The Royal College of Radiologists updates Referral Guidelines

The Royal College of Radiologists has recently updated its imaging referral guidelines. The 7th version of the guidelines is entitled "iRefer: Making the best use of clinical radiology". The RCR state that the guidelines have been given a new name and new format to support choosing the right test at the right time to:

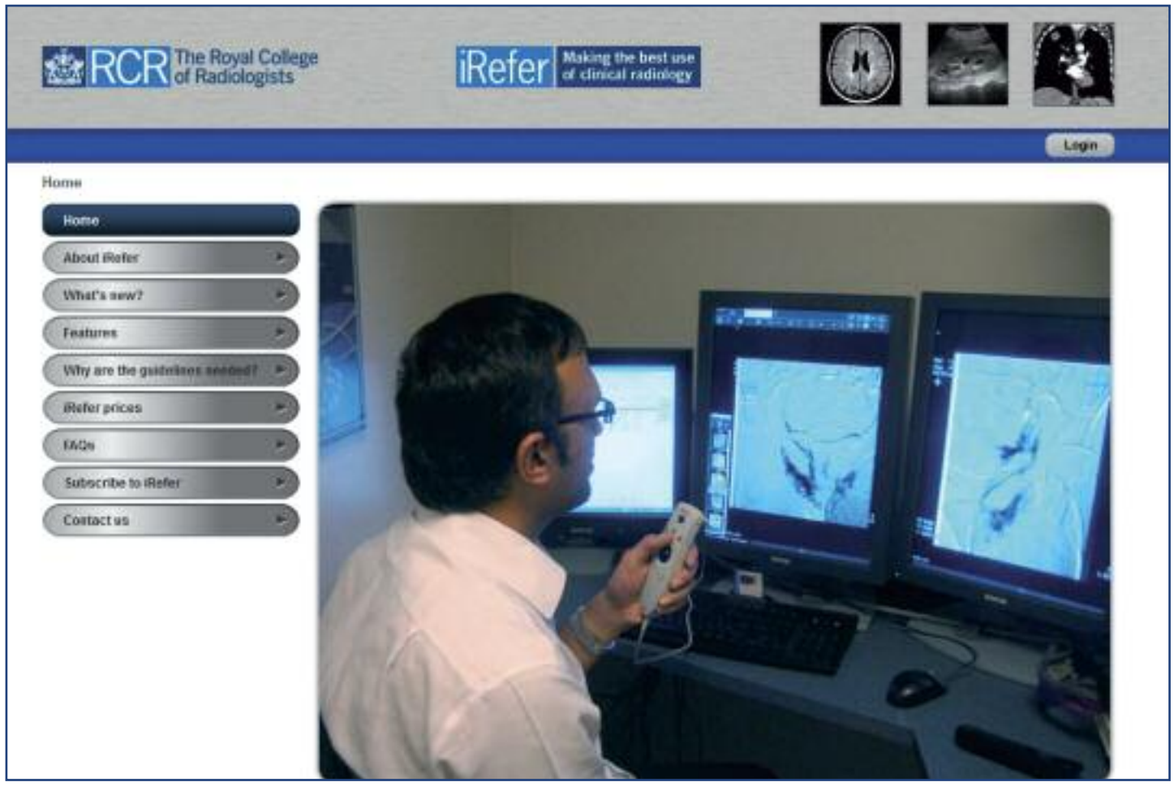
- Ensure patients receive timely and accurate diagnoses
- Reduce patients' unnecessary exposure to radiation
- Ensure the efficient and even use of available diagnostic resources.

iRefer is split into 12 sections and the full online resource consists of over 300 fully-searchable guidelines designed to assist the clinician in selecting the most appropriate investigation for a given diagnostic or imaging problem:

The guidelines are no longer free to the NHS and are available to purchase as an online version, an app or as a booklet. A three-year online subscription costs £510 for up to ten concurrent users, the booklets cost between £14 and £20 each (depending on the quantity ordered) and the app is £8.99 (available in Android format only). X-ray departments are encouraged to ensure that all their referrers are aware of the new guidelines.

For further details, please visit

http://www.irefer.org.uk.



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RPC News

In partnership with Medical Physics at

University Hospital Southampton NHS
NHS Foundation Trust

CQC Reports on its Regulatory Activity

The Care Quality Commission has recently issued a report on the work they carried out in 2011 relating to their role as the IR(ME)R regulator. The majority of the work was concerned with responding to notifications of incidents in which patients received an exposure to ionising radiation that was 'much greater than intended', of which there were 445 from diagnostic radiology.

In some cases notifications may prompt a visit from the CQC, with the majority of their IR(ME)R inspections last year being in response to such incidents. The report gives a few examples of the remedial actions taken in these cases, which are well worth a read as many of the lessons learnt are relevant to all.

For 2012 and beyond, the CQC tell us that their IR(ME)R inspection programme will prioritise organisations that have never made a notification. Inspections may be unannounced or with 1 – 2 weeks' notice, in which case inspectors will ask for IR(ME)R procedures and protocols and other documentation such as evidence of clinical audit programmes to be submitted in advance.

Inspections will involve discussing the written procedures with key staff as well as observing the practice of duty-holders in a clinical setting to see if they understand their responsibilities. Any areas of non-compliance with IR(ME)R will be detailed in a letter to the Chief Executive with recommendations and in extreme cases, a formal Improvement or Prohibition Notice may be served.

The full CQC report can be read at

http://www.cqc.org.uk/sites/default/files/media/documents/20120202_irmer_annual_report_2011_final.pdf

Contents

Welcome to Issue 26 of the RPC newsletter.

If you are in charge of a radiology department and have never made a notification to the Care Quality Commission you might think that you are low priority for getting inspected, think again! Our lead article gives you the reasons why.

We have rewritten our LPS handbook to reflect recent regulatory changes. Details of this can be found on Page 2. Minor changes have been made to the Sentinel Nodes handbook, details of which can be found on Page 3.

Your feedback on this newsletter or on any of RPC's services is always welcomed.

Please feel free to contact me at the e-mail address below or by phone on 020 8725 1051.

Best wishes

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Editor

St George's Healthcare NHS
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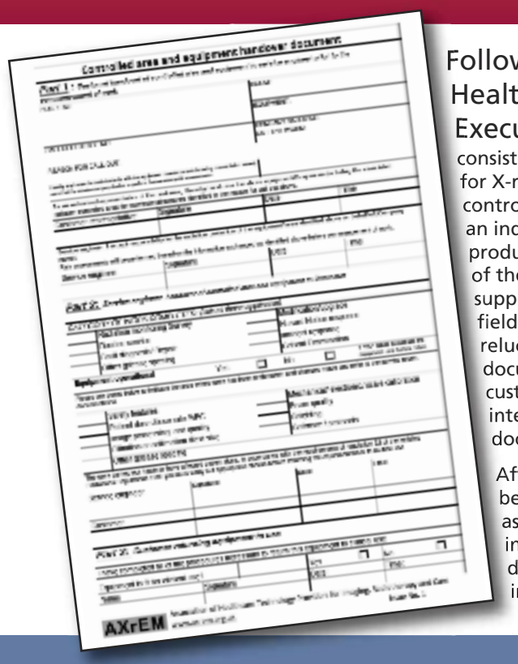
THE RADIOLOGICAL PROTECTION CENTRE
Incorporating The John Perry Laboratory

Revised Equipment Handover Form Available



Following concerns by the Health and Safety Executive (HSE) over the consistency of handover arrangements for X-ray equipment and radiation controlled areas, it was proposed that an industry standard document be produced that would meet the needs of the HSE and the X-ray equipment suppliers. There were concerns that field service engineers would be reluctant to use a range of different documents where individual customers had created their own interpretation of a handover document.

After a number of meetings between AXrEM (a trade association representing the interests of suppliers of diagnostic medical imaging, including all the major X-ray and computed radiography suppliers to the UK market) and the HSE, a consensus was reached on a suitable form. The resultant handover document is now freely available free for use by both public and private organisations and can be found at **http://www.axrem.org.uk/Handover_document_V1_2b.pdf.**

The form should be instantly recognisable to the service engineers of the participating organisations and the representatives of all major companies should be happy to use it. Version control of the document will be maintained within AXrEM and sites are not permitted to make local variations. RPC's customers should note that the AxREM document is very similar our current form and the version in the RPC QA Handbook is still valid. However, customers should be prepared to use the AxREM form where engineers insist on its use.

New Laser Protection Supervisors Handbook issued

RPC has recently issued a revised version of its handbook for Laser Protection Supervisors. The handbook has been completely rewritten to reflect changes in the regulations governing non-ionising radiation and users are now given guidance on compliance with the Control of Artificial Optical Radiation at Work Regulations 2010, the Health and Social Care Act 2008 (Regulated Activities) Regulations 2010, the Care Quality Commission (Registration) Regulations 2009 and other associated guidance and legislation. Sites that adopt the laser safety management system detailed in the handbook should find themselves able to satisfy the requirements of the Health and Safety Executive or Care Quality Commission in the event of an inspection.

The formatting and design of the handbook have been significantly improved to make the document easier to use and navigate.

The new handbook is free of charge to RPC's customers and will be automatically sent by email in Microsoft Word format to all persons with whom we have a contract to act as Laser Protection Adviser. The handbook is also available for sale to non customers and prices are available from Nimisha Asser (nimisha.asser@stgeorges.nhs.uk).

If you have not received a copy or would like further information, please contact Ishmail at RPC

(email: ishmail.badr@stgeorges.nhs.uk or tel: 020 8725 5875).

Society of Radiographers' statement on Supervision of Assistant Practitioners

The Society of Radiographers has recently made a statement regarding the expected level of supervision of assistant practitioners (APs) by radiographers. This may be of interest to RPC's customers who support the designation as APs for mammography or general radiography. The advice is not thought to apply to other non-radiographically trained healthcare professionals such as nurses and ODPs who act as operator under IR(ME)R (e.g. for theatre fluoroscopy) as such persons are usually state registered.

The SoR reminds its members that the role of the assistant practitioner is to perform protocol-limited clinical tasks **under the direction and supervision of a registered practitioner** i.e. radiographer. The person in overall charge of the radiographic procedure is therefore a state-registered radiographer and this responsibility cannot be delegated to the AP.

They state that there must be a designated supervisor and the assistant practitioner should know who is supervising them for all tasks that they undertake and that the supervisor will be working with them in the X-ray room or theatre, or will be immediately accessible for support and advice. Legal opinion has advised that ''adequate supervision" for assistant practitioners cannot be provided by telephone. Indirect may be acceptable when the supervising radiographer has established that the examination for a particular patient is appropriate and delegates the task to the assistant but remains available nearby for advice. As supervisor, the radiographer is also responsible for ensuring that the AP has undertaken "adequate education and training" to act as Operator under IR(ME)R.

Customers should be aware that the supervising radiographer retains legal liability with regard to the patient. They are also responsible for justification of the procedure under IR(ME)R and therefore act as IR(ME)R practitioner. For some very simple procedures, it may be possible for the AP to authorise a procedure against justification guidelines written by the IR(ME)R practitioner. There should also be clear guidelines and protocols in place so that the AP is not required to make a clinical judgement that they are not competent or authorised to make.

The Society claims that in the event of an adverse incident arising from the actions of the assistant practitioner, the act and appropriateness of delegation may be challenged. If the delegation was deemed inappropriate then the radiographer may have this aspect of their professional conduct investigated and may risk losing their registered status with the Health Professions Council (HPC). Even if the employer offers vicarious liability for actions undertaken outside the Scope of Practice or an individual's competence, the supervising radiographer is not protected from any action that may be taken against them by the HPC and could lose their registration to work as a radiographer.

RPC's customers who support assistant practitioners and other non-registered healthcare professionals who carry out the role of IR(ME)R operator are advised to review their supervision arrangements to ensure that they are adequate in the light of the SoR statement. RPC can provide assistance with drafting written arrangements for supervision of APs and examples of protocols for their scope of practice.

Please contact John Kyriou at RPC (john.kyriou@stgeorges.nhs.uk) for further information and advice.

Health Protection Agency report suggests radiation risk estimates for X-rays could be out by a factor of ten

A key element of modern healthcare is ensuring risks and benefits to patients are considered as part of their clinical management. Due to the known detrimental effects of ionising radiation, this assessment is particularly important for medical exposures, where IRMER places a legal requirement on the practitioner to justify each medical exposure, thereby ensuring that the benefit outweighs the radiation risk.

Effective dose has historically provided a useful measure that is approximately proportional to the total radiation risk of cancer associated with a given exposure. Using the International Commission Radiological Protection (ICRP)1 risk coefficient of 5.5% per Sv it is possible to calculate the risk from a particular exposure. However, the risk factor assumes a standard reference person (of 'average' age and gender) and does not take into account the age and sex of the patient.

A recent report by the Health Protection Agency (HPA-CRCE-028)2 highlights the limitations of effective dose when considering the radiation detriment to the individual patient, suggesting a standardised risk coefficient could be in error by as much as a factor of ten. For example, risks of heritable disease are of no concern to an elderly patient beyond reproductive years and similarly the risk of radiation-induced cancer will be significantly reduced in this age group due to the late onset of the effects. Conversely, the risk to young children will be considerably higher than to the standard reference person.

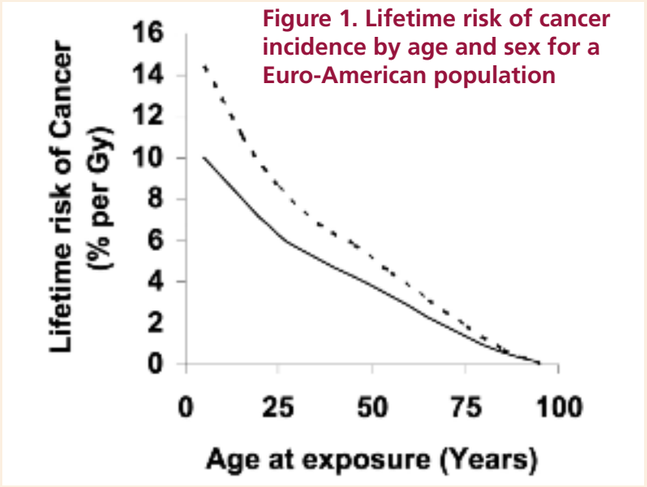


Figure 1. Lifetime risk of cancer incidence by age and sex for a Euro-American population

In addition to age, the report also draws attention to the differences in risk between the sexes (fig 1) and women are more at risk for each unit of radiation exposure. Interestingly the difference varies according to the region of the body exposed and hence the particular X-ray procedure undertaken (Table 1). As can be seen from this table, depending upon the age and body part irradiated, the risk deviates from the previously assumed risk factor of 5.5% per Sv by up to tenfold.

This report highlights the limitations of our current methods of estimating radiation risk and provides a mechanism to more accurately evaluate the risk of a particular exposure to the individual. RPC will be using the new information in areas such as RPA incident reports and advice sheets. It might be hoped that in the future that we will be able to provide IRMER practitioners with a practical means of applying these ideas to assist them with the justification process.

Table 1 – Lifetime cancer risk per unit effective dose (% per Sv)

	0-9		20-29		70-79	
	Male	Female	Male	Female	Male	Female
Head	18	15	9.1	7.6	1.2	0.9
Neck	9.1	20	4.1	7.2	0.4	0.5
Chest	8.3	14	5.8	10	1.9	3.3
Abdomen & Pelvis	12	10	7.5	6.6	1.1	1.1

References

[1]International Commission on Radiological Protection Publication 103: The 2007 recommendations of the international commission on radiological protection. Annals of the ICRP 37, 2-4

[2]Wall BF, Haylock JT, Jansen JTM et al (2011). Radiation Risks from Medical X-ray Examinations as a function of the age and sex of the patient, 2011. Report HPA-CRCE-028 (www.hpa.org.uk)

New Requirement to appoint a Radioactive Waste Adviser

Under new European law anyone who uses and disposes of radioactive waste is required to appoint a Qualified Expert. Following a consultation by various government agencies, the role of Radioactive Waste Adviser (RWA) was created to serve this function. All RPC's customers who are operating with a permit under the Radioactive Substances Act 1993 or the Environment Permitting Regulations 2010 are therefore required to appoint a RWA if required to do so by conditions on their permit (some sealed source permits will not require an RWA). The scheme is already in place.

The role of the RWA is to provide advice on waste management and environmental radiation protection, including:

- **protection of the environment, staff and members of the public**
- **radiation monitoring devices and procedures for measuring exposure and contamination**
- **regular checking of the serviceability and use of measuring instruments**
- **advice on Best Practicable Means/ Best Available Technique**

The role of RWA is distinct from that of the Radiation Protection Adviser (a requirement of the Ionising Radiation Regulations 1999). However, there is considerable overlap and the Radiological Protection Centre is able to act in this capacity for its customers and we have long been advising on all relevant areas of radioactive waste management through our annual RPA audit programme. A new registration scheme for Radiation Waste Advisers has been put in place and three of our staff have already achieved certification. We will automatically assume the role of RWA as part of our RPA contract for existing radioisotope customers. As such, there is no need for a separate appointment and customers need take no action. Service specifications for our customers will be amended to include our appointment as RWA as contracts are renewed.

For further details please contact Ishmail at RPC (Ishmail.badr@stgeorges.nhs.uk).

Health Protection Agency publishes update on X-ray trends in the UK

The Health Protection Agency (HPA) has recently published its survey on trends in doses from diagnostic radiology practice in the UK over the past decade. The report summarises activity for the year 2008 and is based on information derived from 29 NHS Trusts and a sample of dentists, chiropractors and independent hospitals. The key findings are presented below and make interesting reading.

A total of over 46 million medical X-ray examinations were performed in 2008, 26% of which were dental X-rays. 67% of the total were performed in NHS hospitals with only 2.6% in the independent sector. The full breakdown by sector is shown in Table 1.

Table 1: Frequency of X-ray Examinations in the UK, 2008 by Sector

Sector	Number of Examinations	Percentage of total
NHS Trusts	30,963,000	67.2
Independent Hospitals	1,200,000	2.6
Mammography Screening	2,030,000	4.4
Chiropractic Clinics	88,000	0.2
Prisons (excluding dental)	10,000	0.02
Private Ct Screening	20,000	0.04
Total (excluding dental Practice)	34,311,000	74
Dental (primary care + prisons + MOD)	11,828,000	26
Total (all UK medical dental)	**46,139,000**	**100**

The total number of X-ray examinations over the year is equivalent to 752 examinations per 1000 of the population and represents a 10% rise in frequency compared with the 1998 survey.

The total annual collective dose for 2008 is estimated at 24,700 man Sv compared with 19,300 in 1998 and means that the annual dose per UK resident from diagnostic X-rays is 0.4 mSv, compared with approximately 2.2 mSv from natural sources. This represents a 28% rise in collective dose over the decade and is primarily attributed to a doubling of the CT collective dose since 1998. A 3% rise in the UK population may also have had an effect. Table 2 shows the breakdown of collective dose into the four main examination categories. Whilst conventional radiology and angiography collective doses are down by nearly 40%, interventional doses are up by approximately 60% and the CT dose burden has more than doubled and now contributes more than 67% of the total, compared with 40% in 1998.

Table 2: UK Collective Doses by Examination Category

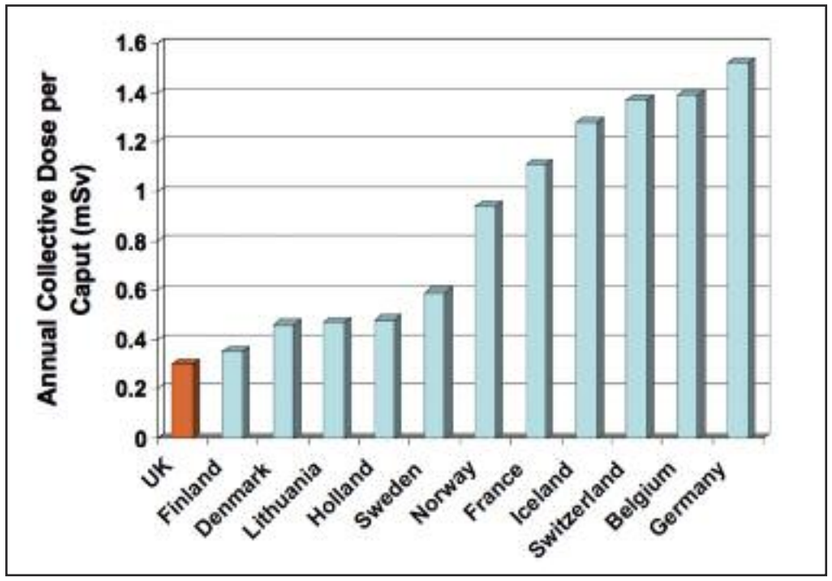
	Number of Examinations 1998	Number of examinations 2008	Collective Dose 1998 (ICRP60) Man Sv	Collective Dose 2008 (ICRP103) Man Sv
Conventional radiology inc dental	39,586,000	41,927,000	7,850	4,799
CT	1,387,000	3,421,000	7,662	16,723
Angiography	321,000	293,000	1,923	1,187
Interventional	247,000	442,000	1,239	1,985
Total	**41,541,000**	**46,083,000**	**19,300**	**24,694**

The huge rise in CT collective dose perhaps comes as no surprise. CT scanners are far more widely available than ten years ago and CT is now the modality of choice for many examinations that used to be performed using other techniques. For instance, CT has almost entirely replaced conventional radiographs for skull imaging, the use of CT for extremities imaging is up approximately fourfold, CT angiography cases have increased from about 5,000 in 1998 to 250,000 in 2008 and the number of CTPA cases was nearly 160,000, in stark contrast to 1998 when very few were performed. Combined CT of the chest, abdomen and pelvis is now the second most frequently performed CT examination (followed by CT head/brain) and is the biggest single contributor to UK collective dose.

Away from CT, barium meals and enemas have continued to decrease in frequency as they have been replaced by endoscopy and colonoscopy. IVUs have approximately halved due to the current preference for CT and ultrasound. Bone mineral densitometry scans have increased tenfold but are still insignificant in terms of overall collective dose. Mammography has increased from 1.7 million to 2.7 million examinations, due mainly to the widening of the screening age, and is now a significant contributor to the collective dose.

The report finishes with a comparison of the UK figures with those from other developed countries. Interestingly, the UK has a lower per capita frequency than the European average for all but one of the top 20 examinations. The UK has the lowest frequency for six examinations and in no case does it have the highest. The situation with regard to mean effective dose and overall dose contribution is similar, as demonstrated in Figure 1.

Figure 1: Annual Collective Dose per Caput for the 'Top 20' Examinations from 12 European Countries



The UK per caput dose of 0.4 mSv is small compared to the USA (2.2 mSv) and all HCL1 (Healthcare Level 1) countries shown in Figure 1, although mammography and dental radiography are more frequent than average in the UK. Of the 16 examinations included in the survey of HCL1 countries, the UK has a lower frequency than average for 13 and only for coronary angioplasty, cardiac angiography and mammography is the UK frequency higher. For 15 of the 16 examinations, the UK has a lower dose than the HCL1 average, the exception being CT of the spine.

The full report, Frequency and Collective Dose for Medical and Dental X-ray Examinations in the UK, 2008, HPA-CRCE-012 can be accessed from the HPA website www.hpa.org.uk and typing CRCE-012 into the search box.

Sentinel Lymph Nodes Localisation Handbook updated

We have recently made some minor changes to our handbook for Radiation Protection Supervisors for sentinel lymph node localisation (SNL) procedures. The document has been updated to encompass the requirements of the Environmental Permitting (England & Wales) (Amendment) Regulations 2011. This new act replaces the Exemption Orders made under the old Radioactive Substances Act 1993 and gives revised quantities of aqueous waste that can be disposed of via patient excreta without the need for a permit. The new exemption limits remain comparable to those under the previous regime (see RPC News Winter 2011/12 for full details) and could not be breached by sites carrying out SNL under reasonably foreseeable circumstances. As such, users can continue to use the information in the previous version of the handbook as a guide if they do not wish to start anew with the revised version.

To request a copy of the revised handbook, please contact Ishmail at RPC (email: ishmail.badr@stgeorges.nhs.uk).