



## **ESR Clinical Audit booklet *Esperanto***

This booklet was named after the most successful constructed language in the world, *Esperanto*, created by the Polish ophthalmologist Ludwik L. Zamenhof.

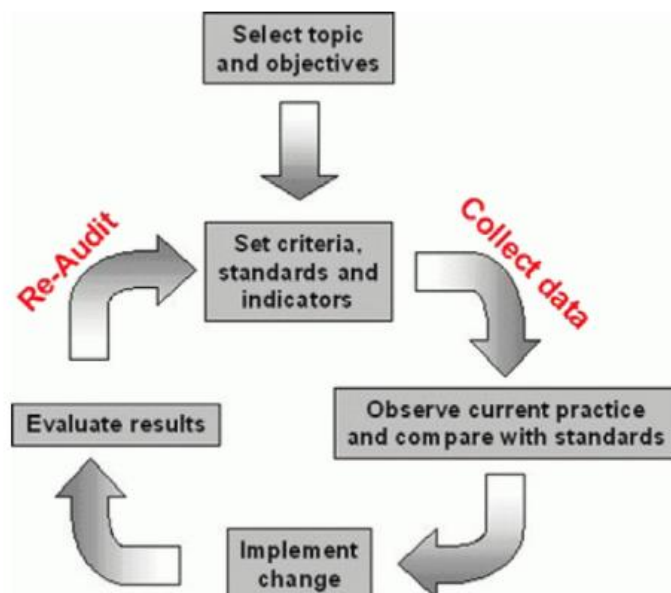
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## 1. Introduction

As part of clinical governance, healthcare organisations are accountable for continually improving the quality of their services. Clinical audits are inextricably linked to quality and, if correctly and professionally conducted, a powerful tool to improve patient care, experience and outcome. They consist of measuring a clinical outcome or procedure against defined standards in order to identify differences between current practice and the given standards. Clinical practice can thus be evaluated. If the standard is not achieved, reasons for this are explored, changes are implemented based on the results and a re-audit is carried out to ensure improvement. This methodology is often described in terms of the *audit cycle*.

### Methodology: the audit cycle



If audit means comparing an element of clinical practice against an agreed standard, in radiological practice this might mean what we do, how we do it, what equipment we use, how we interact with our patients, our colleagues and our environment. To put it in another way, audit asks one question: 'are we safe?'

Audit should be Achievable, Local, Practical, Inexpensive, Non-threatening, and Easy (ALPINE).

Audit carried out within departments ('internal' or clinical audit) can also provide evidence to prepare and support departments that are also undergoing 'external' audit which generally equates with inspection by a regulatory authority. Carrying out clinical audit 'in accordance

with national requirements' is mandatory within the European Union from February 2018 as a result of implementation of the updated Basic Safety and Standards Directive. The updated BSS Directive (COUNCIL DIRECTIVE 2013/59/EURATOM) (1) has major implications for European practice in several areas, including documented justification processes for radiation exposure, and dose optimisation. In addition, it requires that 'clinical audits are carried out in accordance with national procedures'. In whatever form the new legal framework is implemented (and there is inevitably national variation), internal clinical audit within departments helps individual departments to comply with legislation, to monitor their own practice and to be well prepared for any external audit.

Clinical audit is central to modern medical practice, involving reflective validation of existing practices, and identification of potential changes and improvements, in the interests of patient safety and better outcomes.

#### **a. The ESR perspective**

The ESR cooperates with institutions including the European Commission and the Heads of the European Radiation Protection Competent Authorities (HERCA) to ensure that clinical audit is applied properly to improve quality of patient care in Europe, but also to understand the regulators' perspective for its efforts regarding audit.

In the context of the implementation of the Basic Safety Standards Directive, the ESR works with stakeholders to increase awareness of clinical audit among radiologists and to provide radiology departments with a toolkit to perform audits effectively.

## **2. The ESR Clinical Audit Tool**

In preparation for the implementation of the Basic Safety Standards Directive, the ESR Audit & Standards Subcommittee has developed The ESR Clinical Audit Tool. This is a set of suggested audits which can be easily performed, with accompanying templates indicating the steps required to complete each audit, and the information which should be collected and analysed in each case. These suggested audits are an excellent basis for commencing the practice of clinical audit in imaging departments, and for developing audit in those departments already active in this area. The ESR Clinical Audit Tool is designed to increase awareness of clinical audit among radiologists, and to help them make it part of their departmental work. In addition, it can help to demonstrate to external bodies that their department offers safe, well-documented care.

We hope that radiology departments using this Audit tool will find that it provides useful guidance on the implementation of regular audit, and that it will provide training to allow departments design and conduct audits on other topics in the future, according to their own local needs and interests.

The ESR Clinical Audit Tool facilitates the development of local clinical audit across the spectrum of the services provided by clinical radiology. It provides an outline of the principles of clinical audit combined with a library of templates for audit in a variety of situations, as well as a compendium of useful resources.

#### **a. The ESR Audit Pilot project**

To assist departments, the ESR Audit & Standards Subcommittee, under the guidance of Adrian Brady and Barry Kelly, in collaboration with EuroSafe Imaging, developed and completed a pilot project in 2017 to test the prepared audit templates within the network of EuroSafe Imaging Stars. This project was led by E. Jane Adam and supported by the ESR Audit & Standards Subcommittee, EuroSafe Imaging and the ESR Office.

Participating departments were then asked to provide feedback about their experience of performing the suggested audits; this feedback was utilized to optimize the final package of 17 audit templates included in this Audit booklet. The participants also made practical suggestions for improvements and felt that the templates were very useful. The templates and booklet are now available to all radiology departments as a tool in the assistance of developing proficiency in this mandatory activity.

#### **b. List of topics**

1. What is the departmental mechanism for informed consent?
2. Does the department record statistics on the number of accidental /unintended exposures that occur annually?
3. What is the departmental policy for informing patients that they have undergone an accidental exposure?
4. What is the mechanism for record keeping and retrospective analysis of adverse incidents?

5. What is the mechanism for referring accidental exposure events to the medical physicist expert (MPE) and informing the competent authority?
6. Does the department have criteria for what constitutes an accidental or unintended exposure?
7. If the justification process is delegated to an individual other than a radiologist, has that person undergone appropriate training?
8. What is the departmental mechanism to confirm the non-pregnancy status of female patients?
9. Is there a written protocol for the justification of who is responsible for the justification process?
10. For radiation exposure related to health screening, is there a policy affirming justification by a competent authority?
11. What percentage of studies are justified in advance of being performed?
12. What mechanism exists for contacting referrers to permit pre exposure justification discussions to occur if necessary?
13. Is there a written protocol for who may be responsible for justification of fluoroscopic / interventional radiological procedures?
14. Is there a written protocol for who may be responsible for justification of CT studies?
15. What mechanism is used to evaluate patient dose in high-dose procedures?
16. How old is the equipment in your department?
17. What percentage of procedures have established dose reference levels (DRL)?

### **c. How to complete the blank template**

For the purposes of this brief description, the audit topics are all those defined by the Directive (2013/59). For clinical audit in general however, the standard, source of the standard, importance and target to be achieved may vary. For example if one wished to measure the waiting times for an ultrasound in your department, local policy and reasonable achievable targets will dictate these factors and the template might look like this:

1. Audit Title

**Waiting time for outpatient ultrasound**

2. Standard against which the audit topic is to be compared

**Nationally or locally accepted time (e.g. 30 minutes)**

It is likely that each department, local area, or national policy maker has a recommendation as to how long it is reasonable for a patient to wait. This is likely to be a balance between what is inconvenient for a waiting patient, and the throughput and staffing issues of any busy department.

3. Source of standard

**Professional organisation (e.g. Royal College of Radiologists or Department of Health in the UK)**

4. Importance

**High**

(It isn't compulsory for every patient to be scanned within 30 minutes but it is probably reasonable. Waiting for 6 hours, for example, is undesirable. Sometimes it is a balance. The hospital may wish a target of 10 minutes but the department might simply be unable to provide this level service. Scanning within 30 minutes therefore isn't essential, maybe, but it is desirable. Consequently, you may have to arbitrarily decide how important a given audit topic is, unless stipulated by legislation.)

5. Target/compliance percentage to be achieved

**90%**

(Not everyone will be scanned within 30 minutes of arrival. This might be because the patient has left the department or an emergency scan delays the throughput etc so an explanation for why you expect the target to be as stated should be included (e.g. if there are external factors that might impact on whatever is being measured).

Ninety percent is an arbitrary number if the audit isn't a legal requirement, when of course the target must be 100%. You might consider 70% to be achievable. You might expect that 70% of patients are scanned within 30 minutes, perform the audit, and find

to your surprise that it is 45%. If it is, the audit may tell you why - not enough sonographers, radiologists, malfunctioning machines, emergency interruptions etc.).

Back to the key audit topics...

However, we would advocate that, particularly for those beginning to carry out audit, the focus should be on topics explicitly delineated within the Directive. These are compulsory, and are therefore most likely to be checked by any regulator as they relate to radiation protection and patient safety: twin imperatives for radiology departments. Consequently this sets the standard as EC Directive and the source of the standard as EU2013/59; the importance as compulsory and the target as 100%.

This doesn't mean that the audit will confirm that your department meets those standards. There are issues with manpower and funding everywhere. If the target for a legal standard isn't met by your department, it will serve as a baseline; the level from which to begin and may well identify for you any deficiencies that should be corrected by a re-audit.

That's how this process works. If a standard isn't met, at least you know that and can begin to establish why. It might be that the equipment is old or substandard (we all share that problem), but this provides an opportunity for a department to signal this problem to the relevant fundholders and regulatory bodies. ('We need a new scanner to meet a compulsory legal requirement. Now we are telling you that directly and we need to address the problem quickly'). This can be very helpful (and legally, a defence) in patient safety and radiation protection.

So with that in mind, lets take an audit example from the Directive and work through the template:

#### 1. Audit Title

##### **What is your departmental mechanism for informed consent?**

(Do you have a written protocol or checklist to ensure, for example, that the risks, benefits and alternatives to a given procedure are clear? Is the person consenting the patient the same person who is carrying out the procedure, or is this devolved?)

2. Standard against which the audit topic is to be compared

**EU Directive**

3. Source of standard

**Euratom 2013/59**

4. Importance

**Compulsory. Legal requirement**

5. Target / compliance percentage to be achieved

**100%**

(Headings 2-5 will invariably be those given (in bold type). As they are legal requirement, the target MUST BE 100%.)

6. Item or variable to be audited

**Local rules. Pathway for informed consent available widely and implemented**

(Each department MUST HAVE a policy on informed consent. This is often known as 'Local Rules'. It should be visible, widely available and implemented.)

7. Method: Retrospective /Prospective /Other

(Audit is usually retrospective or prospective. If the data is available already, then retrospective is easier. If it isn't, say for example this is something new to a department, it will have to be prospective. In countries with mature clinical audit mechanisms, prospective audits tend to be viewed as more powerful or influential, rather like scientific studies.)

8. Data or information to be collected

**Confirmation of informed consent pathway in the local rules**

This is a more detailed description of WHAT you are trying to audit. In this audit, it's really 'do we have a policy?' For other audits, this will change. For example, if the audit was for lens dose during a CT brain, then it might be: 'The data for lens dose to patients having CT brains was retrieved'

9. Sample details

**Not applicable for an informed consent document**



This is where the exact data source should be explicitly given. For example, with the lens dose audit, you might say:

*Dose data was retrieved for patients undergoing unenhanced CT brain on a specific scanner at particular kV and MAs within a described time period eg 90 days.*

(This permits someone reading it to understand exactly what parameters you used. Any details that are relevant should be included, just as they might be in a published scientific paper. To put it another way, this level of information should permit another department to use their data and apply the same parameters that you did, permitting a comparison.)

#### 10. Target achieved

Yes /no /not applicable

If no: actual result.....

(If it is compulsory, then the answer should be 100%. If it isn't 100% in a compulsory audit, there needs to be an explanation and a remedy. In the case of 'informed consent' the answer will be 100% (the information exists) or 0% (it doesn't!).

#### 11. Action to be taken if the target is not met

##### **The establishment of an informed consent document**

(This is the remedial action. In the case of an informed consent document, then if it doesn't exist –write it!).

#### 12. Timing for re-audit

##### **One year**

The re-audit is crucial to the process. It assesses the impact of actions in item 11 on meeting the target set in item 5). One year is a typical time for re-audit. This gives a department time to make necessary changes (remedial action) before the audit is redone.

#### In Summary

The answers to the headings will vary therefore depending on whether the audit is compulsory; whether you are checking the existence of a document (informed consent, telephone directory for contacting the relevant clinician) or reviewing numbers, like waiting times, throughput of patient, or dose delivered. It's the process that is central: Define the

audit title; apply a standard; see if you meet it; if you don't then establish why that is and then when the remedy is in place, do the same audit again.

### 3. Conclusion

Clinical Audit is required under the Euratom Basic Safety Standards Directive and therefore mandatory in the EU. The ESR Clinical Audit initiative is a first step to aid departments in carrying out audit, thereby complying with the directive and assuring the protection of their patients.

### 4. References

- European Union (2013) COUNCIL DIRECTIVE 2013/59/EURATOM of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom. Access via <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013L0059>
- European Commission Guidelines on clinical Audit. Statement by the European Society of Radiology (ESR) *Insights Imaging* (2011) 2: 97. doi:10.1007/s13244-011-0065-8

## 5. Appendix

### **Audit 1**

1. Audit Title  
**What is the departmental mechanism for informed consent?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory. Legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Local rules. Pathway for informed consent available widely and implemented
7. Method: Retrospective /Prospective /Other
8. Data or information to be collected  
Confirmation of informed consent pathway in the local rules
9. Sample details  
N/A
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
The establishment of an informed consent pathway in the local rules
12. Timing for re-audit  
One year

## Audit 2

1. Audit Title

**Does the department record statistics on the number of accidental /unintended exposures that occur annually?**

2. Standard against which the audit topic is to be compared.

EU Directive

3. Source of standard

EU 2013 / 59

4. Importance

Compulsory: legal requirement

5. Target /compliance percentage to be achieved

100%

6. Item or variable to be audited

The existence of a department repository for this information

7. Method: Retrospective /Prospective /Other

Retrospective

8. Data or information to be collected

The existence of a department repository for this information

The number of cases / year

9. Sample details

Confirmation of appropriate resource

Retrospective calculation of the number of cases per year.

Circumstances of the exposure in each case

10. Target achieved

Yes /no/ not applicable

N/A

If no: actual result.....

11. Action to be taken if the target is not met.

Creation of appropriate resource

12. Timing for re-audit

One year

### **Audit 3**

1. Audit Title  
**What is the departmental policy for informing patients that they have undergone an accidental exposure?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Directive 2013 /59
4. Importance  
Compulsory. Legal requirement
5. Target /compliance percentage to be achieved 100 %
6. Item or variable to be audited  
Local policy rules. Pathway for follow up of accidental exposure
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Confirmation of existence of local rules pathway for accidental exposure follow up  
Number of cases / year  
Date / Time /Reason for accidental exposure  
Consequences, if any, of the exposure
9. Sample details  
One year analysis of the above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Implementation of clear pathway in the local rules
12. Timing for re-audit  
One year

## **Audit 4**

- a. Audit Title  
**What is the mechanism for record keeping and retrospective analysis of adverse incidents?**
- b. Standard against which the audit topic is to be compared.  
EU Directive
- c. Source of standard  
EU 2013 /59
- d. Importance  
Compulsory. Legal requirement.
- e. Target /compliance percentage to be achieved  
100% (Such a resource must exist)
- f. Item or variable to be audited  
Adverse incident repository (AIR)
- g. Method: Retrospective /Prospective /Other  
Retrospective
- h. Data or information to be collected  
Review of AIR components  
Number of incidents  
Patient demographics  
Date time and nature of incidents
- i. Sample details  
One year review of AIR
- j. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
- k. Action to be taken if the target is not met.  
Creation of a detailed AIR
- l. Timing for re-audit  
One year

## Audit 5

1. Audit Title  
**What is the mechanism for referring accidental exposure events to the medical physicist expert (MPE) and informing the competent authority?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory: legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Local rules. Identification of an appropriate information pathway
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Identification of an appropriate information pathway  
Contact details for the MPE and the competent authority official  
Date /time/reason/ consequences of the exposure
9. Sample details  
Review of one year's accidental exposures
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Implementation of an appropriate information pathway
12. Timing for re-audit  
One year

## Audit 6

1. Audit Title  
**Does the department have criteria for what constitutes an accidental or unintended exposure?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory. Legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Local rules. Criteria defining accidental or unintended exposures
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Criteria defining accidental or unintended exposures  
Date/time/cause/consequences of each exposure
9. Sample details  
One year review of above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Implementation of such a resource
12. Timing for re-audit  
One year



## **Audit 7**

1. Audit Title  
**If the justification process is delegated to an individual other than a radiologist, has that person undergone appropriate training**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory. Legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Local rules: training requirements for delegated non radiologists
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Identification for a training programme for delegated non radiologists.  
Components of the programme  
Method by which participant is shown to be safe  
Number of participants  
Percentage of participants who complete the course successfully  
Reasons for non-acceptable outcome
9. Sample details  
One year review of the above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Creation of a training programme for delegated non-radiologists
12. Timing for re-audit  
One year

## **Audit 8**

1. Audit Title  
**What is the departmental mechanism to confirm the non-pregnancy status of female patients?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
EU 2013/59
4. Importance  
Compulsory: legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Request form /Order Comms
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Identification of a place on the request form /order comm for the practitioner or operator to record the patient's date of (first day of) the last menstrual period.  
Ensure that the data has always been entered.
9. Sample details  
One month review of request forms /order comms
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Amendment to include place for this data on the request form.  
Appropriate training to ensure that the data is always recorded.
12. Timing for re-audit  
One year.

## **Audit 9**

1. Audit Title  
**Is there a written protocol for the justification of who is responsible for the justification process?**
2. Standard against which the audit topic is to be compared.  
EU directive
3. Source of standard  
EU2013/ 59
4. Importance  
Compulsory: legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Request form / order comm.
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Confirmation of appropriate place on the request form for justification practitioner  
Confirmation that this has been completed
9. Sample details  
1 month request form /order comms
10. Target achieved  
Yes/ no/ not applicable.  
  
If no: actual result .....
11. Action to be taken if the target is not met.  
Redesign of the request form order comm  
Ensure that the justification practitioner has authorized the procedure
12. Timing for re-audit  
One year

## **Audit 10**

1. Audit Title  
**For radiation exposure related to health screening, is there a policy affirming justification by a competent authority?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory. Legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Confirmation of a policy on health screening justification by a competent authority
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Policy on health screening justification by a competent authority  
Relevant criteria  
Patient numbers
9. Sample details  
Three month review of above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Implementation of a policy on health screening justification by a competent authority
12. Timing for re-audit  
One year.

## **Audit 11**

1. Audit Title  
**What percentage of studies are justified in advance of being performed?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory. Legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Request forms /order comms: justification practitioner identification
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Request forms /order comms: justification practitioner identification  
Percentage correctly completed and verified
9. Sample details  
One month review of the above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Amendment of request forms / order comms
12. Timing for re-audit  
One year

## **Audit 12**

1. Audit Title  
**What mechanism exists for contacting referrers to permit pre exposure justification discussions to occur if necessary?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory: legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Request form / order comm. Relevant communication data pathway
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Request form / order comm. Relevant communication data pathway  
Name/location/phone/email information.  
Percentage of each correctly completed
9. Sample details  
1 month review of the above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Revision of request form / order comm to include pertinent contact information for referrer
12. Timing for re-audit  
One year

## **Audit 13**

1. Audit Title  
**Is there a written protocol for who may be responsible for justification of fluoroscopic / interventional radiological procedures?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Local rules: written protocol for responsibility for the justification of fluoroscopic / interventional radiological procedures?
7. Method: Retrospective /Prospective /Other  
Prospective
8. Data or information to be collected  
Written protocol for responsibility for the justification of fluoroscopic / interventional radiological procedures?  
Criteria for inclusion  
Correlation with request forms /order comms  
Percentage correctly completed
9. Sample details  
One month as above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Establishment of a written protocol for responsibility for the justification of fluoroscopic / interventional radiological procedures.
12. Timing for re-audit  
One year

## **Audit 14**

1. Audit Title  
**Is there a written protocol for who may be responsible for justification of CT studies?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Local rules: written protocol for responsibility for the justification of CT studies
7. Method: Retrospective /Prospective /Other  
Prospective
8. Data or information to be collected  
Written protocol for responsibility for the justification of CT studies  
Criteria for inclusion  
Correlation with request forms /order comms  
Percentage correctly completed
9. Sample details  
One month as above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Establishment of a written protocol for responsibility for the justification of CT studies
12. Timing for re-audit  
One year



## **Audit 15**

1. Audit Title

**What mechanism is used to evaluate patient dose in high dose procedures?**

2. Standard against which the audit topic is to be compared.

EU Directive

3. Source of standard

Euratom 2013 /59

4. Importance

Compulsory. Legal requirement

5. Target /compliance percentage to be achieved

100%

6. Item or variable to be audited

Dose calculation systems in all high dose equipment

Method: Retrospective /Prospective /Other

Retrospective

7. Data or information to be collected

Dose calculation and recording systems in CT/IR/NM systems

Patient exposure results in each of these.

8. Sample details

One month review of above

9. Target achieved

Yes /no/ not applicable

If no: actual result.....

10. Action to be taken if the target is not met.

Equipment modification or replacement to install appropriate measurement systems in all high dose equipment

Consultation with Medical Physicist Experts and Competent Authority

11. Timing for re-audit

One year

## **Audit 16**

1. Audit Title  
**How old is the equipment in your department?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
EU 2013/ 59
4. Importance  
Compulsory. Legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
The purchase and installation dates of departmental radiological equipment
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Installation date and projected longevity of each piece of equipment  
Actual length of service to date.
9. Sample details  
As above
10. Action to be taken if the target is not met.  
Business case / discussion with relevant bodies with purchasing authority to  
renew equipment operating beyond its safety life
11. Timing for re-audit  
Two years

## **Audit 17**

1. Audit Title  
**What percentage of procedures have established dose reference levels (DRL)?**
2. Standard against which the audit topic is to be compared.  
EU Directive
3. Source of standard  
Euratom 2013 /59
4. Importance  
Compulsory. Legal requirement
5. Target /compliance percentage to be achieved  
100%
6. Item or variable to be audited  
Exposure levels for CT/IR/NM procedures
7. Method: Retrospective /Prospective /Other  
Retrospective
8. Data or information to be collected  
Exposure levels for CT/IR/NM procedures compared to DRLs  
Percentage in each category above the DRL
9. Sample details  
One month review of above
10. Target achieved  
Yes /no/ not applicable  
  
If no: actual result.....
11. Action to be taken if the target is not met.  
Remedial action to reduce exposure dose levels  
Equipment implications  
Protocols for scanning
12. Timing for re-audit  
One year