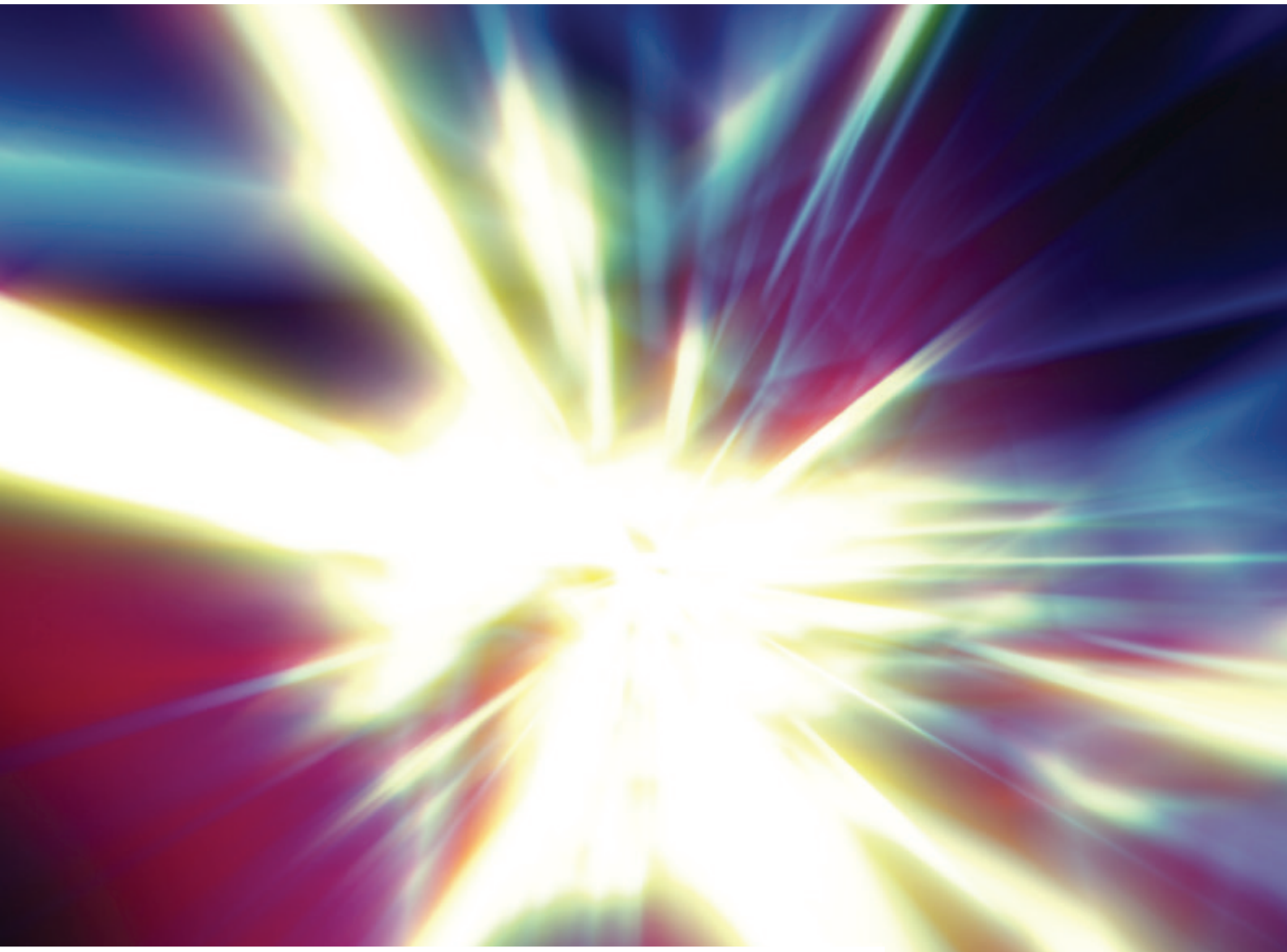
Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

National Radiation Safety Committee



Annual Report 2008

Report for the year-end

31st December 2008

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.

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."

March 2009

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Chairperson's Statement

I am pleased to introduce the First Annual Report of the National Radiation Safety Committee for year end 31st December 2008. The committee was established by the CEO, Health Service Executive (HSE), under Statutory Instrument (SI) 478 (2002), to advise him on any matter pertaining to the health and safety of the patients attending at premises carrying out radiological procedures and the general operational practices of these organisations. This includes both public and private facilities.

The inaugural year of the Committee saw a number of important and new developments based on the requirements in Statutory Instrument (SI) 478 (2002) and its amendment SI 303 (2007) to protect the patient from the harmful effects of ionising radiation. In addition to the responsibilities placed on holders of ionising radiation equipment, practitioners and other staff in SI 478/SI 303; a number of statutory bodies and particularly the HSE, have been assigned regulatory and implementation functions. As a result of the significant progress made by the holders, staff, the HSE and the other bodies in 2008, there is an increased awareness of and compliance with the regulations in Irish organisations.

Ireland has undertaken considerable work to assess patients' needs in terms of radiation protection and to deliver on regulatory requirements. Much of the success to date is due to the work of the HSE Task Force which produced a set of recommendations in 2008 on the implementation of SI 478/SI 303. These recommendations led to the establishment of the National Radiation Safety Committee, the establishment of the Medical Exposures Radiation Unit and the conduct of the first national baseline audit in radiology in Ireland.

The National Radiation Safety Committee was established based on the composition recommended in the Task Force report. Its composition mirrors the interdisciplinary/interagency composition of the Task Force which proved a very successful forum to engage the various stakeholders in the developments of the Committee and implementation of SI 478/SI 303.

A key milestone in 2008 was the conduct of the first national baseline audit by the HSE in Radiology, Nuclear Medicine and Radiotherapy. The HSE should be encouraged by the outcome of this survey, which helps to clarify the issues to be addressed for all organisations. All organisations involved have actions to be taken.

The National Radiation Safety Committee has overseen a number of other developments in 2008, mainly carried out by the subcommittees. A subcommittee has recommended a mechanism for reporting of incidents. A plan is in place in Ireland to monitor population dose and a progress report will be given annually in this Committee's annual report. Two further committees have work underway. A subcommittee has been established to recommend appropriate structures through which to conduct clinical audit and monitor compliance with SI 478/SI 303. The Transition Committee has been established to advise on the governance issues in relation to proposed changes to legislation.
The work of subcommittees mentioned throughout this report has resulted in significant progress being made to advance the understanding of and compliance with SI 478/SI 303.

The Committee has targeted priority areas for development when assessing overall patient safety in regard to radiation protection.

Particular work planned for 2009 such as the establishment of the incident reporting mechanism and the recommendations for appropriate structures will set the foundations on which to develop a model for radiation protection that delivers benefits for the patient and the health services in terms of quality, practicality, effectiveness and optimal patient outcome.

All efforts continue to engage the key stakeholders in promoting an environment where there is a keen awareness of the relative benefits of and risks involved in the use of ionising radiation and the primary concern to protect public health.

I would like to thank the Committee for the commitment, time and expertise they have given in 2008. I would also like to thank the team and advisors of the Medical Exposures Radiation Unit, HSE, for their support and advice to the Committee. I look forward to chairing the Committee and working with the Medical Exposures Radiation Unit to progress many of the recommendations made by the subcommittees in 2009.

Dr. Sheelah Ryan
Chairperson
National Radiation Safety Committee

March 2009

Report from 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.

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 finalise 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.

Medical Exposure Radiation Unit
HSE

March 2009

Background

Radiation used for imaging or treatment in medicine has the potential for great benefit for patients. When indicated and correctly used these procedures have resulted in major benefits for the individuals involved and for the population as a whole. It also has the potential for harm, which needs to be minimised and controlled, whilst still realising the benefits. Over the past 25 years the increasing use of Ionising Radiation for medical purposes has resulted in an overall increase of radiation dose to the patient and to the population in general. This is especially true because of new technological advances and sophisticated techniques used in diagnosis and treatment. Effective regulation and monitoring are required.

In October 2002 Statutory Instrument, SI 478 European Communities (Medical Ionising Radiation Protection) Regulations (2002), on the protection of individuals against the danger of excessive medical ionising radiation in relation to medical exposures, was passed into law. This transposed earlier European Directives on the medical use of ionising radiation into Irish Law. In June 2007, the minister signed a statutory instrument 303 (2007) in to law which makes minor amendments to SI 478.

These regulations lay down measures for the protection of individuals in relation to medical ionising radiation exposure of patients, as part of their medical diagnosis or treatment, and regulate exposure in all circumstances. In addition total population dosage is to be monitored and reported on annually.

The current regulations place considerable responsibilities on the CEO of the HSE, all Holders of radiological equipment both public and private, Prescribers and Practitioners administering ionising radiation, Medical Physicists and Radiographers. The regulatory responsibilities of the CEO, HSE are;

- ***Establish and resource a National Radiation Safety Committee to advise CEO on matters pertaining to the safety of radiological installations and general practices and may issue guidance notes to comply with regulations.***

- The CEO, HSE can introduce measures, on advice of the National Radiation Safety Committee, to protect health and safety of patients, public or employees.

- Appoint a Clinical Auditor.

- Hold and maintain a register of all radiological installations in Ireland.

The Regulations of October 2002 set out a timescale for full implementation with the Medical and Dental Councils required to adopt criteria for clinical audit within two years, and the first audit, under the Regulations, to take place not more than three years after the date of adoption of criteria for clinical audit. The Medical and Dental Councils, as required by SI 478, have published the Criteria for Clinical Audit, Diagnostic Reference Levels, etc.
(See: - http://www.medicalcouncil.ie/medical_ionising_radiation/default.asp and www.dentalcouncil.ie).
Clinical audit was required to be conducted by the HSE by October 2007.

Recognising that the full implementation of the audit required necessary co-operation between the agencies and stakeholders involved, the HSE established a Task Force on the Implementation of SI 478/SI 303 in April 2007, which included representatives from the main stakeholders with interests in this area; i.e., Radiological Protection Institute of Ireland, Irish Medical Council, Department of Health and Children, Irish Dental Council, Health Information and Quality Authority and the various staff disciplines to prepare an Action Plan for implementation of the Statutory Instruments.

The report of the Task Force in April 2008 has, in the main, set the agenda for the operation of the National Radiation Safety Committee and the Medical Exposure Radiation Unit and subsequently, much has been achieved in fulfilling the requirements of the Statutory Instruments.

The Task Force produced a set of recommendations, which included:

Some key recommendations of the Task Force included the recommendation that the medical ionising regulations be amended to designate the Health Information and Quality Authority as the competent authority in relation to the setting of standards. It is recommended that Health Information and Quality Authority will have responsibility to ensure that the regulations are complied with and ensure that a local clinical audit is carried out at regular intervals in a sufficiently rigorous manner and meets required standards.

This recommendation reflected the fact that the Task Force identified that there was a significant conflict of interest between the role ascribed to the HSE under the legislation, which covers both public and private facilities and the HSE's role as a service provider. The Health Information and Quality Authority was not in existence at the time that the regulation SI 478 was adopted. It is recommended that the Health Information and Quality Authority should set and regularly review standards, ensure that regulations are complied with and ensure that the local clinical audit is sufficiently rigorous and meets the required standards.

They also recommended that, in the first instance, clinical audit should be carried out at local level (self audit) with some independent external input. It is recommended that an appropriate multi-disciplinary audit process for medical ionising radiation protection should be established in all relevant facilities and that radiological departments carry out regular routine self-audit with some independent external input.

The Task Force also recommended the composition of the National Radiation Safety Committee. It recommended the establishment of the Medical Exposure Radiation Unit to pursue the recommendations of the Task Force report, conduct the baseline clinical audit and provide expertise and support to the National Radiation Safety Committee, as appropriate.

A number of other recommendations were made concerning communication, awareness, training and education, structures and resources required.

Discussions have since taken place with the Department of Health and Children regarding the matter of the Health Information and Quality Authority becoming the competent authority. The department recognises the conflict of interest regarding the HSE. Consequently, Department of Health and Children and the Health Information and Quality Authority have indicated their agreement that the Health Information and Quality Authority should be designated the competent and legal authority going forward. This change is expected to have a lead in time of at least two years.

The National Radiation Safety Committee was subsequently established in November 2007 and is the statutory committee that has been appointed by the CEO, HSE to advise on matters of radiation protection for the patient.

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 the National Radiation Safety Committee

Dr. Sheelah Ryan, Chair

Dr. Ryan was appointed Chair of the National Cancer Screening Service Board in January 2007. Dr. Ryan previously chaired the National Breast Screening Board and has held this position since BreastCheck's inception. Dr. Ryan is a public health physician and a former Chief Executive Officer of the Western Health Board and also works as an advanced organisation development consultant.

Dr Brian P O'Herlihy

Dr O'Herlihy is 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.

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.

Dr. Michael Casey

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.

Eamonn Fitzgerald

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.

Dr Mary Hynes

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.

Angela McGovern

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.

Professor Frank Sullivan

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).

Dr. Tom Ryan

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.

Dr. Ronan S Ryan

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.

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 Elect of the Public Dental Surgeons Group, Irish Dental Association.

The Work of the National Radiation Safety Committee 2008

The National Radiation Safety Committee has met 5 times in total since its inaugural meeting in December 2007. It has made a number of recommendations to the CEO, HSE. 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.

One of the roles of the National Radiation Safety Committee was to receive and consider the Task Force report and its recommendations. A regular update on the implementation of its recommendations is tabled for meetings of the National Radiation Safety Committee. The National Radiation Safety Committee has also set up subcommittees to pursue and advance specific objectives of the Task Force recommendations, i.e., incident reporting and transition of governance to the Health Information and Quality Authority. A list of all subcommittees is provided in **Appendix 3**.

Progress report of subcommittees:

Incident Reporting Subcommittee

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.

This subcommittee was established to produce a report on what constitutes a major and minor incident and report on any other relevant issues. A draft report was considered by the National Radiation Safety Committee and is now at consultation stage with stakeholders. The report is a macro report and will be subject to review. Some of its key features include:

- Recognition of incident reporting as an important mechanism in which to monitor and improve the occurrence of incidents that are harmful to patients.
- Recommendation that a mechanism for incident reporting is notified to holders.
- Recommendation that protocols are in place in each facility to
  - Bring major incidents to the immediate attention of the National Radiation Safety Committee
  - Manage the recording, investigation and follow up of all incidents
  - Report annually on all incidents, near misses and trends to the National Radiation Safety Committee.
- Recommendation to include incident reporting in local clinical audit.
- Recommendation of definitions for major and other incidents.

Population Dose Subcommittee

The subcommittee was established to produce recommendations on the collection of population dose data, which is a statutory requirement of the committee. The report, which was accepted by the National Radiation Safety Committee, recommends the collection of dose data in CT as a priority due to its increased use and higher doses of radiation used.

The subcommittee also advised that the statutory requirement to produce an annual report on dose can be met by addressing specific modalities. The National Radiation Safety Committee may prioritise on modalities, as appropriate, from time to time. The National Radiation Safety Committee acknowledged with thanks the permission given to use the dose data collected by the Radiological Protection Institute of Ireland. This has enabled it to fulfil its mandate to report on population dose for 2008.

See Appendix 1 for a summary of the Population Dose Report for 2008.

Structures Subcommittee

The National Radiation Safety Committee has established this subcommittee to explore and advise on appropriate local structures and their links at regional and national level. The recommendations should take consideration of current local arrangements.

An appropriate local structure will be recommended to:

- Address radiation protection issues,
- Agree clinical audit priorities,
- Review national and local audits,
- Review local incidents,
- Monitor patient dose,
- Review quality management and quality assurance programmes in radiology and radiotherapy,
- Monitor compliance with SI 478/SI 303.

This committee will produce a report in 2009.

Dental Review Subcommittee

The dental audit was conducted in 2008 and a 19% response rate was achieved. This was attributed to the fact that the body representing dentists had concerns about the undertaking.

A subcommittee has been established to review the consequences of the low response rate and other issues raised in the audit report, and make recommendations for the future.

Since the publication of the baseline audit report there has been definite progress in clinical audit in dental radiography. It is anticipated that this will lead to greater compliance with SI 478/SI 303 in both the public and private dental sectors. The Dental Council has statutory responsibilities to advise dentists on a number of issues relating to SI 478/SI 303. The HSE looks forward to collaborating with the Dental Council to advance these issues. The National Radiation Safety Committee, through the HSE, intends to engage with all relevant stakeholders on an on-going basis to facilitate and monitor progress.

Transition Committee

Amendments to SI 478/SI 303 have been drafted to transfer functions from the HSE and other statutory bodies to the Health Information and Quality Authority. The transition committee was established to advise on the smooth transition of responsibilities between the statutory bodies from those outlined in SI 478/SI 303 to the responsibilities in newly proposed amendments. The transition committee, consisting of a senior representative from the relevant statutory bodies – the HSE, Department of Health and Children, the Health Information and Quality Authority, the Radiological Protection Institute of Ireland, Irish Medical Council and Irish Dental Council first met in November 2008. All statutory bodies have been asked to consider the implications of these proposals. The transition committee will recommend a suitable timeframe for implementation of the new legislation.

The National Radiation Safety Committee recognises the potential conflict of interest role of the HSE both as the regulator and a major holder of equipment. The proposed changes will move the functions to an independent body, the Health Information and Quality Authority therefore resolving the conflict of interest issue. These changes are not expected for at least two years and the transition committee will advise on the interim role of HSE prior to legislative change.

Section 6 (SI 478(2002)) Committee, Schedule of Equipment Criteria

Complementing the work of the National Radiation Safety Committee is the requirement by the Department of Health and Children, as the Competent Authority, to establish criteria for equipment and guidelines for their use and assessment. This function has been delegated to the HSE by the Department of Health and Children. A subcommittee has been established and its deliberations are to be advised to the National Radiation Safety Committee to enable it to fulfil its role, as stated in the Statutory Instrument, to advise on replacement dates for equipment and will also be a guide for Medical Physics Experts to make a recommendation to the holder on equipment suitability.

It is envisaged that, once these criteria have been agreed, the National Radiation Safety Committee will establish a mechanism of delegate the decision for replacement to the holder, based on certain requirements being met. The National Radiation Safety Committee will be required to hold a register of and be informed of replacement dates for all licensed equipment in Ireland. This will be addressed as a priority in 2009.

Non-practitioners and non-designated operators

The National Radiation Safety Committee has had some discussion about the apparent anomaly where entities can receive licences for their equipment from the Radiological Protection Institute of Ireland, as is consistent with SI 125 (2000) and there is no licence requirement that they are legally entitled to operate as a holder in compliance with SI 478/303. The National Radiation Safety Committee has recommended that the Minister for Health and Children explore the options available to her in consideration of this issue

The Function of the Medical Exposures Radiation Unit, Environmental Health, Population Health, HSE.

The Medical Exposure Radiation Unit was established to fulfil the regulatory functions assigned to the CEO, HSE in SI 478/SI 303. The regulatory functions have been delegated by the CEO, HSE to Dr. Pat Doorley, National Director of Population Health, HSE.

The unit is also the executive support and advisory unit for the National Radiation Safety Committee. Operationally, this requires that the unit has available to it the relevant expertise. Currently, there are advisors in Radiology, Radiography, Technical and Public Health attached to the unit.

The Medical Exposure Radiation responsibilities are:

- Keeping the National Radiation Safety Committee informed of any relevant matters regarding radiation protection of the patient.
- Providing advice and guidance as required on issues relating to radiation protection of the patient which have been brought to the attention of the National Radiation Safety Committee.
- The conduct and subsequent follow up of the national baseline audit of 2008.
- Establishment, support and project management of subcommittees.
- The development and management of an adverse incident reporting framework. Incidents will be brought to the attention of the National Radiation Safety Committee, the CEO, HSE and the Health Information and Quality Authority where considered relevant.
- Partnering with statutory agencies to progress the recommendations of the HSE Task Force report, the baseline audit and support the implementation of SI 478/SI 303.
- Raising awareness of the content of SI 478/SI 303 and its obligations for staff, patients and public.
- Liaising with the Health Information and Quality Authority on the production of a set of standards for radiological practice as part of their quality and safety framework.
- The unit manages other matters as they arise or are assigned to the unit.

Members of the unit are:

Ciara Norton, Head of Medical Exposure Radiation Unit, HSE, Environmental Health, Population Health Directorate, Mill Lane, Palmerstown, Dublin 20

Vera Furness, Senior Administrative Assistant, Medical Exposure Radiation Unit, HSE, Environmental Health, Population Health Directorate, Mill Lane, Palmerstown, Dublin 20

Public Health Advisor; Dr. Brian O'Herlihy, Director of Public Health, HSE
Technical Advisor; Wilf Higgins, HSE Estates Management, 2-3 Parnell Square, Dublin 1

Radiographic Advisor; Bernadette Moran, Radiographic Services Manager, St James's Hospital, James's Street, Dublin 8

Radiological Advisor; Dr. Neil O'Donovan, Consultant Radiologist, South Infirmary Victoria University Hospital, Cork

Dr. Mary Ormsby, Principal Dental Surgeon, assigned September 2008 to February 2009 to the Health Information and Quality Authority to contribute to the development of standards for Radiology as part of the Authority's quality and safety framework.

Work of the Medical Exposure Radiation Unit

Engagement of Advisors

The unit has available to it advisors in Radiology, Medical Physics, Radiography and Public Health. The unit is considering engaging a dental advisor for one year if required to progress issues recommended for action by the National Radiation Safety Committee in dentistry.

Executive Support to the National Radiation Safety Committee

Much of the work of the National Radiation Safety Committee and its subcommittees is supported by the unit and all meetings are attended by at least one member of the unit.

Awareness Programme

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

Training and education regarding the implementation of SI 478/SI 303, is the responsibility of the relevant professional bodies. However, an Awareness Programme, organised by the Medical Exposure Radiation Unit, took place on 17th May 2008 at Farmleigh House, Phoenix Park, Dublin. This consisted of a programme that covered legislation and focussed on clinical audit. There were approximately 100 attendees, including radiologists, radiation oncologists, radiographers, radiation therapists, physicists, hospital CEOs, risk managers and other professionals.

Due to the success of the initial programme, a similar programme was agreed with the Irish Dental Association. Ongoing awareness is being driven through the Medical Exposure Radiation Unit, particularly regarding clinical audit. This is delivered through lectures at study days and seminars. Members of the Medical Exposure Radiation Unit office regularly attend and contribute towards courses and seminars relating to SI 478/SI 303, as well as those regarding clinical audit.

Raising awareness about the legislative requirements and benefits of clinical audit is essential to monitor and improve the clinical pathway of the patient. The sessions have also contributed significantly to empowering staff in locations to fulfil their legislative requirements.

Progress report, Medical Physics Expert in Dentistry

It was recognised that the requirement in SI 478/SI 303 that a dentist engage a Medical Physics Expert (MPE) to carry out checks has many similarities to the separate requirement by the Radiological Protection Institute of Ireland to engage a Radiation Protection Advisor. It is likely that, in most cases, the same person/entity could fulfil both roles. However, there is no register from which to obtain an MPE; a checklist for MPEs for compliance with SI 478/SI 303 in dentistry needs to be drawn up and an examination of their compatibility with current Radiation Protection Advisor activities is required.

This group was established to produce recommendations for the National Radiation Safety Committee. To date, a draft definition has been agreed with physicists, based on European guidelines; a mechanism proposed in which dentists will be informed of the MPEs in Ireland and a checklist (based on EU recommendations) for use by MPEs in dentistry. A final report from this group will be presented to the National Radiation Safety Committee at its June 2009 meeting. Significant progress has been made in this area due to the engagement of stakeholders throughout the process, including the Radiological Protection Institute of Ireland, dentists, physicists and equipment suppliers. A continuation of this level of cooperation and engagement will be necessary to ensure that MPEs operate effectively in dentistry in a reasonable cost effective timescale that ensures safe performance of equipment.

Progress report, Development of Standards for Radiological Practice

In June 2007, the HSE Task Force on implementation of SI 478/SI 303 held discussions with the Health Information and Quality Authority (the Authority) regarding transfer of responsibility for regulating the use of medical ionising radiation, as required by SI 478/SI 303, from the CEO of the HSE to the Authority. The Authority indicated that they would be willing to assume this regulatory responsibility, subject to amendment of the Statutory Instrument. The Authority also indicated that they would be willing to assume responsibility for coordinating the development of standards for radiation safety provided a suitably qualified person was made available to the Authority to project manage the development of these standards in the short term. The HSE Task Force recommended that the HSE should second someone to the Authority to manage the standards-development project.

The project manager post was advertised internally within HSE in March 2008 and a suitable candidate selected at interview. The secondment term was for twelve months. Some difficulties arose, however, regarding release of the project manager for that length of time. In view of this the secondment duration was changed to six months and the project manager took up position in September 2008.

The development of standards for health and social care services is a complex process involving a number of steps beginning with background research and progressing through many stages before agreed standards are produced. Since taking up the position in September the project manager has undertaken extensive background research looking at best practice nationally and internationally, obtained evidence on the need for regulation of radiological practice, the development of knowledge in the area of radiation risk and radiation safety, and the evolution of legislative and regulatory systems both in Ireland and internationally. Work is currently being undertaken on the nature of regulatory systems in other countries, particularly the UK. The project manager anticipates the background research phase of the project will be up to date when the secondment period comes to an end in March 2009.

The Authority is currently embarking on the development of a framework for quality and safety standards in health and social care services. The development of this framework is a core component of the Authority's long term strategy for safety and quality in health and social care services, a component of which includes monitoring of compliance with these standards. Standards for medical ionising radiation will form part of this framework and will be developed over the next 6 to 12 months as part of this overall programme. The Authority will reassess its requirement for suitably experienced personnel to assist with the radiation aspect of the standards-development project at this stage.

First National Baseline Audit, Radiology/Nuclear Medicine and Radiotherapy

A survey of current practice and equipment was commissioned in the following areas:

- Radiology/Nuclear Medicine
- Radiotherapy

These surveys covered the arrangements for *structures for oversight, quality improvement, clinical audit, justification and optimisation* of ionising radiation equipment in medicine and dentistry. They were conducted by the Quality Assurance Reference Centre (QARC), UK.

A survey was also commissioned in Dentistry and a report will be available in the spring of 2009.

Responses to the questionnaires were collected and collated. Final audit reports on the radiology/nuclear medicine services and on radiotherapy were submitted to the National Radiation Safety Committee and their recommendations in December 2008. The National Radiation Safety Committee submitted the report to the CEO, HSE, in January 2009 and it was circulated to all holders. All of the reports identify a number of areas in which changes and developments are required to ensure compliance with the provisions of SI 478/SI 303.

This baseline audit report is the first step in conducting a national audit in Ireland relating to the medical use of ionising radiation as required by legislation. As far as the authors of this report are aware, the audit is at the forefront of work in this area compared to other European countries. No other country has published or is known to be undertaking such a comprehensive survey of adherence to this important public health legislation.

It is clear from the undertaking that the organisations which hold and use ionising radiation equipment for medical purposes are committed to ensuring safe use of radiation while maximising the benefits that diagnostic information and treatment brings.

In carrying out this initial baseline survey it was considered to be of importance that an independent outside body should undertake the task. This has proved very useful, though it must be recognised that in interpreting some of the answers, the UK consultancy body, in a number of instances, benchmarked against the UK legislation. The consultancy body, for example, attributed responsibility to the HSE rather than to the individual facilities holding ionising radiation equipment. In addition, it is clear that, in a number of cases, omissions by facilities in completing the survey document were due to misinterpretation of the question.

All recommendations have been considered by the National Radiation Safety Committee and are being followed up where appropriate or necessary. The HSE is also following up directly with some holders on the aspects of the SI 478/SI 303 in which the respondent indicated they were not in compliance.

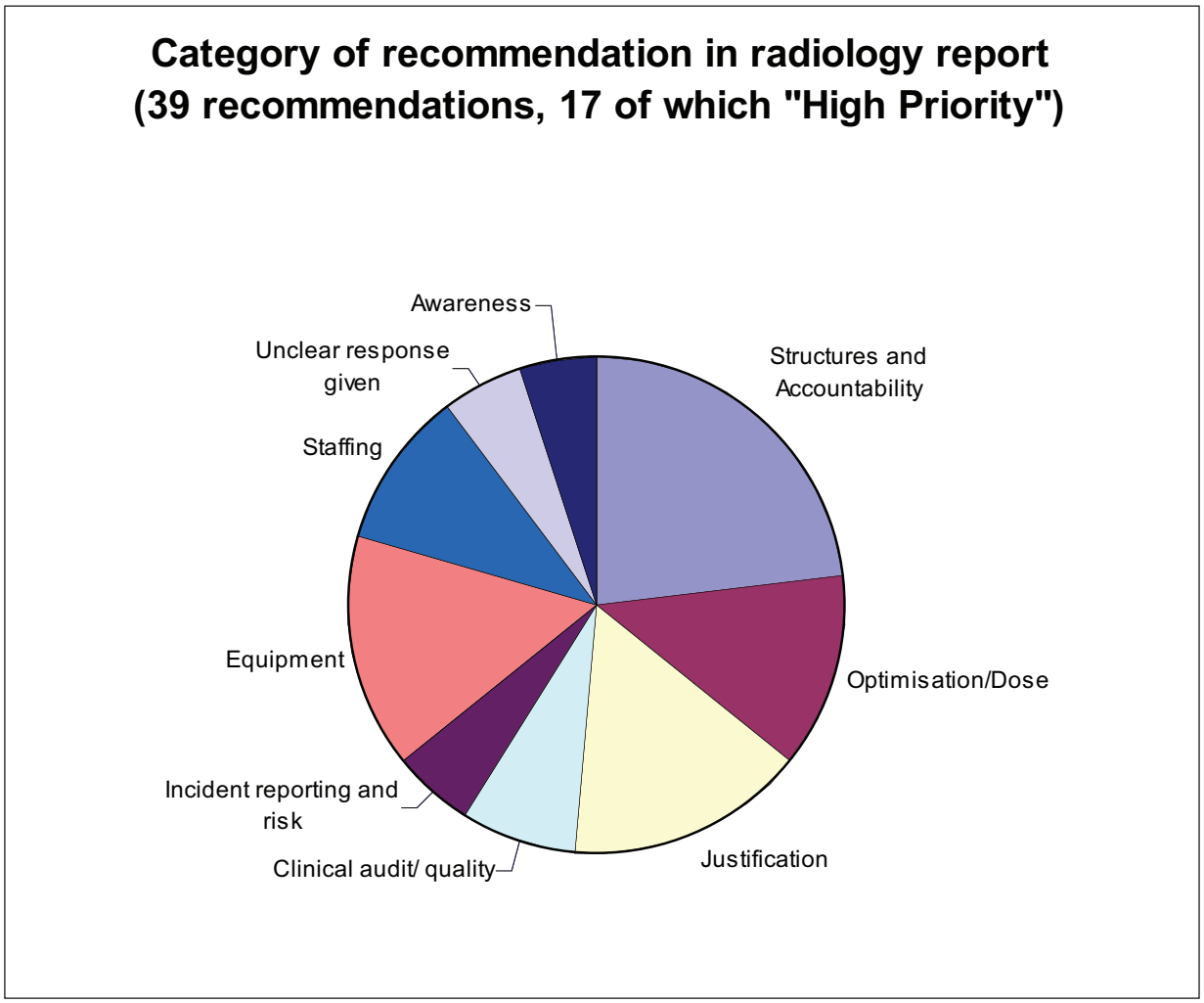
Recommendations

A summary of the report recommendations and progress made is attached in **Appendix 2**. The number of recommendations in each report are categorised in to main topics in Pie Chart 1 – Radiology and Pie Chart 2 - Radiotherapy, below.

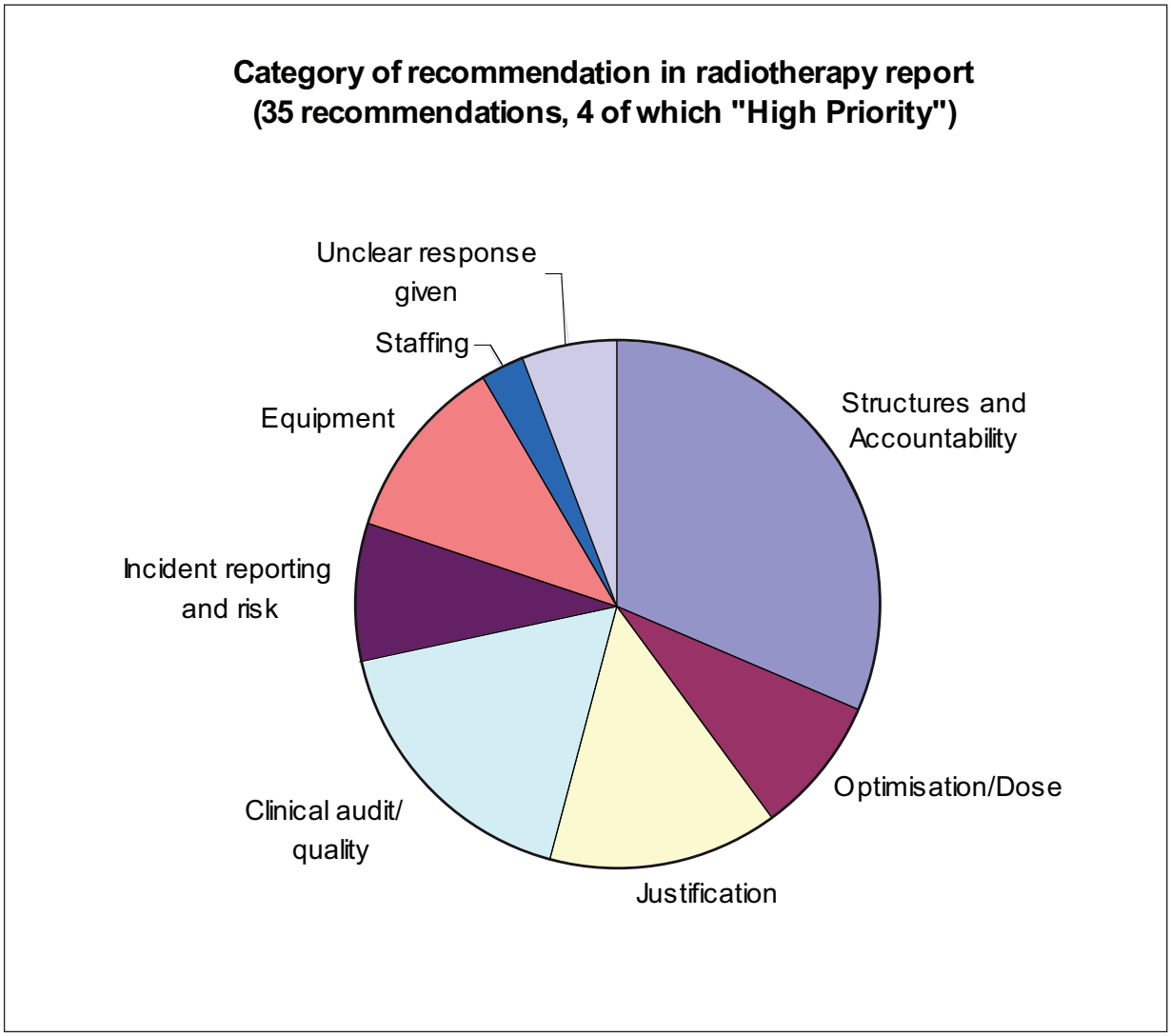
The survey findings indicate that there are a number of challenges to the facilities, which hold or oversee the use of ionising radiation equipment. The audit reports made a number of recommendations for action by:

- The HSE
- The HSE's National Radiation Safety Committee
- "Holders" of ionising radiation equipment
- The Irish Medical Council
- The Radiological Protection Institute of Ireland

Pie chart 1 – Radiology



Pie chart 2 - Radiotherapy



Priorities for the National Radiation Safety Committee and the Medical Exposure Radiation Unit for 2009

- Issue audit results and track progress on compliance. Follow up non-responders. Organise further audits or other action if required.
- Work with professional bodies, statutory bodies and organisations to further develop concept, awareness and practice of clinical audit.
- Develop clinical audit priorities in association with professional bodies.
- Produce quarterly reports on progress on implementation of Task Force report recommendations and audit results.
- Agree programme and timescale to research population dose.
- Notify licence holders of statutory incident reporting requirements.
- Brief relevant staff groups and organisations on responsibilities.
- Increase patient awareness.
- Provide guidance to organisations on governance, accountability and local radiation safety and clinical audit committees.
- Issue, as required, guidance notes from the National Radiation Safety Committee on protection of the patient to holders, practitioners and prescribers to assist them to comply with the regulations.
- Explore safety issues regarding the operation of radiological equipment by non-designated persons.
- Provide general risk management advice and updates as appropriate.

APPENDIX 1

Population Dose from Medical Exposures Report

December 2008

Main Findings:
In this country population dose from medical exposures has traditionally been estimated using data from European sources, particularly, data from the UK. However, in 2006 the Radiological Protection Institute of Ireland (RPII) conducted a major survey of radiation dose to the Irish population (1). As part of this survey population dose from diagnostic X-ray exposures and nuclear medicine procedures in Irish hospitals was estimated. The RPII survey was conducted by questionnaire and targeted procedures that have been reported internationally as giving rise to relatively high radiation doses. We are grateful to the RPII for granting us permission to use their findings for this report.

The main findings in relation to X-ray procedures are presented in Table 1

Table 1.

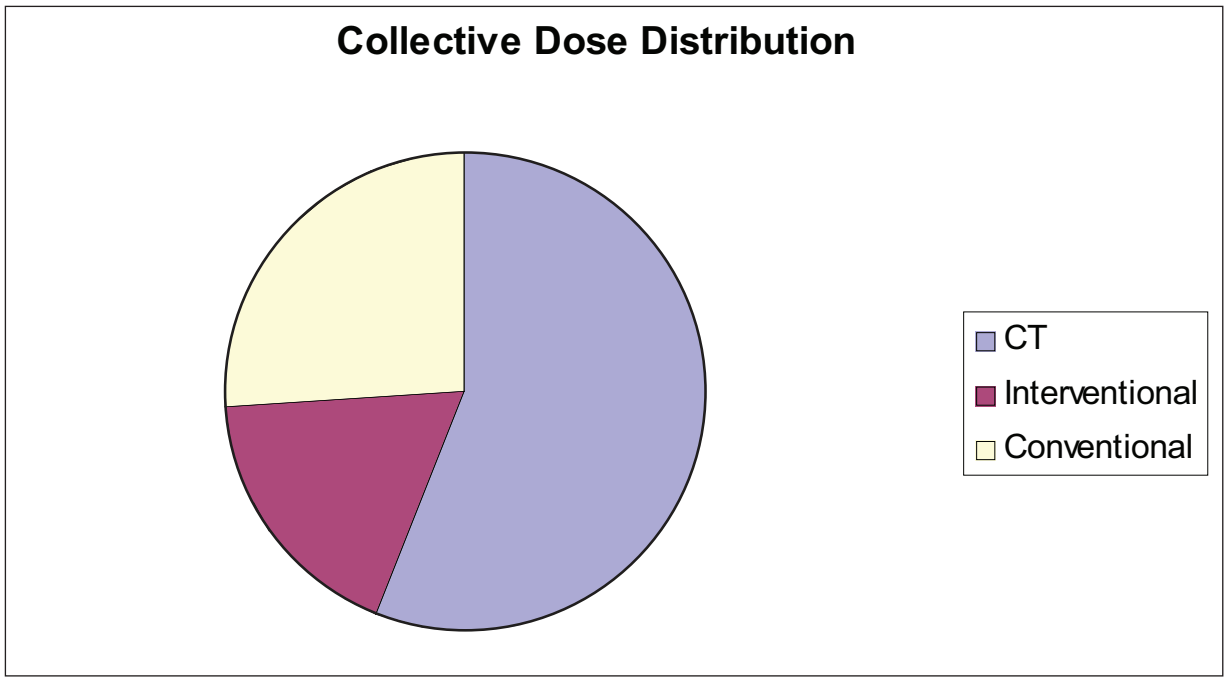
Procedure	**Estimated number of procedures per year ***	**Mean Effective Dose per procedure (mSv)****	**Collective Dose Man-Sv**
CT Abdomen (a)	60,900	8.2499	
CT Chest	39,700	5.1	202
CT Pelvis	38,000	6.8	254
CT Head	70,300	2.0	141
CT Spine	8100	7.9	64
Barium Enema	5800	4.6	27
Angiocardiography	24,000	6.0	144
PTCA (b)	13,900	17.1	238
Abdomen (plain film)	92,400	0.6	55
Lumbar spine	68,300	1.0	68
Pelvis	61,900	1.3	80
Mammography	60,400	0.5	30
Intravenous Urogram (c)	1300	1.9	2
Hip	52,700	0.6	32
Total	**597700**	**Not Applicable**	**1836**

* Figures rounded to the nearest 100.
** The average dose to a member of the Irish population from natural background radiation is ~ 3 mSv per annum.
(a) CT - Computed Tomography
(b) PTCA - Percutaneous Transluminal Coronary Angioplasty – a procedure involving the coronary blood vessels...
(c) Intravenous Urogram - an X-ray examination of the urinary tract.

Collective Dose:

To evaluate the relative contribution of the different imaging modalities to the population dose it is useful to examine the collective dose distribution. (Collective dose is the mean dose per procedure multiplied by the number of procedures performed.)
The distribution of collective doses from medical X-ray procedures is illustrated in Figure 1.

Figure 1.



CT examinations contribute 56% of the collective dose but consist of less than 10% of the actual procedures performed.
Interventional radiological procedures contribute 18% of the collective dose but consist of 7% of the procedure numbers.

Dose per-caput:

To enable a comparison between dose levels in this jurisdiction with those in other countries a useful comparative parameter is the dose per-caput. (The dose per-caput is the collective dose divided by the total population size.)

For X-ray examinations the per-caput dose in Ireland is ~ 500 μSv (0.5 mSv). For the nine most frequent nuclear medicine imaging procedures it is 40 μSv. The total per-caput dose in Ireland from all diagnostic medical exposures is, therefore, 540 μSv.
Medical exposures are by far the largest man-made contributor to collective dose. This fact underlines the need to vigorously pursue dose optimisation for these exposures.

A comparison between the X-ray dose per-caput from this and other countries with similar healthcare systems is contained in Table 2.

Table 2.

Country	Dose per-caput (μSv)
Ireland	500
UK	380
Germany	1900
France	1000
Poland	800
Sweden	700
Portugal	680

The per-caput dose in Ireland is higher than in the UK but lower than in the other countries listed. The per-caput dose in the UK has remained relatively stable since 2001, when it was 330 μSv. While this is surprising given the increasing contribution of CT practice to the dose profile it does indicate a strong commitment in the UK to dose optimisation strategies.

Future Strategy:

The National Radiation Safety Committee notes that CT and Interventional Radiology, while being very powerful diagnostic aids, contribute disproportionately to collective dose. It is also highly likely that collective dose from CT will continue to rise in the coming years due to the increased access to multi-slice CT machines.

The Committee proposes to investigate, in detail, doses from CT practice. The data on CT doses will be obtained from a comprehensive survey of CT facilities and should provide detailed dose information on CT examinations in both adults and children. A template has been identified for the collection of the required data. These data should also enable the Committee to refine the Diagnostic Reference Levels in current use for these procedures. Diagnostic Reference Levels are an essential tool in the process of dose optimisation.

When the CT survey is completed it is then proposed to investigate the dose associated with Interventional Radiology in both adults and children.

Investigations would then be conducted into the other exposure areas, such as, conventional radiology, nuclear medicine, dental etc.

(1) http://www.rpii.ie/Download/Radiation_Doses.pdf

Appendix 2

National Baseline Audit Results 2008

The following results relate to radiology/nuclear medicine services, and to radiotherapy services.

Response rate

There are currently 121 “Holders” of equipment for Radiology and 10 “Holders” for Radiotherapy. This includes all private and public facilities in Ireland. Response rates to these two surveys were very high (91% in Radiology/Nuclear Medicine and 100% in Radiotherapy) due to the statutory obligation on organisations to comply. The questionnaire, necessarily, was relatively long and covered some areas with which the respondents were unfamiliar and so the response rate is very pleasing and those organisations which did comply should be commended. The remaining 9% non-responders are being actively pursued by the HSE.

Activity levels

Radiology/nuclear medicine facilities in Ireland are responsible for the delivery of approximately three million radiation exposures per year. Radiotherapy organisations deliver approximately a quarter of a million exposures per year.

Summary of Audit Recommendations

1. Clinical Audit

Ninety four radiology/nuclear medicine organisations (82%) were found to be conducting clinical audit, primarily in the areas of safety, clinical image quality and justification. Clinical audit is in its early stages and there was no apparent consistency in audit themes and there was a lack of strategic focus.

The report found that there were inconsistencies in the supporting structures for local clinical audit. Nine of ten radiotherapy organisations have formal clinical audit structures but the format of those structures is quite varied.

Report Recommendations

The authors state that it is important that clinical audit is systematic and that this is overseen within a suitable committee structure with clear lines of accountability. Each organisation should review its committee structures and plans for clinical audit. The HSE and the National Radiation Safety Committee should provide guidance on clinical audit structures e.g. the identification of suitable audit committee structures for facilities 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. The National Radiation Safety Committee should also consider making recommendations to facilities on the choice of clinical audit undertaken, for example high dose procedures, paediatrics and screening programmes.

The National Radiation Safety Committee should work with the Medical Council and the Faculty of Radiologists to develop audit criteria further and to build on tools and work undertaken already in this area in other European countries.

Progress to date

The audit demonstrated that clinical audit is in the early stages in many organisations. It was recognised that a clinical audit awareness campaign should be initiated. In May 2008, a national clinical audit day for Radiology and Radiotherapy organised by the HSE was held in Dublin and further awareness and training has taken place.

The results of the audit also focussed on the need to develop initiatives at national and local level to ensure the culture of clinical audit is established firmly in all organisations using ionising radiation. Leadership from the professions is key to the embedding of clinical audit and the HSE have agreed to sponsor the first clinical audit poster competition organised by the Faculty of Radiology, Ireland. It is intended that this will be an annual award which will promote the concept, practice and broaden the expertise on clinical audit in radiology in Ireland.

The National Radiation Safety Committee is considering providing guidance to facilities on priorities in clinical audit, once appropriate structures and local leads have been identified and assigned responsibility at local level (the work of the structures subcommittee).

The Medical Exposure Radiation Unit has issued the audit results to all holders and has asked them to compare their local practice with the results and make adjustments to practice where appropriate. This is the first step in the audit process and the National Radiation Safety Committee plans to ask for a progress report on the implementation of the recommendations in due course.

The HSE are in discussions with the Health Information and Quality Authority and the Department of Health and Children regarding amendments to the legislation to allow for the transfer of clinical audit functions to the Health Information and Quality Authority.

2. Governance

The authors of the report recommend that the delegation of the CEO, HSE's function as the accountable holder in the HSE is in place. The report recommends that this function is delegated to hospital management and that persons are identified as responsible for radiation safety and for the activities of the local radiation safety committee. In almost one third of all three types of facility (radiology, nuclear medicine and radiotherapy) the audit questionnaire was not signed off on by the persons responsible for the application of the Statutory Instrument.

The structures to support local radiation safety committees (as established to comply with the requirements of the RPII under SI 125) are in most cases satisfactory. However 15% of radiology/nuclear medicine organisations (17 facilities) appear not to be fulfilling their legal obligations in this respect.

Report Recommendations

- The National Radiation Safety Committee should raise awareness of the requirements of SI 478/SI 303.
- The CEO of the HSE should delegate responsibilities for radiation safety in HSE facilities.
- Many local Radiation Safety Committees were chaired by radiologists. The report authors have asked the National Radiation Safety Committee to debate the appropriateness of this and consider the potential for conflict of interest.
- The HSE, the National Radiation Safety Committee and the RPII should work together to clarify and provide guidance on governance arrangements and guidance on the differing roles and responsibilities of the local and national radiation safety committees.
- The authors of the baseline audit report recommend that an integrated approach should be taken to the implementation of the provisions of SI 125 and SI 478/SI 303.
- The National Radiation Safety Committee should work with the RPII to recommend a minimum frequency of meetings of local radiation safety committees.

Progress to date

The National Radiation Safety Committee has established a subcommittee to recommend appropriate structures for local clinical audit committees. This subcommittee will also address the governance issues and the relationship between clinical audit committees, local radiation safety committees and the National Radiation Safety Committee.

3. Risk Management

The majority of radiology/nuclear medicine facilities have risk management and incident reporting mechanisms in place. In many smaller facilities, risk management falls under the remit of the local Radiation Safety Committee – this is considered appropriate by the authors who express the view that in smaller facilities, there may be no requirement for a separate risk management committee. There was considerable inconsistency in the range of mechanisms for reporting and review of incidents, and for providing feedback on incidents to patients and healthcare staff.

All radiotherapy installations had guidelines and procedures in place for reporting and reviewing of incidents and near misses and all had a radiation incident risk management committee in place. Memberships of the radiation risk management committee varied and there was considerable inconsistency in the mechanisms for providing feedback to patients and healthcare personnel.

Ten percent of radiology/nuclear medicine facilities and 20% (2 out of 10) of radiotherapy facilities had deficiencies in relation to written protocols and instructions to prevent accidental/over exposures.

Report Recommendations

- The National Radiation Safety Committee should develop guidelines on risk management and incident handling to include guidance on feedback to health care professionals, patients and other affected persons such as carers.

- National incident reporting and feedback dissemination mechanisms should be established.

- All organisations should have written protocols to prevent accidental exposures.

Progress to date

A subcommittee of the National Radiation Safety Committee has produced a protocol on reporting of incidents of national significance which gives recognition to the HSE's Serious Incident protocol. This is at consultation stage for users' comments and will be notified to all facilities by end 2009.

4. Justification and Optimisation

The audit reports show that a number of organisations had not fully developed their protocols for justification and optimisation of procedures. This was evidenced in the following ways:

Radiology/Nuclear Medicine:

- Nearly 20% of radiology /nuclear medicine facilities had failed to identify a Practitioner in Charge.
- 10% of radiology/nuclear medicine centres need to improve their practice in relation to written documentation.
- Approximately 15% of radiology/nuclear medicine facilities did not obtain confirmation of the pregnancy/breast feeding status of females of child-bearing age
- One third of radiology/nuclear medicine units do not provide written information on risks and do not obtain informed consent from comforters and carers.
- Almost 50% of radiology/nuclear medicine organisations showed that there was room for improvement in referral criteria and prescription documentation.
- Approximately one third of radiology/nuclear medicine organisations reported deficiencies regarding
  - Authorisation of exposures by a named practitioner,
  - Obtaining previous diagnostic information,
  - The provision of training in radiation procedures,
  - The availability of a medical physics expert when nuclear medicine procedures are undertaken.

Radiotherapy:

- There are a number of inconsistencies in the checking and testing of equipment by Medical Physics Experts (MPE's).
- Two out of ten radiotherapy organisations need to further develop Quality Control (QC) measures and a Quality Assurance (QA) programme.
- Most radiotherapy facilities maintain systematic records of assessments made by MPE's but 60% do not keep written documentation clearly setting out tests to be undertaken by the MPE.
- One radiotherapy unit does not obtain confirmation of the pregnancy/breast feeding status of females of child-bearing age.
- Further work is required on the development of local protocols for routine treatment of common cancer types in eight out of ten radiotherapy units.
- While procedures regarding referral criteria and prescribing documentation are generally good in radiotherapy facilities, 3 out of 10 facilities were found to have some deficiencies in relation to obtaining previous diagnostic and treatment information.
- Four out of ten radiotherapy organisations had inadequate arrangements to ensure that verification films are checked and signed by a radiation oncologist at all times.
- One radiotherapy facility had no protocol in place for data checking and data transfer.

Report Recommendations

All organisations should have transparent and documented procedures for:

- Accepting referrals.
- Authorisation of exposures.
- Obtaining previous diagnostic information.
- Recording dose for each procedure.
- Providing written instructions to patients and carers/guardians who have been exposed to radionuclides.
- Requesting and noting the pregnancy/breast-feeding status of females of child-bearing age.

All organisations should have evidence available to demonstrate that an MPE has been consulted for acceptance testing, performance testing after major maintenance, issues of optimisation, quality control, dose and the evaluation of patient administered activity.

Progress to date

All holders have been notified of the recommendations in the report and have been asked to compare local practice with their requirements in SI 478/SI 303. The National Radiation Safety Committee is planning to implement a mechanism for recording of replacement dates of equipment.

5. Equipment

The majority of all three types of facility reported having a preventative maintenance programme in place for equipment.

The audit reports provide valuable baseline information on the range, type and age of radiation equipment in the three types of facility under review. For radiology/nuclear medicine facilities, 17% of items of equipment are over ten years old (241 items out of 1,384). None of the radiotherapy equipment was more than ten years old and 53% (47 items out of a total of 88 items) is less than five years old.

Report Recommendations

The National Radiation Safety Committee should consider whether items of general x-ray equipment older than twelve years, and items such as cardiac-angio, cardiac-ultrasound, CT, mammography and fluoroscopy equipment which are over eight years old should still be in use, and should notify affected organisations of its conclusions. Any installation used beyond its replacement date should be certified for continued use, taking into account issues of justification and optimisation.

The National Radiation Safety Committee should clarify the mechanism for certification in this respect.

Progress to date

All equipment in Ireland has now been recorded and significant progress has been made on setting replacement dates for equipment. A national project in the HSE is introducing Picture Archiving and Communication Systems (PACS) into HSE hospitals.

The Section 6 committee is developing equipment criteria for completion in 2009. These criteria will inform decisions on appropriate replacement dates.

6. Quality initiatives

There is a high level of quality improvement activity taking place in all radiology and radiotherapy installations. There is some scope for further improvement in areas such as the development of patient pathways, implementation of accreditation standards and involvement of patients in their own care. The report noted;

- One third of radiotherapy facilities would benefit from the introduction of interdisciplinary team meetings.
- Two thirds of radiology/nuclear medicine facilities undertake initiatives such as complaints review and development of policies and protocols.
- Approximately one half of radiology/nuclear medicine facilities have a quality improvement team involved in initiatives such as developing accreditation standards and patient pathways.
- Almost one third of radiology/nuclear medicine facilities have no formal quality improvement or risk management structures in place.

Report Recommendations:

All organisations should be involved in quality improvement initiatives and should be able to demonstrate this involvement i.e;

- The presence of formal structures and management arrangements for clinical audit and incident management,
- The presence of a quality improvement team involved in the development of quality improvement projects,
- Accreditation standards,
- Patient pathways,
- Complaints review,
- Protocols and policies/procedures.

Progress to date

All holders have been notified of the recommendations in the report and have been asked to compare local practice with their requirements in SI 478/SI 303.

7. Population Dose

Finally, the authors recommend that the information provided in the audit regarding numbers of exposures could be used as a baseline for gathering additional data in the future to facilitate the calculation of population dose.

Progress to date

The population dose subcommittee was set up to advise the National Radiation Safety Committee on monitoring population dose for the HSE functional area. Its report is attached in **Appendix 1**.

Appendix 3

Subcommittee members and contributors

A number of Subcommittees and subgroups were established in 2008 on the following topics;

- **Incident Reporting;**
- **Population Dose;**
- **Medical Physics Experts in Dentistry;**
- **Communications Awareness;**
- **Development of Equipment Criteria, regulation 6 of SI 478(2002);**
- **Transition Committee;**
- **Dental Review;**
- **Structures.**

All groups had membership from the National Radiation Safety Committee or the Medical Exposure Radiation Unit and, in addition, the following contributed their expertise to or were members of one or more of the above committees;

Dr. Stephen Fennell
Erik Koornneef
Dr. Louise Rainford
Dr. Eamon Croke
Dr. Maurice Fitzgerald
Prof. Patrick Brennan
Dr. Lesley Malone
Dr. Donal McDonnell
Dr. Aoife Gallagher
Dr. Deirdre Mulholland
Ann Carrigy
Dr. Paul Kavanagh
Edwina Dunne
Dr. Eamon Breatnach
Dr. Dominique Crowley
Dr. Andrew Bolas
Shane Foley
Andrea Hanson
Dr Maurice Fitzgerald
Dr Julie Lucey
Prof. Brendan McClean
Paddy Gilligan
Christopher Hone
Suzanne Dennan
Anita Dowling
Dr. Nick Armstrong
Prof. Michael Maher
Prof. Wil Van der Putten
Fionnnuala Barker
Dr. Ailis Quinlan
Dr. Stephanie Ryan
Eilish Hardiman
Margaret C Brennan
Fergus Clancy
Frank Edwards
Dr. Risteard O'Laoide
Dr. Maurice Quirke
Dr. Jerome Coffey
Niall Phelan
Dermot Howett
Danielle Bracken

Notes

Notes

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