



Feidhmeannacht na Seirbhíse Sláinte  
Health Service Executive

## **National Radiation Safety Committee**

**ANNUAL REPORT 2009**

# **Report for the year-end**

## **31st December 2009**

**The National Radiation Safety Committee (NRSC) established in November 2007 is a statutory committee appointed by the CEO, HSE to advise him on matters pertaining to medical exposure of patients to ionising radiation, in accordance with article Statutory Instrument (SI) 478 (2002).**

Extract from SI 478 (2002):

"22.8. The Radiation Safety Committee shall furnish the chief executive officer with an annual report and such other reports as the chief executive officer may require.

22.6. The Radiation Safety Committee shall monitor the population dosage for the health board functional area and will include their findings in an annual report."

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## Chairperson's Statement

I am pleased to introduce the Second Annual Report of the National Radiation Safety Committee for year end 31st December 2009. The committee was established in November 2007 by the CEO, Health Service Executive (HSE), under Statutory Instrument (SI) 478 (2002) and its amendment SI 303 (2007), to advise him on matters pertaining to the health protection of patients in relation to medical exposures. This includes both public and private facilities.

In 2009, the Committee continued to advise the CEO, HSE and produce recommendations on the implementation of the requirements of SI 478/303 for 2009. This is supported by the work of the Medical Exposures Radiation Unit, HSE and the key stakeholders.

The Committee has been encouraged by many of the developments in 2009. A guidance document to assist holders of radiological equipment with the implementation of SI 478 was prepared. A process agreed for national reporting of patient ionising radiation incidents for introduction in 2010. Clinical audit in dentistry has been widely promoted. The committee provided advice throughout the year to the CEO, HSE on practices in Radiation Protection and recommended a broadening of the role of local Radiation Safety Committees to include SI 478/303 responsibilities.

The recommendations of the National Baseline Audits in Radiology and Radiotherapy, 2008 are actively being addressed and many of the above actions are a direct result of the audit.

The HSE Task Force Report, 2007 identified a possible conflict of interest in relation to the HSE functions covering all holders on the one hand and the fact that the HSE itself is the "owner" (holder) of radiological equipment in the public sector. The Task Force recommended that amending legislation be introduced making Health Information and Quality Authority (HIQA) the responsible body in relation to audit, population dose reporting and incident reporting. This would remove same from the HSE in view of the conflict of interest. It is the view of this committee that this needs to be dealt with as a matter of urgency.

Ireland has an effective statutory inspection process in place for the radiation protection of workers and the public delivered by the Radiological Protection Institute of Ireland. It is a requirement of the European legislation, EC Directive 97/43 EURATOM that Ireland has an inspection process in place for the radiation protection of patients. Whilst guidelines on compliance and incident reporting are important methods to bring about improvements and minimise errors, their effectiveness and application are diluted in the absence of an inspection function in SI 478. This needs to be expedited to supplement governance structures already in place.

The committee has noted, however, that no further progress was made on implementing the recommended changes to current legislation to allow for inspection of facilities and the transfer of competent authority functions to HIQA.

Therefore the situation remained for 2009 that the HSE continued to be responsible for conducting clinical audit in, and receiving incident reports from, all public and private facilities in Ireland.

Radiological equipment is licensed for custody and use by the Radiological Protection Institute of Ireland (RPII) in accordance with the Radiological Protection Act, No. 9 of 1991 and S.I. No 125 of 2000. However, the regulations are focused on the protection of workers and members of the public and are specifically excluded from considering the medical qualifications of staff involved in the use of the equipment on patients or that the holder has protocols in place to protect the patient.

Licences to hold x-ray equipment are currently issued to Chiropractors by the RPII. Chiropractors are not on a register of practitioners as defined in SI 478 (2002). Chiropractors need to engage a practitioner and staff with recognised training to operate the equipment. An audit of these practices is required to assess the levels of general compliance and is planned for 2010.

Recent general developments in the Patient Safety agenda have been encouraging. The NRSC works well with the stakeholders in this area and adds to and complements the agenda. An Implementation Steering Group has been appointed by the Minister for Health and Children to develop action plans based on the recommendations of the Report of the Commission on Patient Safety and Quality Assurance (2008). This report produced recommendations on proposals for a national, standardised approach to clinical audit, and incident reporting. It also recommends licensing of all hospitals. This will be an opportunity to integrate SI 478 requirements with national processes such as clinical audit and a national repository for incident reports in to hospital licensing requirements.

Other encouraging developments include the introduction of the HSE National Imaging Management Information Systems (NIMIS) project. It is designing and installing imaging systems that will allow for images to be transferred between hospitals, allowing for better patient information flow. The national project intends to replace or upgrade systems, as required, in public hospitals around the country over 5 years from 2010. The requirement for clinical audit in the new Consultant Contract and the Medical Practitioners Act, 2007 will strengthen the regulatory framework for clinical audit. The establishment of the Health Information and Quality Authority (HIQA) has introduced the concept of external regulation on the basis of Patient Safety and the transfer of Competent Authority to HIQA of SI 478 will be complemented by the general activities and ethos of HIQA.

It is likely that the role and work of the NRSC will be realigned with these national developments in the years ahead, to provide a comprehensive national approach to patient safety.

I would like to thank the members of the NRSC for their continued work and commitment and acknowledge the support of the Medical Exposures radiation Unit in effecting the advice of the committee and networking with stakeholders to ensure the successful implementation of patient safety advice.

**Dr. Sheelah Ryan**  
**Chair**  
**National Radiation Safety Committee**

**May 2010**

## **Report of the Medical Exposure Radiation Unit**

The Medical Exposure Radiation Unit was established following the recommendation from the HSE Task Force on the implementation of SI 478/SI 303. Its primary tasks are to execute the responsibility of the CEO, HSE and support the NRSC's advisory role in implementing the provisions of SI 478 (2002).

Since its establishment, the unit has engaged extensively with stakeholders, statutory bodies and staff to advance the requirements of SI 478/SI 303.

The unit works closely with the National Radiation Safety Committee, providing the executive support and expertise as required. In addition, the unit carries out the functions assigned to the CEO, HSE as a regulator of SI 478/SI 303.

The baseline audit has proved to be very useful in planning the work of the unit. It has identified areas that require priority attention. The unit intends to continue the work commenced to date and its priority is to support the implementation of the incident reporting mechanism and to follow up on the results of the baseline audit. The unit will continue to work closely with professional bodies and organisations to embed clinical audit and put in place the supporting framework that enables organisations and staff to comply with SI 478/SI 303.

The unit is very appreciative of the significant input by statutory bodies such as the Radiological Protection Institute of Ireland, the Department of Health and Children, the Health Information and Quality Authority, the Irish Medical Council and the Irish Dental Council to advance the common agenda. In addition, the support and guidance of the advisors to the unit and the members of the subcommittees has been the key to the success of all the advancements made.

**Ciara Norton**  
**Medical Exposure Radiation Unit**

**May 2010**

## **Function of National Radiation Safety Committee as outlined in SI 478 (2002)**

The National Radiation Safety Committee established in November 2007 is the statutory committee that has been appointed by the CEO, HSE to advise him on matters pertaining to medical exposure of patients to ionising radiation. The committee consists of no more than 10 members, appointed by the CEO, HSE for a period not exceeding five years. The National Radiation Safety Committee is required to meet twice a year at a minimum and currently meets quarterly.

The role of the National Radiation Safety Committee includes:

- Establish population dose level, i.e., the total population exposure to ionising radiation in liaison with Radiological Protection Institute of Ireland.
- Advise the CEO, HSE, as appropriate, on measures or arrangements in installations that are necessary to protect the health and safety of patients, the general public or persons employed in the installations.
- Receive reports from the clinical auditor and inspectors.
- Produce annual report.
- Receive reports on radiation incidents as required and advise where appropriate.
- Gather lifetime data on equipment and an assurance that each piece is recorded as being maintained.
- Issue Guidance Notes where applicable.
- Review relevant new clinical risk practices to ensure that the exposure and outcome for the patient is in line with international best practice and provide advice where applicable.
- Monitor radiation dose reference levels as established by Irish Medical and Dental Councils.
- Any other appropriate matters that may arise.

## Membership of National Radiation Safety Committee

	<p><b>Dr. Sheelah Ryan, Chair</b></p> <p>Dr. Ryan is a public health physician and a former Chief Executive Officer of the Western Health Board. She chaired the National Breast Screening Board and the National Cancer Screening Service Board since their inception until they were subsumed in to HSE in April 2010. She currently works as an advanced organisation development consultant.</p>
	<p><b>Dr Brian P O'Herlihy</b></p> <p>Dr O'Herlihy is retired Director of Public Health, HSE, East. He is a Consultant in Public Health Medicine and Chaired the Task Force on the implementation of SI478/SI303 which, in the main, set the agenda for the operation of the National Radiation Safety Committee and the Medical Exposure Radiation Unit.</p> <p>Dr O'Herlihy is a graduate of the National University of Ireland (UCD) and prior to being appointed Director of Public Health in 1995 by the then Eastern Health Board, he held, among other posts, that of Director of Community Care and Medical Officer of Health with the Eastern Health Board and Medical Officer with the Department of Health.</p>
	<p><b>Dr. Michael Casey</b></p> <p>Dr. Michael Casey completed his PhD studies in UCD in 1978 and started work in the Nuclear Medicine Department, St Vincent's University Hospital, Dublin. Subsequently he was involved in the provision of general medical physics services in St Vincent's and was promoted to the position of Chief Physicist in 1997. He has been Radiation Protection Advisor to the hospital since 1984.</p>

	<p><b>Eamonn Fitzgerald</b></p> <p>Eamonn Fitzgerald is Chief Executive of the Hermitage Medical clinic in Lucan, Co. Dublin. Eamonn has worked in the healthcare services sector for the past 18 years. Eamonn previously worked as the Deputy Chief Executive of St Vincent's Healthcare Group. He also worked in Beaumont Hospital. He holds an M.B.S. from the Smurfit Graduate School, UCD and an M.Sc. in Economics from Trinity College.</p>
	<p><b>Dr Mary Hynes</b></p> <p>Dr. Hynes is a public health doctor and was Director of Public Health and later Regional Manager Acute Services in the former Western Health Board. Dr. Hynes was appointed to the new post of Assistant Director in the National Hospital Office with a brief for quality, risk and customer care. Currently Dr Hynes is Cancer Network Manager West, National Cancer Control Programme, Galway</p>
	<p><b>Professor Frank Sullivan</b></p> <p>Frank Sullivan is Professor and Chair of the Department of Radiation Oncology and Consultant Radiation Oncologist, at Galway University Hospital (GUH). Dr. Sullivan was formerly the Cancer Centre Director for Holy Cross Health, Silver Spring MD as well as CEO and Medical Director of Maryland Regional Cancer Care. Dr. Sullivan has over 18 years' experience practicing medicine in the USA and held senior appointments in both the private and public sectors. He continues to hold Adjunct Faculty appointments at the National Cancer Institute (USA), and Georgetown University (Washington DC).</p>

	<p><b>Dr. Tom Ryan</b></p> <p>Dr. Tom Ryan is the Director of Regulatory Services with the Radiological Protection Institute of Ireland. His role involves responsibility for the licensing and inspection of practices using ionising radiation in Ireland including those within the medical and dental sectors. He also has responsibility in the Radiological Protection Institute of Ireland for matters relating to radioactive waste and the security of radioactive materials. Tom is a member of the EURATOM Article 37 Expert Group, the European Commission's Standing Working Group and the Inter-Departmental High Level Group on radioactive waste.</p>
	<p><b>Angela McGovern</b></p> <p>Angela McGovern qualified as a radiographer and worked in London and Cork. In 2000 she was appointed Radiographic Services Manager in Cork University Hospital. Angela was a member of the Radiation Safety Committee at Cork University Hospital for a number of years and was on the Radiation Safety Committee at St Mary's Orthopaedic Hospital, and St Finbarr's Hospital, Cork.</p>
	<p><b>Dr. Ronan S Ryan</b></p> <p>Dr. Ryan is a Consultant Radiologist, practising in Mayo General Hospital, Castlebar (HSE-West) and sits on the National Radiation Safety Committee in this capacity. Dr. Ryan is currently a Board member of the Faculty of Radiologists of The Royal College of Surgeons in Ireland, the education and training body for the medical specialty of Radiology in Ireland and chairs that organisation's Radiation Protection Committee which reports to the Faculty Board. His membership of the National Radiation Safety Committee followed on from his membership of the 2007 HSE Task Force on implementation of SI 478/SI 303.</p>



**Dr Jane Renehan**

Dr Renehan is Principal Dental Surgeon in HSE Dublin North West. Dr Renehan has regional responsibility for planning and evaluation of Health & Safety, Radiation Safety, Quality & Audit, Continuing Professional Development (CPD), and Risk Management, in Dublin North East. She is joint chair of the Dental Radiation Safety Committee in Dublin North East / Mid Leinster. Dr Renehan is President of the Public Dental Surgeons Group, Irish Dental Association.

## **Work of the National Radiation Safety Committee and Medical Exposure Radiation Unit 2009.**

The National Radiation Safety Committee met 3 times in 2009. Its membership remained unchanged in 2009. The meetings are also attended by the advisors to the Medical Exposure Radiation Unit and HIQA are invited as attendees.

Much of its work is delivered through the subcommittees which are established by it and chaired by a member of the National Radiation Safety Committee. The recommendations of the NRSC and its subcommittees are addressed to the delegated nominee of the CEO, HSE. The Medical Exposure Radiation Unit is responsible for the implementation of the advice and recommendations of the NRSC and its subcommittees, in addition to fulfilling the regulatory requirements placed on the CEO, HSE. A regular update from the subcommittees and the Medical Exposure Radiation Unit on the implementation of its recommendations is tabled for meetings of the National Radiation Safety Committee. A list of all subcommittees is provided in **Appendix 1**.

### **PROGRESS REPORT ON THE RECOMMENDATIONS OF THE NATIONAL BASELINE AUDITS IN RADIOLOGY AND RADIOTHERAPY, 2008 AND HSE TASK FORCE REPORT, 2007**

One of the first tasks of the National Radiation Safety Committee was to receive and consider the Task Force Report and National Baseline Audit Reports. These reports identified five key themes that needed to be addressed to improve compliance by holders with the legislation and to improve radiation protection for the patient. It was identified that the Holder is the entity that must comply with the legislation and many of the recommendations are directed at the holder. However, the following also highlights the recommendations that will assist the holder in compliance.

#### **1. Legislation and Strategic Governance**

##### **a. HIQA to be designated as appropriate Competent Authority**

The HSE Task Force Report 2007 recommended that the medical ionising regulations be amended to designate HIQA as the competent authority in relation to the setting of standards, ensuring that the regulations are complied with and ensuring that a local clinical audit is carried out at regular intervals in a sufficiently rigorous manner and meets required standards.

##### **b. Introduce Process of Inspection for Patient Ionising Radiation in Ireland**

It is a requirement of the European legislation, EC Directive 97/43 EURATOM that Ireland has an inspection process in place. This has been implemented

broadly across the EU. Ireland has an effective statutory inspection process in place for the radiation protection of the workers and the public delivered by the Radiological Protection Institute of Ireland. There is no statutory inspection process for the radiation protection of patients. This needs to be addressed as a matter of urgency to supplement governance structures already in place.

#### **c. Regular Clinical Audit must take place at local level**

The practice of clinical audit at local level has been proven to be an effective and necessary tool to improve the quality and effectiveness of the medical use of radiation. The HSE Task Force Report recommended that the audit process should be conducted at local level with some external input. The EU Guidelines on Clinical Audit (RP159) point out the need to have both internal audits, or self assessments and external audits. The current legislation provides only for a framework for external audit.

#### **d. Amend Legislation as a Priority**

These proposals require an amendment to the current legislation. A Transition Committee consisting of senior representatives from the relevant statutory bodies was established to review the current legislation and produced proposed amendments. The proposed amendments were issued to the Department of Health and Children in 2009. It has been agreed that HIQA will regulate this area. However, a date has not yet been set for the transfer of this function.

## **2. Organisational Structures - Operational Governance**

#### **a. Local Clinical Audit Structures and Processes**

It was recommended that structures be put in place locally to facilitate the requirement to comply with SI 478 and to conduct clinical audit such as local Radiation Safety Committees/Clinical Audit Committees and for smaller locations to have links to a committee.

In addition it was recommended that the Medical Exposure Radiation Unit and the National Radiation Safety Committee should provide guidance on clinical audit structures e.g. the identification of suitable audit committee structures with clear lines of accountability, the identification of clear terms of reference, suggestion of a minimum frequency for meetings (the authors suggest once every six months), a forward plan for audits (based on a risk assessment to identify high dose, high risk or high volume procedures) and identification of the need to provide a clear record of adherence to the audit cycle.

#### **b. Clarify Accountability and Responsibility of local Radiation Safety Committees (RSCs)**

The NRSC established the Structures subcommittee in 2008 and it produced a report of recommendations in 2009.

The terms of reference for the structures subcommittee were:

Present recommendations for:

- Local and sub-national structures based on recommendations of the task force and audit reports to meet requirements of SI 478;

- Their links to national level, other relevant structures such as radiation safety committees and to proposed structures;
- The membership, accountability and remit of these structures.

The subcommittee recommended that;

- Local RSCs, where they exist, should extend their remit to include compliance with SI 478
- Smaller hospitals that do not have their own RSC should link in to a larger hospital/location RSC.
- The subcommittee recommended membership of these committees
- RSCs should link to the local risk, governance and audit structures of the location.
- In the case of small holders with lower levels of activity and complexity, such as dentistry, it is recommended that these holders keep a Radiation Protection File on site for viewing if required.

The structures subcommittee intends that its proposals will add value and support to the implementation and delivery of quality and patient safety measures. The rationale for proposing a form of structures is to connect everyone to the system, bring in outliers so that there is a forum for sharing of learning and knowledge and awareness of responsibilities which leads to better quality and patient safety.

These recommendations formed the basis of the recommendations produced in the NRSC Guidance to Holders. The report and the subsequent guidance document that was issued in March 2010 are available at the following link:

[www.hse.ie/eng/about/who/meru.html](http://www.hse.ie/eng/about/who/meru.html)

### **3. Responsibilities and Accountability of Holders**

#### **a. Guidance to holders on the requirements of SI 478**

The National Baseline Audits conducted in Radiology, Nuclear Medicine, Dentistry and Radiotherapy in 2008 recommended that *“The HSE and the National Radiation Safety Committee should clarify and promote the requirements of SI 478 and ensure that all Holders of ionising radiation equipment are aware of these”*.

The NRSC recommended the production of a guidance document for holders on compliance with SI 478. The EC Directive 97/43 EURATOM, Statutory Instruments 478(2002) and 303(2007) and the recommendations of the Structures Subcommittee were the basis on which the Guidance to Holders was developed. This was largely complete in 2009 and following the advice from the NRSC, consultation with statutory bodies and holders, it was published in 2010. It is available at this link

[www.hse.ie/eng/about/who/meru.html](http://www.hse.ie/eng/about/who/meru.html) Legislation and Responsibilities.

#### **b. Role of the Medical Physics Expert in Dentistry**

The Baseline Audit in Radiology recommended that the NRSC should give guidance on the distinction between the role of the Radiation Protection Adviser and the Medical Physics Expert (MPE). A subcommittee was established in

2008 to define the role of MPE in dentistry and define the tasks required and the requirement of the holder to engage them. The subcommittee completed its work in 2010 and a copy of their recommendations is available at the following link [www.hse.ie/eng/about/who/meru.html](http://www.hse.ie/eng/about/who/meru.html) . The recommendations have been recommended for implementation and it is expected that notification will issue to MPEs and Dentists in 2010.

### **c. Communications and Raising Awareness**

The Task Force that was established in 2007 recognised the requirements to raise awareness of the legislative responsibility of users of ionising radiation. The national campaign of awareness which highlights the necessity to ensure compliance with SI 478/SI 303 was identified.

On going awareness is being driven through the Medical Exposure Radiation Unit. In 2009, members and advisors of the Medical Exposure Radiation Unit spoke at annual national and international conferences of professionals in radiology on compliance with SI 478. The requirements of the legislation have been included on training and education programmes in the teaching hospitals.

The success of the awareness seminar in Farmleigh in 2008 was further developed and led to planning a national seminar specifically to address Risk and Patient Safety in Radiotherapy. A seminar took place in February 2010 to raise awareness of staff responsibilities about the risks involved in radiotherapy treatment of the patient.

The Medical Exposure Radiation Unit has promoted the awareness of holders and statutory bodies on the requirements of SI 478/303 through the following:

- Development of a public website
- Development of Guidance to Holders with NRSC and Stakeholders.
- Publication of all reports.
- Awareness Seminars in Radiology, Radiotherapy and Dentistry.
- Modules on Radiation Protection have been integrated in to professional courses.
- Attending Training / Educational Courses to present on legislation.
- Presenting at professionals' national and international conferences.
- Engagement of facilities in pilot projects, consultation on policies and feedback.
- Regular meetings with relevant Statutory Bodies
- Collaboration with UK IR(MER) Inspectors; attending Inspector Summit meetings.
- The Medical Exposure Radiation Unit worked with the CEO's office, HSE to update the list of licence holders in the HSE, such as hospital managers and Principal Dental Surgeons.

## **4. Processes and National Frameworks**

### **a. Implement a Regular Process of Clinical Audit**

The National Baseline Audits recommended that the NRSC and the Medical Exposure Radiation Unit provide further guidance on Clinical Audit structures. Guidance notes and training packages should also be considered. Since then, the European Commission published Guidelines on Clinical Audit for Medical Radiological Practices (Diagnostic Radiology, Nuclear Medicine and Radiotherapy) in 2009. These were adopted by the NRSC in January 2010. They have also been adopted by the Medical Council.

*"Clinical audit under EC directive 97/43/EURATOM has been defined as a systematic examination or review of medical radiological procedures which seeks to improve the quality and the outcome of patient care, through structured review whereby radiological practices, procedures and results are examined against agreed standards and good medical radiological procedures, with modifications of the practices where indicated and the application of new standards if necessary. The purpose of a multidisciplinary clinical audit can generally be summarised as:*

*To improve the quality of patient care*

*To promote the effective use of resources*

*To enhance the provision and organisation of clinical services*

*To further professional education and training in a health care environment*

*The audit can be of various types and levels, either reviewing specific critical parts of radiological process (partial audit) or assessing the whole process (comprehensive audit). Comprehensive audit covers structure, process and outcome. It addresses organisational, physical-technical and clinical aspects of practices"*

### ***European Commission Guidelines, 2010***

The National Radiation Safety Committee plans to issue guidance on external and internal clinical audit in consultation with the Medical / Dental Councils. Under current legislation, clinical audit is required to be conducted by all Holders by October 2012. All guidance will be developed within the context of national developments resulting from the Report of the Commission on Patient Safety and Quality Assurance, 2008 and the Adverse Event, Clinical Audit and Patient Safety Protocols being developed.

### **b. Develop a National Incident Reporting Mechanism**

The Task Force and Baseline Audit Reports recommended as a priority the introduction of a national reporting mechanism for patient incidents in ionising radiation. The National Radiation Safety Committee recognised that an appropriate warning system of incidents is a significant contributor to reducing the number of future incidents, on the basis that all incidents are reported and

acted upon. Furthermore, the information reported will assist in the analysis of incidents.

The National Radiation Safety Committee advises Chief Executive Officer, HSE on any matter pertaining to the safety of practices and may issue guidance notes on putting in place protocols to prevent accidental exposures.

An incident reporting subcommittee was established by the NRSC in 2008 to consider and report on what constitutes a major and minor incident and report on any other relevant issues. The subcommittee recommendations are:

- The definition of an incident, based on IAEA BSS
- The definition of notifiable incidents and reporting procedure, i.e., these are incidents at which there may be a level of patient harm and/or learning to prevent recurrence.
- A process for all other incidents: These are incidents from which there may be a learning to prevent recurrence

The Medical Exposure Radiation Unit piloted the definitions and process with 6 locations in the period October to December 2009. Pilot sites included private / public, small/large, adult / children and diagnostic/radiotherapy/nuclear medicine.

The results of the pilots led to modification of the definitions and agreement on a process of managing and reporting on incidents. The definitions of notifiable incidents are listed in **appendix 2**. Further developments in 2010, including the national launch of the incident reporting mechanism in April 2010 are available on the website.

## **5. Holders' Responsibilities**

The recommendations in the Baseline Audits were returned to the Holders to review and implement changes to meet the requirements of the legislation. Those that were highlighted as priority were addressed with the holders in 2009. Holders are required to engage in external audit every five years and will be required to conduct a further audit by October 2012. It is expected that HIQA will become the competent authority before that date.

## Report on Population Radiation Dose From Medical Exposures

At an early stage, the Population Dose subcommittee recognised that it would not be practicable or meaningful to produce a report annually to cover all modalities.

Thus it was decided to deal with a specific modality annually on a five year cycle basis.

The Population Dose subcommittee identified the collection of CT dose data as a priority in its 2008 report, owing to the disproportionate amount (56%) that CT is estimated to contribute to the collective population dose from medical exposures in Ireland, while only accounting for approximately 10% of total examinations carried out (RPII, 2006). A national survey is currently under way to audit both adult and paediatric CT examinations. This will record both the number of CT examinations currently performed as well as the average radiation exposure from each for both adults and children.

### Progress in 2009

A permanent Population Dose Subcommittee was recommended to be established to oversee the work being carried out to meet the requirement to report annually on population dose.

Terms of reference are:-

- Advise on the establishment and publication of Population Dose levels.
- Prioritise areas for population dose assessment.
- Provide guidance to the NRSC on the most efficient way to collate population dose figures.
- Identify methods that will facilitate the establishment and updating of Diagnostic Reference Levels.
- Produce an Annual report on Population Dose.
- Report on other relevant matters.

This committee held its first meeting in February 2010 and approved the issue of the National CT Population Dose Survey which will issue in 2010. It is intended that as well as providing baseline figures on collective dose from CT, the survey will also assist in the establishment of national Diagnostic Reference Levels (DRLs) in the modality. Individual results will also be communicated back to each participating site to allow departments to create local DRLs and also to compare their results to the national average, thus facilitating the process of optimisation. The study is confined to the use of CT in diagnostic radiology and will not be collecting data pertaining to the use of CT in other areas, such as Radiotherapy and Nuclear Medicine.

A web page has been created within the HSE website with information pertinent to the survey and is available at:-

<http://www.hse.ie/eng/about/Who/Population%20Dose.html>.

## HSE/RCSI Clinical Audit Poster Competition 2009

The Health Service Executive sponsored a poster competition for the first time at the Annual Scientific Meeting of the Faculty of Radiologists in the RCSI - September 24<sup>th</sup>-26<sup>th</sup> 2009. This competition was aimed at Specialist Registrars in training ideally collaborating with other members of any Clinical Audit Committees that may exist in their training institutions. Any issue that impacts on the quality of Radiological Services can be audited. Both the Faculty of Radiologists and the HSE see this initiative as dovetailing with the onset of audits/inspections required under SI 478 of 2002 and the need to demonstrate ongoing compliance with same. A perpetual trophy was awarded to Dr Carole Ridge, Specialist Registrar, St Vincent's University Hospital, Dublin 4, the winning entrant.



*(Photo courtesy Irish Medical News)*

Presentation by Dr. Risteard O'Laoide, Dean, Faculty of Radiologists to Dr Carole Ridge.

Poster Title: COMPLETING THE AUDIT CYCLE: Evaluation of an Optimised Algorithm for the Imaging of Pulmonary Embolism in Pregnancy.

C.A Ridge, S McDermott, C.D Collins, J.D Dodd, S.J Skehan.

Department of Radiology, St Vincent's University Hospital, Dublin.

## **Quality Assurance & Performance Criteria for Radiological & Nuclear Medicine Installations Draft Guidelines.**

The European Commission has prepared a document *Radiation Criteria for Acceptability of Medical Radiological Equipment used in Diagnostic Radiology Nuclear Medicine and Radiotherapy* which is now out for European Consultation.

The Committee has recommended that this be adopted by the competent authority in its final state to satisfy the requirements of regulation 6 of Statutory Instrument 478 (2002). The committee is also reviewing the document to prepare the NRSC response to the consultation. In addition it is intended to bring to the attention of all holders the existence of the document in order that they might prepare for its implementation.

## **Priorities for the National Radiation Safety Committee and the Medical Exposure Radiation Unit for 2010**

Monitor compliance with SI 478/303

Develop national framework for clinical audit

Deliver audit compliance awareness and training

Conduct CT population dose survey and general x-ray population dose survey

Develop and implement a self assessment tool for dentists

Publish radiation protection file guidelines

Establish and support national subcommittees in dentistry and radiotherapy

Support the development of structures for Radiation Safety Committees

Launch national incident reporting mechanism

Produce regular reports on incidents

Roll out the medical physics expert requirement for dentistry

Continue international collaboration on protocols

Implement advice of CEO, HSE and NRSC

## Relevant Documents

EC Directive 97/43 EURATOM

Statutory Instrument (SI) 478 (2002)

Statutory Instrument (SI) 303 (2007)

HSE Task Force Report, 2007

National Baseline Audits in Radiology and Radiotherapy, 2008

Report of the Commission on Patient Safety and Quality Assurance (2008).

European Commission Guidelines on Clinical Audit for Medical Radiological Practices (Diagnostic Radiology, Nuclear Medicine and Radiotherapy), 2009

Radiation Criteria for Acceptability of Radiological, Nuclear Medicine and Radiotherapy Installations V1.1-090227

## **Appendix 1**

### **Subcommittees, 2009:**

Incident Reporting Subcommittee

Structures Subcommittee

Population Dose Subcommittee

Medical Physics Experts in Dentistry Subcommittee

Guidance to Holders on medical exposures

Dental Review Subcommittee

Transition Committee

Section 6 SI 478 (2002) Schedule of Equipment Criteria

Further details on the committees' terms of reference, membership and reports are available online at

[www.hse.ie/eng/about/who/meru.html](http://www.hse.ie/eng/about/who/meru.html)

## Appendix 2

### 1.1 A GUIDE TO EXAMPLES OF RADIATION INCIDENTS.

### 1.2 Examples of Radiology, Nuclear Medicine and Radiotherapy (Diagnostic Imaging, CT, PET-CT, Nuclear Medicine, Cardiology and Interventional Radiology studies) Patient Safety Incidents

#### 1.2.1 Exposure Greater than intended, for example;

- A diagnostic exposure “greater than intended” (see below).
- Incorrect Radiopharmaceutical.
- Therapeutic nuclear medicine – administered activity differing by a factor of 1.1.

#### 1.2.2 Exposure where none intended, for example;

- Incorrect Patient.
- Incorrect Procedure.
- Incorrect Anatomy.
- Equipment failure, accident, error or mishap causing patient exposure.

#### 1.2.3 Radiotherapy dose variations, for example;

- Radiotherapy Dose variation from prescribed total dose from 5% up to 10%.
- Radiotherapy Dose variation from a fractional dose from 10% up to 20%.

#### 1.2.4 Deterministic effects.

#### 1.2.5 Any other relevant radiation incident considered to have patient safety implications.

#### 1.2.6 A near miss under any of the above headings.

#### Guide to “Greater than Intended”:

Diagnostic Procedures	Dose multiples greater than intended
Limbs and Joints (except hip); chest (single PA film); skull; dental; DXA	5
Thoracic spine; lumbar spine; hip; pelvis; abdomen; dental CT; Brain CT	3
IVU; barium swallow; barium meal; barium follow through; barium enema; CT chest; diagnostic nuclear medicine	3
CT abdomen or pelvis, PET-CT; cardiology; interventional radiology	2

## **2.0 GUIDE TO INCIDENTS THAT REQUIRE TO BE NOTIFIED TO THE MEDICAL EXPOSURE RADIATION UNIT:**

### **2.1 Examples of Radiology, Nuclear Medicine and Radiotherapy (Diagnostic Imaging, CT, PET-CT, Nuclear Medicine, Cardiology and Interventional Radiology studies) Notifiable Patient Safety Incidents**

#### **2.1.1 Exposure much greater than intended, for example;**

- Diagnostic overexposure of adult as a result of more than twice the exposure intended that leads to an overexposure of > 10mSv **or** 20 times the dose intended, regardless of the dose level.
- Diagnostic overexposure of a child as a result of more than twice the exposure intended that leads to an overexposure of > 3mSv **or** 15 times the dose intended, regardless of the dose level.
- Inadvertent deterministic effects produced as a result of interventional radiology.
- Therapeutic nuclear medicine - administered activity differing by a factor of 1.2.
- Therapeutic dose given instead of diagnostic dose e.g. radioiodine.
- Dose given to carers without consent that is greater than medical council guidelines of 3 mSv, and 15mSv for adults 60 years or over.

#### **2.1.2 Exposure where none intended, for example;**

- Inadvertent dose to the breastfed child over 1 mSv.
- Inadvertent Dose to foetus over 1 mGy.
- Incorrect patient (radiology or radiotherapy) exposed to over 1mSv.

#### **2.1.3 Radiotherapy dose significant variation, for example;**

- Radiotherapy Dose variation from prescribed total dose of greater than 10%.
- Radiotherapy Dose variation from a fractional dose of greater than 20%.
- Radiotherapy - completely incorrect volume.
- Radiotherapy – inadvertent setup variation that will/could impact on normal tissues/organs at risk (e.g., heart, lung, eyes, kidney, etc.).

#### **2.1.4 Inadvertent deterministic effects from radiotherapy.**

#### **2.1.5 Any other relevant radiation incident considered to have serious patient safety implications.**

#### **2.1.6 A near miss under any of the above headings.**