

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. Providers reporting through the NRLS will note the new Learning from Patient Safety Events Service (LFPSE), further information can be seen within this e-bulletin. 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 May 2022. To subscribe to future editions please follow this [link](#). Please email radiotherapy@phe.gov.uk for advice on reporting and learning from RTE and with comments or inclusions for the e-bulletin.

Thank you to all RTE reporters who facilitate this work.

UKHSA update

To reflect the transition of PHE into UHSA, new [UKHSA webpages](#) will be established on 31st January for all new [Safer Radiotherapy](#) publications. Previous Safer Radiotherapy reports will continue to be available via links on the new UKHSA pages. New contact email addresses will be shared in the May e-bulletin.

Medical Exposures Group (MEG) Webpage

The MEG webpages have been developed to share the work of the group in improving patient safety in medical exposures. All [Safer RT e-bulletins](#) and newsletters will be available on the [MEG webpage](#) going forward.

Some new learning resources are under development 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. The first two are now available on the [MEG webpage](#):

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

These presentations have been developed with the support of the PSRT, colleagues at the Christie Education Team, Manchester and the Ninewells Radiotherapy Department, Dundee. Special thanks to Alison Savannah and Gareth Hill for their input. Additional presentations will be available shortly.

HEE Launch training programme

Health Education England (HEE) in partnership with the Academy of Medical Royal Colleges and NHS England and NHS Improvement have launched a [training programme](#) in Levels 1 and 2 of the NHS [patient safety syllabus](#), as free e-learning resources. Level 1 (Essentials) is designed to introduce all staff in the NHS to key patient safety concepts; while level 2 (Access to Practice) provides more detailed training in those areas for those who wish to progress further.

New webpages from NHS National Patient Safety Team

New 'Using patient safety events data to keep patients safe' web pages are now available from the NHS National patient safety team. The pages include information about collecting patient safety events and issues which have been addressed through review and response work. The new webpages also feature a range of [case studies](#) providing examples of where action has been taken to address these issues.

Patient Safety Specialists are individuals who have been designated to provide patient safety leadership. NHS England have now updated their the [Patient Safety Specialists webpage](#) to reflect more on the role the specialists play in supporting local and national efforts to improve patient safety.

HSIB publish national learning report

The Healthcare Safety Investigation Branch (HSIB) have published a [thematic analysis](#) of HSIB's first 22 national investigations. The publication defined a safety management system as an 'organised approach to managing safety'. It reported the implementation of safety management systems enabled a 'prioritisation of actions to address safety issues and effectively manage resources'. Within the thematic analysis 85 safety recommendations were grouped into 6 categories: identification of patient safety hazards, improving the management of known patient safety risks, monitoring of patient safety performance, evaluation of patient safety interventions, training and education for patient safety and promotion of patient safety

SoR publish inclusive pregnancy status guidance

The Society of Radiographers (SoR) have published [inclusive pregnancy status guidance](#) and associated resources. The associated resources include an Inclusive Pregnancy Status (IPS) form for radiotherapy, patient questionnaires, patient information leaflets and patient poster. The aim of the publication is to support services to comply with the requirements of IR(ME)R in an inclusive way.

Advancing Safer Radiotherapy

The PSRT are developing new guidance for UK RT staff to support the advancement of safer radiotherapy through the adoption of contemporary thinking in the field of patient safety. In these early stages the PSRT would like to invite any topics for inclusion. Please email topics for inclusion to radiotherapy@phe.gov.uk.

Dates for the diary

BIR Annual Radiotherapy and Oncology Meeting	31 March -1 April, London
ESTRO 2022	6-10 May, Copenhagen and virtual
SRP Annual Conference	14-16 June, Llandudno

End of process checks (EOP)

The Safety Barrier (SB's) EOP occur at the end of each discrete part of the pathway. A recent review of SB within the RTE data was carried out. This highlighted that EOP from across the pathway was the largest proportion of failed SB and method of detection (MD). The PSRT are working to better understand the efficacy of EOP and are grateful to the Midlands Organisation of Specialists in Quality Improvement for Therapeutic Oncology (MOSQUITO) group for supporting a review of end of process checks. Any learning will be shared in the May Safer RT e-bulletin.

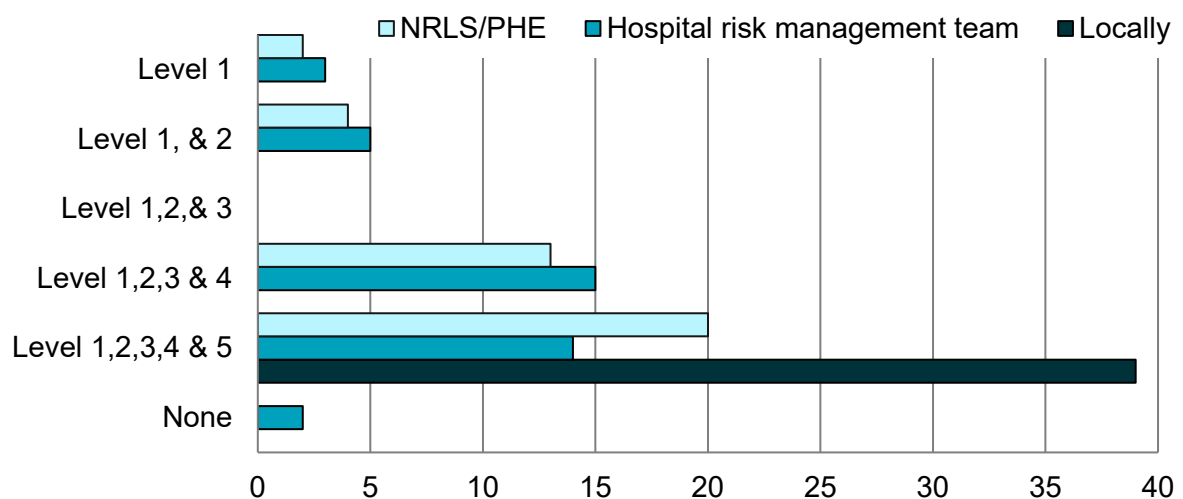
RTE reporting culture survey 2021

A national survey of radiotherapy errors and near miss (RTE) reporting culture was deployed to all RT providers in August 2021. The purpose of the survey was to identify current trends in reporting to the voluntary national reporting and learning system.

There was a positive response rate of 62.3% (43/69). However, not all respondents completed all questions in the survey. From the 43 respondents 18.6% (n = 8) still utilised both a paper and electronic incident learning system (ILS). 81.4% (n = 35) utilised Datix (non-web) locally and 74.4% (n = 32) at a hospital risk management level. At time of responding, only 16.3% (n = 7) of the 43 respondents utilised one of the LFPSE compliant risk management systems locally and 18.6% (n = 8) at a hospital risk management level. 64.3% (n = 27/42) stated their local ILS was linked for data transfer to the risk management ILS.

A total of 83.7% (n = 36) of respondents, indicated they had a dedicated member of staff to oversee RTE reporting and analysis. 75.8% (n = 25/33) stated they had a quality manager. Multiple staff were reported to support this work by 21.2% (n = 7) respondents.

As seen in figure 1 below, all 39 respondents report all levels of RTE locally. Only 35.9% (n = 14) reported all levels of RTE to their hospital risk management team, or similar. Rationale for not reporting all levels includes resource required, utilisation of dual reporting systems and time required for reporting level 5 RTE. 51.3% (n = 20) respondents stated they sent all levels of RTE for inclusion in the national database. Of the 39 respondents 59.0% (n =23) analysed their local RTE once a month.



Further comments from this survey indicated that a number of respondents share learning via meetings and emails. Respondents utilising systems which are not linked stated they would be able to report more levels of RTE if the systems were linked.

CQC publish annual IR(ME)R report

The Care Quality Commission (CQC) have published their annual IR(ME)R report. The report includes information on notifications, inspections and enforcement and key themes across the different modalities. The report also provides data on the number and type of statutory notifications of errors.

Clinical Oncologist entitlement under IR(ME)R

There is a requirement under IR(ME)R for the employer to identify individuals entitled to act as referrer, operator or practitioner within a defined scope of practice.

Entitlement refers to the process where individuals are authorised as duty holders to undertake the tasks of referral, justification or specific tasks to underpin the safe planning and delivery of radiotherapy. An individual may be entitled to act as more than one duty holder and all of this needs to be recorded locally. The entitlement process should ensure individuals have an up to date scope of practice for each area. This should be reviewed and updated to include new skills and to remove skills individuals are no longer competent to undertake.

Guidance on entitlement is provided in IR(ME)R: Implications for Clinical Practice in Radiotherapy.

Below is an example of how an entitlement matrix for a clinical oncologist could be presented but please note this is not a comprehensive list.

	Treatment sites			
Radiotherapy tasks	Simple Palliation	Radical Lung	VMAT Lung	SABR Lung
Referrer (supplies sufficient clinical information to allow justification of the medical exposure)				
Pre-treatment planning exposures; (e.g. CT scan)	AA, BB, CC	AA	AA	AA
Radiotherapy treatment exposure	AA, BB, CC	AA	BB	CC
Verification images (e.g. CBCT/ EPI)	AA, BB, CC	AA	BB	CC
Re planning (e.g. CT scans)	AA, BB, CC	AA	BB	CC
Practitioner (considers the benefit and risk of the medical exposure and justifies that exposure)				
Pre-treatment planning exposures (CT scan)	AA, BB, CC	AA	BB	CC
Prescribe radiotherapy treatment exposures (benefit/risk analysis)	AA, BB, CC	AA	BB	CC
Verification images (CBCT/ EPI)	AA, BB, CC	AA	BB	CC
Re planning (CT scans)	AA, BB, CC	AA	BB	CC
Operator (carries out the practical aspects associated with the medical exposure)				
Clinical mark up of patients for RT	AA, BB, CC	AA	BB	CC
Define volumes and structures in treatment planning system (TPS)	AA, BB, CC	AA	BB	CC
Review & approve volumes and structures in TPS	AA, BB, CC	AA	BB	CC
Review & approve RT treatment plans	AA, BB, CC	AA	BB	CC
Clinical patient review	AA, BB, CC	AA	BB	CC
Review of verification images	AA, BB, CC	AA	BB	CC
Clinical Director or nominated Clinical Oncologist IR(ME)R lead entitlement signature.....date.....				

Update from the IPEM Radiotherapy Imaging Dose Working Party

The working party would like to thank all the contributors from across the UK who submitted data to the verification imaging dose audit (primarily CBCT data). The working party received over 80 spreadsheet submissions from 63 different UK radiotherapy centres, this demonstrates how important this kind of work is.

Analysis of this data continues as quickly as we can manage in what is proving to be a very challenging time. The working party is meeting every three weeks to discuss progress. Most of the initial data analysis is complete on the seven clinical sites that were involved in the audit, which includes bringing together the data from both Varian and Elekta systems, common threads have been identified. These require further study, and in some cases centres will be receiving requests for clarification on the data that was submitted, or to provide additional information to aid the final analysis. It would be greatly appreciated if centres could provide a prompt response to such requests so that we can bring this project to a conclusion.

The work has been presented at a couple of online meetings through the pandemic (most recently at the BIR IR(ME)R update meeting in September 2021) and overall seems to have been met with a positive response. Whilst it is still early days, the main broad trends that are being identified are:

- There is a large degree of variability in dose indices between Elekta users, which for the most part are lower than the vendor default settings
- There are noticeable differences in collimation settings between vendors. Whilst the technology differs between Elekta (fixed collimator inserts) and Varian (variable jaw positions), scan lengths for the same site can be quite different between systems. Varian users generally appear to just run all scans at the default (maximum) scan length, whilst Elekta users tend to vary more by clinical indication.
- Varian users mostly use the vendor default settings for all patients. A significant minority have also developed size based protocols with selection criteria that on average result in a dose reduction to the standard size patient (whilst allowing higher doses where required on the largest obese patients). The use of size based protocols on Elekta systems was a lot less common.

It is still hoped that the data will be published very soon, but this will be subject to follow up data submissions and clarifications, alongside general workload for the working party. Careful thought will need to be put into whether it is appropriate to set any national dose reference levels at this time (like we did with the planning CT audit), or if the work is published as a 'best practice' guide and reference data source (with a view to setting NDRLs in a future audit).

Thanks again to everyone for your patience.

Tim Wood, Rebecca Lindsay, Matthew Williams, Rosaleen Plaistow, Anne Davis and James Earley. IPEMRTimaging@gmail.com

Review of molecular radiotherapy services in the UK published

The RCR, Royal College of Physicians, IPEM and the British Nuclear Medicine Society have published a document which reviews the present state for the [provision of molecular radiotherapy services](#) across the UK.

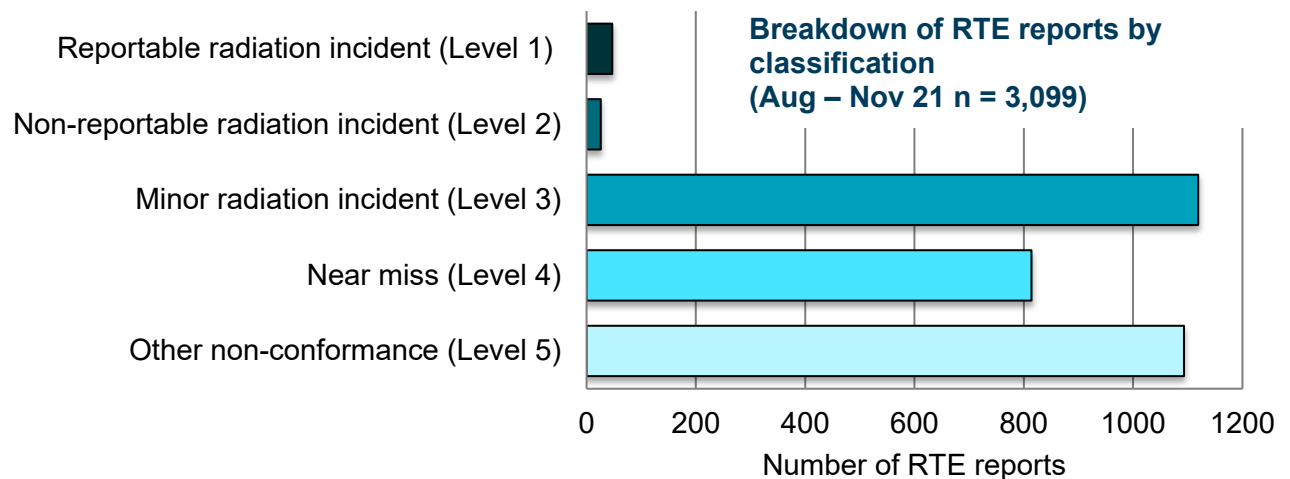
RTE data analysis

August to November 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.

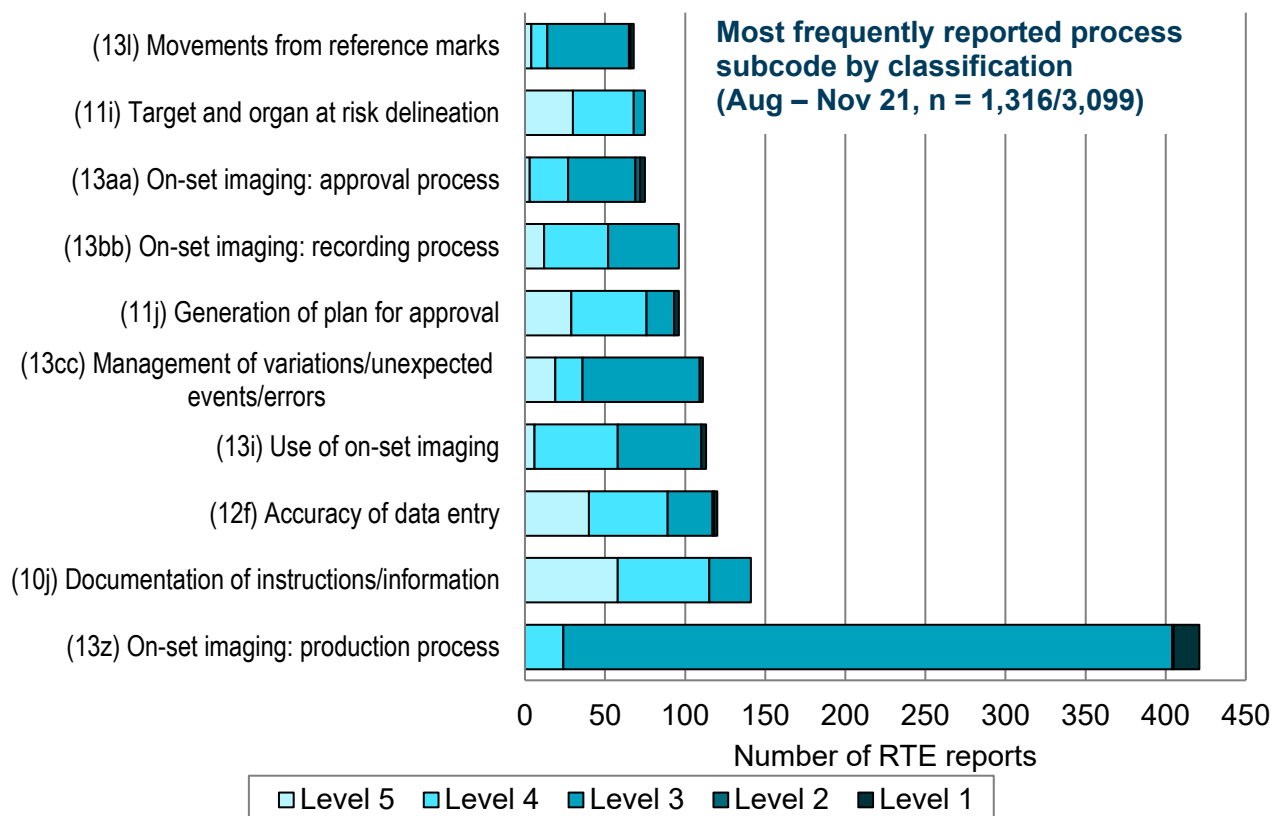
Classification (Level) of RTE

Of those 3,099 RTE reported, 3,026 reports (97.6%) were classified as minor radiation incidents, near misses or other non-conformances (Level 3-5). These would have no significant effect on the planning or delivery of individual patient treatments.



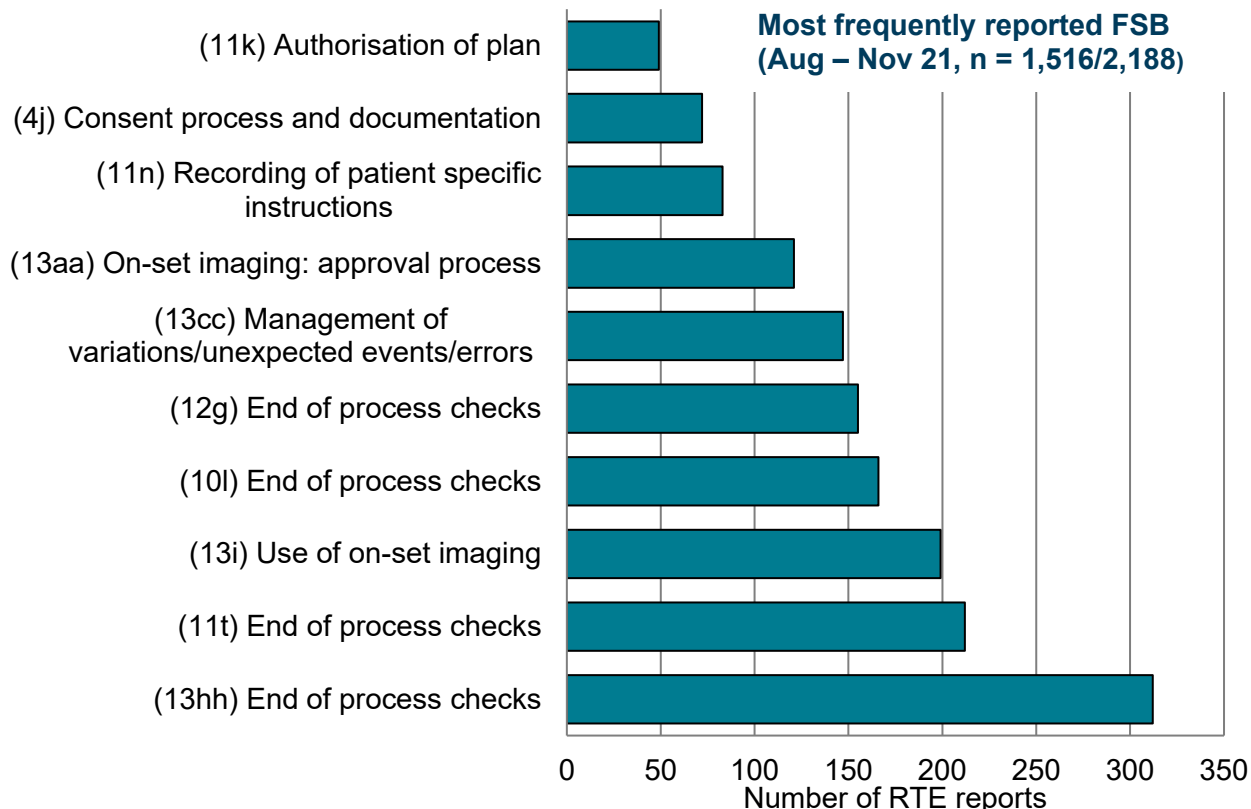
Primary process subcode

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 (13.6%, n = 421).



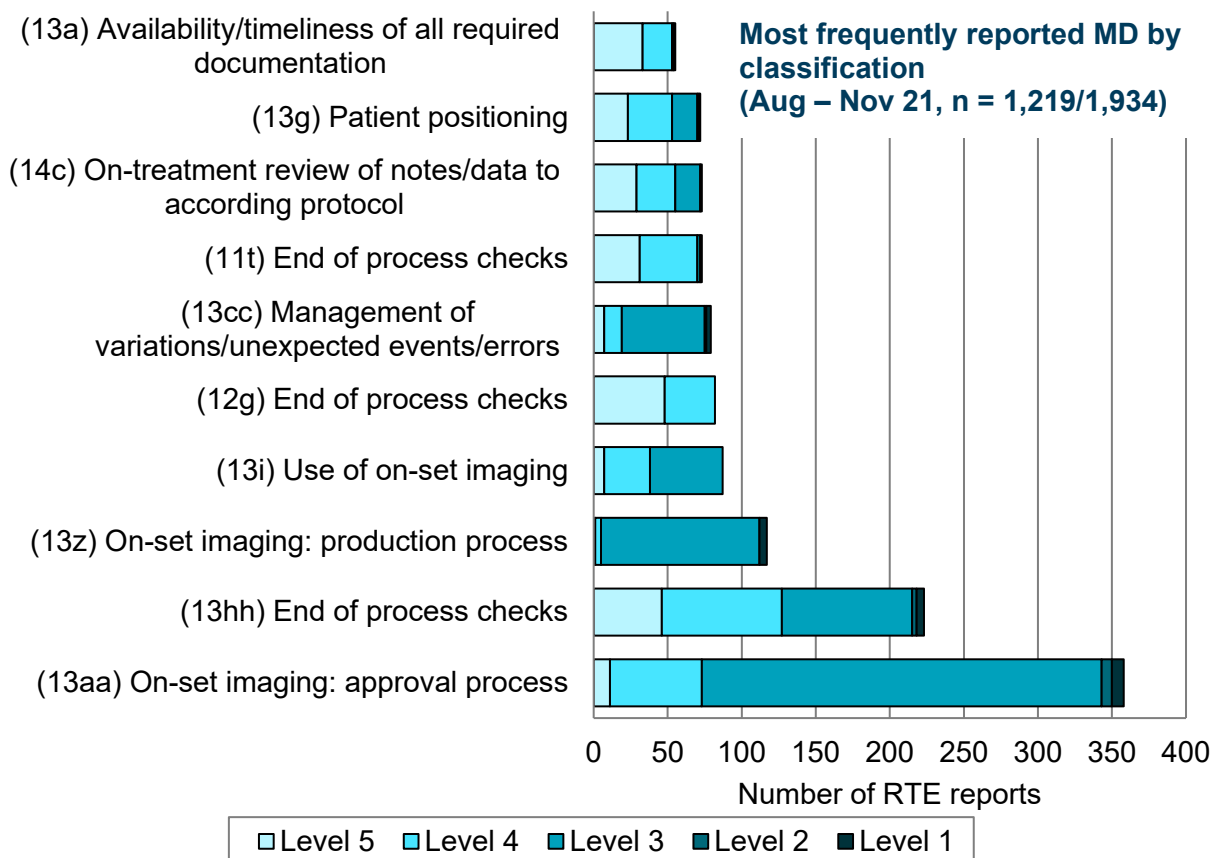
Failed Safety barriers (FSB)

A total of 2,188 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 (14.3%, n = 312).



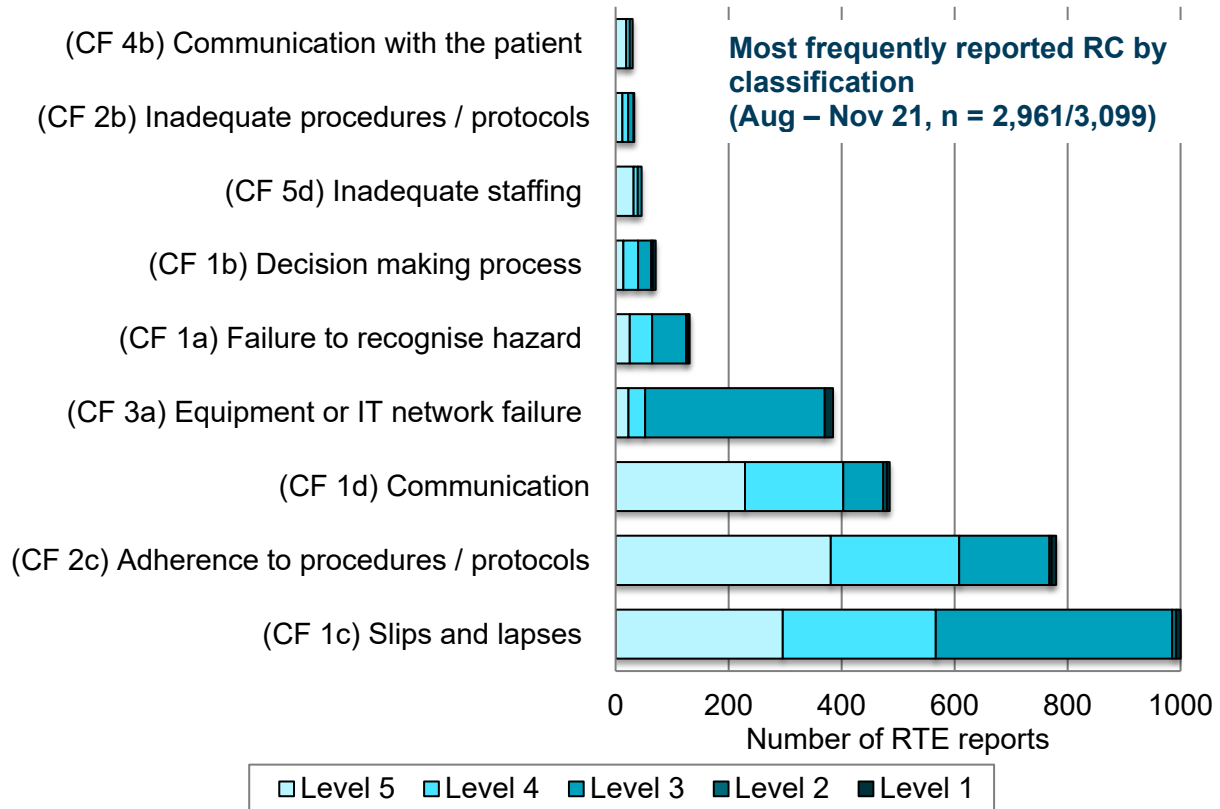
Method of detection (MD)

For this reporting period 1,934 reports contained MD. The most frequently reported MD was ‘on-set imaging: approval process’ (18.5%, n = 358).



Causative Factors

The primary causative 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' (32.3%, n = 1,000). CF were indicated across 782 reports. Of these 105 contained multiple factors leading to 902 CF. The most frequently reported CF was 'adherence to procedures/protocols' (36.9%, n = 333).



Example of coding of an RTE report

TSRT9/ Level 3/ 3i / 13u / MD13hh / CF2c

BCON cylinder volume was not checked prior to getting patient in the room / before setup. First #1 CBCT acquired, it was found that the cylinder was empty, balloon not inflating. Change of BCON gas and rescan of verification image. Additional dose received 9.2mGy one additional image - not reportable.

Quality of reporting – method of detection (MD) taxonomy.

The use of a MD to indicate how RTE are detected was recommended in 2018. For the reporting period August to November 2021 30 providers indicated MD in 40.0% (n = 1,240) of reports. Following consistency checking, a further 694 reports with MD taxonomy, resulting in 1,934 reports including MD for analysis.

For each part of the pathway there are 'other' pathway subcodes, before consistency checking 8.6% (n = 166) of the RTE containing a MD were assigned a 'other' pathway subcode. After consistency checking this was reduced to 4.2% (n = 82).

Of the MD assigned a 'other' pathway subcode 46.4% (n = 77) occurred at 'treatment unit process' equating to 4.0% of all the allocated MD. After consistency checking this was reduced to just 1.9% (n = 36) of all MD.

The PSRT recommend the entire radiotherapy pathway taxonomy should be considered when applying MD to RTE reports. The following table indicates potential MD for those RTE originally coded with treatment unit processes 'other' MD.

Primary process subcode	Example	Potential MD subcode
(13z) On-set imaging: production process	Machine fault during imaging production leading to additional imaging, 33 of these were due to machine fault.	(13z) on-set imaging: production process
(10j) Documentation of instructions/ information	Immobilisation was documented incorrectly	This may be detected during (13r) using immobilisation or (13g) patient set up or (13aa) on-set imaging: approval process
(13g) Patient positioning	Switched on treatment beam prior to patient achieving breath hold	(13hh) end of process check
(6d) Communication of appointments to patient	Patient arrives for treatment, but appointment changed	Options to include either (13d) explanation to patient (13f) assessment of patient
(13cc) Management of variations/ unexpected events/errors	Either machine breakdowns or removing patient from bed before treatment completed	If equipment malfunction (13cc) management of variations/unexpected events/ errors If removing patient from bed past (13hh) end of treatment checks
(13gg) Recording of additional information	Incomplete skin assessment check on final fraction of radiotherapy treatment meaning no record of any skin changes	(16b) recording of treatment summary
(13u) Use of compensators	Bolus omitted for part or all of fraction	(13hh) end of process checks
(13r) Use of immobilisation devices	All level 3, these include the incorrect use of patient immobilisation, the breast board angle is incorrect etc	(13hh) end of process check
(6b) Bookings made according to request details	Booking made for incorrect time slot, detected whilst patient being treated.	(13hh) end of process check
(12g) End of process checks	Patient plan not approved or ready for treatment	(13a) availability of all required documentation

Safety Culture webinar available from SRP

A safety culture webinar is available from the Society For Radiological Protection (SRP). The [webinar](#) is intended to provide insights into safety culture and encourage others to discuss and be alert to cultural issues. The webinar explains safety culture and its importance in safe working.

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. RO-ILS also publish themed reports including COVID – 19 disruptions to process, SGRT and peer review.

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

Guest Editorial

Engaging the patient in safety – comments from the PSRT lay representative

Tony Murphy



For over a decade of involvement, I've never been comfortable with the simplicity of the question, 'Is Radiotherapy safe?'

During the consent discussion with the patient the risk and benefit of their radiotherapy treatment are outlined. However, is the following discussed? Radiotherapy is a very complex way of treating cancer. The very potential for radiation to harm has meant it is tightly regulated and a great deal of process applied for it to be used in the health care settings. Given the technical nature, human involvement, steps in communication and so on, there is potential for errors. A small number of errors do occur, and we have to report the serious ones. But through checking procedures, experience, etc, healthcare professionals are able to minimise errors and call them 'near misses'. These events are recorded too, and opportunities taken to learn from mistakes, as individuals, and as a Department.

Would this communication capture the essence of 'involving patients in their safety?'

The challenges of this approach include how many patients want to know, what other questions might it lead to and the potential for patients to withdraw from treatment, fearing 'errors' and 'near misses' (on top of expected side effects). Of course, some patients request great detail and want to know as much as possible about their individual treatment. Perhaps the most frequent questions from patients are:

- 'Is it safe?', they want to know the side effects
- Does the department treat 'my type of cancer a lot?'
- Does the machine ever break down?
- How do you ensure I get the right amount of radiation – and not too much?

Prior to treatment, it is a lot more complicated to involve the patient in their own personal safety in a meaningful way. Until we ask patients, we can't know how they would like to be engaged in safety. As a start, patients could be invited to have their say within safety committees, clinical governance meetings or reviews of RT practice.

The NHS framework for involving patients in patient safety

The [NHS framework for involving patients in patient safety](#) sets out how NHS organisations should involve patients in patient safety. This framework is in two parts. Part A highlights the impetus is to involve patients in their own safety, this includes encouraging patients to ask questions, involving patients in their treatment with information sharing and when appropriate discussing how to report incidents. This is also reflected in international [guidance](#) on making the patient a partner in patient safety published by ASN in 2017.

Part B discusses involving a patient safety partner (PSP) in organisational safety, this relates to the patient's role in supporting and contributing to organisational governance and management processes for patient safety. This role can include being involved in safety and quality committees, involvement in staff patient safety training and involvement in patient safety improvement projects.

Learning from good practice – Electronic booking forms

Elliot Caparros, Radiotherapy department, Singleton Hospital, Swansea

The screenshot shows a web-based form titled "1.Booking FormUrgentSC - NHS #: ABC Test, Sim". The form is organized into three main sections:

- Info:** Contains fields for "Pregnancy Status Urgent" (N/A due to age or gender - Pregnancy Not Applicable), "Pacemaker/Defibrillator Urgent" (No - Pt does not have Pacemaker/Defibrillator), "Concurrent medication Urgent", and "Comments for action Urgent".
- Demographics:** Contains fields for "Patient attendance Urgent" (AMB- NEPTS Hospital Transport - Non Emergency Pt Transport Suitable for tra...), "Booking Comments Urgent", and "Tel.No(pref.contact)Urgent".
- Referrer and Practitioner:** Contains fields for "Referrer Urgent palliative" (SPR Sample - Referring for CT & planning), "Practitioner Urgent Palliative" (SPR Sample - Authorising medical exposure), "Primary Consultant Urgent" (RO Consultant - RO Consultant is named consultant), and "eBook URGENT to Booking Office" (Yes send form, Status=Reviewed - Form signed, status changed to Reviewed, f...).

At the bottom of the form, a status bar reads "1.Booking FormUrgentSC Will Be Added".

Electronic booking forms, to request CT planning and radiotherapy treatment, were introduced a few years ago. The forms are site-specific and linked to clinical protocols, highlighting any off-protocol bookings. They follow a common format and require an e-signature by an entitled practitioner within Mosaiq. Once signed, the status of the form is changed to reviewed and the initials of the approving practitioner appear at the foot of the form. The electronic forms can be accessed at all of the outlying clinics and within the department, this has removed the potential for misplaced booking forms.

The form contains mandatory fields which must be completed before a referral can be completed. There are drop down sections to ensure department nomenclature is used. There are also three drop-down sections for referrer, practitioner and primary consultant which are mandatory on each form. An example of part of a referral form can be seen above.

A formalised programme of training was implemented for all new referrers and practitioners, as part of their induction programme. Once entitlement is signed off by the supervising oncologist and the IR(ME)R lead consultant, doctor entitlement forms are uploaded to I-Passport and a reminder is set to review each entitlement after three months and again at the end of any six monthly rotations. When entitlement is in place, the name of each entitled referrer and practitioner is added to the appropriate drop down list on the e-booking form. This requires some communication and co-ordination between the IR(ME)R lead consultant, QA Lead Radiographer and Mosaiq Lead Radiographer to manage the process effectively. Names are inactivated once entitlement has expired, usually at the end of each placement, and the name disappears from the list. This ensures that only the names of appropriately entitled individuals are available for selection when booking requests are made. The "approved by" initials on the form must match the named practitioner selected from the drop-down list.

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.