Safer Radiotherapy
The radiotherapy newsletter of Public Health England

Supplementary Data Analysis
Issue 28 – Full radiotherapy error data analysis
December 2018 to March 2019
About Public Health England

Public Health England exists to protect and improve the nation’s health and wellbeing, and reduce health inequalities. We do this through world-leading science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

Public Health England
Wellington House
133-155 Waterloo Road
London SE1 8UG
Tel: 020 7654 8000
www.gov.uk/phe
Twitter: @PHE_uk
Facebook: www.facebook.com/PublicHealthEngland

For queries relating to this document, please contact: radiotherapy@phe.gov.uk

© Crown copyright 2019
You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v3.0. To view this licence, visit OGL. Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

Published June 2019
PHE publications gateway number: GW-479

PHE supports the UN Sustainable Development Goals

Corporate member of Plain English Campaign Committed to clearer communication

SUSTAINABLE DEVELOPMENT GOALS
Contents

About Public Health England 2
Contents 3
Full radiotherapy error data analysis December 2018 to March 2019 4
Monitoring of TSRT classification and coding by radiotherapy providers 5
Number of reports per provider 7
Breakdown of process codes 8
Classification of radiotherapy errors 9
  Reportable radiation incident 10
  Non-reportable radiation incident 11
  Minor radiation incident 12
  Near miss 13
  Other non-conformance 14
Safety barriers 15
Causative factors 17
Brachytherapy errors 18
References 21
Full radiotherapy error data analysis
December 2018 to March 2019

This analysis has been undertaken by Public Health England (PHE) on radiotherapy errors and near misses (RTE) reported voluntarily by only NHS radiotherapy (RT) providers. Reports are submitted from England and Wales to the National Reporting and Learning System (NRLS) at NHS Improvement and NHS England using the TSRT9 trigger code\textsuperscript{1} and directly to PHE from providers in Northern Ireland and Scotland.

The classification from \textit{Towards Safer Radiotherapy}\textsuperscript{2} (TSRT) and the pathway coding from the \textit{Development of learning from radiotherapy errors}\textsuperscript{3} (DoL) to include safety barriers and causative factor taxonomy was employed for the analysis. Where appropriate, comparisons have been drawn with previous issues of \textit{Safer Radiotherapy}\textsuperscript{4} and the PHE supplementary data analyses\textsuperscript{5}. The analysis has been reviewed by the Patient Safety in Radiotherapy Steering Group, whose comments have been incorporated into this document.

Due to merging of 2 NHS Trusts there are now 61 NHS RT providers across the UK. For this reporting period, December 2018 to March 2019, 88.5\% (n = 54) of providers have submitted RTE reports using the TSRT9 trigger code, this is slightly less than the last reporting period (90.2\%, n = 55)\textsuperscript{5}. The RTE reports received at PHE are anonymised and received as part of a voluntary reporting scheme. New and existing NHS and independent RT providers are welcome to contact PHE at radiotherapy@phe.gov.uk for advice on how to submit data for inclusion in these national analyses.

The average number of reports received by PHE each month for this reporting period was 744.3. This is a 12.0\% decrease in the number of reports received from the last reporting period August to November 2018 (n = 845.8)\textsuperscript{5} and a 12.9\% increase when comparing to the same reporting period in 2017 (n = 695.5)\textsuperscript{5}.

A mature reporting culture is reflected in the continued participation by many providers in national reporting. This continued commitment of providers demonstrates the community’s drive to improve patient safety in RT.

According to the Radiotherapy Dataset, the estimated number of attendances in NHS providers across England and Wales for this reporting period was 537,402. Across England and Wales 2,834 RTEs were detected and reported by NHS providers, equating to 0.5\% of all attendances for this reporting period\textsuperscript{6}; this is like the previous reporting period\textsuperscript{5}. The estimated number of prescriptions was 49,148 equating to RTE detected in just 5.8\% of prescriptions. Similar activity data is not yet available for an estimated reported error rate to be calculated for Northern Ireland and Scotland.
Again, it is worth noting that the vast majority of these events did not impact on the patients’ planning, treatment or outcome.

It is clear that there is some disparity in frequency of reporting across providers, with a wide variance shown when comparing the incident date with the date reported to the national voluntary reporting scheme. This time lag ranges from a minimum of 0 day to a maximum of 582 days for this reporting period, with a mode of 22 days and a mean of 49 days. This is a decrease on the last reporting period (mean = 50.4 days). This variance in timeliness of reporting is also reflected in the overall patient safety incident reports received by the NRLS. There were 20 reports received from 1 provider which were reported with a time lag over 365 days; these did not contain text which could account for the time lag length. These outliers were removed from the data and a new mean of 46.7 days was calculated. To ensure timely learning from RTE reports continues to be shared nationally, providers are asked to make submissions at the earliest opportunity for inclusion in the monthly data uploads by PHE and four-monthly analyses. Issue 26 of Safer Radiotherapy provides further information on the frequency of reporting.

The overall analysis presented in this report will help providers to compare locally identified trends against the national picture. In doing so it is expected that these events might be minimised in the future. However, it should be noted this data is not adjusted to reflect individual provider activity or service specification. As with any voluntary reporting system, the data will only reflect those incidents that are reported and may not necessarily be representative of the actual level of occurrence. As such, this data needs interpreting with care.

If individual providers would like to comment on the analysis or can offer further advice in preventing any RTE please email the RT team at radiotherapy@phe.gov.uk.

Monitoring of TSRT classification and coding by radiotherapy providers

The TSRT\(^2\) classification, DoL\(^3\) pathway coding and causative factor taxonomies had been applied by local RT providers to 2,399 of the 2,977 reports received from December 2018 to March 2019. This demonstrates the high adoption rate (80.6%) in the application of the TSRT\(^2\) and DoL\(^3\) taxonomies.

All providers are asked to apply a trigger code, classification, coding, including failed safety barriers, causative factor and where applicable effective safety barrier (detection method) to their RTE reports to facilitate both local and national analysis, for example TSRT9/ Level 4/ 13c/ 13l/ MD13hh/ CF1c/ CF2c. Failed and effective safety barriers and how to include them in report submissions are discussed further in Issue 24 and 28 of Safer Radiotherapy\(^4\).

Consistency checking was undertaken by PHE staff on the application of the TSRT\(^2\) classification and DoL\(^3\) coding system by RT providers. During consistency checking
the coding is reviewed for all RTE classified as reportable through to near miss (levels 1 – 4) and 10% of non-conformances (level 5) RTE are audited. A complete report (Figure 1) contains the classification, pathway code, including safety barriers and causative factor taxonomies. From the 2,399 RTE reports classified and coded locally, 369 were amended (complete fixed in Figure 1); an 84.6% level of consistency was achieved. The DoL guidance document gives examples of the application of the classification, pathway and causative factor coding. In addition, 561 RTE were classified or coded by PHE staff using the supporting text supplied by the local providers, (incomplete fixed in Figure 1). The DoL guides on the application of coding and classification. All reports contained enough information to allocate classification and pathway coding and causative factor taxonomy; therefore, no reports were left incomplete (incomplete within Figure 1).

Non-RTE reports submitted with the TSRT9 trigger code formed 0.6% (n = 17) of all the reports for this reporting period. Data and accompanying text indicate that these were patient safety incidents (PSI). This is consistent with previous analyses. A PSI is defined by the NRSLS as ‘any unintended or unexpected incident which could have or did lead to harm for one or more patients receiving care’; further information on PSI can be found in issue 5 of Safer Radiotherapy. Non-RTE reports were excluded from the detailed analysis.

**Figure 1. Breakdown of reports, December 2018 to March 2019 (n = 2,977)**

In total, 2,960 RTE for the reporting period from December 2018 to March 2019 were included for analysis. The analysis is presented here.
Number of reports per provider

Figure 2 shows the number of RTE reported by providers during December 2018 to March 2019. The number of reports per provider ranged from 1 to 253 reports with a mode of 8 reports and mean of 45.4 reports for this subset of data. Over half of providers (65.6%, n = 40) reported less than the national mean, 7 of which did not submit a report. It should be noted that those centres reporting higher numbers of RTE represent providers with mature reporting cultures and should be encouraged to continue reporting. Figure 2 also indicates the classifications of reports received per provider, it can be seen that the providers reporting higher numbers of RTE reports include all classification of reports. Furthermore, it is essential that the local reporting and learning system is readily accessible and offers an efficient solution to enable reporting.

The third in a series of surveys of UK RT providers in 2014\(^9\) on reporting culture demonstrated that those departments with fully electronic single reporting and learning solutions, which were accessible in all areas of the clinical department, were most likely to submit greater numbers of RTE. The intention in sharing this data is to allow providers to benchmark themselves against other UK NHS radiotherapy providers. Furthermore, a survey on the current reporting culture can be seen in issue 27 of *Safer Radiotherapy*\(^4\).

**Figure 2. Number of RTE reported per RT provider, December 2018 to March 2019 (n = 2,960)**
Breakdown of process codes

The 2,960 RTE reports were categorised by process code according to DoL\textsuperscript{3} irrespective of classification, so that the main themes could be derived. Figure 3 shows 39.5% (n = 1,169) of the RTE were reported to have occurred during treatment unit processes. The most frequently reported RTE activity codes were associated with treatment unit processes for all classifications of RTE except other non-conformances (Level 5), where the most frequently reported RTE within this subgroup were associated with pretreatment planning respectively. It is expected that the treatment unit process code is to be the most frequently reported code as RT treatments can span a number of visits, providing many opportunities during the treatment unit process for RTE to occur.

**Figure 3. Breakdown of RTE main activity codes reported, December 2018 to March 2019 (n = 2,786/2,960 subset of RTE)**

The most frequently reported process subcodes in the RT pathway are presented in Figure 4. This subset of data was also broken down by classification. The most frequently occurring RTE reported was ‘on-set imaging: production process’ at 8.7% (n = 258) of all the reports. This has reduced from 13.4% (n = 452) from the previous reporting period\textsuperscript{5}. Of this subset 93.8% (n = 242) reports were level 3 events. The second most frequently occurring RTE was ‘use of on-set imaging’ at 4.7% (n = 138) followed by ‘documentation of instructions/information’ at 4.1% (n = 120).
Classification of radiotherapy errors

Each of the 2,960 RTE reports was classified as ‘other non-conformance’, ‘near miss’, ‘minor radiation incident’, ‘non-reportable radiation incident’ or ‘reportable radiation incident’ (Figure 5). Of the RTE reports, 98.0% (n = 2,899) were minor radiation, near miss or other non-conformities with little or no impact on patient outcome. Of the remaining 2.0% (n = 61) RTE reports, only 1.0% (n = 30) were reportable under the Ionising Radiation (Medical Exposure) Regulations (IR(ME)R) to the appropriate authority. The national survey on reporting culture in issue 27 of Safer Radiotherapy indicates that providers are more likely to submit RTE reports of higher classification levels (levels 1 – 3) to the national voluntary reporting system. It was found RTE reports of lower classification (level 4 – 5) are less likely to be shared due to resource constraints and inefficient reporting and learning systems.
Reportable radiation incident

Reportable radiation incidents as defined in TSRT\(^2\) fall into the category of reportable under IR(ME)R\(^{10}\). These incidents will generally be clinically significant, although they may be correctable within the course of treatment. The majority of these higher level incident reports affected a single exposure. This meant that corrective action could be taken over the remaining treatment fractions so the incident did not have a significant impact on the patient or the outcome of their treatment.

There were 30 reportable radiation incidents submitted to the voluntary system from December 2018 to March 2019 (Figure 5), comprising 1.0% of the RTE reviewed; this is a slight increase from 23 (0.7%) reportable radiation incidents in the previous four-monthly analysis\(^5\). Further analysis of the reports indicates the points in the pathway at which the reportable incidents occurred (Figure 6).
Figure 6. Breakdown of reportable radiation incidents (level 1) by process subcode reported, December 2018 to March 2019 (n = 16/30 subset of RTE)

‘Choice of other concurrent treatment or interventions and their sequencing or timing’ and ‘on-set imaging: approval process’ each comprised of 10% (n = 3) of these reportable radiation incidents. An example of reportable RTE associated with ‘choice of other concurrent treatment or interventions and their sequencing or timing’ includes a patient having multiple CT planning scans prematurely before commencement of chemotherapy or hormone therapy, requiring additional exposures after completion of other treatments. An example of reportable RTE associated with ‘on-set imaging: approval process’ includes an image match discrepancy leading to missing the target volume for 1 fraction. Further guidance on mismatch of vertebrae can be seen in issue 28 of Safer Radiotherapy. Singular events reported are spread across 14 different subcodes.

Non-reportable radiation incident

A non-reportable radiation incident is defined as a radiation incident which is not reportable, but of potential or actual clinical significance.

Non-reportable radiation incidents comprised 1.0 % (n = 31) of the RTE reported from December 2018 to March 2019 (Figure 5); this is consistent with the previous four-monthly analysis.

Further analysis indicates the points in the pathway at which non-reportable radiation incidents occurred (Figure 7). The reports were spread across 22 different subcodes. ‘On-set imaging: approval process comprised 16.1% (n = 5) and was the most frequently occurring event within the non-reportable radiation incidents. An example of RTE associated with ‘on-set imaging: approval process’ includes the mismatch of imaging which does not lead to a total geographical miss. This was also the most frequently occurring non-reportable radiation incident in the previous four-monthly
analysis (18.8%, n = 6). Further guidance on reducing this type of event can be seen in issue 3 of *Safer Radiotherapy*. Singular events reported are spread across 16 different subcodes.

**Figure 7. Breakdown of non-reportable radiation incidents (level 2) by process subcode reported, December 2018 to March 2019 (n = 15/31 subset of RTE)**

**Minor radiation incident**

A minor radiation incident is defined as a radiation incident in the technical sense, but of no potential or actual clinical significance.

Minor radiation incidents comprised 32.4% (n = 958) of the RTE reported from December 2018 to March 2019 (Figure 5); this is a slight decrease from 1,227 (36.5%) minor radiation incidents in the previous four-monthly analysis.

The most frequently occurring level 3 process subcodes (Figure 8) consisted mainly of treatment unit processes 64.8% (n = 621). ‘On-set imaging: production process’ was the most frequently occurring event (25.3%, n = 242) within this subset; this is a decrease from 34.8% (n = 427) in the previous four-monthly analysis. Examples of this type of minor radiation incident included using the incorrect filter for a CBCT. The second most frequently occurring event within this classification was ‘on-set imaging: approval process’ (6.5%, n = 62), followed by ‘use of on-set imaging’ (6.4%, n = 61). This is consistent with the previous four-monthly analyses.

A large proportion of the reports in this classification were related to on-set imaging, these included ‘use of on-set imaging’, ‘on-set imaging: production process’, ‘on-set imaging: approval process’ and ‘on-set imaging: recording process’ (43.2%, n = 414). This is a minor decrease since the previous four-monthly analysis when 49.5% (n = 607) of minor radiation incidents were associated with on-set imaging. A number of minor radiation incidents with the primary code ‘on-set imaging: production process’
were attributed to equipment malfunction, (43.0\%, n = 104), examples of this type of RTE includes CBCT faults during acquisition. Equipment malfunction and on-set imaging: production process is discussed further in issue 18 of *Safer Radiotherapy*.

**Figure 8. Breakdown of most frequently occurring minor radiation incidents (level 3) by process subcode reported, December 2018 to March 2019 (n = 647/958 subset of RTE)**

**Near miss**

A near miss is defined as a potential radiation incident that was detected and prevented before treatment delivery².

Near misses comprised 25.4\% (n = 753) of the RTE reported from December 2018 to March 2019 (Figure 5). This is a slight increase from 819 (24.3\%) near misses in the previous four-monthly analysis⁵.

Figure 9 shows the most frequently occurring process subcodes across this level of RTE. ‘Use of on-set imaging’ comprised of 7.8\% (n = 59) followed by ‘documentation of instructions’ 7.3\% (n = 55); An example of RTE associated with ‘use of on-set imaging’ includes the omission of verification imaging on fractions required in the imaging protocol. An example of RTE associated within ‘documentation of instructions’ includes the incorrect entry of information regarding the set-up, positioning and immobilisation of a patient at pretreatment, this error is then not recognised until patient set up at treatment. Further details on ‘use of on-set imaging’ can be found in issue 7 of *Safer Radiotherapy* and issue 8 contains further details on ‘documentation of instruction’. The top 6 most frequently reported near miss RTE within this reporting period also
featured in a different order as the top 6 most frequently reported near miss RTE within the previous four-month period.

**Figure 9. Breakdown of the most frequently occurring near misses (level 4) by process subcode reported, December 2018 to March 2019 (n = 372/753 subset of RTE)**

![Bar Chart](chart.png)

**Other non-conformance**

Other non-conformance is defined as a non-compliance with some other aspect of a documented procedure, but not directly affecting radiotherapy delivery.

Other non-conformance comprised 40.1% (n = 1,188) of the RTE reported from December 2018 to March 2019 (Figure 5). This is a slight increase from 1,263 (37.5%) non-conformances in the previous four-monthly analysis.

The most frequently occurring subcode was ‘communication of appointments to patient’ (4.3%, n = 51), within this classification. Examples of other non-conformance RTE associated with communication of appointments to patient includes the incorrect or omission of appointments shared with the patient, leading to patients arriving for appointments at the incorrect time. This was followed by ‘target and organ at risk delineation’ (4.1%, n = 49) and ‘documentation of instructions/information’ (4.0%, n = 47). An example of other non-conformances associated with ‘target and organ at risk delineation’ includes the omission of the superior edge of a target volume, this is then detected at the pretreatment planning checking stage. Examples of other non-conformance RTE associated with ‘documentation of instructions/information’ includes the incorrect entry of information regarding the set-up, positioning and immobilisation of a patient at pretreatment, this error can then be recognised at the end of
process checks either at pretreatment, pretreatment planning or during treatment data entry process.

The previous four-monthly analysis\(^5\) included the same subcodes but in a different order to this four-month analysis.

**Figure 10. Breakdown of the most frequently occurring non-conformances (level 5) by process subcode reported, December 2018 to March 2019 (n = 415/1,188 subset of RTE)**

![Bar chart showing the breakdown of the most frequently occurring non-conformances by process subcode reported, December 2018 to March 2019. The most frequently failed subcodes are 6d Communication of appointments to patient, 11q Timeliness of plan production or approval, 12f Accuracy of data entry, 6a Bookings made according to protocol, 11j Generation of plan for approval, 10j Documentation of instructions/information, and 11i Target and organ at risk delineation.]

**Safety barriers**

A safety barrier (SB) is a critical control point, detection method or defence in depth, or any process step whose primary function is to prevent errors occurring or propagating through the RT workflow\(^1^1\).

A number of SB embedded in the pathway coding\(^3\) can be allocated to each RTE report to identify all points in the pathway where the error was not detected (failed SB). All subcodes were analysed across the 2,960 RTE reports for the reporting period December 2018 to March 2019, a total of 1,026 subcodes were identified as failed (SB). Only 2.9% (n = 30) of failed SB led to a Level 1 or 2 RTE. SBs associated with treatment unit processes were attributed to 41.4% (n = 425) of all failed SB. The most frequently failed SB are represented in Figure 11. Treatment process ‘use of on-set imaging’ was the most frequently reported failed SB (13.5%, n = 138), this was also the most frequently reported failed SB from the previous four-monthly analysis\(^5\). The majority of RTE 98.6% (n = 136) associated with failed SB ‘use of on-set imaging’ were minor radiation, near miss or other non-conformities with little or no impact on patient outcome.
Effective safety barriers or methods of detection (MD) can now be identified also utilising the safety barrier taxonomy. For the reporting period December 2018 to March 2019, 34 providers indicated MD in 16.4% (n = 486) reports. This is an increase from the previous four-month reporting period where 29 providers indicated MD in 15.3% (n = 516) reports. Issue 24 and 28 of Safer Radiotherapy includes guidance on the application of MD coding. The most frequently reported effective safety barriers can be seen in Figure 12. For this reporting period, the most frequently reported effective safety barrier was ‘on-set imaging: approval process’ (36.5%, n = 140), this effective safety barrier detected 84.3% (n = 118) reportable, non-reportable and minor radiation incidents.
Causative factors

The use of a causative factor taxonomy enables identification of system problems or root causes that could precipitate a range of different incidents.12

The new causative factor (CF) taxonomy has been applied to 2,717 (91.8%) RTE reports by 45 (83.3%) providers for this reporting period. This is an increase since the last reporting period when RT providers applied the CF taxonomy to 2,825 (84.0%) RTE. Following consistency checking, PHE coded a further 243 reports with CF taxonomy, resulting in all RTE reports containing CF taxonomy for this analysis.

Figure 13 shows the most frequently occurring primary CFs which are the root cause of an incident. Consistent with the previous analysis, the most frequently occurring primary CF was individual ‘slips and lapses’ (47.3%, n = 1,401), followed by ‘communication’ (15.2%, n= 449). ‘Slips and lapses’ was most frequently attributed to ‘on-set imaging: production process’ (8.2%, n = 115), and ‘communication’ was most frequently attributed to ‘documentation of instruction’ (10.5%, n = 47). Issue 22 of Safer Radiotherapy includes guidance on minimising the occurrence of RTE caused by a slip or lapse of an individual. The majority of RTE (98.6%, n = 1,381) associated with CF ‘slips and lapses’ were minor radiation, near miss or other non-conformities with little or no impact on patient outcome.

Figure 13. Breakdown of most frequent primary causative factors by classification level, December 2018 to March 2019 (n = 2,889/2,960 subset of data)

![Diagram showing breakdown of most frequent primary causative factors by classification level](image)

A number of CF codes can be attributed to each individual RTE. A review of the second to fifth CF codes indicate the contributory factors associated with an incident. Contributory factors were indicated across 713 reports; 94 of these contained multiple CF leading to 838 contributory factors. Figure 14 shows the most frequently occurring
contributory factors. The most frequently occurring was ‘adherence to procedures/protocols’ (41.3%, n = 346).

**Figure 14. Breakdown of most frequent contributory factors, December 2018 to March 2019 (n = 765/838 subset of data)**

Brachytherapy errors

Errors coded with brachytherapy process codes as the primary code account for 1.1% (n = 34) of radiotherapy errors for the reporting period December 2018 to March 2019 this is slight increase from the previous four-monthly report (0.5%, n = 18). Brachytherapy is a small specialised practice within radiotherapy, therefore the number of brachytherapy associated RTE would be expected to be low. Many of the brachytherapy errors reported were near misses or non-conformances (79.4%, n = 27) and only 2.9% (n = 1) were classified as a reportable radiation incident (Figure 15).

The most frequently occurring subcode associated with brachytherapy incidents was ‘maintenance of position of applicators/source’, comprising 23.5% (n = 8) of all brachytherapy incidents. An example of this type of RTE included the movement of applicators or sources during treatment. This was followed by ‘initial positioning of applicators/sources’, comprising 17.6% (n = 6). An example of this type of RTE included the application of seeds in the incorrect position. ‘Issue 20 of Safer Radiotherapy’ includes further guidance on brachytherapy RTE.

Multiple pathway subcodes can be assigned to each RTE. A total of 59 subcodes were identified across the 34 brachytherapy associated RTE reports; only 31 different subcodes were identified as failed (SB), the most frequently failed SB was ‘management of variations/unexpected events/errors’ comprising 13.6% (n = 8) of all brachytherapy subcodes. Only 3 method of detection subcodes were assigned to 4
brachytherapy associated RTE; these were ‘management of variations/unexpected events/errors’, ‘validation of applicator/source position’ and on-set imaging: approval process.

**Figure 15. Breakdown of brachytherapy errors coded ‘15’ by classification level, December 2018 to March 2019 (n = 34)**

The CF were reviewed within this dataset; all 34 brachytherapy associated RTE were attributed to 11 different CF as shown in Figure 16. The most frequently reported CF associated with brachytherapy RTE was ‘equipment or IT network failure’ (29.4%, n = 10), these were associated with ‘correct theatre equipment’ and ‘initial positioning of applicators/sources’ (equally each 30%, n = 3).
Figure 16. Breakdown of brachytherapy primary causative factors, December 2018 to March 2019 (n = 34)
References

1. Implementing Towards Safer Radiotherapy: guidance on reporting radiotherapy errors and near misses effectively. Available at: www.nrls.npsa.nhs.uk/resources/clinical-specialty/radiology-and-radiotherapy

2. Towards Safer Radiotherapy. Available at: www.rcr.ac.uk/towards-safer-radiotherapy


6. Cancer stats. Available at: https://cancerstats.ndrs.nhs.uk


