Summary

Key findings in 2023/24

Statutory reporting has seen an upward year-on-year trend in the annual number of accidental and unintended exposures that are notified to us. We believe this is a generally positive indicator of a good patient safety culture in medical exposure to ionising radiation.

But although we received a higher overall number of notifications, some medical radiological services with high levels of activity across a range of imaging modalities that provide complex medical exposures did not report a single event during 2023/24. Low rates of reporting and no reporting at all may indicate inadequate systems and processes to identify, manage and report incidents. We will therefore prioritise services with low and no reporting in our ongoing risk-based approach to inspections to determine compliance with the regulations.

Effective procedures, protocols and guidance

Employers need to ensure that procedures, protocols and guidance for staff are up-to-date and effective, and to improve processes when investigating incidents.

As in previous years, a key source of errors continued to be when the wrong patient received an examination that was meant for another patient. Inadequate checks about the patient's identity by both the referring clinician and the operator were common causes of errors.

Justification and authorisation

We also continue to find confusion around justifying and authorising medical exposures. As radiographic practice continues to expand and more advanced practice qualified radiographers are working in clinical areas, it is important to differentiate between:

- individuals who are adequately trained and entitled under an approved scope of practice to justify and authorise
- those who are authorising an exposure under guidelines.

Workforce

A further concern from our work continues to relate to the shortages of medical physics experts (MPEs). We recognise the chronic shortages in the medical physics workforce and the need for a solution to increase numbers of MPEs across the country. We believe there is not enough emphasis on the importance of the medical physics expert and the physics workforce generally, and we also find that MPE workforce requirements are not factored into the procurement business cases for new equipment. Scientific staff need appropriate time and resources to quality assure equipment and fulfil all the duties under the regulations. But it is frequently noted that they have had to take on more work with limited or no increase in the workforce capacity.

Statutory notifications of errors received in 2023/24

From 1 April 2023 to 31 March 2024, we received 819 statutory notifications of significant accidental and unintended exposures (SAUE notifications) that met the defined thresholds of notifiable events across all methods of treatment (modalities).

This compares with 727 received in 2022/23, an increase of 13%.

Diagnostic imaging

- 447 notifications received (an 18% increase from 2022/23).

- Most notifications in diagnostic imaging were from CT (computed tomography) scans (65%), followed by plain film x-ray (25%). This is similar to the previous year.
- The most common type of error in diagnostic imaging (26%) noted this year is where a patient received an examination meant for another patient. Of the 447 notifications, 88 (20%) involved the wrong patient being referred for a diagnostic examination and a further 27 (6%) involved the wrong patient being exposed due to an identification (ID) error.
- Similarly to last year, operator errors accounted for the highest origin of incidents reported to us (41%), followed by referrer errors (33%).

Radiotherapy

- 244 notifications (a 10% decrease from 2022/23)
- The decrease was almost entirely in planning and verification imaging (down from 146 to 108 notifications), due to amended thresholds for notifications to reflect changes in episode regimes.

Nuclear medicine

- 128 notifications (a 66% increase from 2022/23).
- 88% of notifications related to diagnostic nuclear medicine and PET-CT/PET-MR studies.
- The number of notifications relating to preparation or administration of a radiopharmaceutical have increased with the introduction of a new notification category in this area.
- The number of notifications relating to hardware failure have increased during the last year.
- Although we received fewer notifications where referrers have failed to cancel requested examinations, we are still seeing incidents where an unintended dose has been administered.

Inspections in 2023/24

In 2023/24 we carried out 40 inspections (compared with 35 in 2022/23). These were a mix of proactive inspections as part of the IR(ME)R annual inspection programme and reactive inspections in response to concerns and high-risk notifications. We inspected:

- 15 diagnostic imaging departments
- 15 radiotherapy departments
- 10 nuclear medicine services.

Enforcement

Poor compliance with the regulations is often the result of an inadequate governance framework around radiation protection. We issued 14 Improvement Notices to IR(ME)R employers following inspections.

Actions for employers to improve compliance

It's important for organisations to not only value and encourage learning from their own experiences, but to avoid complacency by looking beyond themselves for lessons from others. This, in turn, will help to improve patient safety and leadership, and embed a good safety culture.

Based on our findings during 2023/24, we recommend these general actions for IR(ME)R employers to improve compliance with the regulations, as well as the safety and quality of care for patients:

Policy, procedure and protocol

- High numbers of errors are still resulting from inadequate checks. All IR(ME)R duty-holders must remain vigilant and follow procedures and safe practices, such as multi-point checks, at all stages of a patient's care pathway.
- In IR(ME)R documentation, it's important to differentiate the overall 'policy' aspects from the more practical 'clinical instructions'. It may be useful to separate these so that the working procedures only include the relevant information for the intended audiences, with separate high-level 'managerial' procedures.

Justification and authorisation

- Carefully consider the role of the practitioner and the associated training needed for radiographers, who may be entitled within local procedures to act in this capacity.
- Provide adequate training, in line with Schedule 3 of IR(ME)R, for any radiographer seeking to be entitled to act as the practitioner. The Society of Radiographers have issued guidance to support entitlement of individuals other than radiologists to justify and authorise exposures.
- Ensure that all entitlement processes are thorough and effective, and clearly documented within the employer's procedures.

Non-medical referrers

- Any person entitled to act as a referrer for an ionising radiation examination must be a registered healthcare professional.
- Radiology departments should not have sole responsibility for determining whether there is a service need for the entitlement of non-medical referrers. The relevant departments looking to refer should be engaged in the process and in creating an appropriate scope of practice. They should also be involved in the ongoing management and audit of non-medical referrers.

Support from medical physics experts

- Ensure that appointed experts are fulfilling the duties required in the regulations. This is especially important when medical physics support is provided by a third party, as contracts must include sufficient resource for the MPE to undertake their responsibilities. Refer to guidance from the Institute of Physics and Engineering in Medicine for the recommended appropriate MPE support.

Equipment

- Monitor and manage risk continually where equipment falls below normal standards of performance. This may be through a risk register. Consider how the equipment is used and limit its range where appropriate. Address faults with the equipment manufacturer first, but also report persistent issues to the Medicines and Healthcare products Regulatory Agency (MHRA).
- Make sure medical physics experts continue to get support from, and share experiences with, special interest groups and the Institute of Physics and Engineering in Medicine, particularly where issues may be widespread.
- Give more scrutiny, in terms of both quality control and routine maintenance, of systems with a history of unreliability and equipment still in clinical use – both towards and past its end of life. Medical physics experts should review the frequency and effectiveness of routine checks of these systems.
- Involve medical physics experts in decisions on purchasing any new piece of equipment to ensure the correct technical specification, and when making any changes to equipment that will affect image quality and patient dose. Include and consult them in any optimisation programme.