

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

Representatives from the UK Health Security Agency (UKHSA), the Royal College of Radiologists (RCR), the Society of Radiographers (SoR), Institute of Physics and Engineering in Medicine (IPEM), NHS England & Improvement (NHSEI) and a lay representative 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 currently submitted on a voluntary basis through the National Reporting and Learning System (NRLS) of NHSEI or directly to UKHSA, to promote learning and to minimise recurrence of these events. Safer RT accompanies the [Triannual RTE Analysis & Learning Report](#), which summarises learning from RTE reports submitted for the preceding 4-month period. The report is designed to disseminate learning from RTE to professionals in the RT community to positively influence local practice and improve patient safety.

Please email radiotherapy@phe.gov.uk for advice on reporting and learning from RTE and with comments or inclusions for the e-bulletin. Published three times a year, the next issue will be shared in September 2022. To subscribe to future editions please follow this [link](#).

Thank you to all RTE reporters who facilitate this work.

UKHSA update

The Medical Exposures Group transitioned from PHE to the UK Health Security Agency (UKHSA) on the 1st October 2021. To reflect the transition, new UKHSA webpages have been established for Safer Radiotherapy: [Triannual reports](#). Previous Safer Radiotherapy publications will continue to be available via [PHE pages](#). The MEG technical services webpages continue to be developed to share the work of the group in improving patient safety in medical exposures. All Safer Radiotherapy: e-bulletins and newsletters are available on the [MEG webpage](#).

Emails will continue to be received via the radiotherapy@phe.gov.uk address, updates on the changes to this email domain to @UKHSA.gov.uk will be available soon.

New learning resources

[Learning resources](#) are available to support RT healthcare professionals in learning from RTE. These include a series of 15-minute presentations which introduce the national approach to learning from RTE. These are supported by the PSRT and are intended to be used as part of local induction and CPD processes. Previous presentations cover the following topics:

- Introduction to learning from radiotherapy errors and near miss events (RTE)
- Introduction to RTE terminology and taxonomies

A further two new presentations are now available on the [MEG webpage](#):

- Application of RTE taxonomies
- Learning from analysis

Once for Wales Concerns Management System (Datix Cymru)



The Once for Wales (OfWs) Concerns Management System was developed from the recommendations made by Keith Evans in the Welsh Government report – “[The Gift of Complaints](#)” and is aimed at bringing consistency to the use of the electronic tools used by all NHS Wales health bodies.

The Once for Wales Concerns Management System Programme is building a structured platform for capturing learning from incidents and concerns and achieving consistency across NHS Wales. The modules currently include incidents, feedback, claims, redress, risk, mortality and safeguarding. A suite of OfWs codes have been developed alongside the roll out of Datix Cymru System providing a single dataset from which to code and categorise these events. This approach facilitates greater comparability of data and wider awareness of themes, causal factors, and interventions. Additionally, identifying good practice and measuring where initiatives have led to improvements in safety is a key element of the Programme.

The Datix Cymru System was launched on 1 April 2021 with a phased approach implementing various functionalities. The Datix Cymru System will be the NHS Wales solution to collating National data following the decommissioning of the National Reporting & Learning System (NRLS) in March 2022. NHS Wales will still contribute to UK wide data collection including providing information including radiotherapy data to the UKHSA.

The Datix Cymru System is hosted by the Welsh Risk Pool, which is part of the NHS Wales Shared Services Partnership. Contact: OnceforWales.CMS@wales.nhs.uk

Jane Palin, Diogelwch a Chynghorydd Dysgu / Principal Safety and Learning Advisor

Learning from patient safety events (LFPSE) service update

LFPSE is replacing the current National Reporting and Learning System (NRLS) and Strategic Executive Information System (StEIS), to offer better support for staff from all health and care sectors. Further information can be found [here](#).

The LFPSE service is now live, this is being used for all online incident forms and the first few NHS trust organisations are transitioning to the system. The LFPSE team anticipate all trusts migrating to the new system, and the closure of the NRLS, in 18-months/2 years.

National radiotherapy plan for Scotland published

National Radiotherapy Programme Board (RTPB) was established in May 2021, this group has developed the [National radiotherapy plan](#) for Scotland which was published in March 2022. This plan contains 13 key targeted actions to improve Scotland's radiotherapy services. These include national radiotherapy data set training, clinical trials, MRI, SABR, optimising workforce, patient experience, brachytherapy, peer review, recovery data, RTDS, cross border referrals, protons, and common protocols.

Advancing Safer Radiotherapy

Since the publication of [Towards Safer Radiotherapy](#) in 2008, its recommendations on how to improve patient safety in radiotherapy have been adopted locally and nationally and continue to be relevant to clinical practice today.

There have been significant developments in patient safety approaches over the last decade relevant to improving patient safety in radiotherapy. Traditional patient safety models in healthcare focus on learning from incident and near miss events (Safety I Principles). Much of the work of the Patient Safety in Radiotherapy Steering Group (PSRT) to date has focused on improving patient safety in radiotherapy through adoption of Safety I Principles which often focus on the individual. Latterly academics have developed safety thinking to include Safety II Principles. Safety II thinking includes a systems approach and a focus on learning from where things have gone well.

Whilst much has been done to improve patient safety in radiotherapy some error trends persist. It is time to consider new approaches to address these. In addition, when the opportunity for error is weighed against the reported occurrence of error, relative numbers of errors are low. This would suggest that there are many more opportunities to learn from where things have gone to plan as opposed to only where they have gone wrong.

The PSRT will develop guidance for UK radiotherapy stakeholders to support the advancement of safer radiotherapy through the adoption of contemporary thinking in the field.

The following broad topics for inclusion have been proposed:

1. Ongoing value of Towards Safer Radiotherapy
2. Safety culture
3. Shared learning and ongoing value of incident learning system
4. Effective use of radiotherapy error data
5. Effective preventative actions
6. Safety II principles
7. Patient Safety Incident Response Framework and incident investigation
8. Patient comfort
9. Patient engagement in safety

Working on behalf of the PSRT, the Chair of the PSRT will co-opt topic experts to form sub-groups for each of the above topics. The work of the topic sub-groups will be undertaken remotely via email and MS Teams and then shared with the PSRT for review and agreement.

If you would like to be part of this work, please email your expression of interest to radiotherapy@phe.gov.uk. Please share details of your current role and interest in a specific topic by the end of June. If you have any questions about participating in this work or would like further information please email radiotherapy@phe.gov.uk.

Patient safety incident response framework (PSIRF) update

The final version of the framework is due to be published in Spring 2022. The implementation will be a gradual process. The current documents on the [PSIRF](#) web page and the [Patient safety investigation](#) resources page will be revised following the completion of the work with early adopters, but are still available for information only.

A new [PSIRF area](#) in the NHS Patient Safety workspace on the Future NHS platform has been created to support providers to prepare for PSIRF.

Framework for involving patients in patient safety

The appointment of lay people as patient safety partners is a key part of the implementation of the [Framework for involving patients in patient safety](#) (IPIPS). The timescale for organisations to appoint two patient safety partners to their safety related committees has been extended to September 2022 rather than June.

National radiotherapy consent forms

The RCR has enhanced and extended the series of radiotherapy consent forms. A previous guest editorial on the RCR consent form can be seen within [Issue 5 of the e-bulletin](#). Six new forms have also been developed with input from site-speciality experts and patient groups to cover lymphoma, palliative, gynaecologic cancer, and pancreas. The consent forms are available [here](#). Further development of the consent forms aims to include CNS and chemo-rad to include bladder, head and neck, anal and rectal.

RCR guidance 'on-target volume definition and peer review'

The final draft 2nd edition of the RCR Guidance document on target volume definition and peer review document has been out for consultation to the RCR Professional Support and Standards Board. Once these comments have been reviewed, it will go out to consultation to all RCR Heads of Service before the final 2nd edition is then agreed and published by autumn this year. It is a timely document, particularly in a world where virtual meetings have become the norm, reminding us that there should be no barrier to best practice.

Petra Jankowska, Consultant Clinical Oncologist, Taunton & Somerset Foundation Trust; Quality & Safety Lead, Royal College of Radiologists

National patient safety strategic research needs

The 'National Patient Safety Strategic Research Needs' for 2022/2023 has now been published. The research needs are organised into eight themes with specific examples of the research needed for each theme. The document highlights strategic research needs in relation to the priorities in the [NHS Patient Safety Strategy](#). Themes include:

- reducing inequalities in healthcare safety
- improving patient safety intelligence and understanding challenges
- improving organisational patient safety culture and practice
- patient safety behaviours
- effective patient safety practices
- patient safety impacts of alternative service delivery models
- ergonomics, design, and human factors
- clinical risk scores (validation, implementation, and outcomes).

Study of risk of patient ID associated RTE

In response to the new SoR publication [Preventing Patient Identification Incidents in Diagnostic Imaging, Nuclear Medicine and Radiotherapy – guiding principles for safe practice in the United Kingdom](#), a review of relevant RTE reports submitted (Jan 2011 to Jan 2021) as part of the national analysis was undertaken. This was used to inform a study of risk for all patient ID processes. This risk matrix can be used to inform local risk assessments.

| Area of Risk | Initial Risk | | | Following mitigation | | |
|--|--------------|------------|------------|----------------------|------------|------------|
| | Consequence | Likelihood | Risk score | Consequence | Likelihood | Risk score |
| Patient ID process: (4a) referral, (10a) pretreatment activities, (11a) pretreatment planning, (13b) treatment unit | | | | | | |
| Wrong photo applied or camera not available for photo ID | 3 | 2 | 6 | 3 | 1 | 3 |
| 3-point patient ID primary source data not available in area patient ID is undertaken | 3 | 2 | 6 | 3 | 1 | 3 |
| Wrong patient addressograph applied to paper records | 3 | 2 | 6 | 3 | 1 | 3 |
| In-patient wristband missing | 3 | 1 | 3 | 3 | 1 | 3 |
| Failed to exit previous patient and referred wrong patient, identified prior to patient exposure | 2 | 1 | 2 | 2 | 1 | 2 |
| Failed to exit previous patient and referred wrong patient leading to their treatment | 4 | 3 | 12 | 4 | 1 | 4 |
| Failed to exit previous patient and referred wrong patient leading to a CT planning scan | 3 | 3 | 9 | 2 | 1 | 2 |
| (13c) Treatment unit patient data ID process | | | | | | |
| Patient correctly identified on system, then exited to access imaging, on reselection wrong patient dataset selected | 3 | 2 | 6 | 3 | 1 | 3 |
| Patient correctly identified on system, patient had to leave the room to void bladder prior to treatment. Next patient in queue brought in and ID against treatment sheet, dataset in system not changed for treatment | 3 | 3 | 9 | 3 | 1 | 3 |
| Patient correctly identified. Multiple plans in use for patient. Incorrect plan selected and treated. | 3 | 3 | 9 | 3 | 1 | 3 |
| Documents inserted into wrong patient notes and used for ID | 3 | 2 | 6 | 3 | 1 | 3 |

Corrective actions for areas of risk identified in RTE reports include:

- Search electronic systems by patient number and confirm patient name
- Archive patients on electronic systems not on active treatment
- Ensure only live plans are authorised in systems and archive old plans/datasets
- Sequence patient treatment plans in order of use at treatment
- Ensure image scheduling is up to date and included in exposure sequence
- Include photographic ID in treatment room consoles
- Ensure individual passwords used with appropriate system rights

Mitigations from Safer RT publications:

- Review configuration of data interfaces to ensure dataset labels are accessible
- Ensure nomenclature applied to datasets is standardised and consistent
- Ensure the individual taking the patient photo uploads it to reduce opportunity for upload to wrong patient record

- Ensure the patient photo is of reasonable quality for ID purposes and up to date
- Ensure primary source patient identifiers available where patient ID is undertaken
- Ensure environment is not too busy and quiet
- Consider the correct ID of data from external sources (i.e. diagnostic images, clinic letters etc)
- Explore the use of new technologies to assist in patient & dataset ID
- Communicate the need for a patient ID procedure at each attendance to patients via information leaflets and posters positioned in waiting areas

Advanced practitioner scope of practice

There is a requirement under IR(ME)R for the employer to ensure practitioners and operators are adequately trained to perform the tasks defined within their scope of practice. A scope of practice describes a range of tasks an individual is entitled to perform. It is based on professional registration, education, training, knowledge, and experience. Each duty holder must have a scope of practice outlining the tasks they are entitled to perform. This includes advanced practitioners.

Radiographer advanced practitioner accreditation is available through the [College of Radiographers](#). The College require evidence that an advanced practitioner has met professional body requirements across four specific domains. The four domains are:

1. Expert clinical practice
2. Professional leadership and consultancy
3. Education, training, and development
4. Practice and service development, research, and evaluation

Guidance on training, entitlement and scope of practice is provided in [IR\(ME\)R: Implications for Clinical Practice in Radiotherapy](#).

End of process checks (EOP)

EOP are a subset of safety barriers (SB) routinely undertaken locally by operators at the end of each discrete part of the radiotherapy pathway. Analysis of EOPs can identify where they have failed and succeeded in identifying potential errors so they can be optimised. An 18-question survey was shared with the Midlands Organisation of Specialists in Quality Improvement for Therapeutic Oncology (MOSQUITO) group. The aim of the survey was to review local EOP procedures across the pathway and try to understand why some EOP are more successful than others at mitigating RTE.

Results from the survey indicated that respondents reviewed their EOP as a result of process change, in response to RTE trends, and every two or three years. All respondents also stated that they used local and national RTE analysis to affect what is included in the EOP.

Respondents stated the criteria included within their EOP varied across the pathway and differed depending on the activity. However, common checks across the pathway included patient ID, correct plan ID, consent and pregnancy checks, laterality, confirmation of set up information and review of scheduling.

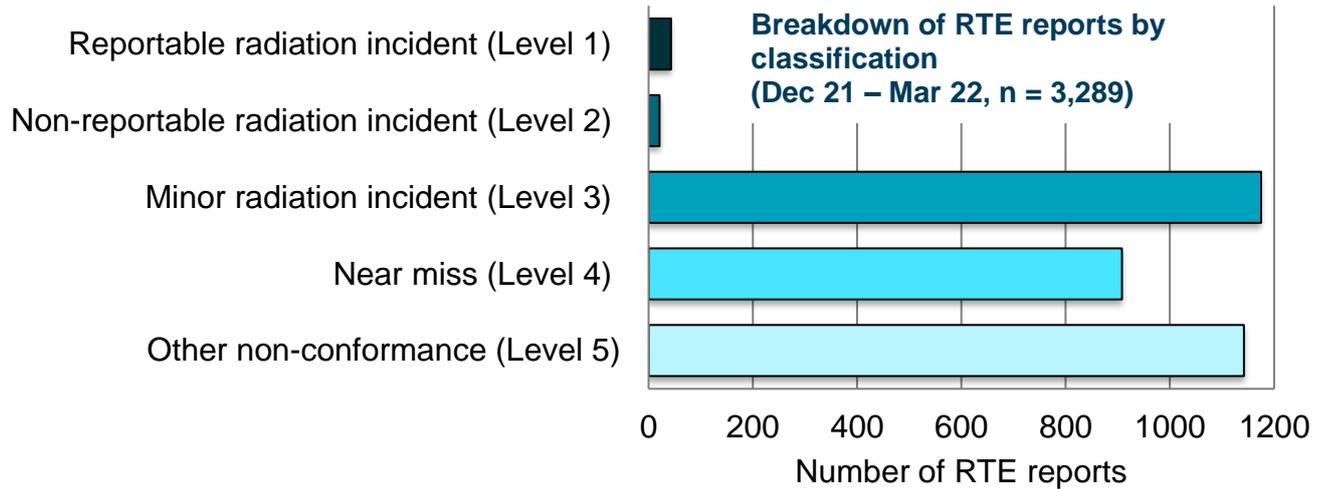
Within the RTE data the most frequently reported failed safety barrier is EOP at the treatment unit, this also features as a frequently reported method of detection. It is recognised that there may be a viewed difference between EOP, pause and check or team huddles. With this in mind further review of the treatment EOP will be carried out. Findings from this will be shared in future publications.

RTE data analysis - December 2021 to March 2022

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.

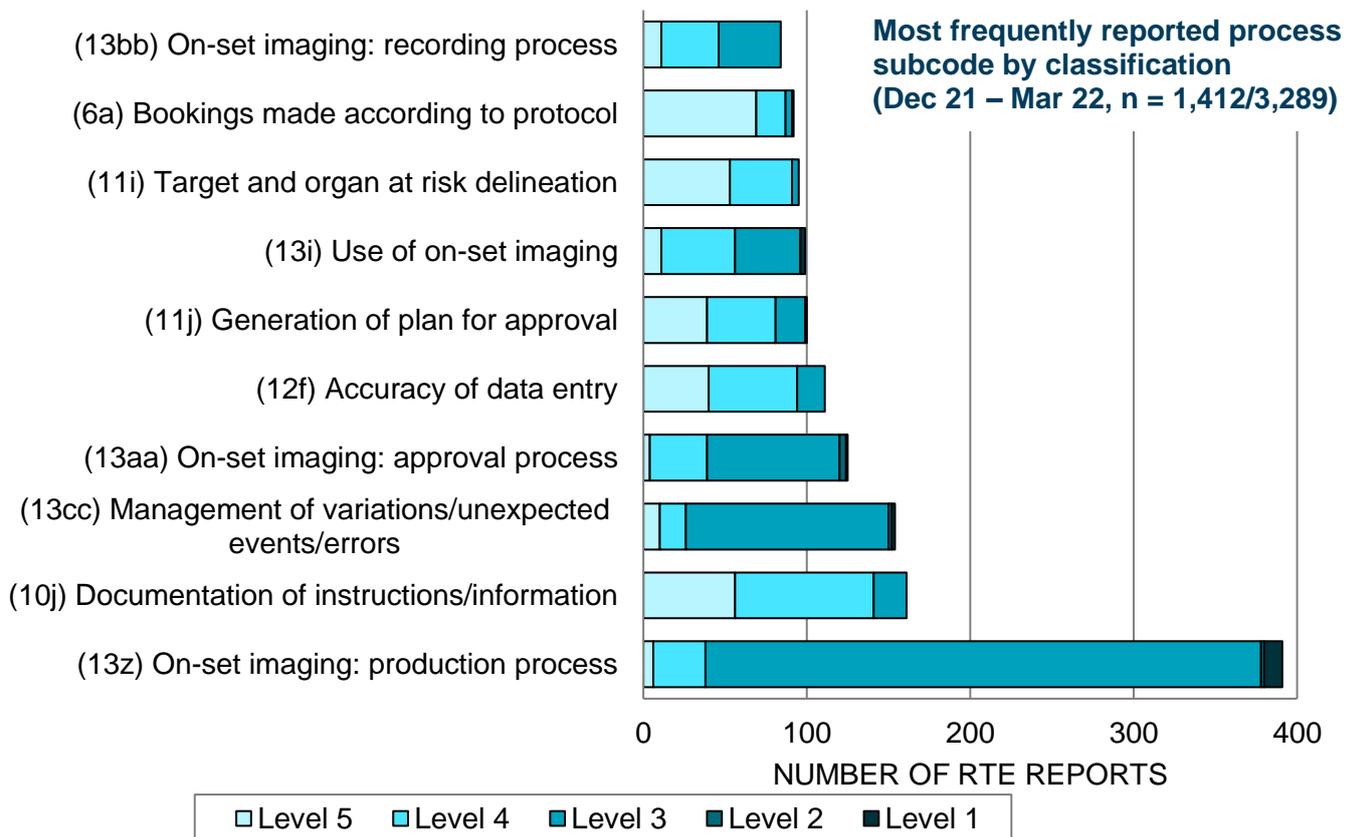
Classification (Level) of RTE

Of those 3,289 RTE reported, 3,225 reports (98.1%) were classified as minor radiation incidents, near misses or other non-conformances (Level 3-5). These had no significant effect on the planning or delivery of individual patient treatments.



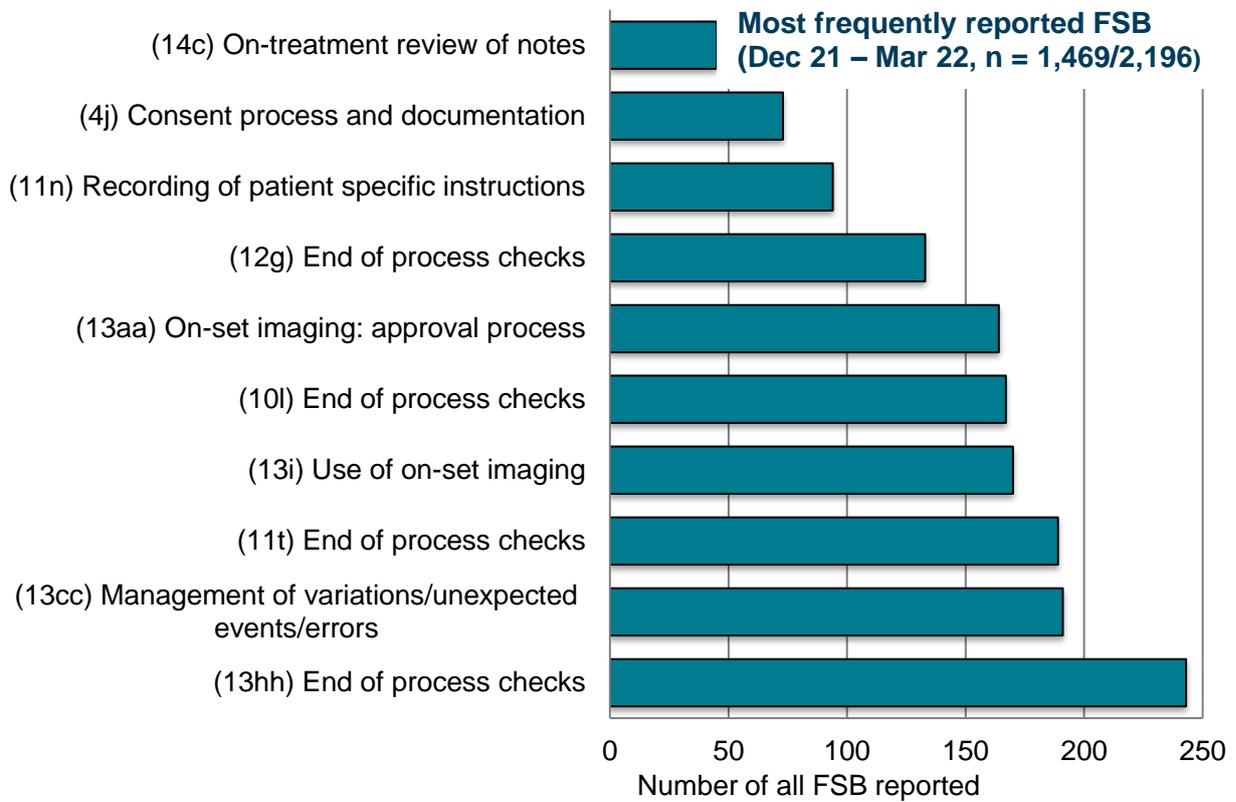
Primary process subcode

The most frequently reported points in the patient pathway where the RTE occurred are shown below. This is broken down by level. Consistent with the previous analysis 'on-set imaging: production process' was the most frequently reported process code (11.9%, n = 391/3,289).



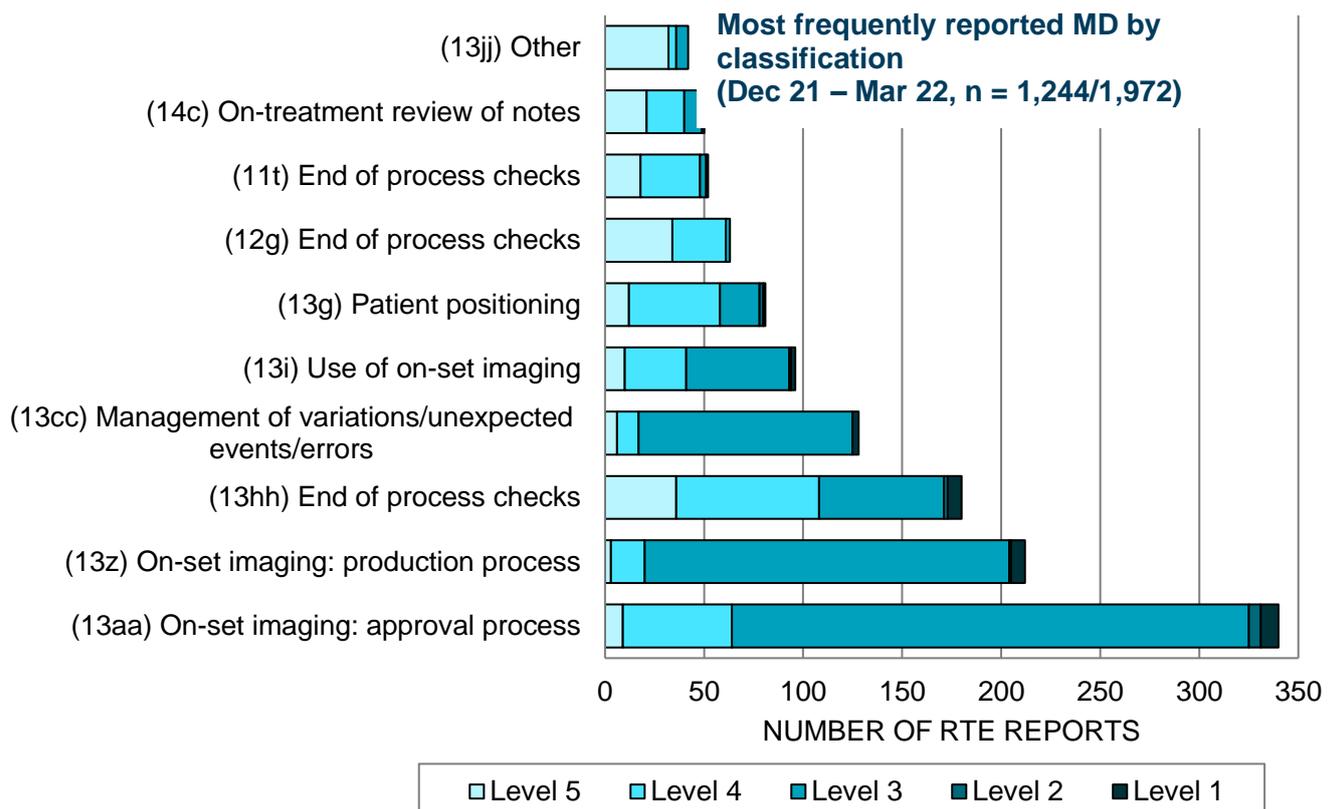
Failed Safety barriers (FSB)

Multiple FSB can be attributed to each individual RTE. A total of 2,196 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 (11.1%, n = 243).



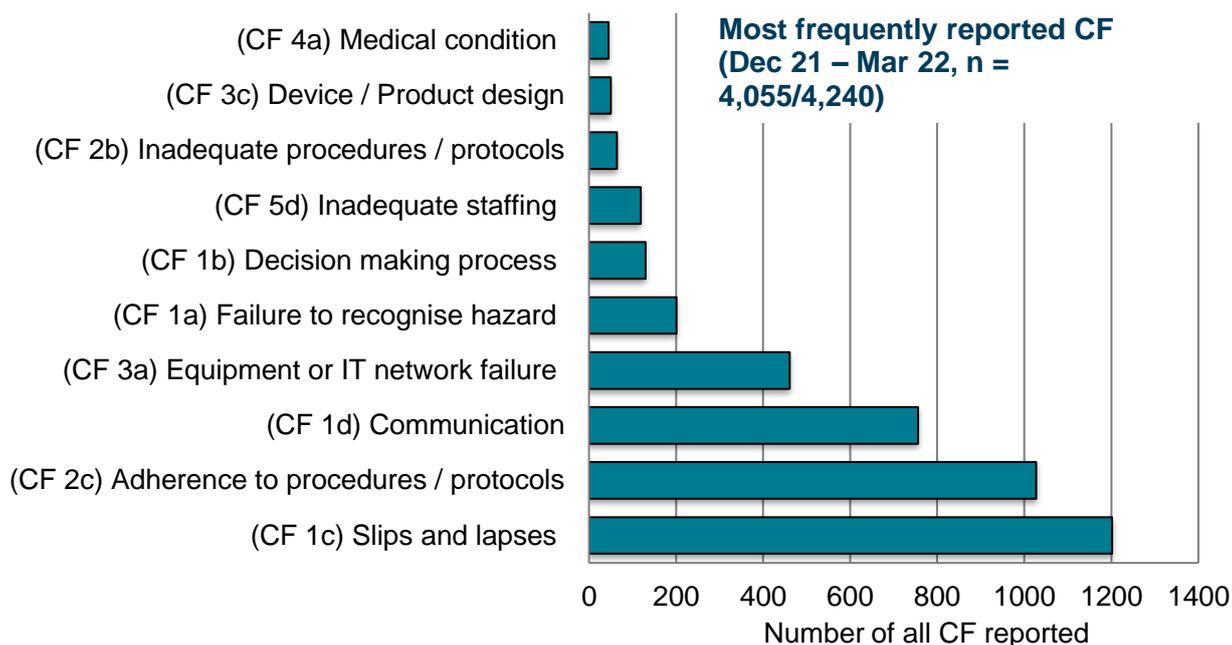
Method of detection (MD)

For this reporting period 1,972 reports contained MD. The most frequently reported MD was ‘on-set imaging: approval process’ (17.2%, n = 340).



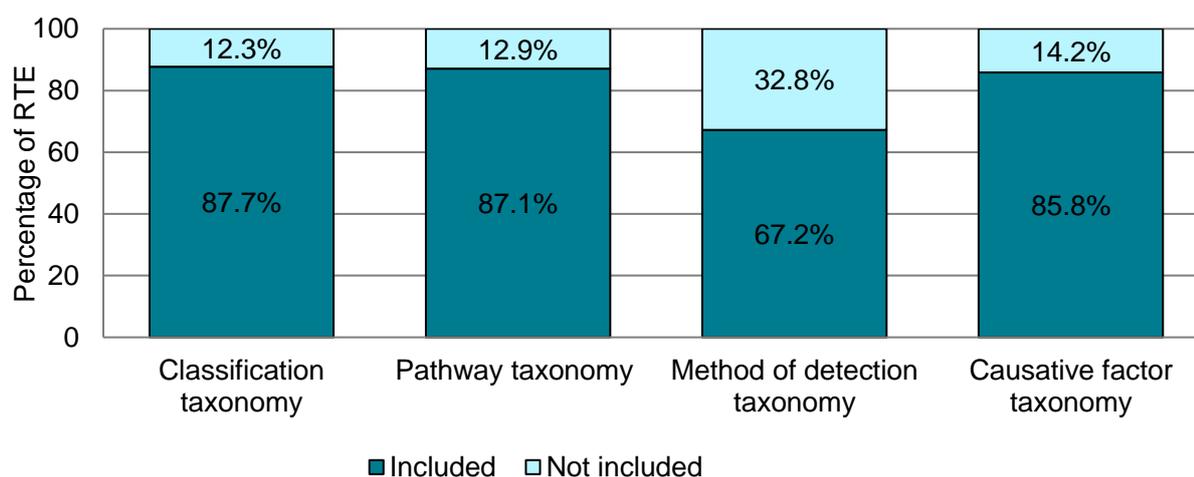
Causative Factors

Each RTE can be assigned multiple CF. A total of 4,240 CF were reported in this period. The most frequently reported was individual ‘slips and lapses’ (28.3%, n = 1,202).



Monitoring of RTE coding by RT providers

All providers are asked to apply a trigger code, classification, pathway coding (including failed safety barriers), method of detection and causative factors to their RTE reports to facilitate both local and national analysis. These should be included in the first open text field in the following format: TSRT9/ Level 1/ 15g/ 15s/ 19a/ MD15s/ CF2a/ CF1a/ CF5f. The allocation of these taxonomies for RTE reported between December 2021 and March 2022 (n = 3,289) can be seen below. Please email radiotherapy@phe.gov.uk if you require any support with application of taxonomies.



| Dates for the diary | |
|------------------------------------|-------------------------|
| SRP Annual Conference | 14-16 June, Llandudno |
| IPEM Empowering healthcare with AI | 23 July, Webinar |
| UKIO Congress 2022 | 4-6 July, Liverpool |
| BIR Annual Congress | 22-23 September, London |

Pregnancy enquiry associated RTE

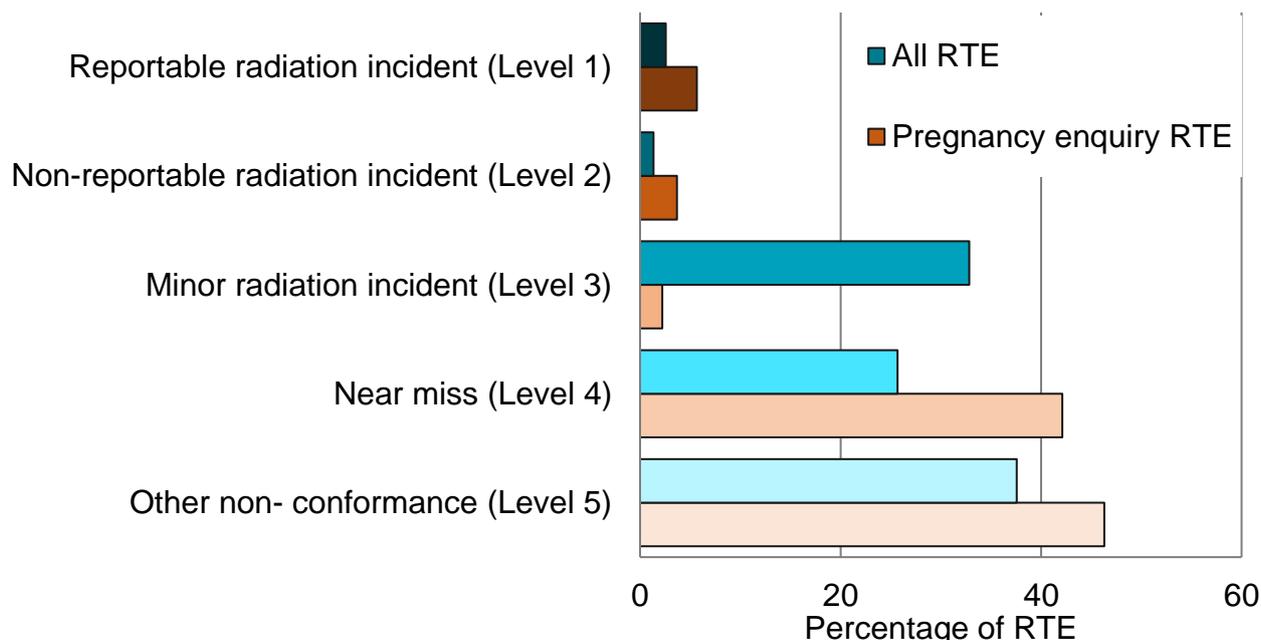
A search of the national RTE database was requested by a RT provider to identify any nationally reported RTE associated with pregnancy enquiries. This data was to be used locally to support the review and implementation of pregnancy and transgender procedures. The search covered the reported date range December 2010 to November 2021. The database does not include gender specific data. A search of the database was performed using the following pathway subcodes:

- (8c) Confirmation of fertility/ pregnancy at pretreatment: preparation of patient
- (13e) Confirmation of fertility/ pregnancy at treatment unit process.

From a total of 76,940 reports, 406 reports (0.5%) were identified as being pregnancy enquiry associated RTE. This data needs interpreting with care as the reported numbers are small. Typical examples of pregnancy associated RTE included:

- a. Patient pregnancy confirmation not completed during consent. This was then detected before treatment or during weekly treatment checks
- b. The patient discovered they are pregnant during or after completion of treatment

A notable difference can be seen between the breakdown in all data and pregnancy related RTE by classification levels.



A total of 5.7% (n = 23) of the pregnancy-enquiry RTE were coded as reportable radiation incidents (level 1). This was higher than the 2.6% (n = 1,974) of all reports for the same time period. This difference may be due to the fact that failure of the pregnancy enquiry is included in [criteria for notifications](#) to the relevant enforcing authority. This was also reflected in the non-reportable radiation incidents (level 2), (3.7% and 1.3%) as providers tend to make voluntary notifications to the relevant reporting authority as a matter of openness and transparency where an unintended or accidental exposure has occurred below the reporting threshold.

Only 2.2% of the pregnancy enquiry RTE were minor radiation incident (level 3), whereas 32.8% of all reports were classified as level 3. The level 3 data for all reports is skewed by on-set imaging related reports.

The higher levels of near miss (level 4) and non-conformities (level 5) in pregnancy enquiry RTE demonstrate a failure in the completion of the pregnancy check or associated documentation and a success of end of process checks.

Study of risk of pregnancy enquiry associated RTE

The preceding review of the patient associated RTE was used to inform a study of risk. This risk matrix can be used to inform local risk assessments.

| Area of Risk | Initial Risk | | | Following mitigation | | |
|---|--------------|------------|------------|----------------------|------------|------------|
| | Consequence | Likelihood | Risk score | Consequence | Likelihood | Risk score |
| Confirmation of fertility/pregnancy: (13e) treatment unit process & (8c) pretreatment: preparation of patient | | | | | | |
| Patient discovered they were pregnant during treatment | 2 | 2 | 4 | 2 | 1 | 2 |
| Patient discovered they were pregnant after completing treatment | 3 | 1 | 3 | 3 | 1 | 3 |
| Patient pregnancy status record not confirmed prior to treatment, detected before treatment commenced | 1 | 3 | 3 | 1 | 1 | 1 |
| Patient pregnancy status record not confirmed prior to treatment, detected during weekly check | 2 | 2 | 4 | 2 | 1 | 2 |
| Patient pregnancy status record not confirmed prior to treatment, detected during treatment summary | 3 | 1 | 3 | 3 | 1 | 3 |

Corrective actions of these pathway codes found within the reports include:

- Include pregnancy enquiry as part of consent
- Consider when/if pregnancy testing should take place

Mitigations from national guidance:

SCoR: The impact of IR(ME)R on pregnancy checking procedures

- In collaboration with MDT consider when the 10 day and 28-day rules apply
- Ensure adequate information is available to all individuals prior to exposure
- Ensure individuals have the time, opportunity, privacy, and safety to raise the possibility of pregnancy

Radiotherapy Board: IR(ME)R: Implications for clinical practice in radiotherapy

- Consideration should be given to the employer's procedure to ensure it reflects the diversity of the gender spectrum
- Consider the training of those involved with patient communication
- Consider the timing and frequency of establishing pregnancy status
- Display patient posters explaining the need to inform staff if patients could potentially be pregnant

PHE (now UKHSA): Learning from the past 10 years of RT clinical site visit

- Adopt appropriate age range based on local demographics for confirmation of pregnancy checks

Study of risk survey

The IR(ME)R Employer's duties require a quality assurance programme be undertaken in respect of radiotherapeutic practices which includes a study of the risk of accidental or unintended exposures (Regulation 8(2)).

A short five question survey has been shared with radiotherapy heads of department with the aim to understand local practice in regard to the study of risk. All feedback from this survey will be shared in the upcoming Safer Radiotherapy: [e-bulletin](#).

Guest Editorial

What makes a good notification?

Alistair McGown, Senior Inspector IR(ME)R,
Healthcare Improvement Scotland



Since the introduction of the [guidance](#) for the reporting of significant accidental and unintended exposure, IR(ME)R regulators have received a range of notifications. The detail in an initial notification and full report can vary considerably. From my perspective, I have noted some key points on what makes a good notification. The initial notification has [set criteria](#), which sets the scene for a more formal report. Essentially the regulator wants to quickly review the information to gain a clear understanding of the basic facts and assess the potential severity. It should include enough initial information to understand what happened (including dose information), where it happened, when the incident occurred and to who. It should also include what equipment was involved and the staff groups involved.

What to include in the final report?

A full detailed report can facilitate a timely resolution to a notification, reducing the need to arrange follow-up discussions or visits by the regulator. The type of incident, complexity and patient pathway will be factors in the content of a report. Each organisation has its own report template and the detail can vary considerably. When writing a report, I would recommend considering the following points to support a full and comprehensive report:

- Description of the incident
- Chronology of the incident and how the incident was identified
- Dosimetry and the impact on the patient and assessment of dose
- Aspects of the referral, justification, imaging, and clinical imaging
- IR(ME)R entitlement details - are all staff involved in the incident appropriately trained and entitled?
- Whether correct local procedures were followed
- Include the employer's procedure or standard operating procedure where relevant
- Factors that contributed to this incident, such as failure to follow procedure, staff shortages.
- What control measures were in place that could have mitigated the risk of the incident?
- Has the patient been informed?
- Was the incident clinically significant?
- Was the type of incident unique or are there any trends emerging?
- A description of the remedial action taken, including how the learning was shared. For example, shared at team meetings, newsletters or discussed at professional events and learning meetings

Particular considerations for nuclear medicine and radiotherapy:

- Details of the prescription
- Are the appropriate ARSAC licences in place?
- Details of the planned and delivered treatment
- A description of the criteria for checking
- Implications for patient care.

Imaging

Use of images can play an important role in describing an incident. Should you consider it relevant, you could include a screen shot of an anonymised image that the report outlines. Such as, an anonymised CT scan denoting the planning target volume and the area of geographical miss.

Reflection

A valuable piece of information is the anonymised reflections from staff involved in the incident. Meaningful reflections allow those involved to have their voices heard and could reduce the likelihood of the regulator needing speak with staff directly.

Conclusion

The quality of a notification and final report reflects on the organisation and provides an insight into its culture. Therefore, I would encourage everyone to reflect on the content of notification reports to support learning outcomes and reduce incidents in the future. Finally, regulators are happy to provide advice and support on the type of information that would be beneficial to be included in a report.

Learning from good practice – Weekly radiotherapy reviews

Dr Jyotsna Bhudia, Proton Beam Clinical Fellow, UCLH

Weekly on-treatment review clinics have been implemented locally for all patients for a number of years; acting as one of the most fundamental methods of both adverse reaction and adverse event detection (DoL method of detection point MD14a (On-treatment review of patient according to protocol by RT staff) and MD14b (on-treatment review of patient according to protocol by other professional)).

In the photon department, patients are reviewed by the Radiotherapy Review Team, (a combination of nurses and radiographers of various bandings), Clinical Nurse Specialists, Site-Specific Specialist Radiographers, Clinical Oncology Registrars or Consultants. Often these reviews occur in combination with other allied health professionals.

The proton department (PBT) is managed with a similar model, patients are reviewed by one of the staff members above and a Senior PBT Clinical Fellow. These review appointments are booked prior to the patient starting their treatment with each tumour site/treatment modality following a specified and documented review protocol.

During the consultation an electronic site-specific 'toxicity flowsheet' is completed to record any acute radiotherapy toxicity and it is graded according to the common terminology criteria for adverse events (CTCAE) toxicity score with the exception of skin toxicity, which uses Radiation Therapy Oncology Group (RTOG). For each named toxicity, a description of the grade for that toxicity is listed in a drop-down menu to ensure data is recorded accurately and consistently between staff across the multi-disciplinary team.

The list of toxicities is standardised following a common format and is electronically completed by a registered practitioner on EPIC (Electronic Health Record System). As all the data is recoded electronically, it allows for a chronological order of toxicities to be documented, while also allowing the practitioner to review any prior concerns and issues. The use of the electronic forms allows for all this data to be stored in the same place within the system ensuring access to all staff who require it.

Using standardised forms within an Electronic Patient record has ensured that outcome data is consistently captured through the Proton Beam Therapy Department, shortly to be implemented within the Photon Department.

This will contribute to a large dataset that can be used to inform patients and practitioners about frequency and severity of side effects and highlight any unexpected toxicities, hopefully improving information given to future proton beam patients, while

also allowing the service to be able to analyse the effect across all treatment modalities, techniques, ages etc. This will not only help inform patients, but also the service on the best methods and combination of review protocols.

Below is an example of the Electronic flowsheet:

The screenshot displays the 'Flowsheets' section of a clinical software interface. The main table shows data for two time points: 17/03/22 (15:00) and 08/04/22 (14:00). The table is organized into sections: General Review, Affected organs, and Skin (irradiated area). The 'General Review' section includes parameters like 'Type of assessment', 'Treatment breaks to date', 'Patient lost to follow-up', 'Current status', 'ECOG Performance Status', 'Current disease status', 'Local control (primary site)', 'Treatment related secondary malignancy', 'Bone Fractures (any)', 'Currently receiving active treatment for cancer?', 'Diabetes/Pre-Diabetes', 'Known Cancer Syndromes/Radiation Sensitivities', and various symptoms (Fatigue, Somnolence, Nausea, Vomiting, Anorexia, Pain, Constipation). The 'Affected organs' section lists 'Protocol name', 'Additional affected organs - Head', and 'Additional affected organs - Body'. The 'Skin (irradiated area)' section includes 'Early skin toxicity (RTOG)', 'Late skin toxicity (RTOG)', and 'Pruritus'. The right-hand side of the interface shows a 'Type of assessment' dropdown set to 'On treatment', 'Value Information' section with 'On treatment' selected, 'Row Information' section with 'Required during' buttons for 'Baseline', 'On-treat', and 'Follow-up', and 'Last Filed Values (24 hours)' section with 'On treatment' selected.

| | Clinic/Practice V... 17/03/22 15:00 | Clinic/Practice V... 08/04/22 14:00 |
|---|---|---|
| General Review | | |
| Type of assessment | Pre-treatment (...) | On treatment |
| Treatment breaks to date | | 0 |
| Patient lost to follow-up | No | No |
| Current status | Alive | Alive |
| ECOG Performance Status | 0 | 0 |
| Current disease status | Stable disease | Stable disease |
| Local control (primary site) | Yes (no eviden... | Yes (no eviden... |
| Treatment related secondary malignancy | 0 | 0 |
| Bone Fractures (any) | No | No |
| Currently receiving active treatment for cancer? | No | No |
| Diabetes/Pre-Diabetes | No | No |
| Known Cancer Syndromes/Radiation Sensitivities | None | None |
| Fatigue | 0 | 0 |
| Somnolence | 0 | 0 |
| Nausea | 0 | 0 |
| Vomiting | 0 | 0 |
| Anorexia | 0 | 0 |
| Pain | 0 | 0 |
| Constipation | 0 | 0 |
| Chemotherapy given/to be given | No chemothera... | No chemothera... |
| Chemotherapy regime | | |
| Medications to palliate symptoms | | |
| Prescribed steroids | No | No |
| Is the patient prescribed antihypertensives | No | No |
| Is the patient prescribed cholesterol lowering drugs? | No | No |
| Weight (kg) | | 38.8 |
| Weight at last measurement (kg) | | |
| Weight change since last measurement | | |
| Recent FBC | | |
| Recent U&E | | |
| Affected organs | | |
| Protocol name | Brain (skull only) | Brain (skull only) |
| Additional affected organs - Head | Skin;Hair Beari... | Skin;Hair Beari... |
| Additional affected organs - Body | | |
| Skin (irradiated area) | | |
| Early skin toxicity (RTOG) | 0 | 0 |
| Late skin toxicity (RTOG) | 0 | 0 |
| Pruritus | 0 | 0 |

Do you have any **learning from good practice** that you would like to share? Please email radiotherapy@phe.gov.uk with your ideas for inclusion in future editions of a Safer Radiotherapy e-bulletin.

Safer Radiotherapy resources

Safer RT: [triannual error analysis and learning](#) reports contain analysis and learning from RTE reported voluntarily by UK RT providers and the relevant reporting authorities.

Safer RT: [e-bulletins](#) provide key messages from the national patient safety initiative

A series of 15 minute RT [learning resources](#) developed to support RT healthcare professionals in learning from RTE are included on the [Medical Exposures Group webpages](#)

[Towards Safer Radiotherapy](#) contains the classification taxonomy for use when assigning a RTE severity level

[Development of Learning from Radiotherapy Errors](#) provides the pathway coding safety barrier, method of detection and causative factor taxonomies