Hospital managers must acknowledge RPE and MPE roles, responsibilities and expertise

Hugh Wilkins, ..., UK

Basic Safety Standards (BSS)

IAEA Basic Safety Standards[1] require **formal recognition of qualified experts**, and that they be consulted as necessary in observing these standards.
The European Basic Safety Standards Directive[2] (BSSD) defines a **"radiation protection expert"** (RPE) and **"medical physics expert"** (MPE) respectively as having the knowledge, training and experience needed to give effective radiation protection advice (RPE),
and to act or give advice on matters relating to radiological physics applied to medical exposure (MPE).

Implementation of BSSD qualified expert requirements in England (different regulations in Scotland, Wales & Northern Ireland)

UK Qualified Experts		*BSSD*	*Legislation*	*Regulator*
Radiation Protection Adviser	RPA	RPE	Ionising Radiations Regulations 2017[3] (GB)	HSE
Radioactive Waste Adviser	RWA	RPE	Environmental Protection (England & Wales) (Amendment No.2) Regulations 2018[4]	EA
Medical Physics Expert	MPE	MPE	Ionising Radiation (Medical Exposure) Regulations 2017 (GB)[5]	CQC

What is the difference between an RPA, RWA and MPE?

IRR 2017 (Reg 14): **RPA**s protect staff and members of the public against ionising radiation arising from work activities[3]
Environment Agencies: **RWA**s are specialists in radioactive waste management and environmental radiation protection[6]
IRMER 2017 (Reg 14): **MPE**s protect patients and others exposed to ionising radiation using medical radiological equipment[5]
Employers are required to consult and take advice from Radiation Protection and Medical Physics Experts.

Ethical foundations of system of radiological protection

ICRP Publication 138, *Ethical Foundations of the System of Radiological Protection*[7],
identifies that the radiological protection system is built on three pillars:

- the **science** of radiological protection combining knowledge from different disciplines;
- a set of ethical and social **values**;
- the **experience** accumulated from the day-to-day practice of radiological protection professionals.

This publication links fundamental principles and values to implementation of the system of radiological protection, focusing on accountability, transparency and inclusiveness.

Radiation safety is complex

Radiation science, **compliance with legislation** which regulates its use in healthcare, and **ensuring that the benefits outweigh the risks** are far from straightforward.
Whilst there is a considerable body of knowledge, hypothesis (e.g. the linear no-threshold hypothesis) plays an important role in radiation protection.

Driving and embedding RP culture throughout organisation

IRPA has identified knowledge, skills and competences required by an RPE[8], noting that competences of an RPE include substantial elements of radiation safety management. IRPA emphasize that RP professionals within an organization must take the central role in supporting management to drive and embed RP culture throughout the organization[9].

General unfamiliarity with radiation safety fundamentals

Managers, particularly those from a non-scientific background, may well be unfamiliar with fundamental radiation safety and scientific concepts (such as uncertainty, justification, optimisation and probability of stochastic effects). Few doctors, nurses and other healthcare professionals, let alone managers, have a good understanding of radiation dosimetry and radiation risk.

RPEs have substantial management roles & responsibilities

RPEs have been instrumental in creating the systems designed to ensure the safe use of radiation in medicine, and play a leading role in managing radiation safety in healthcare. There is a risk that these managerial roles and responsibilities may be overlooked during organisational change.

RP professionals – *"the most difficult of leadership roles"*

In their guiding principles for establishing a radiation protection culture[9], IRPA have noted that *RP professionals have to achieve the most difficult of leadership roles – that of indirect leadership of their non-RP colleagues, who in many cases may be their business leaders or managers.*

Good communication between RPEs, MPEs and senior hospital management is crucial

Hospitals exposing patients to radiation must appoint and support Radiation Protection and Medical Physics Experts, recognizing that RPEs and MPEs are qualified experts who provide expert professional advice. Employers are required to consult and take advice from these subject matter experts.

Contravention of radiation safety legislation is actionable under civil or criminal law. Management systems and organisation structures must ensure good communication between RPEs, MPEs and senior management. **If managers ignore or over-rule qualified expert advice they place the safety of patients, staff, members of the public, the environment, and their organisation's reputation at risk, and must be prepared to be held to account.**

References

1. International Atomic Energy Agency (IAEA) *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards* (General Safety Requirements Part 3), 2014
2. European Union *Basic Safety Standards Directive for protection against the dangers arising from exposure to ionising radiation* (BSSD) 2013/59/EURATOM
3. The *Ionising Radiations Regulations 2017* Part 3 (Arrangements for the management of radiation protection (Regulation 14: *Radiation Protection Adviser*)
4. The *Environmental Permitting (England and Wales) (Amendment) (No.2) Regulations 2018* (Schedule 23, Part 4, Section 3, Para 7)
5. The *Ionising Radiation (Medical Exposure) Regulations 2017* (Regulation 14: Expert advice)
6. Northern Ireland Environment Agency (NIEA), Scottish Environment Protection Agency (SEPA), Environment Agency (EA): *Environment Agencies' statement on radioactive waste advisers* (2011)
7. International Commission on Radiological Protection (ICRP) Publication 138, *Ethical Foundations of the System of Radiological Protection* Ann. ICRP 47(1) 2018
8. International Radiation Protection Association (IRPA) *Guidance on certification of a radiation protection expert*, 2016
9. International Radiation Protection Association (IRPA) *Guiding principles for establishing a radiation protection culture*, 2014

UK Radiological and Radiation Oncology Congress (UKRCO) 2018, Liverpool Arena and Conference Centre, July 2-4 2018