



Welcome to the Safer Radiotherapy (RT) e-bulletin, which provides key messages and learning from radiotherapy error (RTE) reports and patient safety initiatives.

In 2010, PHE brought together representatives from The Royal College of Radiologists (RCR), the Society and College of Radiographers (SCoR), Institute of Physics and Engineering in Medicine (IPEM), NHS England & Improvement (NHSEI) and a lay representative to form a steering group to support the coordination of efforts to improve patient safety in RT across the UK. This work includes the collation, analysis and promulgation of learning from RTE reports.

Anonymised RTE reports are submitted on a voluntary basis through the National Reporting and Learning System (NRLS) of NHSEI or directly to PHE, to promote learning and to minimise recurrence of these events. Safer RT accompanies the **Triannual RTE Analysis & Learning Report**, designed to disseminate learning from RTE to professionals in the RT community to positively influence local practice and improve patient safety.

Published three times a year, the next issue will be shared in September 2021. All previous e-bulletins can be found [here](#). To subscribe to future editions of the e-bulletin please follow this [link](#). Please email radiotherapy@phe.gov.uk for advice on reporting and learning from RTE and with comments or inclusions in the e-bulletin.

Thank you to all RTE reporters who facilitate this work.

UKHSA update

The UK Health Security Agency (UKHSA) will be the new organisation assuming responsibility for health protection from PHE. The new name replaces the working title, the National Institute for Health Protection (NIHP) and recognises the critical role the UKHSA will play in securing the nation's health and forming a permanent part of our national defence against global health hazards. Further information on the UKHSA can be found [here](#). It is expected that all radiation protection services currently provided by the Centre for Radiation, Chemical and Environmental Hazards (CRCE) within PHE, including this work will transfer into UKHSA.

Review of assignment of method of detection (MD)

The use of a MD to indicate how RTE are detected was recommended in 2018. Since then almost half 46.7% (n = 28) of all RT providers have applied MD to their RTE reports. When reviewing the MD coding reported by providers it was seen that the entire radiotherapy pathway taxonomy was used. The use of the full pathway by providers has indicated not all MD are safety barriers (SB). Examples include 'patient positioning' and treatment process 'other'.

The PSRT now recommend the entire radiotherapy pathway taxonomy should be considered when applying MD to RTE reports.

As part of RTE report submissions PHE would be grateful if the coding was included in the beginning of the first open text field in the following format:

Trigger code / pathway code (including failed safety barriers)/ causative factors / method of detection

e.g. TSRT9/ Level 4/ 10j/ 10/ CF1d/ CF1c/ MD13g

Radiotherapy errors and near misses – the unseen pathway

The RT pathway includes a number of safety critical activities usually unseen by the patient. These relate to the safety of the infrastructure, room design, equipment, machine QA, mould room and workshop activities. With the support of the IPEM RT SIG, an analysis of RTE along this unseen pathway has been published and can be found [here](#). This analysis presents five case studies which include a study of risk, mitigations and learning from excellence.

Textbook of Patient Safety and Clinical Risk Management published

A free access [textbook](#) has been published. It includes recommendations and examples of how to improve patient safety by changing practices, introducing organisational and technological innovations. The textbook also describes how to create effective, patient-centred, timely, efficient, and equitable care systems, in order to spread the quality and patient safety culture among the new generation of healthcare professionals.

Tony Murphy, the lay representative on the PSRT, has highlighted the following quote for your attention - *Radiotherapy (RT) is one of the major treatment options in cancer management and “it is widely known to be one of the safest areas of modern medicine, yet, for some, this essential treatment can bring harm” P264*

Technical specifications of radiotherapy equipment

The [IAEA](#) and [WHO](#) have published a joint Technical Specifications of Radiotherapy Equipment for Cancer Treatment. The [publication](#) is intended for medical physicists, radiation oncologists and anyone else with responsibility for manufacturing, planning, selecting, procuring, regulating, installing or using radiotherapy equipment.

Radiation Safety Culture Trait Talks handbook

The [IAEA](#) have launched a new radiation safety culture trait talks handbook for students. The handbook is structured around ten traits that contribute to a strong safety culture. The handbook can be found [here](#). Whilst this is aimed at students it may also be used for professional CPD

New webpages for the SoR and CoR

New separate websites have been launched for the [Society of Radiographers](#) (SoR) and [College of Radiographers](#) (CoR).

Links to international patient safety resources

IAEA [SAFRON](#), the latest [publication](#) includes examples of incident reports and the effective use of timeout

ASTRO and AAPM [RO-ILS](#), publish [Case Studies](#), these stand-alone case studies summarise an event and provide learning and feedback. RO-ILS have also published a [themed report](#) which contains COVID – 19 disruptions to process.

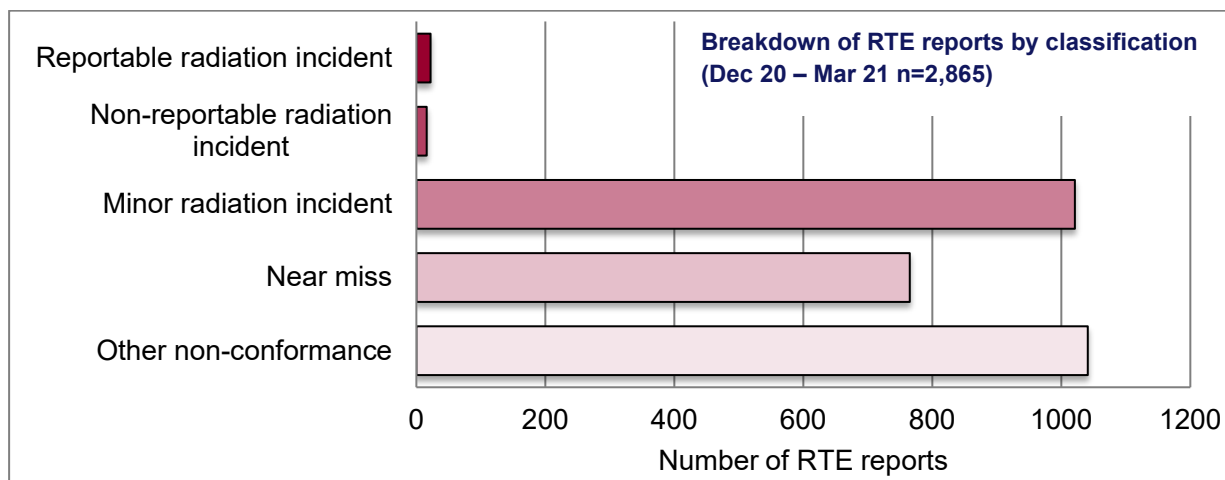
Autorité De Sûreté Nucléaire (French Nuclear Safety Authority) [Publications for Professionals](#) contain patient safety messages and experience feedback

RTE Data analysis: December 2020 to March 2021

The full detailed data analysis is available [here](#) and includes data on primary process subcoding, safety barriers, methods of detection, causative factors, and the severity classification of the RTE. These taxonomies are described in the [Development of Learning from RTE](#). A summary of findings is presented below.

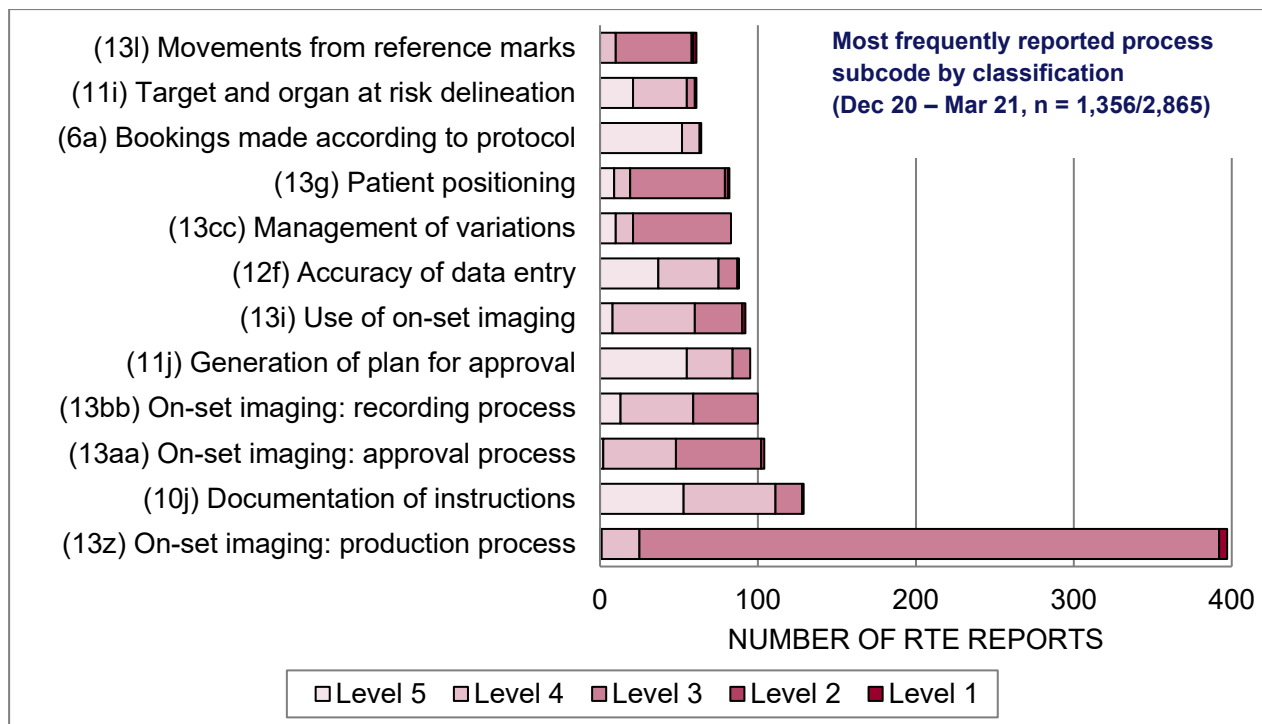
Classification of RTE

Of those 2,865 RTE reported, 2,827 reports (98.7%) were classified as minor radiation incidents, near misses or other non-conformances. These would have no significant effect on the planning or delivery of individual patient treatments.



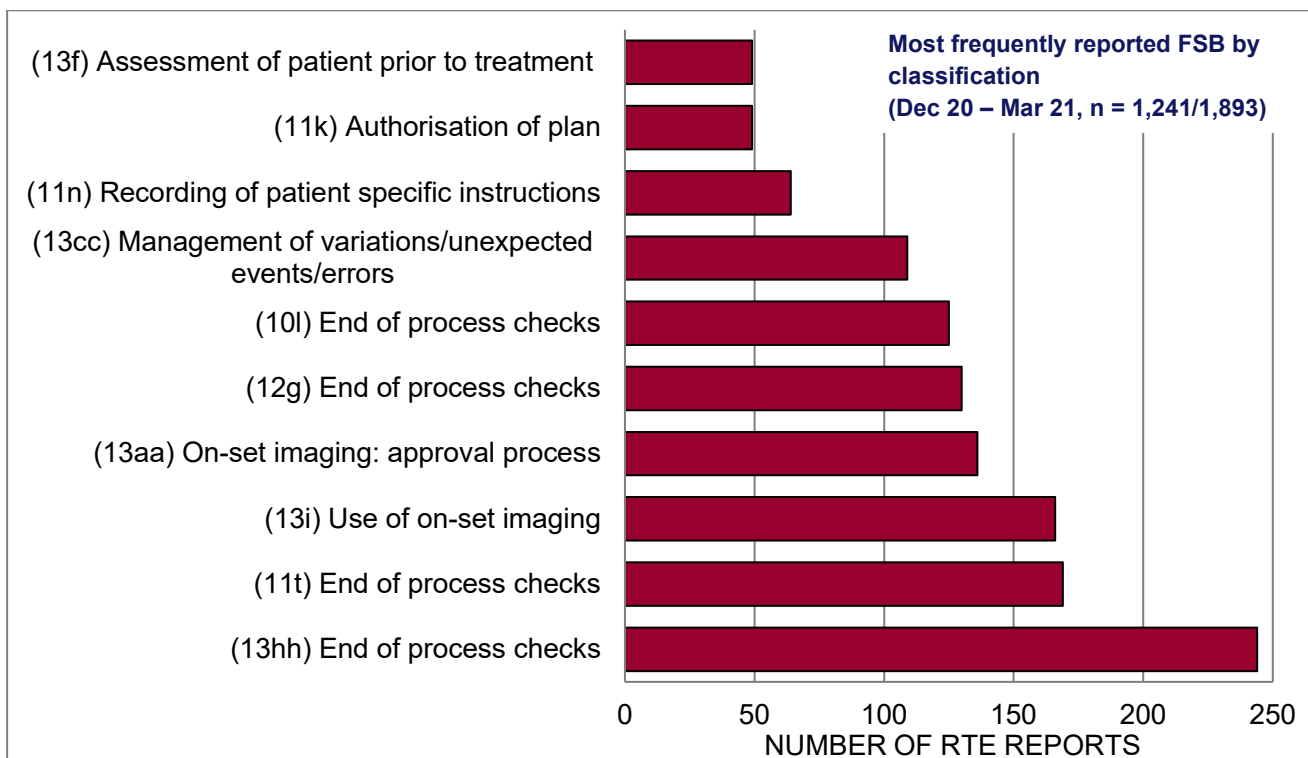
Primary process subcode

The most frequently reported points in the patient pathway where the RTE occurred are shown below. Consistent with the previous analysis ‘on-set imaging: production process’ was the most frequently occurring process code (13.9%, n = 397).



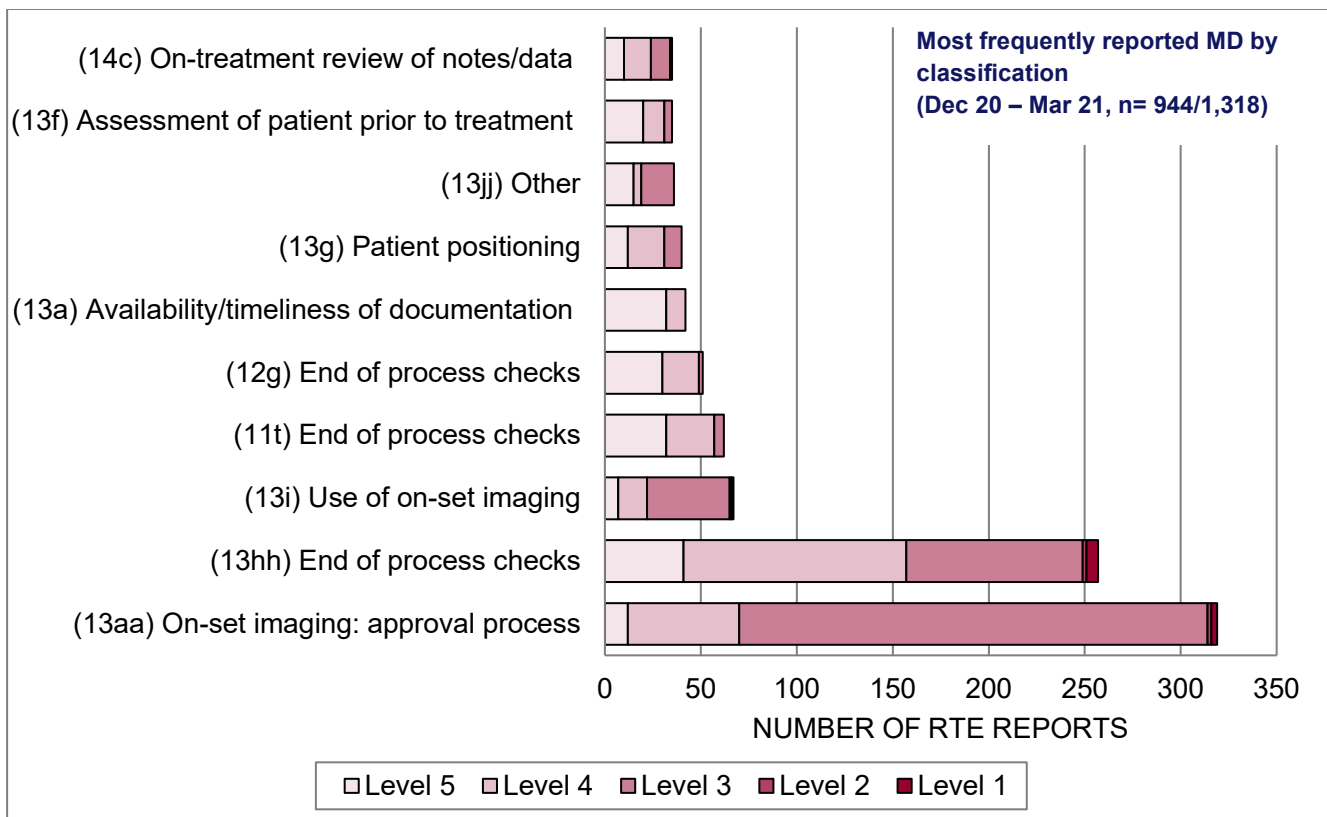
Failed Safety barriers (FSB)

A total of 1,893 FSB were identified across all the RTE reported. The most frequently reported FSB can be seen below. Treatment unit process ‘end of process checks’ was the most frequently reported FSB (12.9%, n = 244).



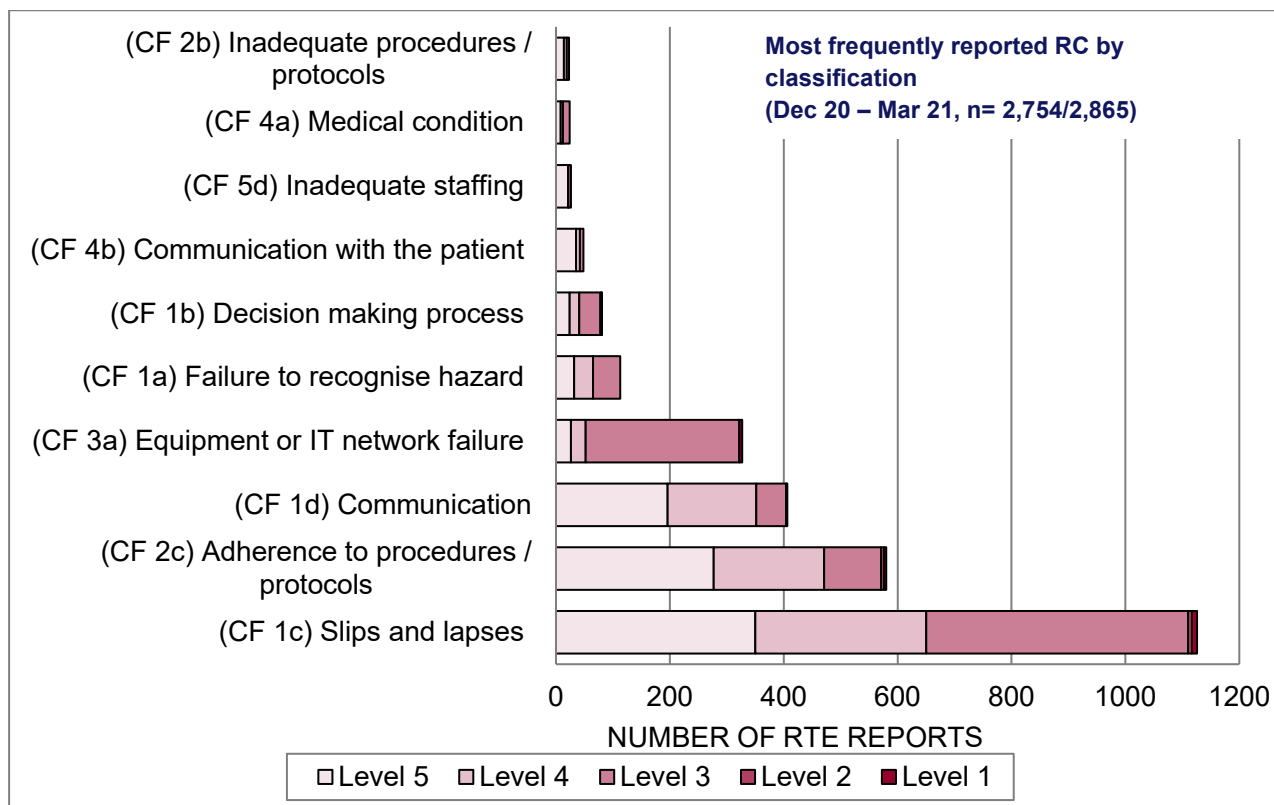
Method of detection (MD)

For this reporting period 1,318 reports contained MD. The most frequently reported MD was ‘on-set imaging: approval process’ (24.2%, n = 319).



Causative Factors

The primary factor is the root cause (RC) and the subsequent factors are contributory factors (CF) associated with an RTE. The most frequently reported RC was individual ‘slips and lapses’ (39.3%, n = 1,126). CF were indicated across 674 reports. Of these 80 contained multiple factors leading to 754 CF. The most frequently reported CF was ‘adherence to procedures/protocols’ (44.8%, n = 338).



Monitoring of RTE coding by RT providers

The DoL guidance document includes examples of the application of the taxonomies. As part of RTE report submissions PHE would be grateful if the coding was included in the beginning of the first open text field in the following format:

Trigger code / pathway code (including failed safety barriers)/ causative factors / method of detection. A sufficient description of the RTE should also be included.

e.g. TSRT9/ Level 4/ 13c/ 13/ CF1c/ CF2c/ MD13hh.

Field	Target	Status for this reporting period
Providers submitting RTE reports to national system	100% providers have reported in the past	76.7% of providers submitted RTE reports using the TSRT9 trigger code
Providers applying failed safety barrier (FSB) coding to RTE reports	Majority of RTE should contain FSB	43.0% of all pathway coding reported included FSB coding
Providers applying causative factor (CF) coding to RTE reports	100% RTE reports should contain CF	79.7% RTE reports included CF coding
Providers applying method of detection (MD) coding to RTE reports	100% RTE reports should contain MD	29.5% RTE reports included MD coding
		0-33%, 33-66%, 66-100%

A complete report includes the trigger code, classification, pathway code, including FSB, CF and MDs. Can we get all of the table above to be green and utilise all of the taxonomies to allow optimal learning from RTE?

PHE will work with NHSEI to support those providers who have not reported over the past year. If you would like any support please do not hesitate to contact PHE at radiotherapy@phe.gov.uk for advice.

COVID related RTE

As the response to the COVID-19 pandemic in April 2020 a rapid monthly review of the RTE dataset was introduced to identify any new RTE trends related to COVID. For the reporting period April 2020 - April 2021 no RTE directly associated with the COVID response were identified. The search revealed 176 RTE which referenced COVID. There were 95 reports with a coincidental mention of COVID which included level 1 (n = 2) and level 2 (n = 1) reports. The remaining 105 reports mentioned one of 3 contributory factors related to the local COVID response. These included a missed process change (n = 57), staff shortage or workload pressure (n = 10) or missed COVID swabs/testing (n = 14). There were 24.4% (n = 43) RTE associated with COVID which were indicated to be due to communication failure, this is higher than the full dataset (14.2%, n = 1,478). This may be due to the speed at which practice is required to change in response to national guidance This work has now been concluded and a report by exception to NHSEI and PSRT introduced on COVID related RTE.

Patient safety specialists

A key part of the **NHS Patient Safety Strategy** published in July 2019 was to identify a designated **patient safety specialist**. The majority of NHS organisations have now completed the process of identifying their Patient Safety Specialist (PSS). PSS will work in networks with other organisations to share good practice and learning, making them fundamental to patient safety across the NHS in England. Early engagement with PSS by these colleagues is important for RT providers to ensure support the continued development of a patient safety culture, safety systems and improvement activity.

PSIMS update

In Spring 2021, the Patient Safety Incident Management System (PSIMS) will enter its public beta stage. The new system will be phased in to replace the current National Reporting and Learning System (NRLS) for England and Wales. Once fully functional, PSIMS will introduce improved capabilities for the analysis of patient safety events occurring across healthcare. PSIMS have started a **blog** which will keep the community informed with updates.

Radiotherapy Dataset (RTDS) update

The RTDS team have been working to improve the reporting of radiotherapy activity data. On **Cancerstats2** a suite of reports to support the Operational Development Networks and regions has been added. The reports feature tumour specific reporting in addition to updating the IMRT reports to give greater functionality. The previously launched RTDS COVID-19 dashboard is updated monthly, which will have new data up to and including February 2021 data. Please note, **Cancerstats2** access is required for these tools. Alongside the Cancerstats2 updates a public facing version of the RTDS COVID-19 dashboard has been launched. This is aimed at anyone with an interest in how UK radiotherapy has been impacted during the COVID-19 pandemic or campaigning for cancer patients. This will be available on the **Cancer Data** website.

Identification related RTE

The Society and College of Radiographers have convened a working party to review patient identification (ID) errors affecting diagnostic imaging, nuclear medicine and radiotherapy. To inform this work PHE undertook a search of RTE data to identify any RTE associated with patient ID.

There were ten pathway subcodes within the nationally agreed radiotherapy **pathway taxonomies** which were associated specifically with patient ID or dataset ID, these were: (4a) identification of patient, (5b) recording of patient ID, (8a) confirmation of ID, (9a) confirmation of ID, (10a) confirmation of ID, (11a) verification of patient ID (11b) recording of patient ID on plan, (12d) correct ID of patient/all patient input data, (12e) correct ID of patient output data, (13b) patient ID process, (13c) patient data ID process. The search within the database was limited to these pathway subcodes between January 2011 to December 2021. Of the RTE reported in this period 1.3% (n = 926) were associated with patient ID. A total of 9.0% (n=83) of the ID RTE were deemed **reportable radiation incidents**. This is significantly greater than the 2.6% (n=1,770) of RTE from the entire dataset for the same reporting period.

The most frequently reported ID RTE were associated with patient data ID process at the treatment unit (27.6%, n=256) followed by patient identification at time of referral (16.6%, n=154). On-set imaging: approval process was the most frequently reported method of detection. (MD was introduced in 2016, so was only available for subset of data, 15.8%, n=146). The most frequently reported root cause of the ID RTE was slips and lapses (CF was introduced in 2017, so only available for subset of data, 43.5%, n=403).

The following mitigations were identified in RTE reports and from publications such as **10 years of learning from clinical site visits**, **6th Safer Radiotherapy newsletter** and **IR(ME)R: the implications for RT clinical practice**:

- Search electronic systems by patient number in systems and confirm patient name
- Review configuration of data interfaces for presentation of patient identifiers
- Consider the additional use of photographic identification
- Ensure primary source data to be used for patient ID is clearly defined and available at point of care and time of referral
- Archive patients on electronic systems that are not on active treatment
- Explain the need for a patient ID procedure at each attendance to patients via information leaflets and posters positioned in waiting areas
- Consider the correct identification of data from external sources (such as diagnostic images, clinic letters etc)
- Explore the use of new technologies to assist in patient ID (biometrics and radiofrequency emitters). Consider these technologies will still rely on the correct entry of patient ID into the system.

Guest Editorial

Local adoption of a study of risk

Julie Johnson,
Superintendent Radiographer,
North Wales Cancer Treatment Centre



The European Commission describes risk management as “all the various organizational structures and processes that are designed to improve safety and prevent or reduce risks, or that limit the consequences of risks (i.e., all risk preventive measures). Risk management is, therefore, part of the overall quality management program.” (1)

The importance of risk management is recognised and encouraged within IR(ME)R (2) and professional and operational standards required by radiotherapy professionals and organisations. One of these standards is ISO 9001 (3). The revision in 2015 of these standards focused on risk-based thinking and proposed a systematic approach to risk throughout the standard. IR(ME)R 2017 regulation 8(2) requires the employer’s QA programme to include a study of the risk of accidental or unintended exposures.

In North Wales, while we analyse our RTE, looking for trends and identifying opportunities for improvement. A review of gaps in our documentation highlighted that we did not have a procedure for a study of risk. To begin with, the Health Board’s policy on risk as well as the IR(ME)R Guidance from the Radiotherapy Board was reviewed (4). An annual summary of the departmental RTE had been completed including a review of those RTE most frequently reported.

Using a basic risk matrix each of the most frequently reported RTE was assigned an initial risk score (using consequence x likelihood, each on a 5-point scale). Mitigating factors were then considered to reduce the probability of each error recurring. The risk score was then amended. The result is a very simple risk matrix table that will be reviewed annually, and assessment made as to whether the mitigations did in fact help to control the risks.

A feeling of ‘over-thinking things’ had led to hesitancy to get going with the study of risk. In the end, the exercise was found to be really useful.

The IR(ME)R Guidance notes (4) are a fantastic resource, the numerous examples and clear explanations gave us the confidence to know we are complying with the regulations and most importantly keeping patients safe.

An example of the local risk matrix is shown below: -

Area of Risk Identified	Initial Score C x L		Mitigation Factors	Mitigated Score C x L	
Positional errors caused by the following: <ul style="list-style-type: none"> • incorrect isocentre shift being documented by pre-treatment staff (11n) • wrong shift being performed by treatment staff (13l) • incorrect shift documented following image review (13bb) 	3 x 3 3 x 3 3 x 3	9	Mitigated by the following: <ul style="list-style-type: none"> • Pre-treatment Aria checks and pre-treatment imaging • Cross-checking by two staff, gross error check against skin render image, pre-treatment imaging • Second check of documentation if isocentre shift changes are applied following image review 	3 x 1 3 x 1 3 x 1	3
Imaging-related errors, particularly incorrect pre-sets being selected (13z)	1 x 3	3	Difficult to mitigate against. Training has been provided and notices are present to act as a reminder	1 x 3	3

Moving forward, within Wales the 3 NHS radiotherapy centres have agreed that we would like to standardise the way we categorise risks when we complete our Datix reports. Upon discussion it was realised that there are some inconsistencies in the classification of RTE. Wales is now in the process of adopting an All Wales Datix, it seems sensible to do this to allow us to compare ourselves and increase learning opportunities.

1. European Commission. Radiation Protection No. 181, General guidelines on risk management in external beam radiotherapy. <https://ec.europa.eu/energy/sites/ener/files/documents/RP181web.pdf>, 2015.

2. The Ionising Radiation (Medical Exposure) Regulations 2017, SR2017/1322, 2018 amendments SR2018/121 and Northern Ireland 2018 SR2018/17. The Stationery Office, London, <http://www.legislation.gov.uk>

3. International Organization for Standardization. Quality management systems - Requirements BS EN ISO 9001:2015. Geneva: ISO, 2015. <https://www.iso.org/standard/62085.html>.

4. The Radiotherapy Board made up of the Society and College of Radiographers; Institute of Physics and Engineering in Medicine and the Royal College of Radiologists. Ionising Radiation (Medical Exposure) Regulations: Implications for clinical practice in radiotherapy. London: The Royal College of Radiologists, 2020 Ref RTBoard20202. <https://www.rcr.ac.uk/sites/default/files/guidance-on-irmer-implications-for-clinical-practice-in-radiotherapy.pdf>.

Dates for the diary

BIR, SGRT for SABR	10 June, Virtual
RCR, Learning course, Breast radiotherapy	29 June, Virtual
SRP, Annual conference	5 – 8 July, Virtual
IPEM, Medical Physics and Engineering Conference	23 – 25 September, Virtual