



# Safer Radiotherapy

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**The PSRT Team**

From L-R Tony Murphy (lay rep), Una Findlay, Maddie Ottrey and Helen Best (PHE), Maria Murray (SCoR), Carl Rowbottom (IPEM), Martin Duxbury (SCoR Clinical rep). Tom Roque (RCR rep, not in picture).

**Welcome to Safer Radiotherapy (RT). The aim of the newsletter is to provide a regular update on the analysis by PHE of radiotherapy error (RTE) reports. These anonymised reports are submitted on a voluntary basis through the National Reporting and Learning System (NRLS) of NHS Improvement or directly to PHE, to promote learning and minimise recurrence of these events. Safer RT is 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, Safer RT contains key messages and trends from the analysis of RTE reports. Any comments and suggestions for inclusion in the newsletter can be sent to [radiotherapy@phe.gov.uk](mailto:radiotherapy@phe.gov.uk) and would be gratefully received. Thanks to all contributors to this issue. The next issue of Safer Radiotherapy will be published in September 2017 and will be available at <https://www.gov.uk/government/collections/medical-radiation-uses-dose-measurements-and-safety-advice>**

**Madeleine Ottrey, Interim Editor**

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## Save the date: Development of learning workshop October 2017

The PSRT are pleased to announce a workshop is to be held in October on the application of the refined pathway coding and new taxonomies from the Development of Learning and future work. Workshop and feedback sessions will allow further sharing and networking between RT professionals. Once the date and venue have been finalised, a save the date email will be sent to every UK RT Provider.

Registration will be free of charge for 1-2 delegates per radiotherapy department and booking is essential as spaces are limited. The Development of learning is available at: [www.gov.uk/government/publications/development-of-learning-from-radiotherapy-errors](http://www.gov.uk/government/publications/development-of-learning-from-radiotherapy-errors)

## Editorial headline: Update on BSSD

The transposition date for EC Basic Safety Standards Directive 2013/59/Euratom is now less than nine months away. A consultation document was released by HSE regarding new regulations for occupational and public exposures (replacing the Ionising Radiations Regulations 1999) with a response deadline of 2<sup>nd</sup> April. The consultation for medical exposures (replacing the Ionising Radiation (Medical Exposure) Regulations 2000 (and equivalents in Northern Ireland) and the Medicines (Administration of Radioactive Substances) Regulations 1978) has been delayed due to the period of silence that surrounds the General Election and is now expected to be issued in July. The appropriate professional bodies will be alerted to the consultation once available.

It is now clear, as hoped, that the formats of both sets of regulations will be familiar and changes in content are limited and reflect only the requirements of the Directive. For example, requirements for licensing are enhanced where necessary. It is expected that final regulations will be prepared during the summer and then submitted to the European Commission. HSE plans for its regulations to come into force on 1<sup>st</sup> January 2018, and those for medical exposures should be in place for the transposition deadline of 6<sup>th</sup> February 2018.

Steve Ebdon-Jackson, PHE

### UK consensus on postoperative radiotherapy for breast cancer

The RCR has published a document outlining a consensus statement for patients with early breast cancer receiving radiotherapy. It aims to state the expected standard of breast radiotherapy across the UK to ensure equity of treatment for cancer patients regardless of postcode. The document may be useful for those working clinically, commissioners and others working in the NHS who are responsible for the provision of care for women with early breast cancer. The document can be accessed here:

[https://www.rcr.ac.uk/system/files/publication/field\\_publication\\_files/bfco2016\\_breast-consensus-guidelines.pdf](https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfco2016_breast-consensus-guidelines.pdf)

## Pause and Check for Radiotherapy

Following the production of a 'Pause and Check' initiative for diagnostic radiographers, feedback from the radiotherapy community suggested a similar concept would be useful to aid patient safety in radiotherapy. A working party was formed to produce posters for various different points of the patient pathway. These include checking aids for referral, pre-treatment imaging and treatment of planned and non-planned radiotherapy and can be found here:

<https://www.sor.org/learning/document-library/have-you-paused-and-checked-radiotherapy>

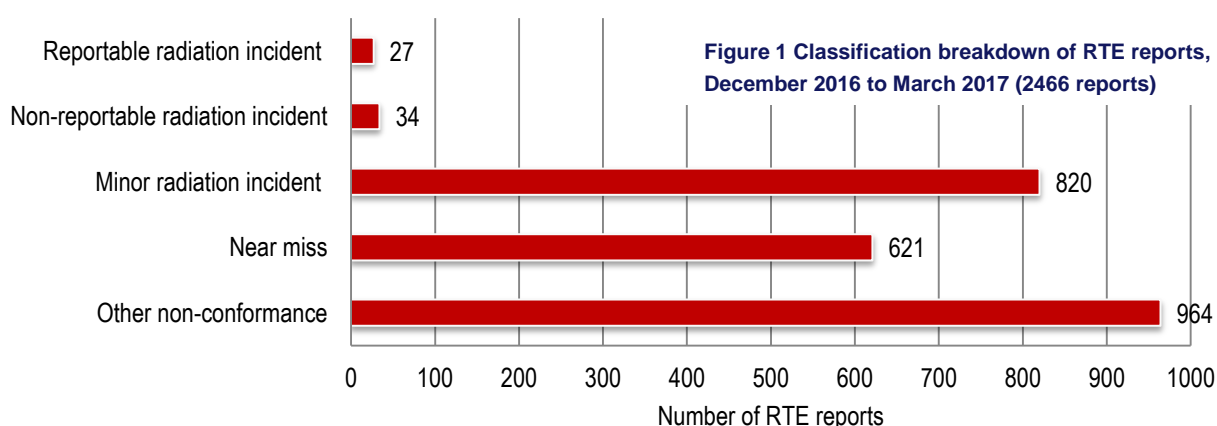
### Dates for the diary

12-14 June	UKRO, Manchester
11-13 Sept	RCR 17, ACC Liverpool
26-Sep	BIR, New ionising radiation regulations: what does it mean for me? London
Sept	Safer Radiotherapy Issue 23

## RTE Data analysis: December 2016 to March 2017

Submissions from 54 NHS UK providers out of 61 contributed to this issue's full data analysis, covering December 2016 to March 2017. Seven departments have not reported or not used the TSRT9 trigger code to report RTE through the NRLS for this reporting period. If any departments require support in reporting please contact PHE staff at [radiotherapy@phe.gov.uk](mailto:radiotherapy@phe.gov.uk). The full analysis is available at [www.gov.uk/government/collections/medical-radiation-uses-dose-measurements-and-safety-advice](http://www.gov.uk/government/collections/medical-radiation-uses-dose-measurements-and-safety-advice) and includes data on primary process coding and severity classification of the RTE.

### Classification of RT

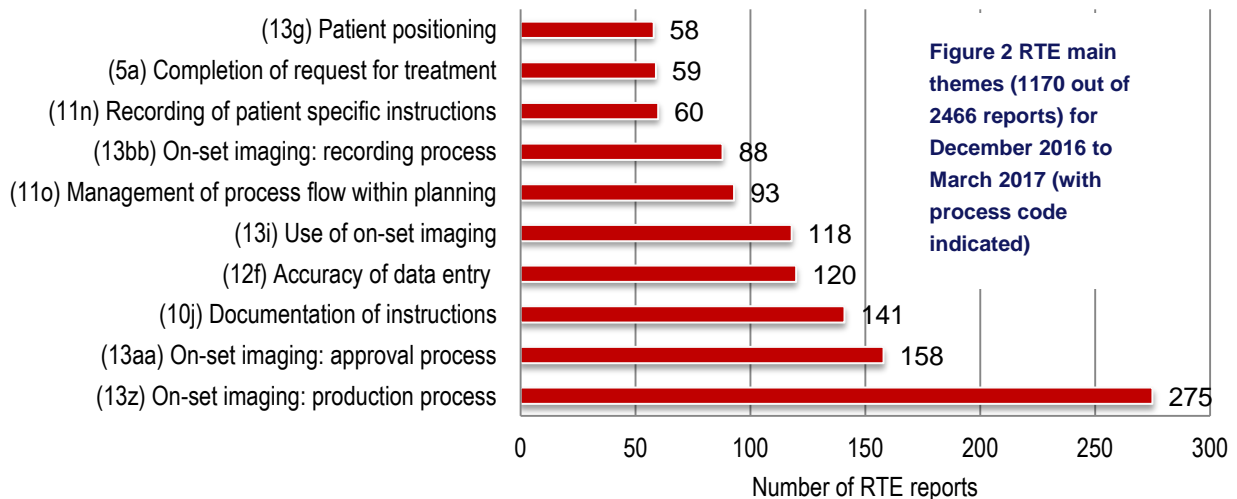


Of those RTE reported for the period December 2016 to March 2017, 2405 out of 2466 reports (97.5%) were classified as minor radiation incidents, near misses or other non-conformances (see Figure 1). These are lower-level incidents which would have no significant effect on the planning or delivery of individual patient treatments. Reportable radiation incidents (level 1) made up 27 (1.1%) of all reports. 'On-set imaging: approval process' and 'use of on-set imaging' each comprised 3 (11.1%) of all level 1 RTE. Non-reportable radiation incident reports (level 2) made up 34 of all reports (1.4%). 'On-set imaging: approval process' comprised 10 (29.4%) of all level 2 RTE. Level 1 and level 2 reports made up 61 (2.5%) for this reporting period which is a decrease from the previous analysis (3.4%, n = 102).

Of the 820 minor radiation incidents (level 3) reported, 245 (29.9%) of this subset were related to the 'on set imaging: production process', making it the most frequently occurring code in this classification, consistent with previous analysis. The most commonly occurring RTE process code in the near miss (level 4) classification was 'documentation of instructions' with 64 reports (10.3%). Within the non-conformance (level 5) classification 'management of process flow within planning' had 90 reports (9.3%) making this the most frequently occurring RTE in this classification.

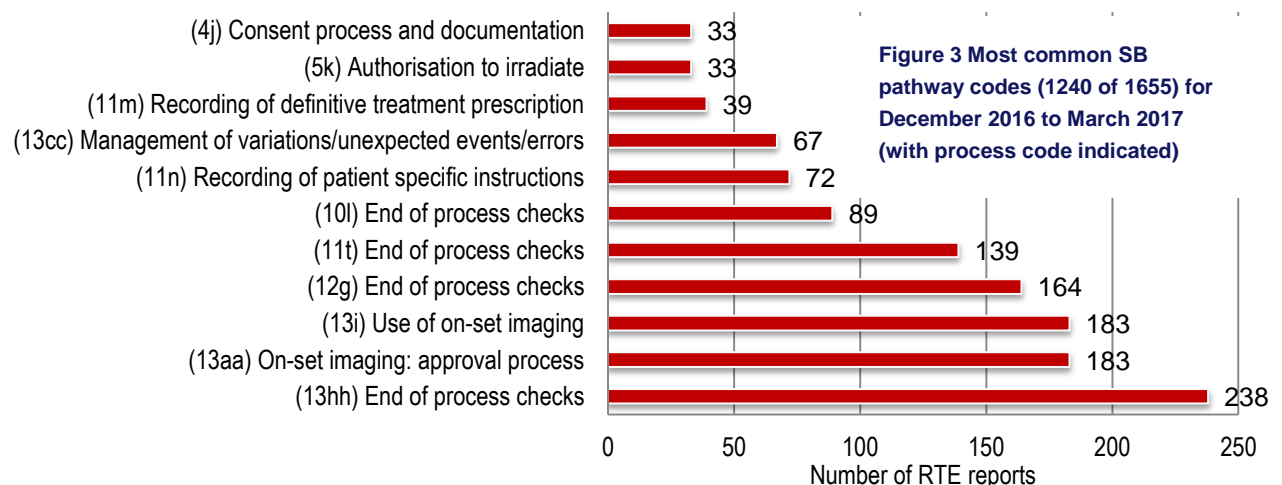
**Primary process code**

The main themes (points in the patient pathway where the majority of reported RTE occurred) for this dataset are shown in Figure 2. On-set imaging process codes contributed 639 of the reports in main themes (54.6%), making up 25.9% of all reports for this reporting period. Consistent with the previous analysis ‘on-set imaging: production process’ is by far the most commonly occurring process code, examples of this include the imaging panel being positioned incorrectly. Guidance on this error can be found in issues 7 and 18 of Safer RT.



**Safety Barriers (SB)**

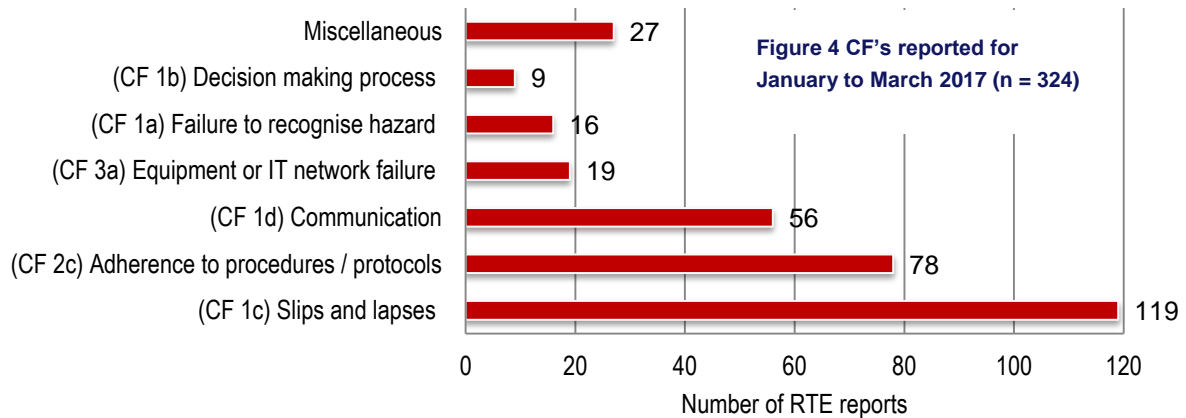
All subcodes from primary to quarterly were analysed across the 2466 RTE reports for the reporting period December 2016 to March 2017 and 1655 subcodes identified as safety barriers (SB). 31 of these RTE led to Level 1 or 2 errors where the SB had failed. The most common SB’s are represented in Figure 3. Treatment unit ‘end of process checks’ is the most commonly reported failed SB (14.4%, n=238) and ‘end of process checks’ at data entry, pretreatment planning and pretreatment activities account for 23.7% (n=392) of all reported failed SBs.



**Causative Factor Taxonomy (CF)**

CFs have been applied locally to 276 RTE during the reporting period from January to March 2017 by 17 RT departments and a total of 324 reported CFs are shown in Figure 4. Data received for the month of December 2016 was not included in the analysis as the DoL was published at the end of December 2016. The most

commonly occurring CF was individual 'slips and lapses' (36.7%, n=119) which is further discussed below in 'Spotlight on causative factor taxonomy'. Three level 1 and 4 level 2 RTE's included CF codes within the report.



## Spotlight on...

### Causative factor taxonomy 'Individual':

#### Slips and lapses (CF1c)

Slips and lapses are actions that are well learned and practiced, proceeding without much conscious involvement; may be associated with tasks of a repetitive nature or preoccupation or distraction; includes a physical stressor or fatigue; involuntary automaticity; skill-based errors occurring in a pressurised work environment.

Examples of RTEs coded with this causative factor taxonomy include incomplete referral forms, incorrect moves from reference marks and incomplete or incorrect patient specific instructions recorded at the pretreatment planning process.

### How can we minimise the risk of this RTE occurring?

#### Points to consider

1. Explore options to design equipment, software and tasks to avoid or reduce their occurrence
2. Ensure checks designed to detect and correct such slips and lapses are robust
3. Ensure staff take appropriately timed breaks from work of a repetitive nature or alternate tasks with other more diverse activities (TSRT page 9)
4. Create effective reminders to carry out tasks that have not been able to be completed before moving on to the next step in the patient pathway or process
5. Create an appropriate environment with minimal distractions for staff (TSRT pages 5, 10 and 35)
6. Monitor locally reported RTE to identify common occurrences and introduce preventative action

**Data Quality**

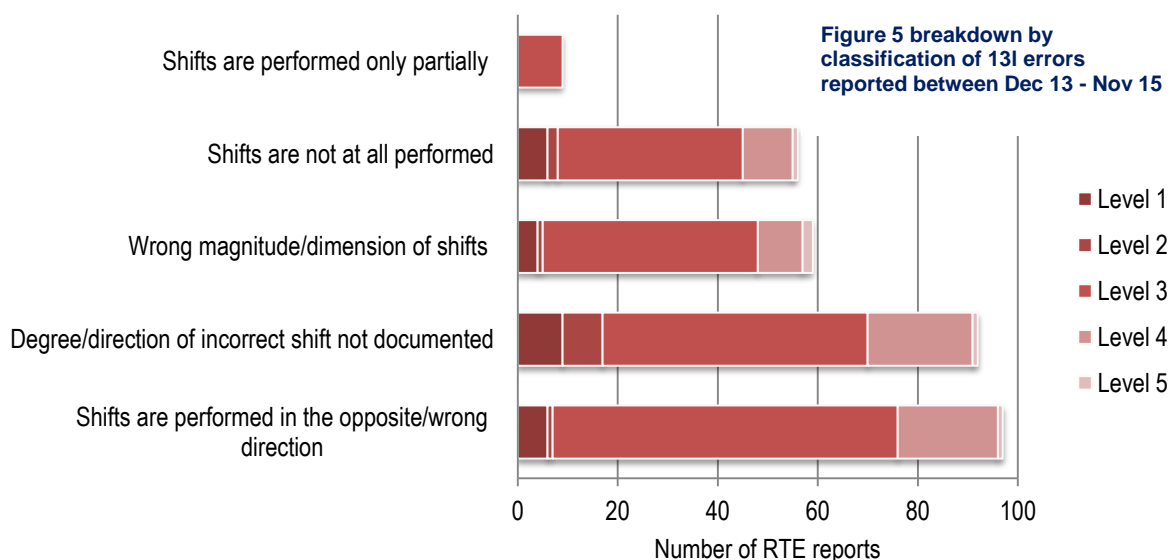
Data received by PHE is consistency checked by the RT team for quality assurance. PHE may amend a number of these reports to represent the correct classification and coding of the RTE. Feedback from the RT community has shown people want more information as to the nature and cause of errors aside from the coding and classification to gain a deeper understanding and learning from the RTEs. It is therefore important to include comprehensive information to allow detailed feedback. It is anticipated this will be of further importance with the application of the causative factor taxonomy. Guidance on reporting RTEs can be found here:

<https://www.gov.uk/government/publications/radiotherapy-good-practice-in-error-reporting>

<https://www.gov.uk/government/publications/development-of-learning-from-radiotherapy-errors>

**Movements from reference marks 13I**

The 4<sup>th</sup> biennial report, published in September 2016 by PHE, found ‘movements from reference marks’ as part of patient set-up was the most common primary code attributed to reportable radiation errors between December 2013 – November 2015. In contrast it was only the 9<sup>th</sup> most commonly reported primary subcode across all classifications, with its incidence decreasing by 1.4% since 2012. The use of online imaging, couch tolerances, capturing of couch positions and the electronic transfer of data can be utilised in order to decrease the likelihood of this type of error resulting in a reportable incident. Attention should be paid where these methods of practice are not utilised, such as the palliative pathway. Figure 5 shows further analysis of errors with the primary subcode 13I reported during this time period revealed more detailed information as to the nature of the error:



Unfortunately a proportion of these errors (n = 92, 29%) did not contain enough information to determine the nature of the error, also not all errors contained enough detail to determine whether the movement from reference marks were performed in the opposite or wrong direction and so these were grouped together and represent the most common error coded as 13I.



## Guest Editorial

### Implementation process for the new Cranial Stereotactic Radiotherapy Service at Belfast Health and Social Care Trust (BHSCT)

**Cristiona Logan** Quality assurance radiographer

**Donna McKay** Neuro clinical site specialist radiographer

The Cranial Stereotactic Radiotherapy (CSRT) service in Belfast was proposed and subsequently co-ordinated via the Radiotherapy Department's New Technology Steering Group (NTSG). The department utilised an "Implementation Map" which consisted of 9 key areas to ensure the process was standardised and all requirements were considered:

- 1. Working party** A multi-disciplinary team, consisting of Radiographers, Radiotherapy Physics, Consultant Clinical Oncologists and Neuro Surgeons, was tasked with the development, implementation and maintenance of the CSRT service.
- 2. Build knowledge** Prior to clinical use it was essential for staff to build foundation knowledge; this was achieved through manufacturers training, conferences and training days and research and connectivity with experienced centres. To maximise knowledge and clinical experience with the new equipment we identified three opportunities: the expertise and mentorship of experienced centres such as St Luke's Oncology Centre Dublin; an Prostate Fiducial Pilot offered staff the opportunity to gain experience operating the new imaging equipment and previously reported anonymous radiotherapy errors relating to the new equipment were identified and shared by PHE. This provided an opportunity to review previously unidentified risks and analyse the effectiveness of our implemented safety barriers.
- 3. Prospective Risk Assessment** With the support of St Luke's Oncology Centre in Dublin we undertook a multi-disciplinary prospective risk assessment based on Failure Modes and Effect Analysis (FMEA)<sup>1</sup>. The FMEA offered a great opportunity to streamline the processes, identify controls for process interfaces, identify areas of potential hazards and ensure additional precautions were taken to mitigate risk, such as safety checklists.
- 4. Define and Document all processes** All process from referral to discharge were defined and documented within the respective Quality System.
- 5. Staff training and education** Staff training consisted of Manufacturers training, the prostate fiducial pilot and the generation and verification of practice plans.
- 6. Verification and Testing** End-to-end testing utilising a stereotactic phantom verified processes, procedures and safety barriers.
- 7. Patient Information and Support** Patient Information Leaflets and Feedback Evaluation Forms were developed and distributed.
- 8. Radiation Safety** The working party liaised with the Department's Radiation Protection Supervisor to confirm the service's conformity and suitability with IRR and IR(ME)R.
- 9. Future Work** A review and analysis was carried out after the initial cohort of patients, facilitating quality improvement and the development of our service. In the future we aim to achieve the Novalis Circle Certification<sup>2</sup> and hope to develop in-house training competencies as our clinical expertise grows.

#### References

1. Perks J et al (2011). Failure Mode and Effect Analysis for Delivery of Lung Stereotactic Body Radiation Therapy. *International Journal of Radiation Oncology*. Vol. 83, No. 4, pp. 1324-1329.
2. Brainlab (2011). *Novalis comprehensive radiosurgery solution*. [ONLINE] Available at: [www.brainlab.com/en/radiosurgery-products/novalis/](http://www.brainlab.com/en/radiosurgery-products/novalis/) Last accessed: 26/04/17