
Not applicable

METHOD
Review policy

SUGGESTED ACTIONS IF TARGET NOT MET
- Creation of a written policy within 3 months if it does not exist.

REFERENCES
IMPLEMENTATION OF POLICY ON COMMUNICATION OF EMERGENCY AND UNEXPECTED FINDINGS

**DESCRIPTION**
An audit of the effective implementation of an agreed policy on communication of emergency guidelines.

**Standard**
There should be a clear policy in place that defines how emergency and unexpected findings are communicated to referring clinicians.

**SOURCE OF STANDARD**
ESR best practice guidance

**IMPORTANCE**
It is essential for patient management that clinicians have timely and accurate reports on relevant imaging.

**TARGET**
All radiologists (and other clinicians involved in the reporting of imaging studies) have a clear knowledge of the key points of the agreed department policy.

**INDICATOR**
% of radiologists understand the key points of the policy.

**DATA TO BE COLLECTED**
Results of questionnaire designed to test the knowledge of radiologist on the agreed policy.

**SAMPLE**
All reporting radiologists.

**METHOD**
A questionnaire should be designed which covers all the key points in the policy with a clear underlying scoring system that will assess the knowledge of radiologist and give a clear answer of their understanding of all key points in the policy.

**SUGGESTED ACTIONS IF TARGET NOT MET**
- Ensure that key points of the policy are included in an annual update training programme for all radiologists.

**REFERENCES**