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 (NHSE) and a lay representative form the Patient Safety in Radiotherapy Steering Group (PSRT) 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) or Learn from Patient Safety Events service (LFPSE) of NHSE or the Once for Wales (OfW) Concerns Management System and 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@ukhsa.gov.uk** for advice on reporting and learning from RTE and with suggestions for the e-bulletin. Published three times a year, the next issue will be shared in September 2023. To subscribe to future editions please follow this link.

Thank you to all RTE reporters who facilitate this work.

Advancing Safer Radiotherapy (ASR) – update

Work to develop guidance for UK radiotherapy stakeholders to support the advancement of safer radiotherapy through the adoption of contemporary thinking in the patient safety field is progressing. Work has commenced on the ten topics included in the guidance, these are as follows –

- Ongoing value of Towards Safer Radiotherapy (TSRT)
- Safety culture
- Shared learning from a radiotherapy incident learning system
- Use of radiotherapy error data
- Advancing Safety principles
- Effective preventative actions
- Patient Safety Incident Response Framework (including incident investigation)
- Patient comfort
- Patient engagement in safety
- Review of RTE Taxonomies

If you would like to share any examples of patient engagement in patient safety with the ASR sub group on patient engagement in safety please email: **radiotherapy@ukhsa.gov.uk**

Many thanks to all those who are taking this work forward. Further updates on this work will be shared in future e-bulletins.

National aggregate RTE data

The radiotherapy reporting and learning system supports a risk based approach to improving patient safety. The Safer Radiotherapy publications include trend analysis of the national data to facilitate a comparison of locally identified trends against the national picture.

To better support RT providers with trend comparison, the UKHSA will now produce national aggregate RTE data on an annual basis. The national data will be available per calendar year going forward as an Excel spreadsheet and will include:

- Data quality of aggregate RTE reports
- Number and classification level of RTE reports per provider
- Number and classification level of aggregate RTE reports per month
- Classification level of aggregate RTE reports
- Process subcodes of aggregate RTE reports
- Failed safety barriers of aggregate RTE reports
- Causative factors of aggregate RTE reports

The data for January to December 2022 is now available. If you are a RT provider, reporting to the national radiotherapy reporting and learning system and would like to receive this dataset, please email **RTEdata@ukhsa.gov.uk** with the following:

- Organisation name
- How you propose to use the national aggregate RTE data

Independent providers RTE data submission

The first RTE data submissions have now been received from the independent sector. These RTE submissions are included within the national database to share learning across the UK.

If you are an independent provider and would like to report RTE please contact **radiotherapy@ukhsa.gov.uk**

LFPSE data received

The first data from a RT provider has been received through the Learn from Patient Safety Events service (LFPSE). This system will replace the NRLS in Autumn 2023.

All providers reporting through the NRLS and LFPSE are encouraged to include the RTE taxonomies within their open text field.

ARSAC notes for guidance update

The latest version of the ARSAC Notes for Guidance Feb 2023 is now published and can be found here. The following updates are of note:

- Updates to guidance on pregnancy checking
- Information on including wider scientific support in employer application
- Additional information on renewal of licences for employers and practitioners

Following the launch of notifications onto the ARSAC online portal, all types of employer, practitioner and research applications to ARSAC should now be submitted online. Guidance on how to use the ARSAC online portal and the requirements for each application type can be found on the ARSAC website.
For general enquiries relating to ARSAC please email **arsac@ukhsa.gov.uk**.

National incident learning system for clinical imaging and nuclear medicine

The Clinical Imaging Board (CIB) 'Learning from ionising radiation dose errors, adverse events and near misses in UK clinical imaging departments' was published in June 2019. The CIB agreed to support the national data collection and analysis of diagnostic and nuclear medicine incident and near miss events. It was agreed this work would be coordinated by UKHSA with input from the professional bodies and oversight provided by the CIB.

UKHSA has adopted a phased approach to taking this work to a national level and is currently reviewing and testing the incident coding taxonomy and associated guidance with expertise from a multidisciplinary working party.

It is recognised there are variations in how nuclear medicine imaging and MRT are delivered across the UK. The working party has sought feedback from IPEM, the Intercollegiate Standing Committee in Nuclear Medicine and the devolved authorities about where incidents from MRT should be reported.

The option of developing a bespoke incident learning system specific to nuclear medicine was not considered feasible due to several factors including, potential confusion for hybrid imaging having separate systems, a lack of additional funding to support this, and the fact that most nuclear medicine services are under radiology management. The working party also agreed that if a nuclear medicine taxonomy was developed, it would be very similar to the clinical imaging taxonomy, with a few codes removed. This would therefore be a suitable for use for any nuclear medicine incidents.

The options considered by the working party were as follows:

- Updating the clinical imaging taxonomy to include incidents from MRT so that all incidents from nuclear medicine are reported in this single system. The clinical imaging taxonomy has been developed with input from nuclear medicine professionals and could be implemented to include MRT
- Updating the radiotherapy taxonomy to include incidents from MRT so that all therapeutic incidents are reported in a single system. Incidents from diagnostic nuclear medicine would be reported through the clinical imaging taxonomy

The MRT clinical pathway is different to that from external beam radiotherapy and brachytherapy and the current radiotherapy taxonomy does not include codes that would be appropriate for reporting incidents within the MRT pathway. Work to update the radiotherapy taxonomy would require planning, coordination, and support of the Patient Safety in Radiotherapy Steering Group. This group has noted the work of the working party and is content for MRT incidents to be reported through the CIB route.

In general, the feedback has been supportive of including analysis of MRT incidents but there has been no consensus on the two options considered. On this basis, the working party adopted option 1 to enable incidents from MRT to be reported within the clinical imaging taxonomy.

Those MRT providers currently reporting through the radiotherapy error (RTE) reports for national learning should continue to do so until reporting mechanisms are in place for clinical imaging and nuclear medicine.

New UKHSA reporting resource available - Brachytherapy

A series of 15-minute presentations which introduce the national approach to learning from RTE are available to RT healthcare professionals.

A new presentation on the analysis of brachytherapy associated RTE is now available. Topic suggestions can be emailed to **radiotherapy@ukhsa.gov.uk**.

The appropriate use of authorisation guidelines in brachytherapy

IR(ME)R states that an exposure to ionising radiation cannot take place unless the referral has been justified and authorised (Reg 11(1)(c)).

- Justification is the responsibility of the practitioner, and in the case of brachytherapy treatments, the practitioner must hold an ARSAC practitioner licence (IR(ME)R Regulation 5).
- Authorisation is a process separate to justification, and is the documentation confirming that justification has taken place.

Where it is not possible for the practitioner to authorise every exposure, they may issue written authorisation guidelines to allow appropriately trained and entitled operators to authorise these exposures (IR(ME)R Regulation 11(5)). Authorisation may be carried out by either a practitioner or an operator in accordance with the authorisation guidelines. Practitioners and operators should be entitled to authorise referrals following the employer's procedures. A letter from the practitioner permitting an operator to authorise under their practitioner licence is **not** sufficient to meet the requirements of IR(ME)R.

An ARSAC practitioner licence is not required for individuals who authorise exposures according to authorisation guidelines or who perform other practical aspects of the exposure such as treatment planning, insertion, and clinical evaluation. Authorisation guidelines should be written within the local protocols and available to the operator following the authorisation guidelines. Further detail on authorisation guidelines, can be found in the IR(ME)R implications for clinical practice in RT **guidance**.

SAUE guidance update, April 2023

The criteria for making a notification to the appropriate enforcing authority has been updated. This includes revised codes and amendments to notification criteria for radiotherapy.

There is no change to the threshold relating to verification images in a single fraction. However, the thresholds for notifications relating to imaging exposures over the course of treatment have changed. Further detail including examples can be found here**.**

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, provide learning and feedback. The latest case study RO-ILS Case Study 14 describes an event in which the maximum dose of the plan sum was less than the two individual treatment plans.
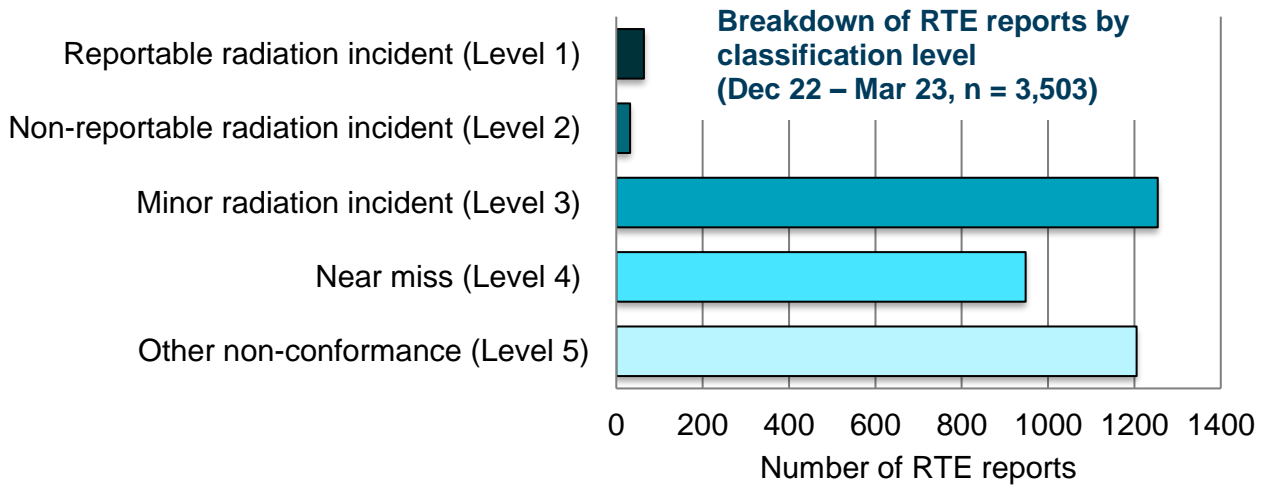
Autorité De Sûreté Nucléaire (ASN) (French Nuclear Safety Authority) Publications for Professionals contain patient safety messages and experience feedback

RTE data analysis – December 2022 to March 2023

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.
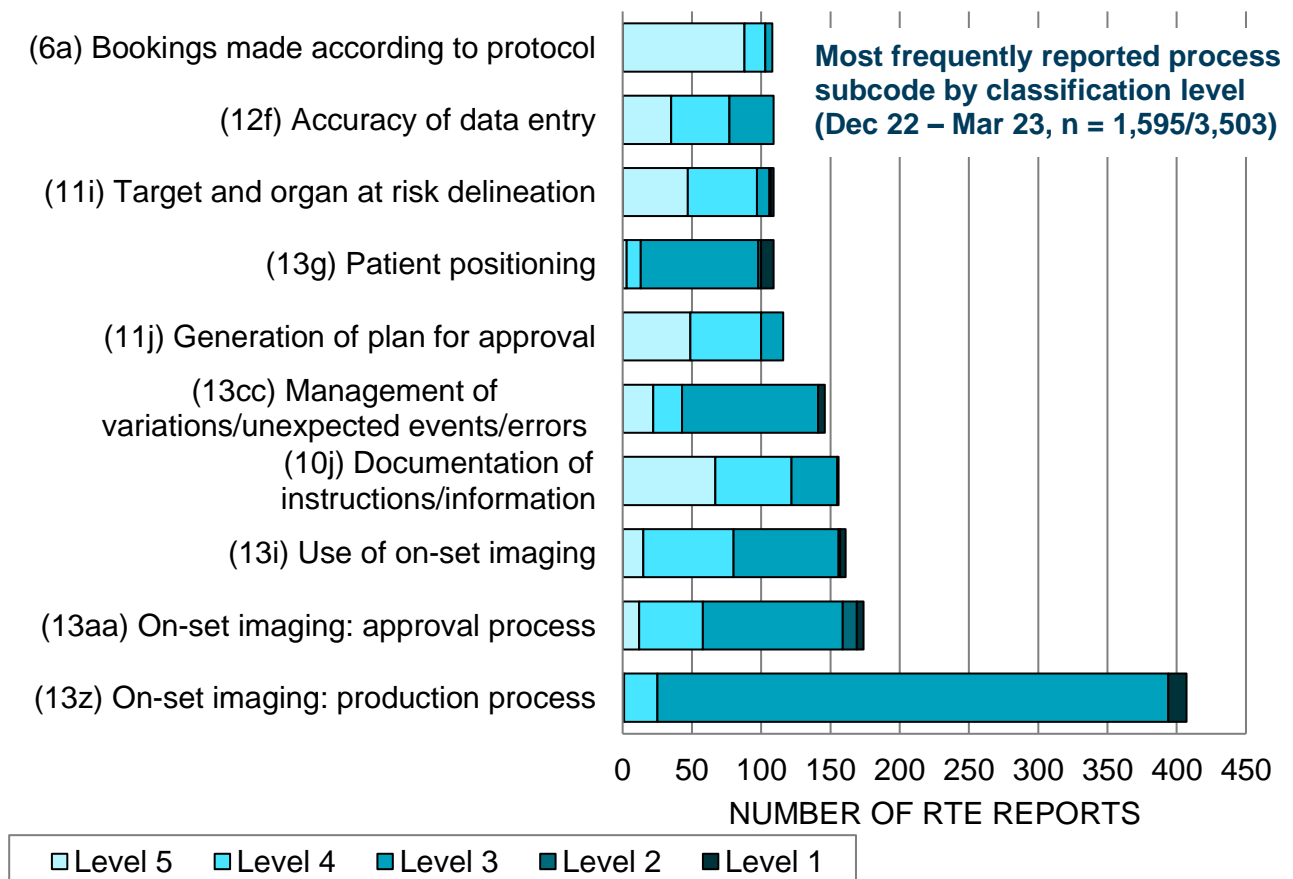
Classification (Level) of RTE

Of those 3,503 RTE reported, 3,407 reports (97.3%) 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 or their outcome.

Breakdown of RTE reports by classification level (Dec 22 – Mar 23, n = 3,503)

Reportable radiation incident (Level 1)
Non-reportable radiation incident (Level 2)
Minor radiation incident (Level 3)
Near miss (Level 4)
Other non-conformance (Level 5)

Number of RTE reports

Primary process subcode

The most frequently reported points in the patient pathway where the RTE occurred are shown below. This is broken down by classification level. Consistent with the previous analysis 'on-set imaging: production process' was the most frequently reported process code (11.6%, n = 407/3,503).

Most frequently reported process subcode by classification level (Dec 22 – Mar 23, n = 1,595/3,503)

(6a) Bookings made according to protocol
(12f) Accuracy of data entry
(11i) Target and organ at risk delineation
(13g) Patient positioning
(11j) Generation of plan for approval
(13cc) Management of variations/unexpected events/errors
(10j) Documentation of instructions/information
(13i) Use of on-set imaging
(13aa) On-set imaging: approval process
(13z) On-set imaging: production process

NUMBER OF RTE REPORTS

□ Level 5   □ Level 4   ■ Level 3   ■ Level 2   ■ Level 1

Failed Safety barriers (FSB)

Multiple FSB can be attributed to each individual RTE. A total of 2,241 FSB were identified across all the RTE reported. The most frequently reported FSB can be seen below. Treatment unit process 'use of on-set imaging' was the most frequently reported FSB (10.6%, n = 238).

Most frequently reported FSB (Dec 22 – Mar 23, n = 1,466/2,241)
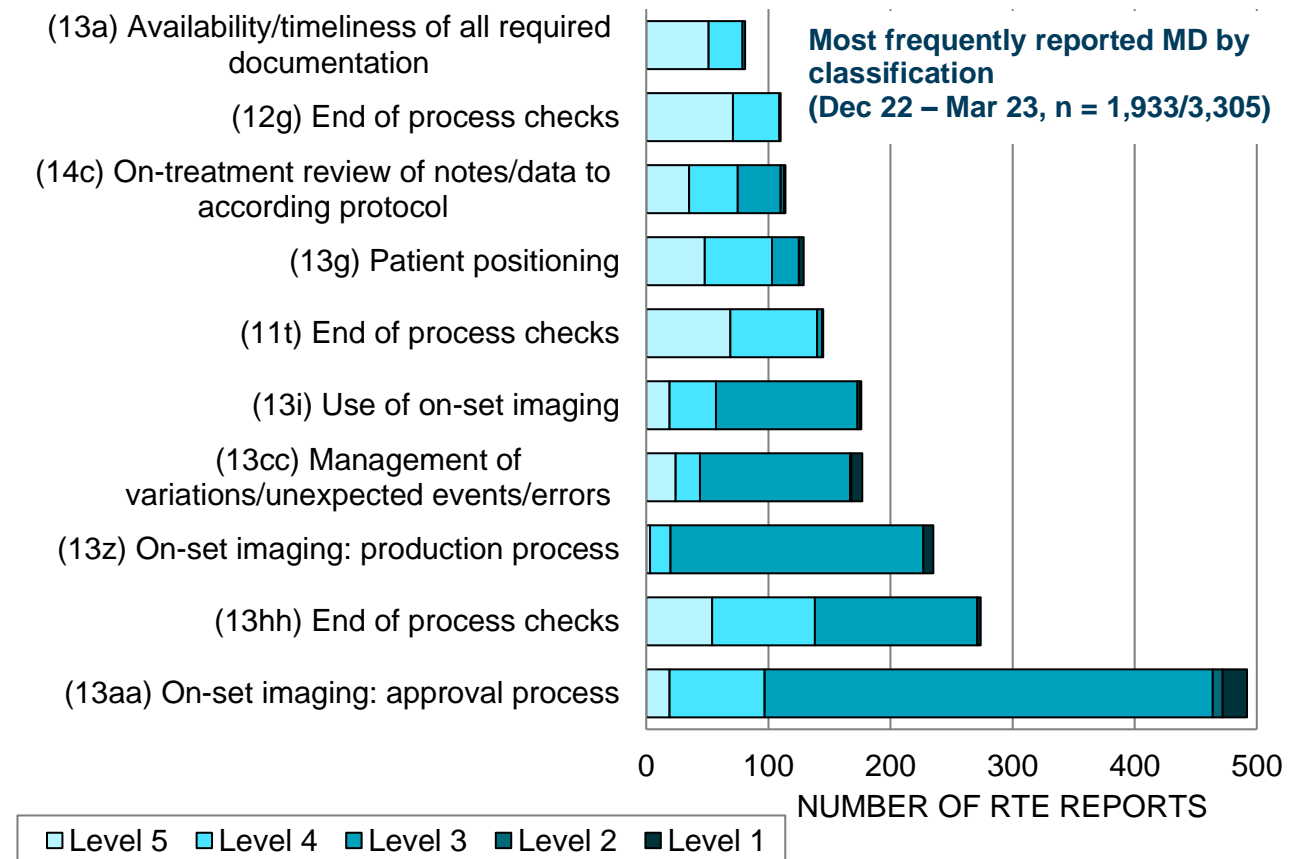
Category	
(4j) Consent process and documentation	
(20a) Availability of staff with competency appropriate to procedure	
(11n) Recording of patient specific instructions	
(10l) End of process checks	
(13hh) End of process checks	
(12g) End of process checks	
(11t) End of process checks	
(13cc) Management of variations/unexpected events/errors	
(13aa) On-set imaging: approval process	
(13i) Use of on-set imaging	

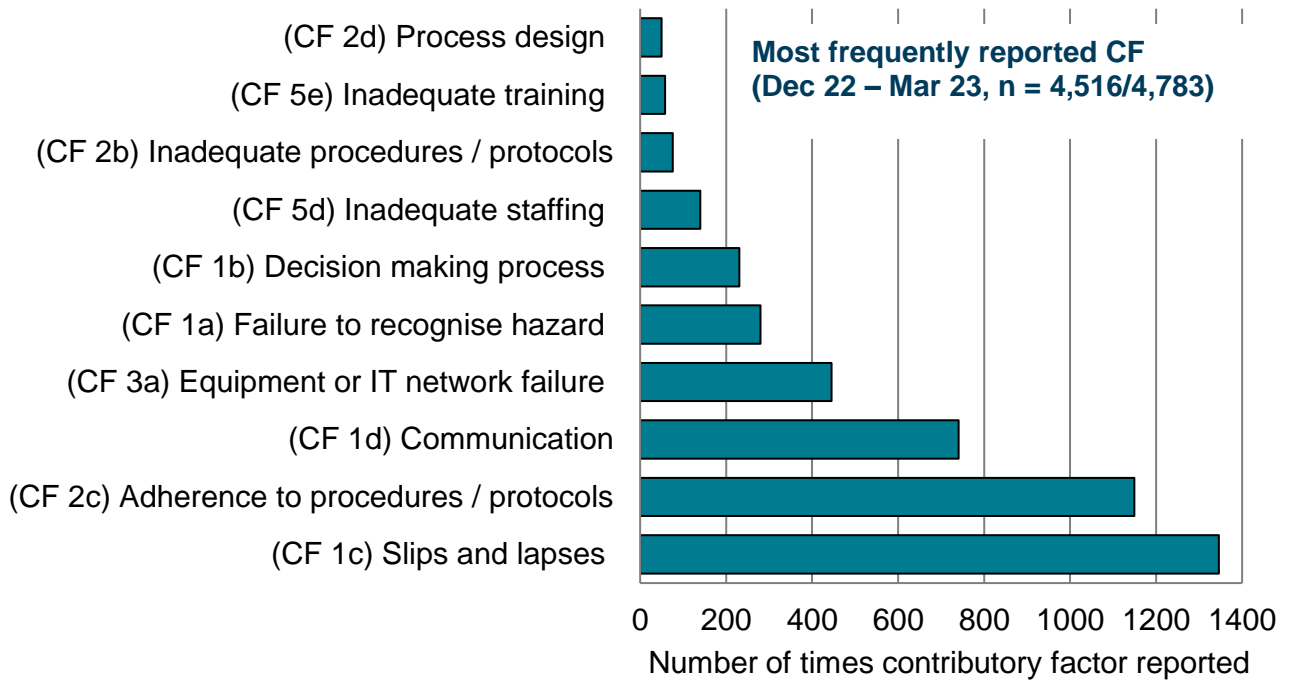Number of RTE reports

Method of detection (MD)

For this reporting period 3,305 reports included MD coding or data. The most frequently reported MD was 'on-set imaging: approval process' (14.9%, n = 492).

Most frequently reported MD by classification (Dec 22 – Mar 23, n = 1,933/3,305)

Category	
(13a) Availability/timeliness of all required documentation	
(12g) End of process checks	
(14c) On-treatment review of notes/data to according protocol	
(13g) Patient positioning	
(11t) End of process checks	
(13i) Use of on-set imaging	
(13cc) Management of variations/unexpected events/errors	
(13z) On-set imaging: production process	
(13hh) End of process checks	
(13aa) On-set imaging: approval process	

NUMBER OF RTE REPORTS
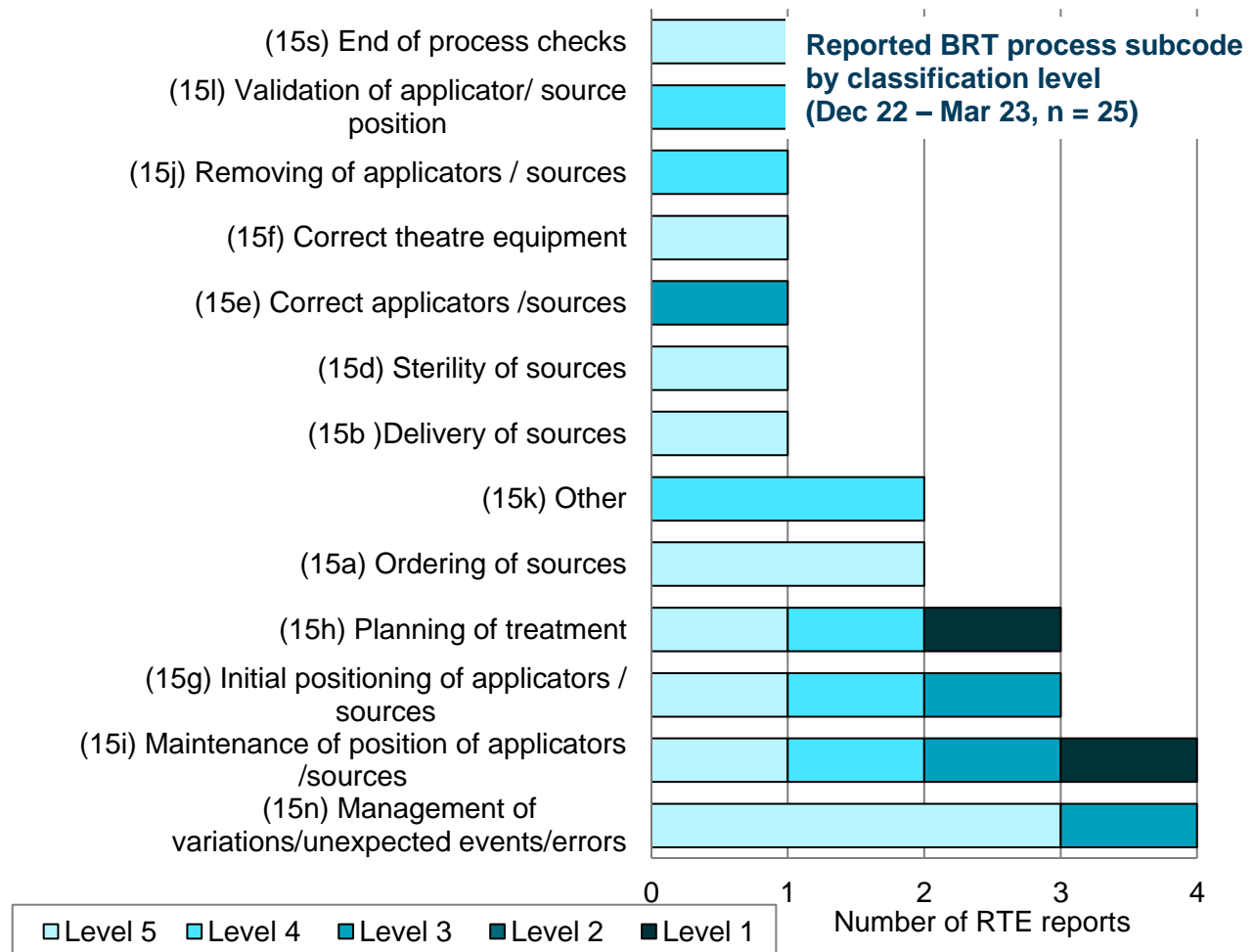
☐ Level 5 ☐ Level 4 ☐ Level 3 ■ Level 2 ■ Level 1

Contributory Factors

Each RTE can be assigned multiple CF codes. A total of 4,783 CF were reported in this period. The most frequently reported CF was individual 'slips and lapses' at 28.1% (n = 1,346).

Most frequently reported CF (Dec 22 – Mar 23, n = 4,516/4,783)

Contributory Factor	
(CF 2d) Process design	
(CF 5e) Inadequate training	
(CF 2b) Inadequate procedures / protocols	
(CF 5d) Inadequate staffing	
(CF 1b) Decision making process	
(CF 1a) Failure to recognise hazard	
(CF 3a) Equipment or IT network failure	
(CF 1d) Communication	
(CF 2c) Adherence to procedures / protocols	
(CF 1c) Slips and lapses	

Number of times contributory factor reported (0 – 1400)

Brachytherapy RTE

RTE coded with BRT process subcodes as the primary code accounted for 0.7% (n = 25) of reports. The most frequently reported BRT RTE was 'management of variations' at 20.0% (n = 5).

Reported BRT process subcode by classification level (Dec 22 – Mar 23, n = 25)

BRT process subcode	
(15s) End of process checks	
(15l) Validation of applicator/ source position	
(15j) Removing of applicators / sources	
(15f) Correct theatre equipment	
(15e) Correct applicators /sources	
(15d) Sterility of sources	
(15b)Delivery of sources	
(15k) Other	
(15a) Ordering of sources	
(15h) Planning of treatment	
(15g) Initial positioning of applicators / sources	
(15i) Maintenance of position of applicators /sources	
(15n) Management of variations/unexpected events/errors	

Number of RTE reports (0 – 4)

Legend: □ Level 5   □ Level 4   ▣ Level 3   ▣ Level 2   ■ Level 1

Number of brachytherapy reports and providers

Over the past ten years there has been an increase in reporting of brachytherapy (BRT) associated RTE which are shown in the bars on the chart. This increase continued until 2019 when there was a drop in reporting between 2020 and 2021, this is believed to be due to COVID, there has since been an increase in reporting again in 2022. The number of providers has followed a similar pattern, as shown as the line on the chart, there were 27 providers who reported BRT associated RTE in both 2019 and 2022.

It is recommended all RT providers who carry out BRT procedures also report all BRT associated RTE.
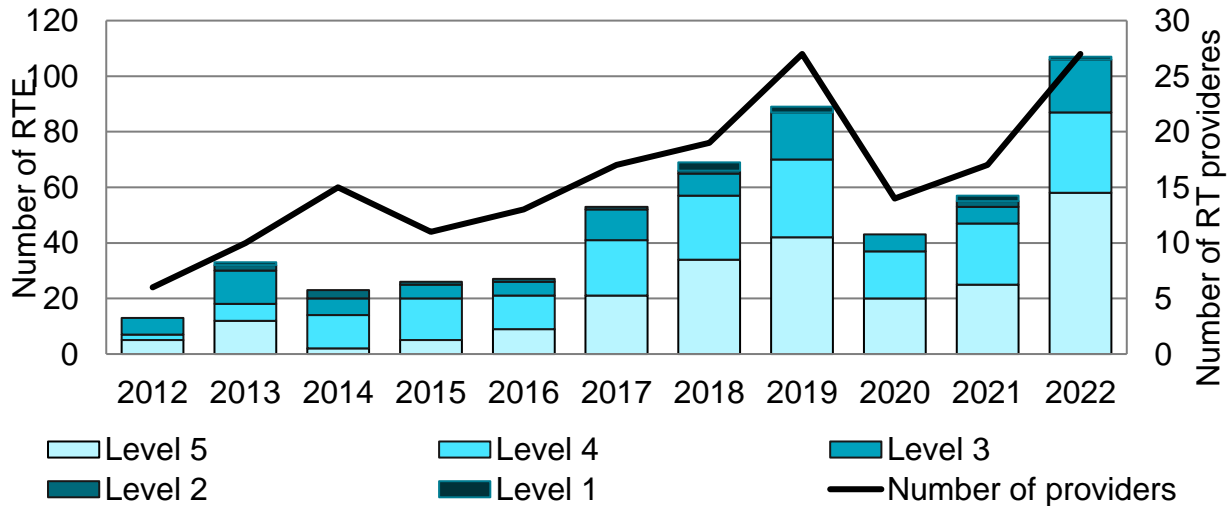
Monitoring of RTE coding by RT providers

All providers are asked to apply a trigger code, classification, pathway coding (including failed safety barriers), method of detection and causative factor coding 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/ 15h/ 15s/ MD15s/ CF1a/ CF2c

The application of these taxonomies by provider for RTE reported between December 2022 and March 2023 (n = 3,503) can be seen below.
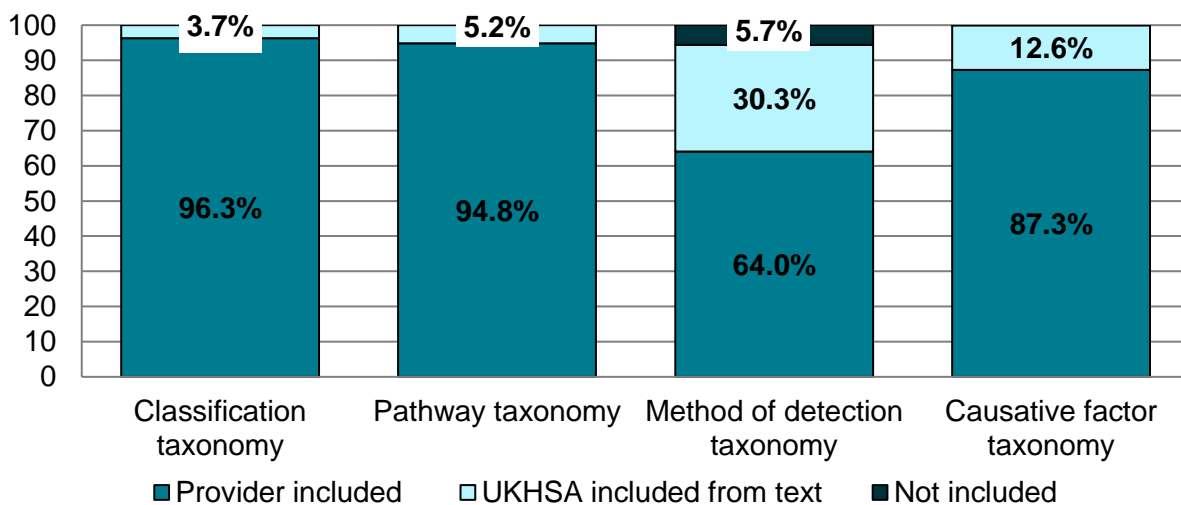
Thanks to all those that apply the coding locally and include it in submissions to UKHSA. There has been an increase in the inclusion of MD from 53.3% to 64.0%. Please email **radiotherapy@ukhsa.gov.uk** with any queries about this and particularly with any issues with the application of any of the coding.

Guest editorial:
The benefits of using on-line communication within the brachytherapy team, Clatterbridge Cancer Centre

Christopher Lee, Lead consultant clinical scientist and RPA and Louise Bagley, Radiotherapy treatment expert practitioner,

Our brachytherapy team has been using online team communication since the pandemic started, originally set up to aid communication for remote working when restrictions were in place as traditionally the teams sat and worked in very close proximity to each other. The team now use a hybrid working model with those required being back together in the department and others, where appropriate, working remotely. The online team communication supports our paperless workflows and the whole MDT including clinicians, radiographers, physics and theatre practitioners who can access the online communication space and contribute to the shared information. Whilst adhering to information governance requirements, it allows the team to communicate in real time about any information that is pertinent to the brachytherapy list for the day and provides a 'running commentary' of the various stages of the processes and treatments thereby providing constant communication updates enabling an efficient use of staff time.

The initial online communication posted on the morning of the treatment day includes the specific team members for the day, their roles and responsibilities. This allows the whole team to be aware of the key staff involved and ensures the relevant staff can be contacted directly. Any changes to the list or cancelations can be communicated immediately. This includes any delays and issues with the patient pathway such as extended recovery requirements, delays or breakdown of the imaging equipment or forewarning that any key element of the treatment process such as contouring, planning, approval tasks or treatment plans will be ready imminently so the relevant staff can be prepared and anticipate their next tasks in good time. Alternatively, staff are able to take breaks where appropriate or perform other tasks as allowed by the estimated time until their next brachytherapy task is due. This creates a dynamic and agile team who are able to respond to the complexities of brachytherapy treatment pathways and maximise the use of available staffing resources. During planning, physicists often use the online communication channel for queries or to ask for clinician support to review difficult plans. This enables the relevant people to facilitate timely discussions efficiently rather than wandering around the hospital looking for colleagues. The channel is also used to request when patients require medical review during the pathway or if technical or managerial support is required across the service.

At the end of the working day, communication is sent when all patients have been treated so those on brachytherapy duty are aware that the session has finished. Finally, regardless of the challenges faced on the day, thanks, praise and complements are posted by contributing team members creating a fantastic team spirit helping to engender excellent team morale.

Dates for the diary	
RCR, Clinical oncology quality improvement and audit forum	13 June, London
IPEM, Automation in RT treatment planning	29 June, TBC
IPEM, Quality improvement in RT	14 September, TBC
BIR, IR(ME)R update	28 September, London
RCR, Annual conference 2023	12-13 October, Birmingham

Rad Chat

Naman Julka-Anderson, Macmillan Treatment Review Radiographer and national AHP clinical advisor for Macmillan Cancer Support

Rad Chat is the multi-award winning first therapeutic radiographer led, oncology podcast, designed for cancer patients, healthcare professionals and academics. Winning regional and UK team of the year with the Society of Radiographers along with being awarded a patient-centred care award by the European Federation of Radiological Societies for the whole of Europe.

Hosted by Naman Julka-Anderson and Jo McNamara, both therapeutic radiographers who have unique backgrounds, bringing specialist knowledge and skills to the conversation. Naman also recently won London and UK radiographer of the year with the society of radiographers.

This podcast is designed to educate and inform healthcare professionals working in oncology and is accredited by the Society and College of Radiographers as Continual Professional Development (CPD Now). Alongside every podcast are reflective questions and links to resources and research. The podcast is an easily accessible platform to promote the profession and share patient stories and experiences.

Rad Chat is being listened to in 96 countries worldwide with over 22,000 downloads across subscribed podcasting platforms. Rad Chat also operates a range of content across all the social media platforms making the content widely accessible to a broad audience, encompassing patients, students, industry, and a variety of oncology healthcare professionals. We have averaged over 60,000 engagements on social media through our content with humbling feedback from patients on how our content has supported them through their treatment.

Find Rad Chat podcast on all social media platforms @Rad__Chat and on all podcast library platforms. Free educational access via the website: https://linktr.ee/radchat. Feel free to email about suggestions, collaborations, or sponsorship opportunities to **rad_chat@outlook.com**.

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
Safer RT: biennial error analysis and learning reports contain 2 years analysis and learning from RTE reported voluntarily by UK RT providers and the relevant reporting authorities.
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