RTDS Annual Report 2009/2010

Department of Health

DH INFORMATION READER BOX

Policy	Estates
HR / Workforce	Commissioning
Management	IM & T
Planning /	Finance
Clinical	Social Care / Partnership Working

Document Purpose	For Information
Gateway Reference	16350
Title	Radiotherapy Dataset Annual Report 2009/2010
Author	Department of Health/ National Cancer Action Team
Publication Date	02 Aug 2011
Target Audience	PCT CEs, NHS Trust CEs, SHA CEs, Foundation Trust CEs , SHA Cancer Leads
Circulation List	Cancer Network Medical Directors, Cancer Network Directors, Cancer Network Lead Nurses, Cancer Action Team, DH Policy Officials, NHS Improvement National Managers, Royal Colleges' Members of the National Cancer Peer Review Steering Group, National Cancer Peer Review User Group, Voluntary Sector
Description	This report details the first year's experience of collecting and using the radiotherapy dataset. It outlines the approach taken to data collection, completeness, timeliness and validity of the data collected, and the quality assurance process. It gives details of the mechanism for feeding data back to the radiotherapy facilities and the commissioners, and makes some preliminary analysis of the whole dataset submitted by the English radiotherapy facilities during the financial year 2009/10.
Cross Ref	
Superseded Docs	
Action Required	N/A
Timing	N/A
Contact Details	Tim Cooper National Cancer Action Team 18th Floor, Portland House Bressenden Place London SW1E 5RS timcooper@ncat.nhs.uk
For Recipient's Use	

RTDS Annual Report 2009/2010

Prepared by

This annual report has been compiled by the Radiotherapy Clinical Information Group, which reports to the National Cancer Information Network (NCIN) and the National Radiotherapy Implementation Group (NRIG), on behalf of the National Cancer Action Team and the Department of Health.

First published July 2011
Published to DH website, in electronic PDF format only.
http://www.dh.gov.uk/publications

Contents

List of Figures

Foreword

By Professor Sir Mike Richards

The Radiotherapy dataset provides us, for the first time in this country, with the information we need to help providers understand how their referral and treatment patterns compare with other centres and be able to identify good practice elsewhere that they may want to replicate. It will enable commissioners to understand the activity that they are commissioning and identify patterns and trends to enable them to plan for future services and, importantly, will enable patients and their families to understand their treatment in the context of what happens to other patients and in other parts of the country.

Much of the work that resulted in the establishment of the RTDS was led by Dr Brian Cottier at NATCANSAT. Brian was a clinical oncologist, and also a chief executive at Clatterbridge Centre for Oncology. Brian had an extraordinary talent for reading key messages in data, and translating them into something we all understood. Sadly, Brian died in 2009, and is missed by many of us who knew him. The RTDS and the opportunity to improve radiotherapy in England is one of the many legacies he left us.

This first analysis has produced some extremely useful information. For example, on the basis of provider activity, we had previously concluded that there was a wide variation in access to this treatment around the country. The analysis of the data by network population however, shows us that the variation in access is not as wide as we had thought so we can now focus more on understanding why there are such wide variations in provider activity.

The analysis has also identified a need to move away from the use of fractions as a key measure to attendances as an objective and clearly defined measure. This will help us to begin our review of the metrics included in the National Radiotherapy Advisory Group Report published in 2007 that we committed to undertaking in the *Improving Outcomes Strategy for Cancer* published in January this year.

Importantly, this data gives us an accurate baseline from which we can now measure and assess improvements and trends. Nationally, it will help us to understand what is happening and where we should focus our efforts in driving up access to radiotherapy so that all patients who we believe will benefit from this treatment will have access to it.

The analysis in this first report demonstrates only a fraction of what is possible from the dataset. I firmly believe that further analysis of these data will contribute significantly to the ongoing development of radiotherapy in England

To establish the systems that have enabled local teams to collect and submit quality data and in collecting it together at a national level has been an enormous task, with a number of hurdles along the way. I am extremely grateful for all the hard work of local and national teams in bringing this data collection together and hope they will all continue to input to and benefit from the output that it provides. This dataset will help take us a step further in achieving our aim of providing world-class radiotherapy services in this country.

Executive summary

This document outlines the experience of the collection of a new dataset in radiotherapy for the first year April 2009 – March 2010.

Data were collected by the National Cancer Services Analysis Team (NATCANSAT) on behalf of the National Cancer Action Team (NCAT), and later the National Cancer Intelligence Network (NCIN).

Software was developed to facilitate the extraction of the data from existing radiotherapy treatment verification systems, which minimised the need to duplication of data entry into administrations systems.

A quality assurance system was established, and data were returned to the submitter if they did not meet quality standards.

Timeliness and quality of submissions has been a major issue, but has improved considerably during 09/10, and continues to do so.

A complete return has been made by every NHS radiotherapy facility in England for the period.

Data in the following areas are still poor, and steps need to be taken to improve:

- NHS Number.
- Data items associated with waiting time for radiotherapy (priority and dates).
- Data items associated the site treated.

A recent end-to-end audit of the data collected identified that submissions to the dataset may have omitted a small number of records at up to five centres in England, which may affect less than 1% of radiotherapy patients. The reason for this has now been identified and resolved.

Analysis of the data is carried out against the two major NRAG recommendations around radiotherapy activity:

- Fractions per million population.
- Fractions per linear accelerator.

The data show that in 09/10 there were approximately 31,000 attendances for radiotherapy per million population (at radiotherapy facilities in England, for patients resident in England). Attendances are an objective and consequently consistent measure of radiotherapy activity which will be slightly less than fractions (approximately 0.85-0.9 attendances per radiotherapy fraction).

Further analysis attempts to identify and highlight the reasons for geographical variation in uptake of radiotherapy. This can be partly explained by variations in cancer incidence. There is more variation in the uptake of palliative radiotherapy than in radical radiotherapy.

The data show an average of 6660 attendances per linear accelerator in regular use.

Figure 1-1 Summary of data submitted to the Radiotherapy Dataset 2009/10

		Episodes			Attendances	
	Total	**126,400**			**1,738,781**	
Gender	Male	59,292	46.91%		849,574	48.86%
	Female	66,379	52.52%		884,892	50.89%
	Not Recorded	729	0.58%		4,315	0.25%
Age	0-18	704	0.56%		12,831	0.74%
	19-49	14,520	11.49%		232,462	13.37%
	50-69	55,511	43.92%		818,579	47.08%
	70-79	31,662	25.05%		431,866	24.84%
	80+	15,097	11.94%		133,287	7.67%
	Not Recorded	8,906	7.05%		109,756	6.31%
Intent	'Radical' (15+ attendances)	62,295	49.28%		1,437,347	82.66%
	'Palliative'	64,105	50.72%		301,434	17.34%
Primary Tumour Site	Brain/CNS	3,454	2.73%		74,296	4.27%
	Breast	35,534	28.11%		506,102	29.11%
	Endocrine	551	0.44%		8,110	0.47%
	Gynae	4,834	3.82%		86,877	5.00%
	Haematology	5,811	4.60%		52,621	3.03%
	Head & Neck	6,499	5.14%		151,858	8.73%
	Lower GI	8,039	6.36%		126,501	7.28%
	Lung	16,833	13.32%		132,647	7.63%
	Other	9,636	7.62%		72,415	4.16%
	Sarcoma	1,548	1.22%		25,655	1.48%
	Skin	4,975	3.94%		43,259	2.49%
	Upper GI	4,009	3.17%		44,985	2.59%
	Urology	23,056	18.24%		402,132	23.13%
	Not Recorded	1,621	1.28%		11,323	0.65%

1. Introduction

The central submission of a dataset for every patient receiving radiotherapy in the NHS in England has been mandatory under ROCR/OR/0194/001 for patients whose treatment is recorded on an Oncology Management System since April 2009.

In April 2011 the scope of the dataset was expanded to include all patients treated with radiotherapy using a machine. Information Standards Board approval is in place to expand this further to every patient receiving radiotherapy from 2013, subject to ROCR clearance.

This report details the first year's experience of collecting and using these data. It outlines the approach taken to data collection, completeness, timeliness and validity of the data collected, and the quality assurance process. It gives details of the mechanism for feeding data back to the radiotherapy facilities and the commissioners, and makes some preliminary analysis of the whole dataset submitted by the English radiotherapy facilities during the financial year 2009/10.

2. Background

The Radiotherapy dataset (RTDS) was established to collect data centrally on every patient treated with radiotherapy in, or funded by, the NHS in England.

Prior to the inception of the RTDS, very limited radiotherapy data were collected, and there were a wide variety of definitions of each of the currencies in use. The RTDS seeks to standardise these currencies, and to introduce new currencies which are aligned with other activities in the NHS.

Despite the lack of central information on radiotherapy, each patient's data are stored on a database linked to the radiotherapy treatment machine (these systems are referred to generically as Oncology Management Systems), which generate an essential clinical record of the radiation delivery to each patient. These systems have been in use for several years.

A decision was taken early in the RTDS development to use these systems as the main source for the dataset, in order to avoid duplication of effort in entering the radiotherapy treatment details onto hospital patient administration systems (PAS), and to benefit from the excellent data quality in the technical radiotherapy data resulting from the use of the system which actually controls patient treatment. This resulted in an unconventional approach to submission of the data which is detailed below in section 3.1.

The new dataset was designed as a 'tail' to the Out-patient commissioning dataset (OPCDS), which is the NHS standard for reporting out-patient attendances. A standard interpretation of the OPCDS for radiotherapy was agreed as part of the dataset approval process, where one out-patient attendance would be reported for each attendance for radiotherapy, including for patients who are in-patients in hospital whilst undergoing radiotherapy.

The new data standard was approved by the NHS Information Standards Board in September 2008, and the dataset was mandated for collection from April 2009 in England. A Data Set Change Notice (DSCN 22/2008)[1] was published in September 2008.

3. RTDS Submission

3.1 The submission process

The OPCDS and RTDS consists of a relational set of data held at four different levels. In order to facilitate reporting the data as a tail to the OPCDS, the data had to be reported at attendance level, however as the radiotherapy currencies needed attendances to be grouped together, some data were duplicated on each attendance to make this possible.

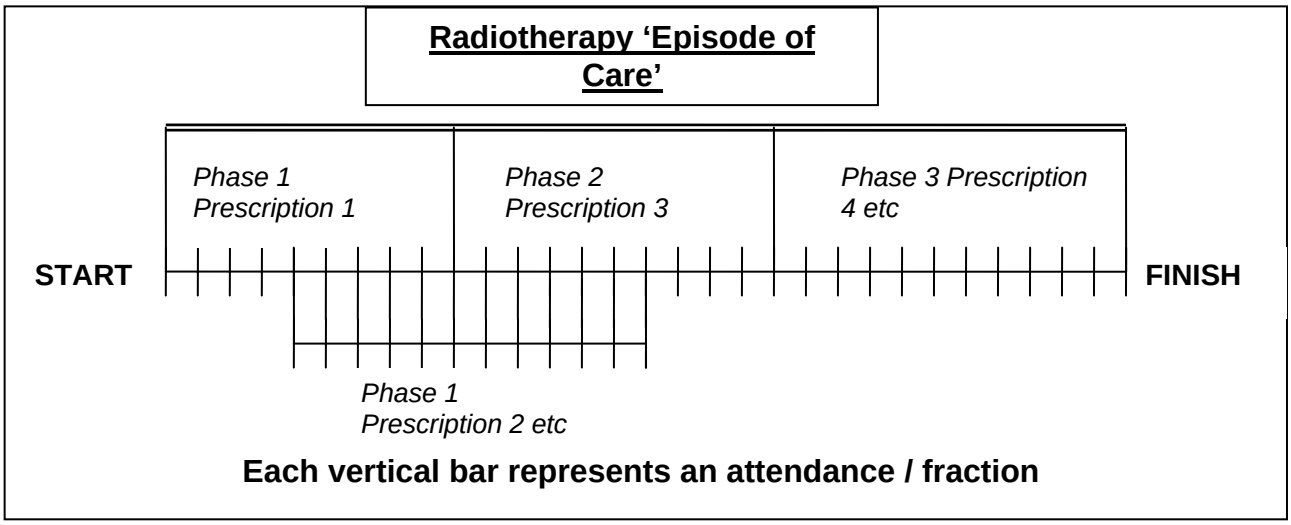
OPCDS consists of one record per attendance

RTDS Episodes consists of a record for each radiotherapy episode. This record is reported against each attendance during the episode. The first attendance of the episode is identified as a first attendance in the first field in the OPCDS, and the final attendance of the episode is identified as a discharge in the outcome field of the OPCDS.

RTDS Prescriptions consists of a record for each radiotherapy prescription. An episode may consist of several prescriptions treated consecutively and/or concurrently. Each prescription record is reported against every attendance when treatment was delivered against the prescription.

RTDS Exposures consists of a record of the treatment exposure of each radiotherapy field. Each exposure in linked to a prescription and to an episode as is reported against the attendance when it was delivered. Each field has a unique identifier, which facilitates identification of multiple exposures to the same field during multiple attendances.

Figure 3.1-1 Representation of a radiotherapy Episode[2]



The figure above describes the activities which may occur as part of the same radiotherapy 'episode'. These include multiphase treatments (each phase reported as a separate prescription.), concurrent and/or consecutive treatments to related or unrelated treatment sites. In the example shown above Prescriptions 1, 3 & 4 represent a three phase treatment to the same site (eg: head and neck tumour) and prescription 2 represents a concurrent treatment to another site (eg: neck nodes).

A full list of the data items included in the RTDS can be found in Appendix 2.

The Oncology Management system (OMS) holds detailed technical information on the radiotherapy delivered, and a validated patient identifier to accurately retrieve the information for the treatment of the correct patient. However in many Trusts no system is in place to validate and update any demographic data stored on the OMS. Thus these patient level data are extracted from local PAS and linked to the OMS data.

In order to facilitate the consistent reporting of data from each of the OMSs consultation was undertaken with the manufacturers, UK user groups and pilot centres for each of the four systems in use.

Oncentra (older versions were known as Visir) is an OMS developed by Nucletron and widely used with Elekta machines. Subsequently Elekta acquired another software company, and began to bundle its own software with its machines. Nucletron are no longer developing Visir.
Aria (older versions were known as Varis) is the Varian OMS which is widely used with Varian machines.
Mosaiq (previously branded as Impac) is the OMS company acquired by Elekta which is now in use with Elekta machines. This system is also marketed separately in the UK by Siemens.
Lantis is a predecessor of Impac which was bundled with Siemens machines.

During this consultation a number of key issues were agreed establishing data entry protocols:

- All items which were required for the RTDS had to be recorded on OMS or PAS, some centres had to commence recording items which were previously omitted.
- Some data items were previously entered as free text in OMSs, and modifications had to be made to allow them to be coded, or existing codes had to be modified to align them with national codes.
- Some elements of some OMSs allowed for flexibility in data entry. In order to allow data to be extracted in a consistent manner across the country, centres agreed to standardise their data entry. (eg: standard naming conventions for treatment details entered only for verification purposes, so that these can be ignored for treatment data).
- Certain data items in the RTDS were not available on each OMS. Protocols were agreed to record these items in standard locations, or OMSs were modified to allow them to be recorded.

There are interface documents for all systems, and a number of data entry protocol documents of varying complexity published on the canceruk.net website at:

Oncentra: http://www.canceruk.net/rtservices/rtds/visir_Oncentra/index.asp
Aria: http://www.canceruk.net/rtservices/rtds/Aria/index.asp
Mosaiq: **(Elekta versions):**
http://www.canceruk.net/rtservices/rtds/Impac_Mosaiq/index.asp
(Multiaccess versions):
http://www.canceruk.net/rtservices/rtds/Impac_MultiAccess/index.asp
Lantis: http://www.canceruk.net/rtservices/rtds/lantis/index.asp

To ensure that extracts were carried out in a consistent manner, and to avoid duplication of effort, NATCANSAT developed a suite of software applications (***toolkits***) to take extracts from the OMS and combine them with extracts from PAS and to output the OPCDS and RTDS ready for submission.

These toolkits perform a number of functions:

- Supply the user with a package to extract data directly from the OMS (this code was developed by the software provider and/or pilot sites).
- Take the standard OMS extract, and import it into the toolkit for processing.
- Identify the patients who were treated in the relevant time period and produce an extract of identifiers which can be used to generate an extract from PAS.
- Import the standard PAS extract.
- Retain a series of lookup tables holding national codes for variables which are coded using local codes on OMS. (eg: consultant is be held on local systems usually coded by the consultant's initials. The toolkit contains a local version of a lookup table of initials against GMC codes.

- Perform a range of housekeeping checks on the data, and identify omissions and prompt the user to complete the data as appropriate. (egthe housekeeping checks inform the user if a new consultant is present in the data who is omitted from the list, so that their details can be added).
- Merge the data from both sources, using a patient identifier selected by the user as the one which is validated against the radiotherapy record on OMS.
- Generate the output in a form which can be submitted.
- Name the output according to an agreed naming convention.

3.2 First year's submission

Submission of the dataset was mandated from April 2009 but various problems emerged once individual centres tried to implement the data capture and return. Some of these difficulties were related to the toolkits. Each toolkit had been developed and piloted at one centre, but as they were rolled out to other centres, new problems came to light due to differences in local data entry practice. In addition many centres encountered problems with obtaining the extract from local PAS systems which was required to complete the submission.

As a result functioning toolkits were not available to all users until several months into the data collection, and an iterative process was entered into by a significant number of centres in order to produce an acceptable dataset. Additional support was required to individual centres from NATCANSAT and the National Cancer Action Team to identify and fix these problems before successful data flows were achieved. The extreme effort of all of those involved is recognised.

The majority of providers effectively implemented the new data entry protocols in order to collect the additional data required. There were, however, delays in this implementation at many providers, which has resulted in omissions in some fields in the earlier data and some providers have still not implemented all of the data collection required for a complete submission. See section 5 for more details.

Submissions were due to be made by the fifteenth working day of the month following the submission month (ie: April 2009's submission to be made by 20th May). Initially providers had difficulty in meeting this schedule due to the problems described above, but by April 2010 many providers were making their submissions on schedule, and had been able to backfill the submissions from previous months. This situation continues to improve. A table is published weekly on the NATCANSAT NHS Net website at http://nww.natcansat.nhs.uk/rtds/analysis.htm (this link only available to NHS users on an N3 connection to the NHSNet)

The following figures summarise the timeliness of returns made during 2009/10.

Figure 3.2-1 Delay in receipt of the first submission

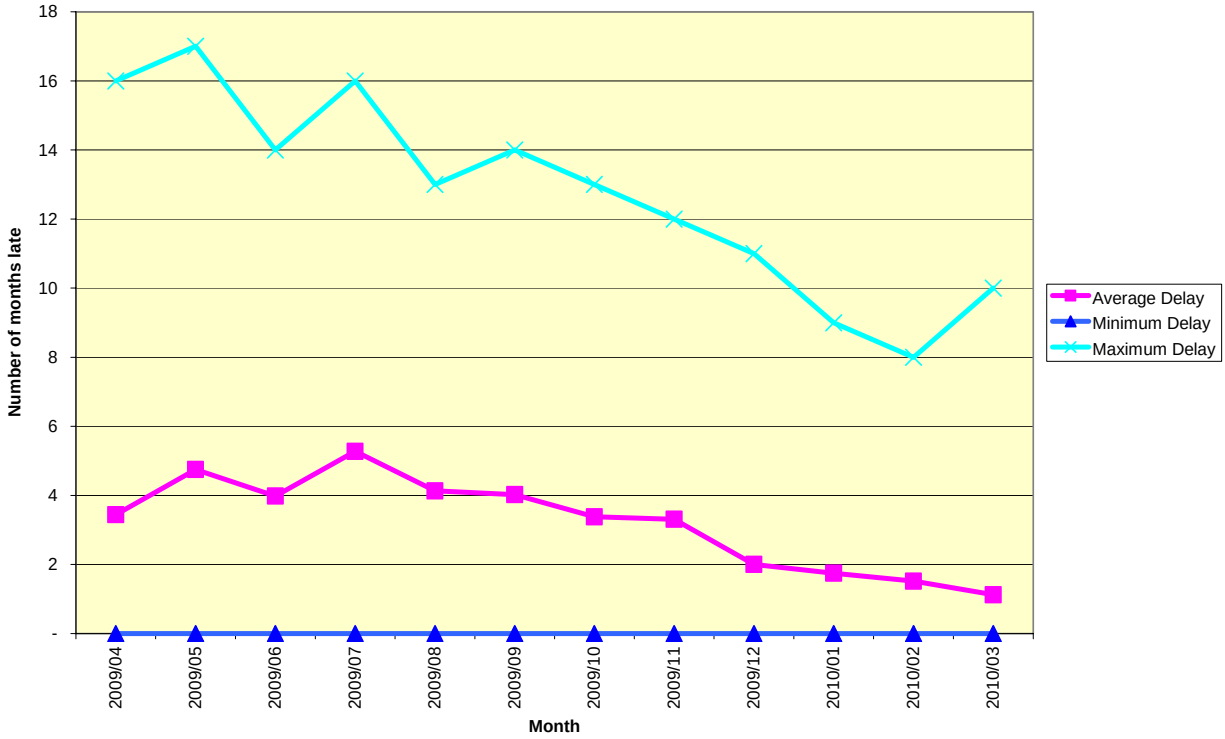


Figure 3.2-1 Delay in receipt of the first submission shows the number of months after the due month that the first version of the submission for each month was made. (In the event that a submission fails the quality assurance checks, the provider is requested to resubmit corrected data.) Timeliness of submissions improved significantly through the year. By the end of the year, submissions were being received on average around one month late with many centres achieving submission on time as shown in figure 3-2-2. This turn around is a tribute to the hard work and dedication of those charged with the data returns at individual radiotherapy centres.

Figure 3.2-2 Delay in receipt of the final submission

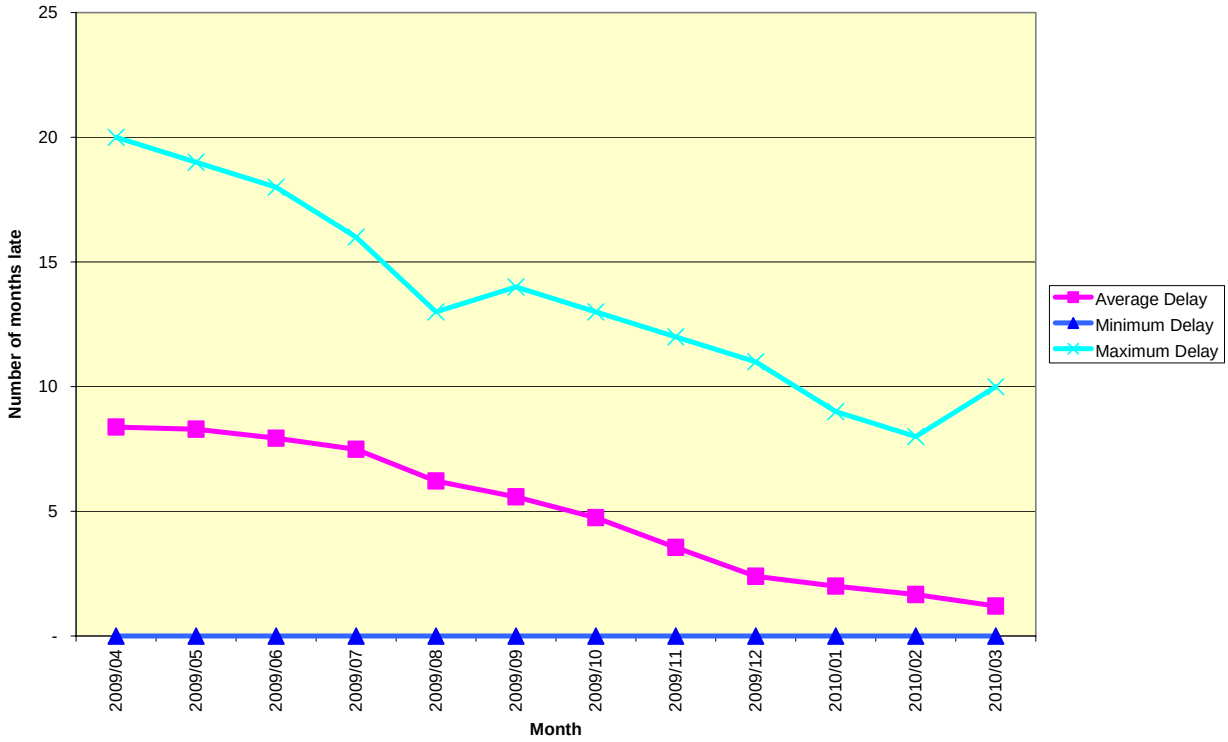


Figure 3.2-2 Delay in receipt of the final submission shows the number of months after the scheduled submission month that each submission was made in its final version. This was the version of the submission which passed the quality assurance checks and was uploaded to the RTDS database for use in reporting and analysis. Timeliness of final submissions too improved throughout 2009/10, with a final submission being received on average around one month late by the end of the year.

Figure 3.2-3 Progress in delay in submission of radiotherapy centre

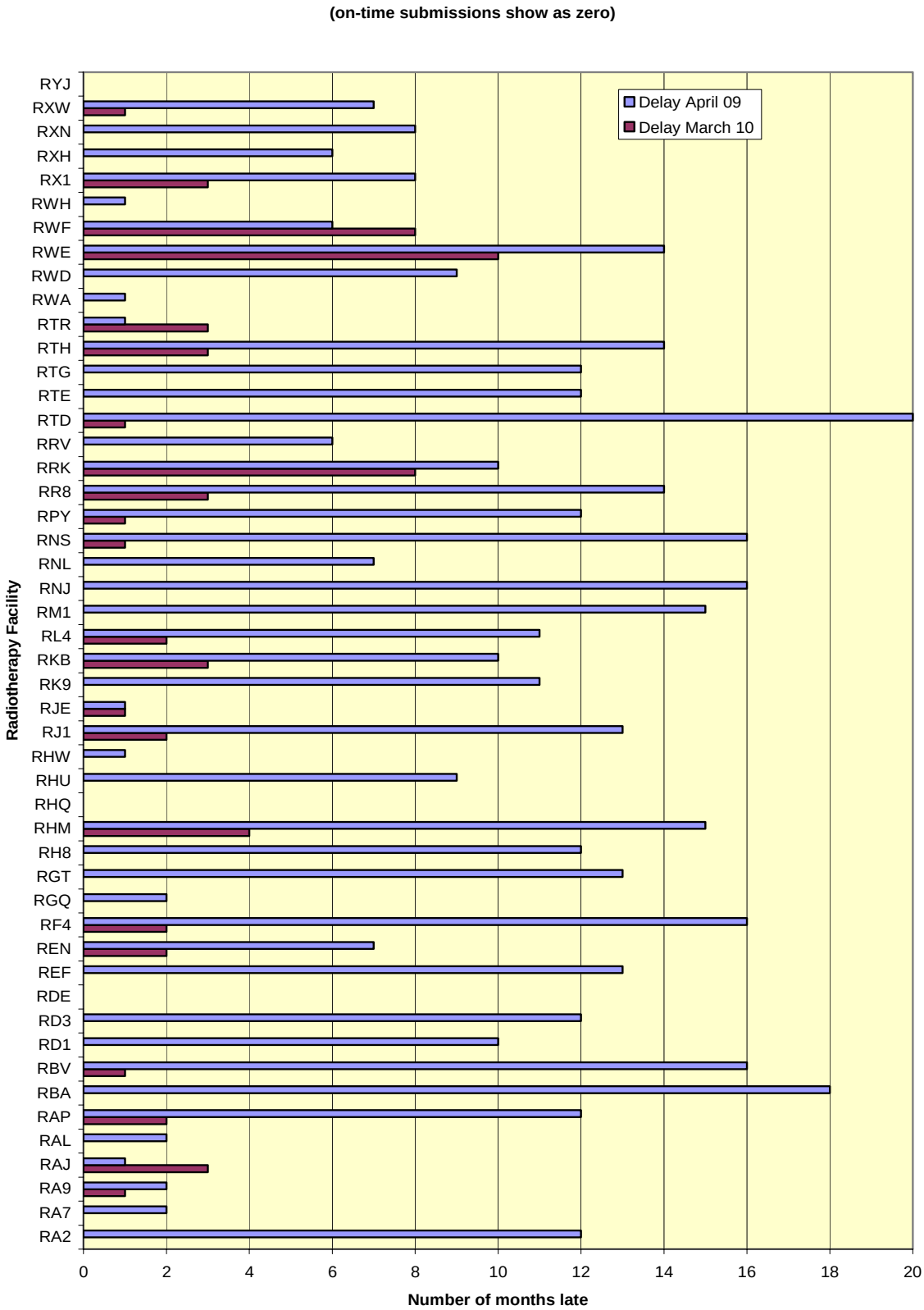


Figure 3.2-3 Progress in Delay in Submission by Radiotherapy Centre shows the delay in receipt of the first submission each month as of the April 2009 submissions (blue/light bar) and the March 2010 submission (brown/dark bar) in months after the scheduled submission month grouped by submitting radiotherapy centre. Centres with no visible bar submitted during the scheduled month.

The centre codes are listed in Appendix 3.

Figure 3.2-4 below, lists the dates on which the final submission for each month of data was received from each radiotherapy facility. This chart can be found on the NATCANSAT N3 website at nww.natcansat.nhs.uk/rtds/ where it is updated weekly, and submissions which have yet to satisfy the quality assurance requirements are shown in yellow.

Figure 3.2-4 RTDS Submissions 2009/10

Trust	Centre Name	Trust Name	April	May	June	July	August	September	October	November	December	January	February	March
RWH	Mount Vernon	East and North Hertfordshire NHS Trust	27-May-10	13-May-10	12-May-10	28-Apr-10	23-Apr-10	23-Apr-10	22-Apr-10	21-Apr-10	04-Feb-10	18-Feb-10	11-Mar-10	09-Apr-10
RNJ	Barts	Barts And The London NHS Trust	15-Sep-10	15-Sep-10	13-Sep-10	23-Sep-10	08-Oct-10	07-Jul-10	17-Nov-09	12-Dec-09	14-Jan-10	15-Feb-10	12-Mar-10	15-Apr-10
RAP	North Middlesex	North Middlesex University Hospital NHS Trust	04-May-10	04-May-10	04-May-10	19-May-10	27-May-10	07-Jun-10	02-Jun-10	02-Jun-10	09-Jun-10	29-Jun-10	01-Jul-10	30-Jun-10
RF4	Queens, Romford	Barking, Havering And Redbridge Hospitals NHS Trust	02-Sep-10	20-Sep-10	20-Sep-10	20-Sep-10	22-Dec-09	22-Dec-09	26-Jan-10	29-Jan-10	26-Jan-10	12-Feb-10	26-May-10	11-Jun-10
RAJ	Southend	Southend Hospital NHS Trust	02-Jun-09	14-Jun-10	19-Feb-10	19-Feb-10	19-Feb-10	19-Feb-10	19-Feb-10	19-Feb-10	19-Feb-10	19-Feb-10	13-Jul-10	01-Jul-10
RRV	University College	University College London Hospitals NHS Foundation Trust	21-Jan-10	04-Feb-10	08-Feb-10	12-Feb-10	15-Feb-10	01-Mar-10	01-Mar-10	04-Mar-10	03-Mar-10	01-Mar-10	16-Mar-10	22-Apr-10
RAL	Royal Free	Royal Free Hampstead NHS Trust	03-Jul-09	02-Jul-09	20-Nov-09	18-Sep-09	20-Nov-09	11-Nov-09	13-Nov-09	10-Dec-09	22-Jan-10	18-Feb-10	13-Apr-10	13-Apr-10
RYJ	Imperial	Imperial College Healthcare NHS Trust	19-May-09	03-Jun-10	10-Jun-10	27-Jan-10	29-Jul-10	20-Oct-09	09-Sep-10	07-Sep-10	19-Jan-10	17-Feb-10	06-Apr-10	27-Apr-10
RDE	Colchester	Essex Rivers Healthcare NHS Trust	28-May-09	09-Mar-10	23-Jul-09	25-Feb-10	15-Dec-09	09-Mar-10	28-Jan-10	09-Mar-10	25-Feb-10	25-Feb-10	24-Mar-10	20-Apr-10
RR8	Leeds	Leeds Teaching Hospitals NHS Trust	27-Jul-10	27-Jul-10	27-Jul-10	27-Jul-10	27-Jul-10	27-Jul-10	23-Jul-10	23-Jul-10	23-Jul-10	23-Jul-10	19-Jul-10	29-Jul-10
RNL	Carlisle	North Cumbria Acute Hospitals NHS Trust	17-Dec-09	17-Dec-09	17-Dec-09	17-Dec-09	17-Dec-09	17-Dec-09	17-Dec-09	22-Jan-09	22-Jan-09	09-Mar-10	21-Apr-10	21-Apr-10
RTD	Newcastle	Newcastle Upon Tyne Hospitals NHS Trust	21-Jan-11	21-Jan-11	21-Jan-11	22-Dec-10	02-Mar-10	20-Dec-10	16-Dec-10	14-Oct-10	30-Sep-10	18-Mar-10	24-Mar-10	05-May-10
RTR	Middlesborough	South Tees Hospitals NHS Trust	16-Jun-09	16-Jun-09	12-May-10	15-Sep-10	15-Sep-10	15-Sep-10	27-Aug-10	27-Aug-10	27-Aug-10	28-Jul-10	28-Jul-10	28-Jul-10
RWA	Hull	Hull And East Yorkshire Hospitals NHS Trust	16-Jun-09	20-Aug-10	20-Aug-10	20-Aug-10	28-Sep-09	20-Oct-09	22-Dec-09	22-Dec-09	29-Jan-10	19-Feb-10	17-Mar-10	19-Apr-10
RTE	Cheltenham	Gloucestershire Hospitals NHS Foundation Trust	04-May-10	12-Feb-10	14-Jan-10	14-Jan-10	14-Jan-10	15-Jan-10	15-Jan-10	15-Jan-10	11-Jan-10	22-Feb-10	18-Mar-10	21-Apr-10
RA7	Bristol	United Bristol Healthcare NHS Trust	16-Jun-09	16-Jun-09	13-Jul-09	07-Aug-09	15-Sep-09	27-Oct-09	16-Nov-09	08-Dec-09	21-Jan-10	15-Feb-10	11-Mar-10	19-Apr-10
RD1	Bath	Royal United Hospital Bath NHS Trust	26-Mar-10	26-Mar-10	26-Mar-10	26-Mar-10	26-Mar-10	26-Mar-10	26-Mar-10	26-Mar-10	26-Mar-10	26-Mar-10	26-Mar-10	22-Apr-10
RA9	Torbay	South Devon Health Care NHS Trust	24-Jun-09	16-Jun-09	14-Jul-09	11-Aug-09	17-Sep-09	17-Mar-10	27-Mar-10	22-Mar-10	22-Mar-10	15-Apr-10	28-Apr-10	10-May-10
RH8	Exeter	Royal Devon And Exeter NHS Foundation Trust	19-May-10	19-May-10	19-May-10	20-Aug-09	20-Nov-09	20-Oct-09	19-May-10	18-Dec-09	22-Apr-10	12-Feb-10	08-Mar-10	30-Apr-10
RK9	Plymouth	Plymouth Hospitals NHS Trust	14-Apr-10	01-Apr-10	01-Apr-10	18-Mar-10	18-Mar-10	22-Feb-10	22-Feb-10	22-Feb-10	22-Feb-10	08-Mar-10	23-Mar-10	29-Apr-10
REF	Truro	Royal Cornwall Hospitals NHS Trust	07-Jun-10	07-Jun-10	07-Jun-10	07-Jun-10	07-Jun-10	07-Jun-10	07-Jun-10	07-Jun-10	28-Jan-10	23-Aug-10	24-Mar-10	23-Apr-10
RHM	Southampton	Southampton University Hospitals NHS Trust	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10	13-Aug-10
RD3	Poole	Poole Hospital NHS Trust	08-Jun-10	08-Jun-10	05-May-10	06-May-10	03-Dec-09	20-Oct-09	10-Nov-09	08-Dec-09	11-Feb-10	23-Feb-10	30-Mar-10	20-Apr-10
RHU	Portsmouth	Portsmouth Hospitals NHS Trust	12-Feb-10	16-Jul-09	06-Jul-09	11-Aug-09	15-Sep-09	12-Oct-09	11-Nov-09	10-Dec-09	12-Jan-10	16-Feb-10	12-Mar-10	14-Apr-10
RRK	Birmingham	University Hospital Birmingham NHS Foundation Trust	03-Mar-10	03-Mar-10	03-Mar-10	03-Mar-10	03-Mar-10	03-Mar-10	03-Mar-10	03-Mar-10	03-Mar-10	08-Oct-10	31-Aug-10	08-Oct-10
RKB	Coventry	University Hospitals Coventry And Warwickshire NHS Trust	08-Mar-10	01-Mar-10	08-Mar-10	08-Mar-10	03-Mar-10	03-Mar-10	11-Apr-10	11-Apr-10	11-Apr-10	23-Jul-10	26-Jul-10	28-Jul-10
RJE	North Staffords	University Hospital Of North Staffordshire NHS Trust	02-Jun-09	28-Jul-09	23-Dec-10	11-Nov-10	27-Sep-10	02-Sep-10	06-Aug-10	17-Dec-09	25-Jan-10	23-Mar-10	25-Mar-10	04-May-10
RL4	Wolverhampton	Royal Wolverhampton Hospitals NHS Trust	16-Apr-10	30-Apr-10	05-May-10	05-May-10	05-May-10	05-May-10	15-Jun-10	05-May-10	05-May-10	15-Jun-10	15-Jun-10	15-Jun-10
RXW	Shrewsbury	Shrewsbury And Telford Hospital NHS Trust	31-Dec-09	20-May-10	22-Jan-10	02-Feb-10	17-Feb-10	25-Feb-10	15-Mar-10	22-Mar-10	29-Mar-10	30-Mar-10	30-Mar-10	18-May-10
RHQ	Sheffield	Sheffield Teaching Hospitals NHS Foundation Trust	14-May-09	22-Jun-09	10-Sep-09	08-Sep-09	30-Sep-09	27-Oct-09	12-Jan-10	13-Jan-10	13-Jan-10	12-Feb-10	17-Mar-10	26-Apr-10
RWE	Leicester	University Hospitals Of Leicester NHS Trust	26-Jul-10	26-Jul-10	26-Jul-10	09-Jul-10	15-Oct-09	02-Jul-10	02-Jul-10	17-May-10	23-Jun-10	21-Jun-10	21-Jun-10	03-Feb-11
RTG	Derby	Derby Hospitals NHS Foundation Trust	26-May-10	26-May-10	26-May-10	26-May-10	26-May-10	26-May-10	26-May-10	26-May-10	04-Feb-10	22-Feb-10	10-Mar-10	28-Apr-10
RX1	Nottingham	Nottingham University Hospitals NHS Trust.	13-Jan-10	14-Jan-10	14-Jan-10	14-Jan-10	14-Jan-10	14-Jan-10	14-Jan-10	14-Jan-10	09-Feb-10	12-Feb-10	12-May-10	26-Jul-10
RWD	Lincoln	United Lincolnshire Hospitals NHS Trust	11-Feb-10	24-Jun-09	12-Aug-09	07-Sep-09	15-Sep-09	12-Oct-09	16-Nov-09	16-Dec-09	15-Jan-10	12-Feb-10	23-Mar-10	22-Apr-10
RGT	Cambridge	Cambridge University Hospitals NHS Foundation Trust	21-Jun-10	21-Jun-10	21-Jun-10	17-Jun-10	21-Jun-10	21-Jun-10	07-Dec-09	04-Jan-10	20-Jan-10	11-Feb-10	16-Mar-10	12-Apr-10
RM1	Norwich	Norfolk And Norwich University Hospital NHS Trust	25-Aug-10	25-Aug-10	25-Aug-10	25-Aug-10	25-Aug-10	24-Aug-10	24-Aug-10	18-Feb-10	18-Feb-10	18-Feb-10	11-Mar-10	14-Apr-10
RGQ	Ipswich	Ipswich Hospital NHS Trust	13-Jul-09	10-Sep-09	03-Aug-09	14-Oct-09	11-Jan-10	03-Mar-10	23-Mar-10	18-Mar-10	22-Mar-10	26-Mar-10	07-Apr-10	20-Apr-10
RTH	Oxford	Oxford Radcliffe Hospitals NHS Trust	07-Jul-10	07-Jul-10	07-Jul-10	07-Jul-10	07-Jul-10	07-Jul-10	07-Jul-10	07-Jul-10	07-Jul-10	12-Aug-10	07-Jul-10	07-Jul-10
RNS	Northampton	Northampton General Hospital NHS Trust	21-Sep-10	25-Nov-10	07-Jul-10	25-Jun-10	25-Jun-10	08-Jan-10	09-Feb-10	23-Mar-10	01-Apr-10	23-Apr-10	28-Apr-10	17-May-10
RHW	Reading	Royal Berkshire And Battle Hospitals NHS Trust	26-May-09	26-Jun-09	31-Jul-09	17-Sep-09	30-Sep-09	27-Oct-09	20-Nov-09	01-Jun-10	26-Jan-10	24-Feb-10	23-Mar-10	29-Apr-10
RWF	Kent	Maidstone And Tunbridge Wells NHS Trust	04-Nov-09	09-Dec-09	12-Jan-10	28-Jan-10	19-Feb-10	14-Apr-10	13-May-10	13-Dec-10	16-Dec-10	01-Nov-10	22-Nov-10	09-Dec-10
RPY	Royal Marsden	Royal Marsden NHS Foundation Trust	05-May-10	05-May-10	05-May-10	15-Oct-09	15-Oct-09	15-Oct-09	18-Jan-10	15-Feb-10	09-Mar-10	09-Mar-10	09-Mar-10	14-Apr-10
RJ1	Guy's & St Thomas'	Guy's And St Thomas' NHS Foundation Trust	16-Aug-10	15-Sep-10	16-Sep-10	22-Sep-10	22-Sep-10	22-Sep-10	22-Sep-10	23-Sep-10	23-Sep-10	23-Sep-10	23-Sep-10	17-Jun-10
RA2	Guildford	Royal Surrey County Hospital NHS Trust	27-May-10	28-May-10	28-May-10	23-Mar-10	12-Apr-10	20-May-10	12-May-10	25-May-10	25-May-10	25-May-10	25-May-10	19-Apr-10
RXH	Brighton	Brighton And Sussex University Hospitals NHS Trust	16-Nov-09	16-Nov-09	16-Nov-09	20-Oct-09	18-Sep-09	20-Oct-09	20-Nov-09	16-Dec-09	15-Jan-10	24-Feb-10	18-Mar-10	16-Apr-10
REN	Clatterbridge	Clatterbridge Centre For Oncology NHS Trust	14-Dec-09	14-Dec-09	14-Dec-09	14-Dec-09	05-Jan-10	05-Jan-10	05-Jan-10	16-Feb-10	16-Mar-10	14-Apr-10	18-May-10	15-Jun-10
RBV	Manchester	Christie Hospital NHS Trust	02-Sep-10	03-Sep-10	08-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	15-Sep-10	02-Feb-10	08-Jul-10	18-Aug-10	21-May-10
RXN	Preston	Lancashire Teaching Hospitals NHS Trust	28-Jan-10	28-Jan-10	29-Jan-10	29-Jan-10	29-Jan-10	04-Feb-10	02-Feb-10	04-Feb-10	09-Feb-10	02-Mar-10	29-Mar-10	23-Apr-10
RBA	Taunton	Taunton & Somerset NHS Trust			11-Oct-10	11-Oct-10	11-Oct-10	11-Oct-10	11-Oct-10	11-Oct-10	11-Oct-10	11-Oct-10	11-Oct-10	11-Oct-10

4. Analysis

Below are a series of analyses derived from the submission from 2009-10.

The NRAG report has described radiotherapy activity in terms of fractions, but when a patient is receiving treatment to more than one radiotherapy prescription concurrently, there are different interpretations of how these are combined to report fractions, also some centres will use multiple fractions to indicate that a more complex treatment was given. Thus a currency of fractions, however clearly defined, tends to lead to confusion and potential misinterpretation of the information provided.

An attendance is an objective measure, which is clearly defined in the NHS Data Dictionary[3], therefore the analysis below is reported in terms of patients, and of radiotherapy attendances.

The data used to develop the recommendations in the National Radiotherapy Advisory Group (NRAG) Report[4] : 'Radiotherapy Developing a World Class Service in England' which produced the radiotherapy activity metric of 54,000 fractions per million population by 2016, came from the NATCANSAT radiotherapy equipment survey[5], which included self-reported figures on the number of fractions delivered by each radiotherapy machine in the UK. A fraction was clearly defined in the survey documentation, but providers inevitably returned figures which had already been collected using their own definitions.

This makes it difficult to assess the RTDS data against the NRAG recommendations as the number of attendances will be fewer than the number of fractions used for the recommendations. NATCANSAT have estimated that the number of fractions which each attendance reported through the RTDS might represent is 1.15 (or 0.85-0.9 Attendances per fraction). It is important that the RTDS data are interpreted against the NRAG recommendations in the light of this.

4.1 Radiotherapy Uptake – Attendances per million population by provider

Figure 4.1-1 Radiotherapy Attendances per million population by provider

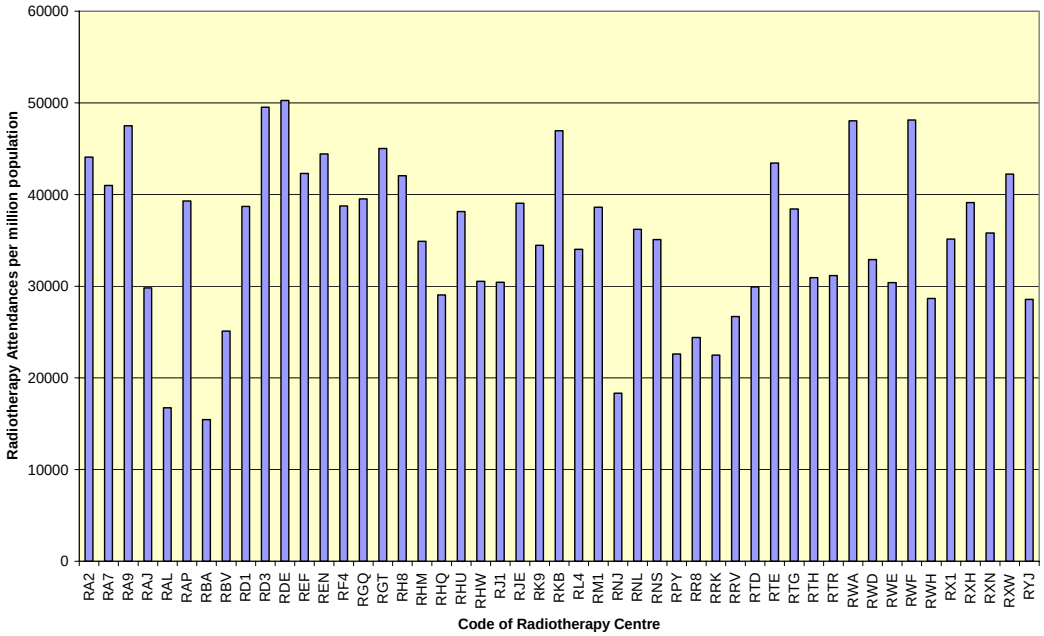


Figure 4.1-1 Radiotherapy Attendances per million population by provider shows the rate of attendances per million population in the calculated catchment area of the facility submitted through the RTDS for 09/10. NATCANSAT's approach to calculating catchment population can be found at www.canceruk.net/catchment/

4.2 Radiotherapy Uptake – Attendance per million population by residence

Figure 4.2-1 Radiotherapy attendances per million population

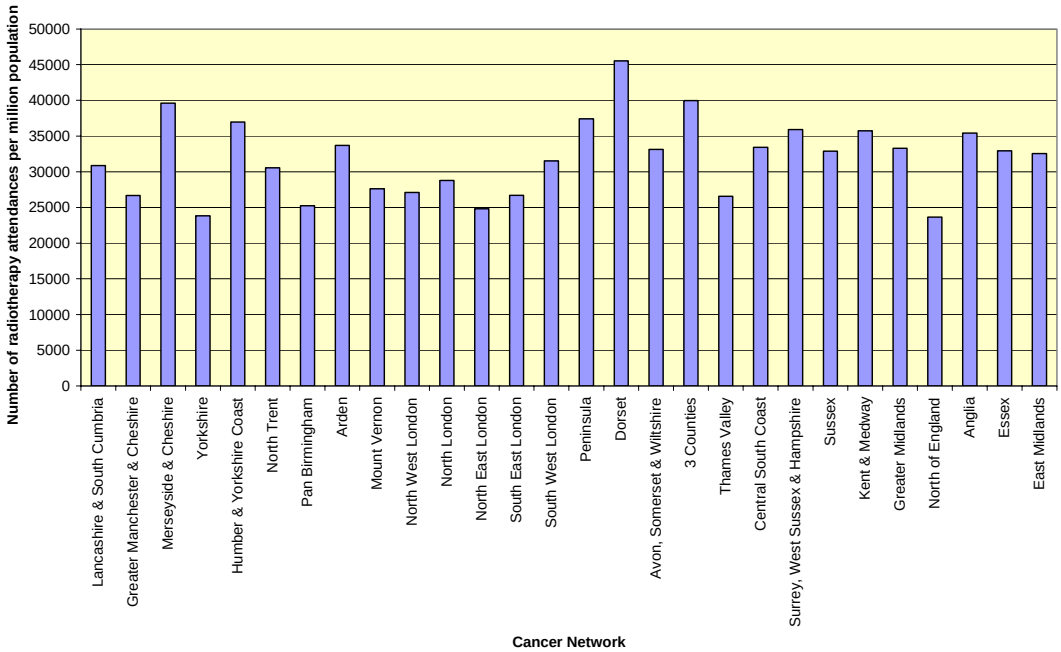


Figure 4.2-1 Radiotherapy attendances per million population shows the number of attendances during 09/10, grouped by cancer network of residence of the patient, and the rate of attendances per million population. Less variation is observed in this chart than the previous one.

The population figures used for Cancer Networks are the 2007 mid-year estimates for 2001 census wards[6], using the agreed cancer network boundaries[7] described by census ward summated for each network.

The resident population of an area is absolute, and therefore the resident data relating the cancer network population will be a better measure of the true radiotherapy rate. The radiotherapy catchment areas will always be an estimate based on the patient flows, and it can be difficult to accurately reflect complex tertiary and quaternary referral patterns.

For this reason, the remainder of these analyses use cancer network resident based radiotherapy data from RTDS. A matrix showing the proportion of patients from each radiotherapy facility resident in each network is included in Appendix 4.

The chart shows that variation between networks persists (notably high rates in Dorset Three Counties, Merseyside and Humber, and low rates in the Cities and the North).

There are a number of possible reasons for variation in the number of attendances by population:

- The cancer incidence in the underlying population.
- The casemix of patients presenting with cancer, and their radiotherapy need (ie: radiotherapy is an appropriate treatment for certain types of cancer, and for tumours presenting early or late, treatments for different tumours and at different stage requiring different numbers of attendances).
- The clinical practice at the treating facility, in terms of the number of fractions of radiotherapy which are prescribed for different conditions, and the referral patterns for radiotherapy in the conditions where there are alternative treatments (eg: mastectomy versus breast conserving surgery and radiotherapy in breast cancer).
- Genuine variations in the provision of service where patients for whom radiotherapy would be an appropriate treatment are not accessing the service. This might be due to an inadequate provision of radiotherapy equipment, extended waiting times, patient choice or inappropriate lack of clinical referral.

Each of these issues is addressed in the following sections.

4.3 Radiotherapy Uptake – Attendances per cancer registration

Cancer incidence figures used in this report represent new cases of cancer diagnosed during 2008, grouped by cancer network of residence[8], published by the National Cancer Intelligence Network (NCIN). This is the most up to date published incidence data by cancer network, so is compared with the radiotherapy data from 2009/10.

Figure 4.3-1 Unadjusted Cancer Incidence per 100,000 population by Cancer Network

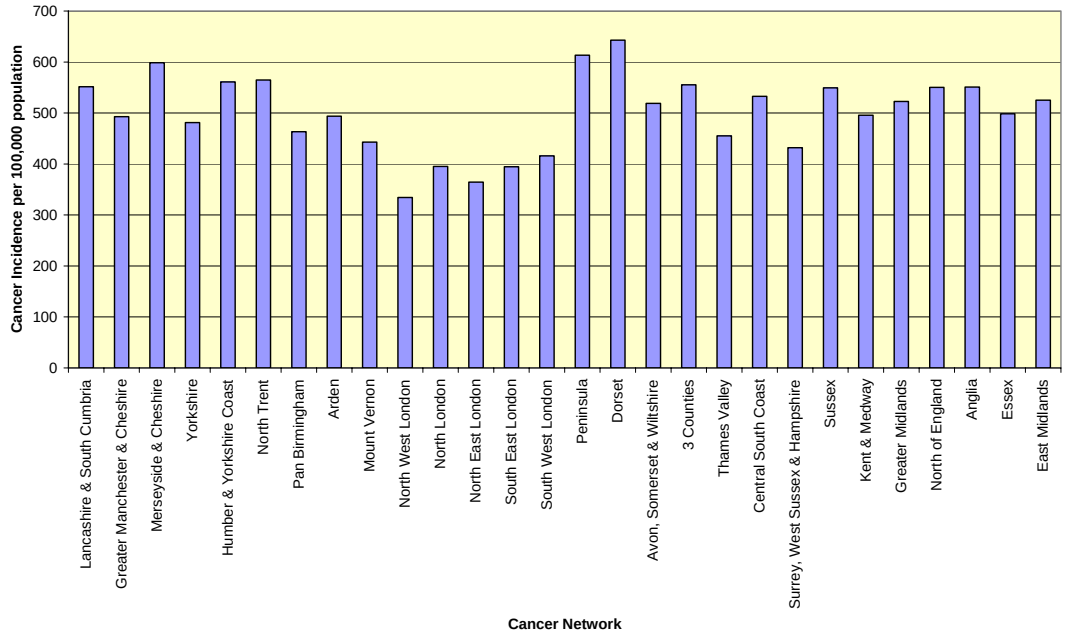


Figure 4.3-1 Unadjusted Cancer Incidence per 100,000 population by Cancer Network per 100,000 population shows the crude incidence of cancer in each cancer network. The networks with the highest incidence (Dorset and Peninsula Cancer Networks) also have a high uptake of radiotherapy per million population, and those with the lowest incidence (North/West London and North East London Cancer Networks) have a low uptake of radiotherapy. However, there are other networks with radiotherapy treatment rates at the extremes, which are not explained by the underlying cancer incidence.

Figure 4.3-2 Radiotherapy attendances per thousand cancer incident cases

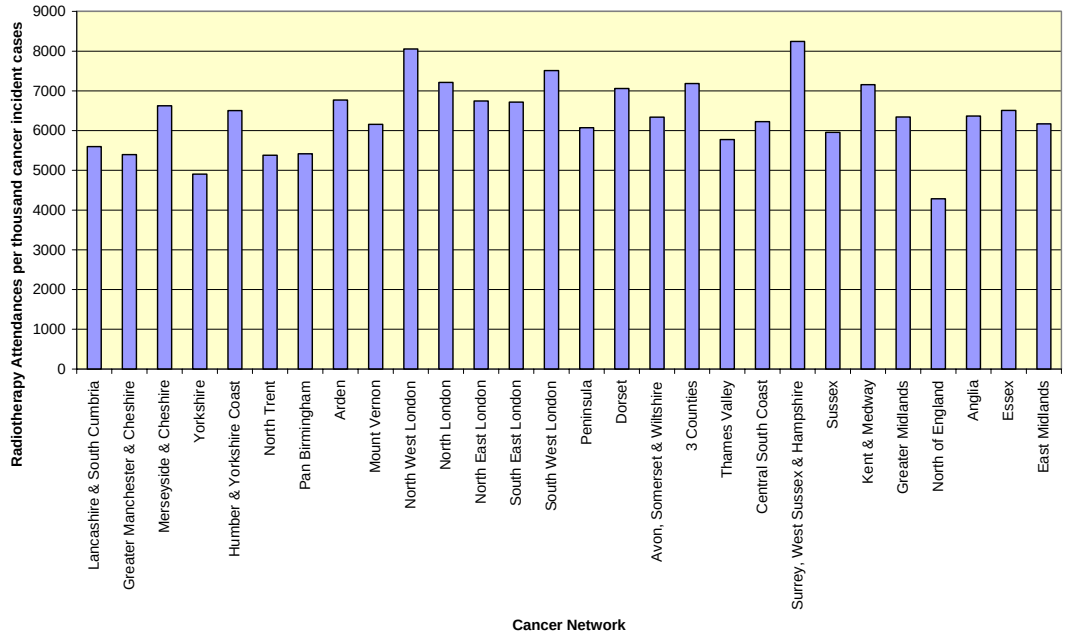


Figure 4.3-2 Radiotherapy attendances per thousand cancer incident cases shows the number of radiotherapy attendances per newly diagnosed cancer case in 2008 in each cancer network. This graph most accurately shows the variation in the number of radiotherapy attendances which are being accessed by patients with cancer in each network.

It can be noted that the high activity outliers previously identified are no longer apparent, as the high uptake of radiotherapy there might be associated with a high incidence of cancer. Interestingly, the London networks, which appeared to have a low uptake of radiotherapy when compared with their resident population, now appear to have a high uptake perhaps due to lower cancer incidence in their younger populations.

*(**Note**: the high figures in the London Networks cannot be explained by the provision of a service to a wider area of the South East, and nationally by the specialist Trusts in London, as this is a **residence** based analysis.)*

Low uptake of radiotherapy in the North of England and Yorkshire Cancer Networks is not explained by variations in cancer incidence.

4.4 Uptake of Radiotherapy – Analysis by Patient

Another possible explanation for the variation in uptake of radiotherapy, is the clinical practice within each radiotherapy facility, in terms of the number of fractions prescribed for each case. Recent clinical trials[9,10] have demonstrated that breast cancer can be treated successfully with fewer fractions, so variations in the uptake of the new practice by clinicians will result in variations in the number of attendances per patient.

A high or low rate of attendances per patient may be related to variation in the casemix of patients presenting for treatment, the stage of disease at presentation, or in the number of fractions prescribed by clinicians. However, number of patients treated can be regarded as a surrogate for patients accessing radiotherapy.

Figure 4.4-1 Radiotherapy Attendances per Patient

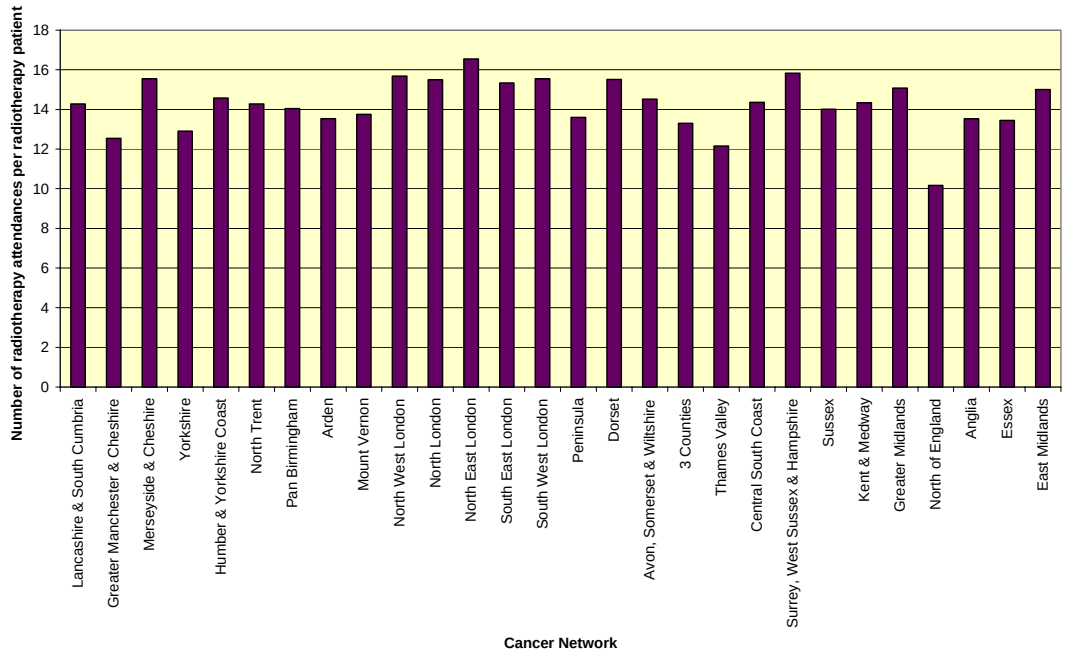


Figure 4.4-1 Radiotherapy Attendances per Patient shows the average number of attendances for each patient attending for radiotherapy by cancer network of residence. This chart does not show a great deal of variation, but it can be noted that some of the outlying networks in rate of radiotherapy attendances even by cancer incident case analysis, appear to also have attendance per patient rates at the extremes.

Figure 4.4-2 Radiotherapy Patients per million population

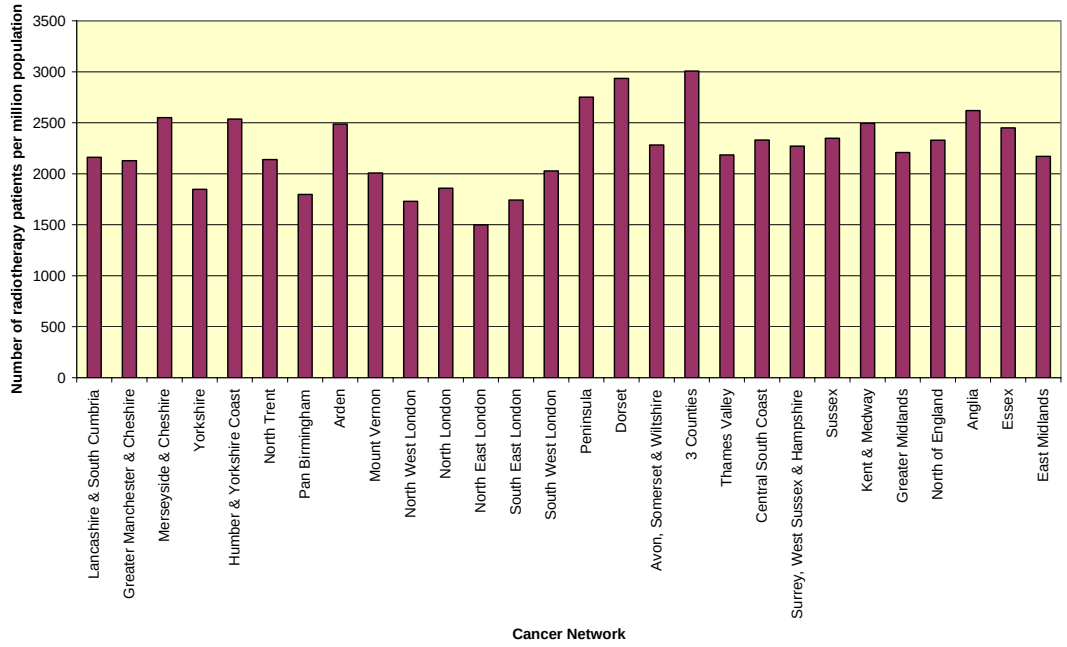
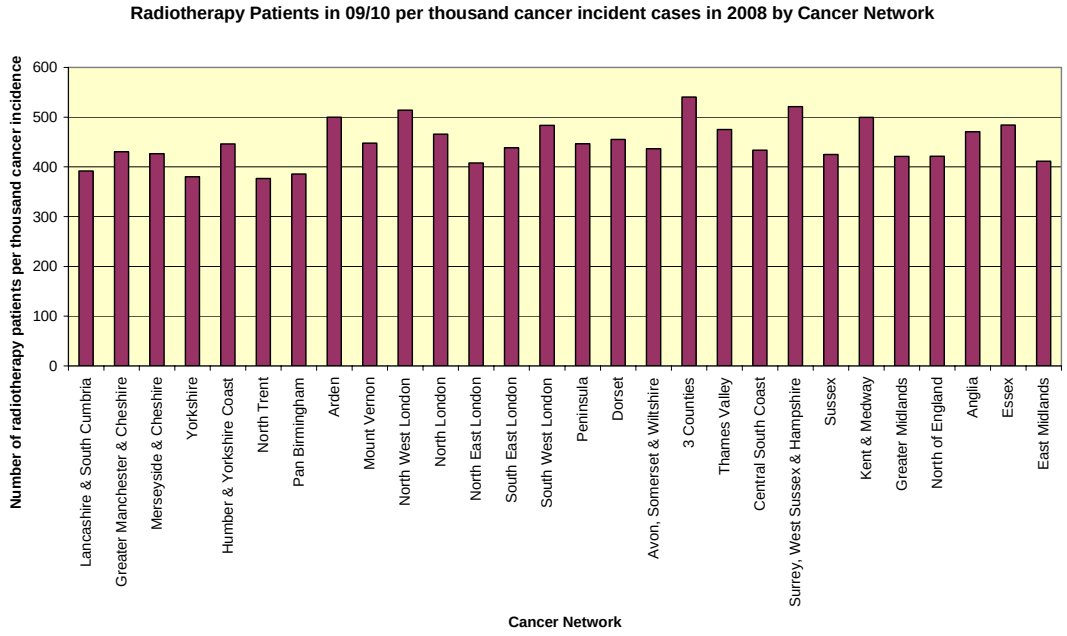


Figure 4.4-3 Radiotherapy Patients per thousand cancer incident cases



The preceding figures show the variation in number of patients attending for radiotherapy by underlying population and cancer incidence. The population and incidence charts show similar patterns to those by attendance, with the North of England and Yorkshire Cancer Networks still showing low rates of access to treatment, but not outlying as far as the analyses by attendance as they have a lower than average number of attendances per patient.

The analysis seems to indicate that patients resident in Three Counties, Mersey and Kent Cancer Networks have very high access to radiotherapy services, and those in Yorkshire, Pan-Birmingham and North of England having lower than average access.

4.5 Radiotherapy Uptake for Breast Cancer

A final explanation for the variation demonstrated in the previous sections, is that the casemix of patients varies so that there are variations in the proportion of the incident cases which would be eligible for radiotherapy.

The figures from the previous section are repeated here for breast cancer alone. The figures used for radiotherapy attendances and patients are for those with a primary diagnosis of breast cancer, incidence figures are for primary invasive tumours of the female breast.

Breast is selected as a good example of a diagnosis where the radiotherapy uptake rate might be variable. If there is a long wait for radiotherapy, or if the service is remote, patients and/or clinicians might opt for mastectomy, instead of breast conserving surgery with radiotherapy.

Figure 4.5-1 Breast Cancer Radiotherapy Attendances per million population

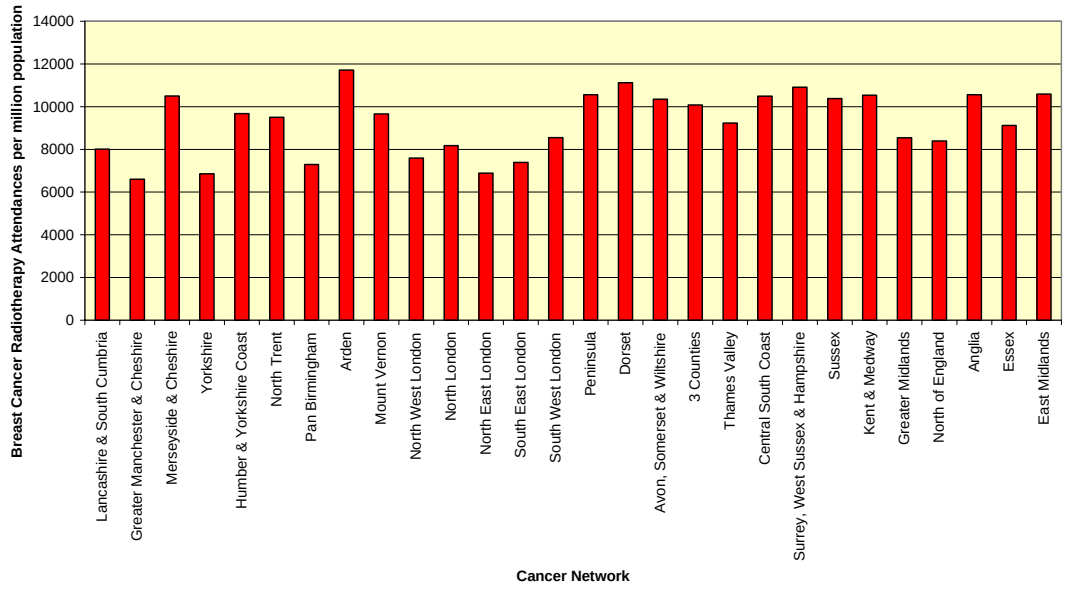


Figure 4.5-2 Unadjusted Breast Cancer Incidence by Network per 100,000 population

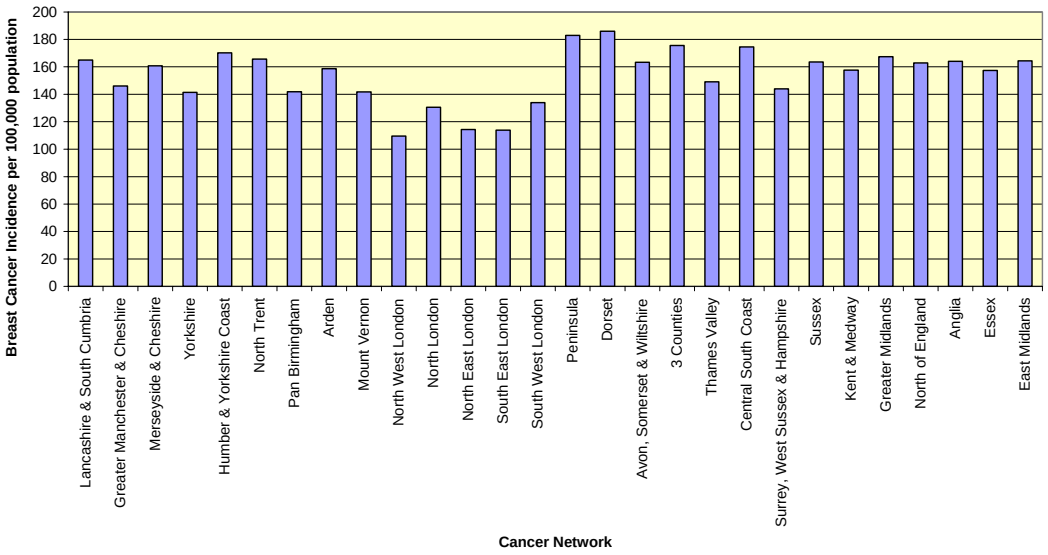


Figure 4.5-3 Breast Cancer Radiotherapy Attendances per thousand breast cancer incident cases

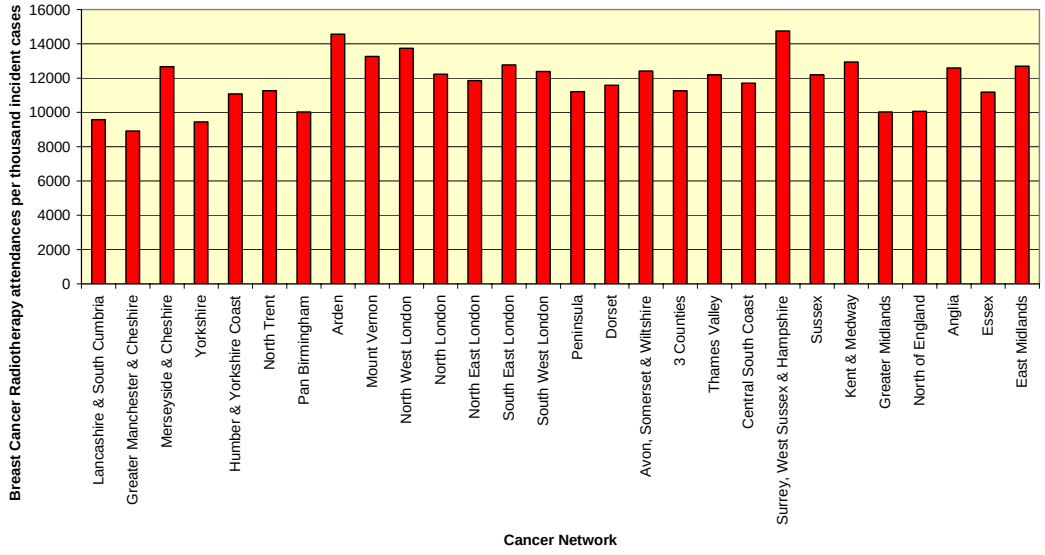


Figure 4.5-4 Breast Cancer Radiotherapy Attendances per Patient

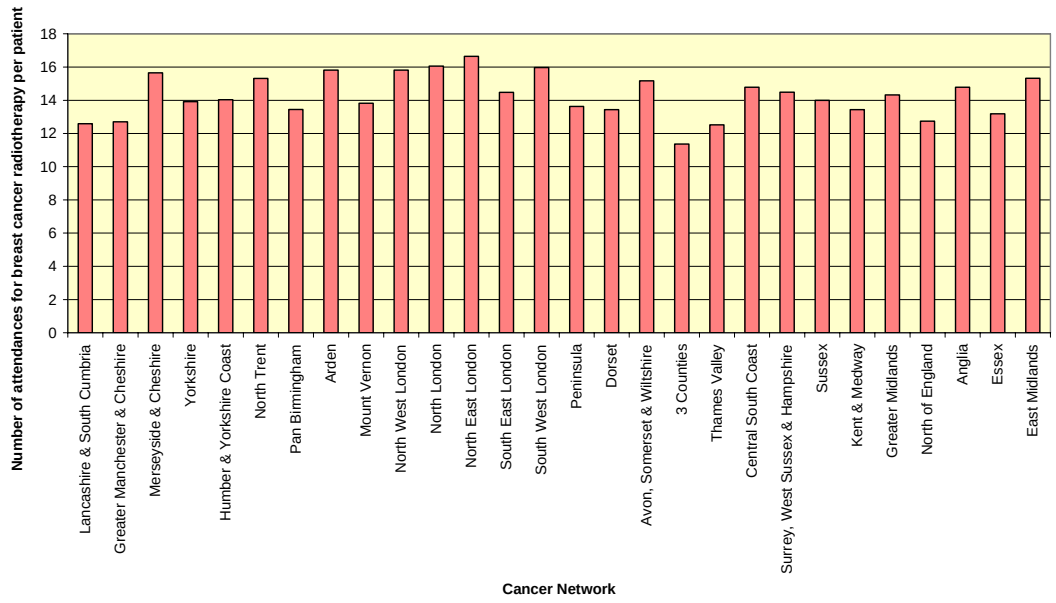


Figure 4.5-5 Breast Cancer Radiotherapy Patients per million population

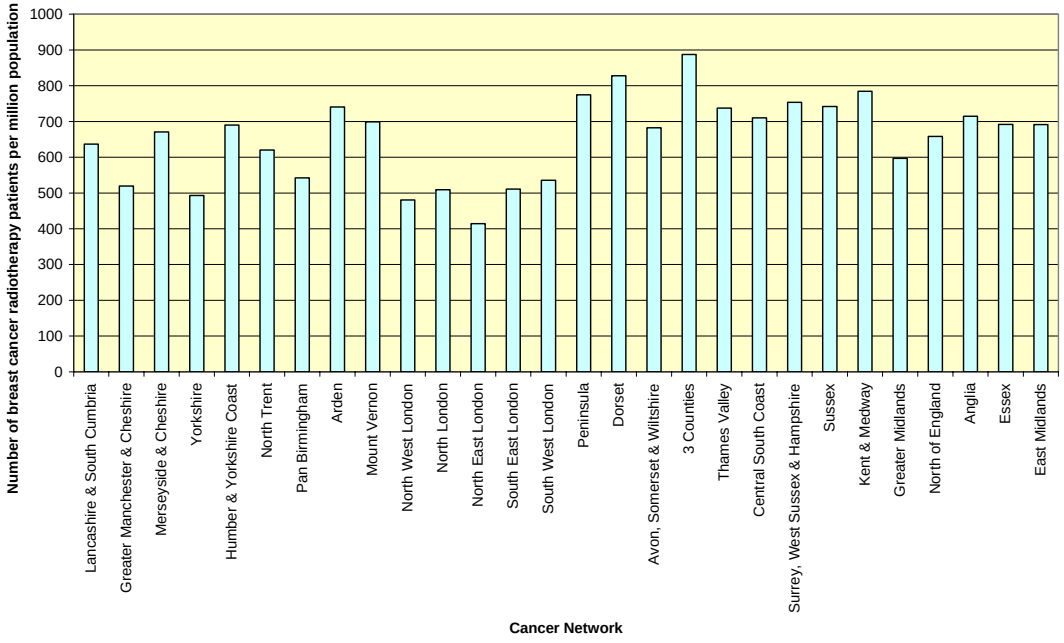
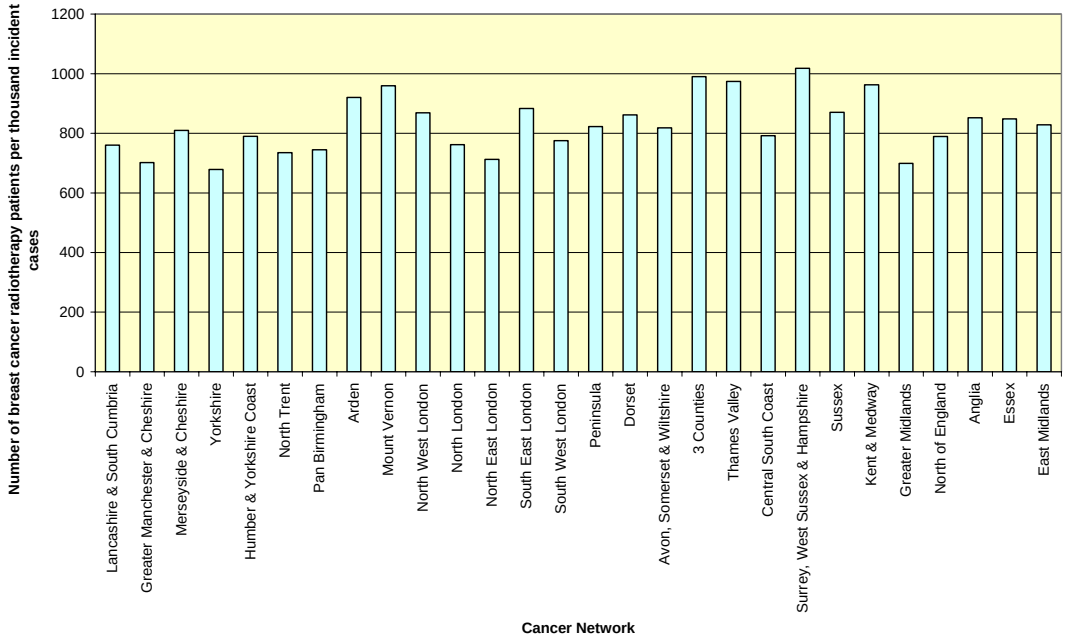


Figure 4.5-6 Breast Cancer Radiotherapy Patients per thousand Breast Cancer Incident Cases



The final chart gives the best indication of access for radiotherapy (using access for breast cancer radiotherapy as an example).

4.6 Radiotherapy Uptake per cancer incident case by Treatment Intent

Uptake of radiotherapy as illustrated in the previous section for breast radiotherapy alone allows for variations in case mix for cancer diagnosis, but not for case mix in stage of disease at presentation.

Unfortunately, little data exist on stage at presentation (although these data will soon be available from the cancer registries). However the following analyses have been carried out by treatment intent.

Treatment intent (ie: 'curative' versus palliative radiotherapy) is excluded from the radiotherapy dataset, as it is a subjective concept in modern radiotherapy. Thus the objective division has been made to identify treatments of 'radical/adjuvant' or 'palliative' intent. These records have been categorised purely by the number of radiotherapy attendances associated with a radiotherapy episode.

Figure 4.6-1 Frequency chart of Number of attendances in each radiotherapy episode

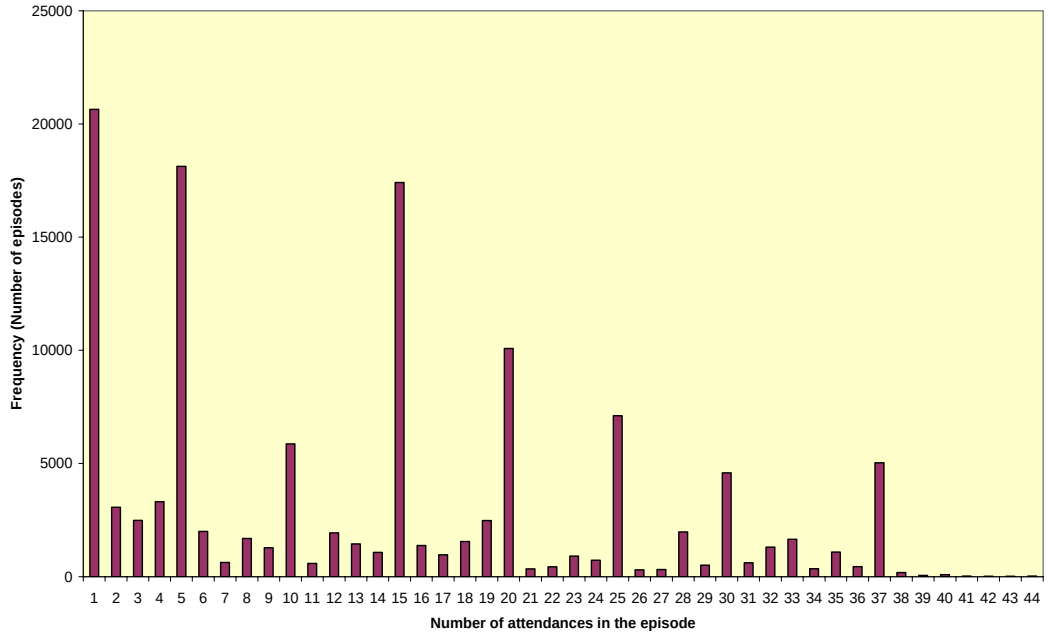


Figure 4.6-1 Frequency chart of Number of attendances in each radiotherapy episode shows the total number of attendances associated with each radiotherapy episode. The number of fractions of radiotherapy prescribed as part of radical or adjuvant treatments vary by tumour site and centre, but as a general rule episodes containing less than fifteen attendances are regarded as those associated with palliative treatment.

'Adjuvant' or 'Radical' radiotherapy has been classified as radiotherapy episodes including fifteen or more attendances. (In breast radiotherapy, patients treated at Cheltenham with a 13 fraction regime, and some patients treated at Clatterbridge with a 15 fraction regime, who had been classified as 14 fractions due to a problem with their planning attendances, were also placed in the 'adjuvant' category).

'Palliative' radiotherapy has been classified as radiotherapy episodes including fourteen or less attendances. (Except for the breast patients placed in the 'adjuvant' category above.)

The first two graphs give a measure of the number of episodes of 'radical/adjuvant' radiotherapy during 09/10 against the number of incident cases in 2008. These show a percentage 'uptake' of radiotherapy, which can be regarded as the percentage of patients diagnosed with the disease who go on to receive 'radical/adjuvant' radiotherapy. Of course the graph is not comparing the same cohort of patients, and some patients will undergo radical radiotherapy months after their initial diagnosis, but patients will almost never receive two episodes of radical radiotherapy for the same tumour.

There is more variation in the uptake for prostate radiotherapy than there is for breast radiotherapy.

Figure 4.6-2 Breast Cancer 'Adjuvant' Radiotherapy Episodes per Breast Cancer Incident Case

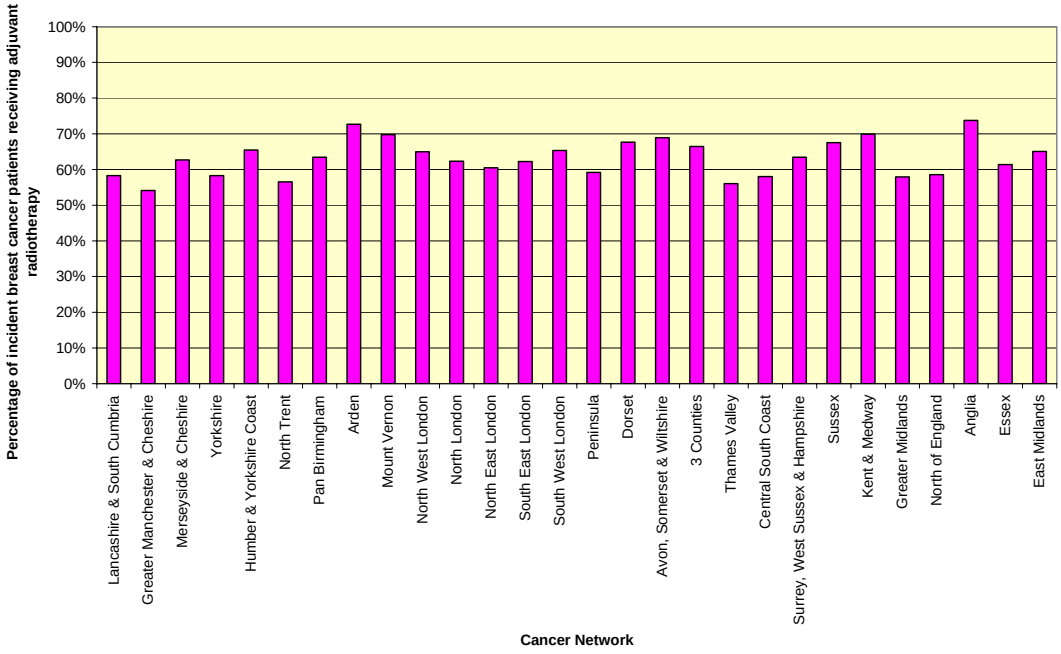
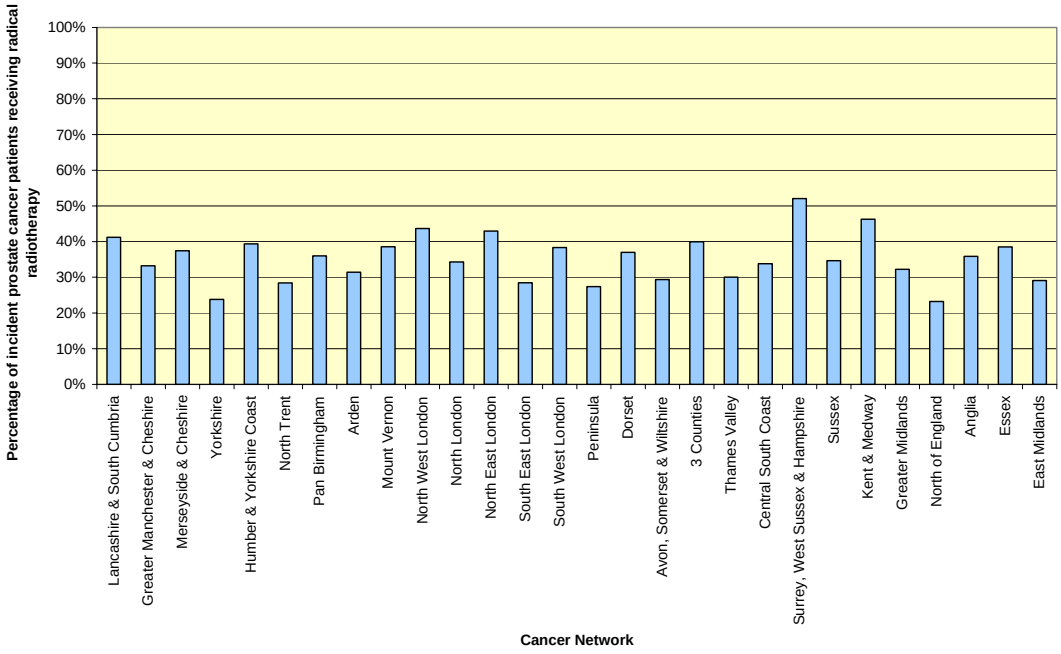


Figure 4.6-3 Prostate Cancer 'Radical' Radiotherapy Episodes per Prostate Cancer Incident Case



The following graphs showing the uptake of 'palliative' radiotherapy cannot be interpreted in the same way as the 'radical' charts. As patients may receive multiple episodes of palliative radiotherapy, either to the primary or metastatic sites, and these may extend over several years after the initial diagnosis, they do NOT represent a percentage of diagnosed patients receiving treatment. However they do indicate a much wider variation in access to 'palliative' radiotherapy, than to 'radical' treatment.

Figure 4.6-4 Breast Cancer 'Palliative' Radiotherapy Episodes per Breast Cancer Incident Case.

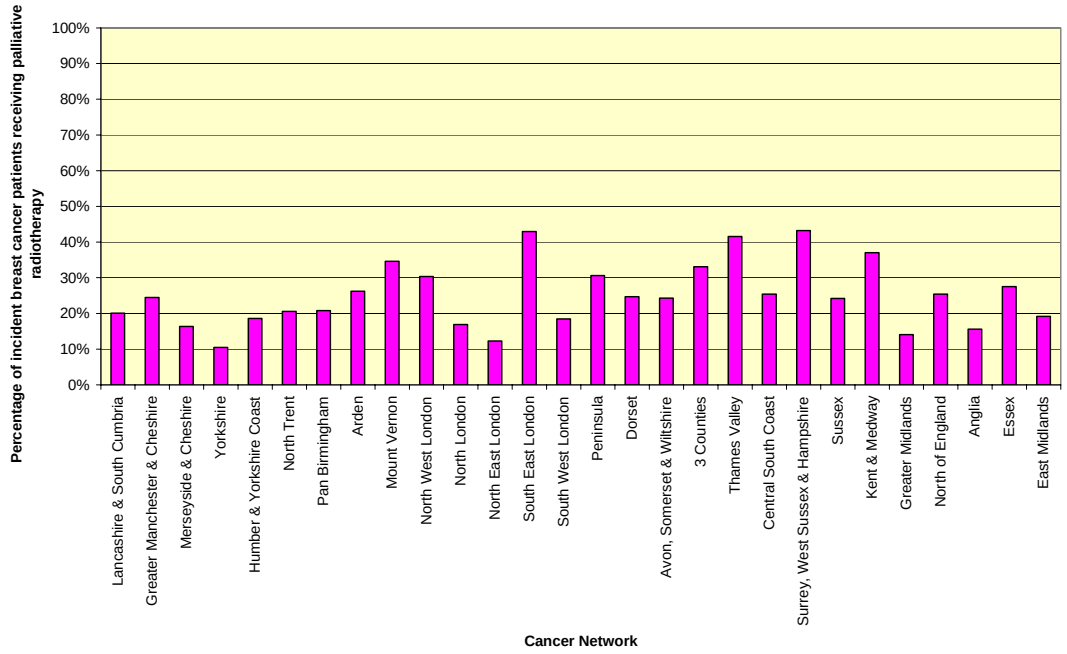
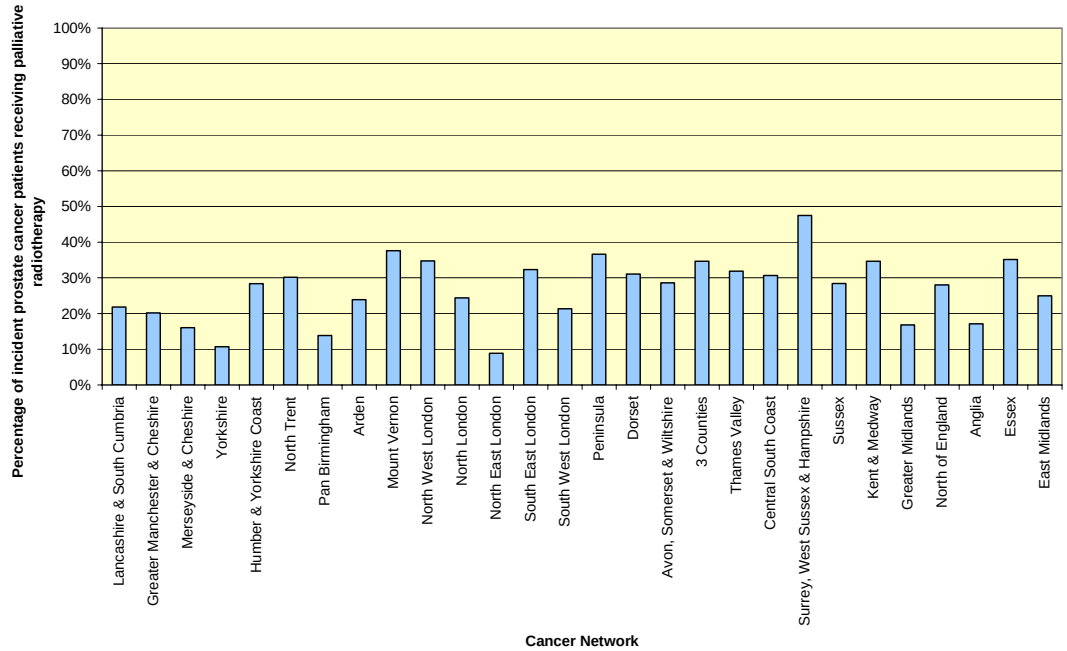


Figure 4.6-5 Prostate Cancer 'Palliative' Radiotherapy Episodes per Prostate Cancer Incident Case.



In summary, the variation in uptake of radiotherapy by population which has been noted in previous analyses can be partly explained by the use of geographical catchment areas which do not accurately reflect patient flows, and by variation in cancer incidence. However, there is variation which is not due to these factors. Other possible explanations are outlined in section 4.2. There is more variation in uptake of palliative radiotherapy than radical radiotherapy.

4.7 Linear Accelerator Throughput

NRAG made recommendations on the number of fractions which should be treated on each linear accelerator during a year. The targets set were that an average of 8,300 fractions should be delivered per linac per year by 2011 and an average of 8,700 fractions should be delivered per linac per year by 2016. The data which follows uses radiotherapy attendances and not fractions (see note in 4 above).

Figure 4.7-1 Number of attendances delivered by linear accelerator in three centres

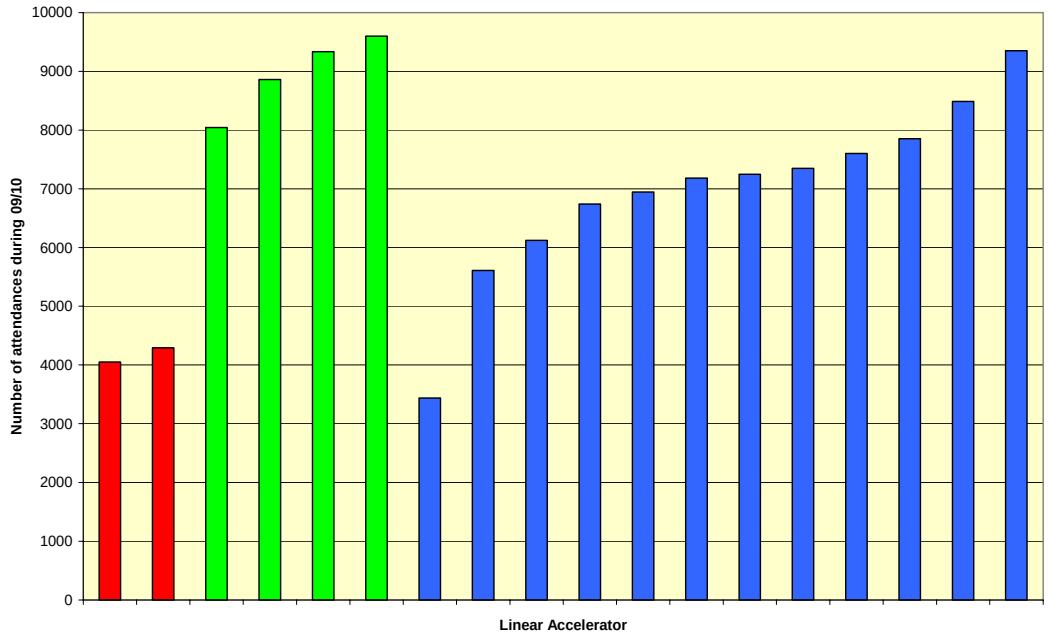


Figure 4.7-1 Number of attendances delivered by linear accelerator shows the number of attendances at each linear accelerator in a selected group of three radiotherapy centres which illustrate varying practice in linac use.

- The first two bars, shown in red are the linear accelerators at a small radiotherapy centre, there is no backup machine in the event of a machine failure, and servicing is carried out during the normal working day, so machines have to be closed to patients, the throughput on these machines is lower than at the other centres.

- The second group of four green bars represent the linear accelerators at a medium sized radiotherapy facility which was in the middle of an expansion program during 09/10. The four machines were being used for an extended day in order to deal with the workload, this centre has now opened an additional two new linear accelerators.
- The third group of twelve blue bars represent a large radiotherapy centre, where one machine is used for service continuity in the event of a breakdown, or during routine servicing. This centre is able to achieve a higher throughput on all the machines.

Many providers operate a 'service continuity machine' which is not normally staffed, but can be used in the event of the breakdown of another machine, or to treat patients during routine maintenance and quality assurance of machines. There are other reasons for the use of machines for less than the normal working week:

- Specialist machines – some linear accelerators are used for special treatments (eg: stereotactic radiosurgery, gating), or for clinical research.
- Staffing – if there are vacancies, or the staffing establishment is not adequate to staff all of the machines, some may be temporarily taken out of service.
- Insufficient demand – smaller facilities have to operate an integer number of machines, and a minimum of two machines to ensure service continuity. Sometimes demand requires a second or third machine to be staffed only for part of the day or week.

Figure 4.7-1 Number of attendances delivered by linear accelerator for each radiotherapy centre in England can be found at www.canceruk.net and are published via the RTDS microsites.

Figure 4.7-2 Radiotherapy delivered by time of day

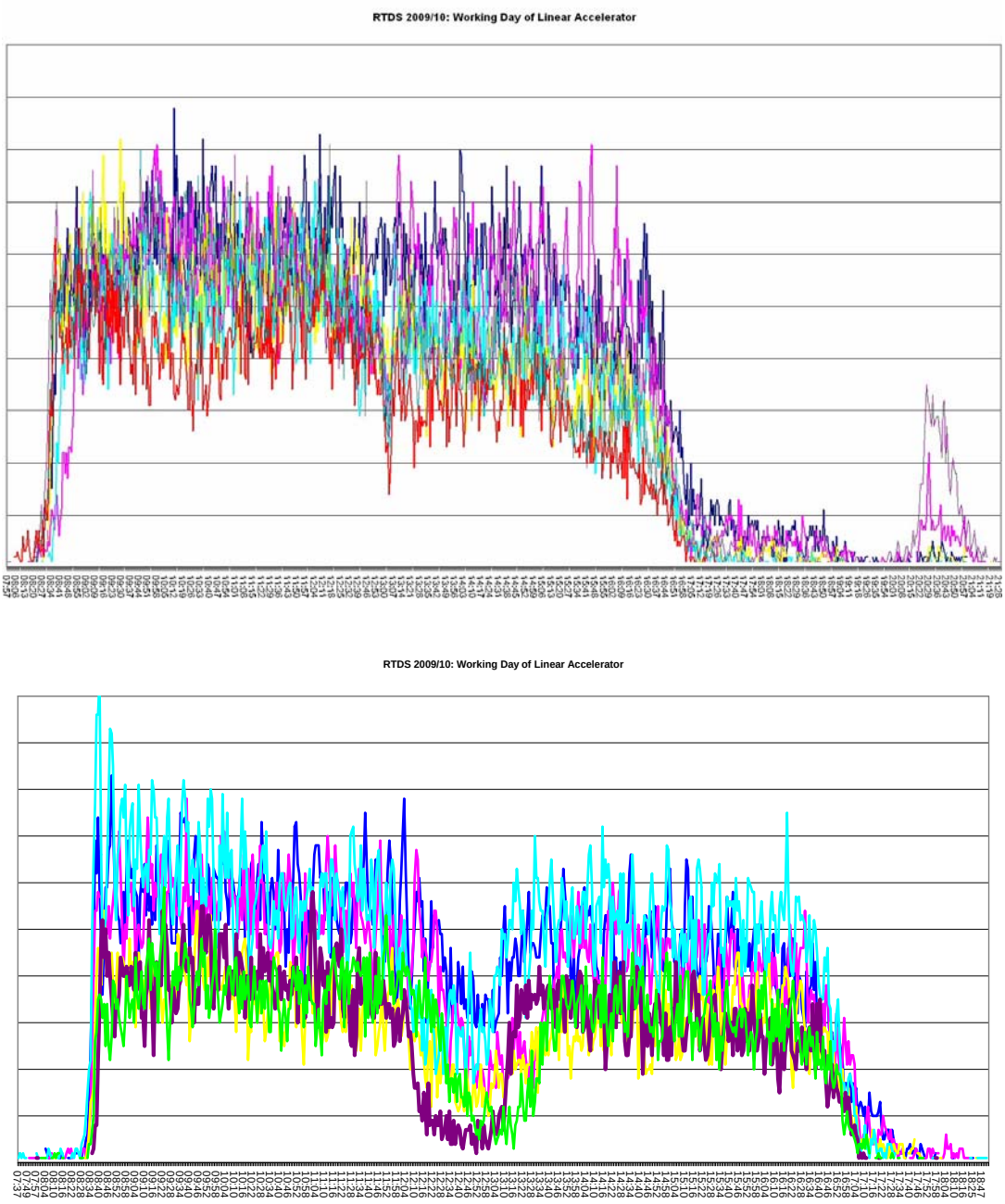


Figure 4.7-2 Radiotherapy delivered by time of day demonstrates the pattern of use of linear accelerators. The two charts contain data from different radiotherapy facilities, where different patterns of use are in place. This chart can be viewed for individual machines or providers on the RTDS microsite. The first chart shows activity beginning with a 9am start on most machines, then falling towards the end of the working day at 5pm, with some machines continuing to treat patients through the evening. The second chart shows a facility where lower staffing levels with no facility to cover lunch breaks or planned lunchtime servicing results in a fall in activity in the middle of the day.

Figure 4.7-3 Number of attendances per linear accelerator in use

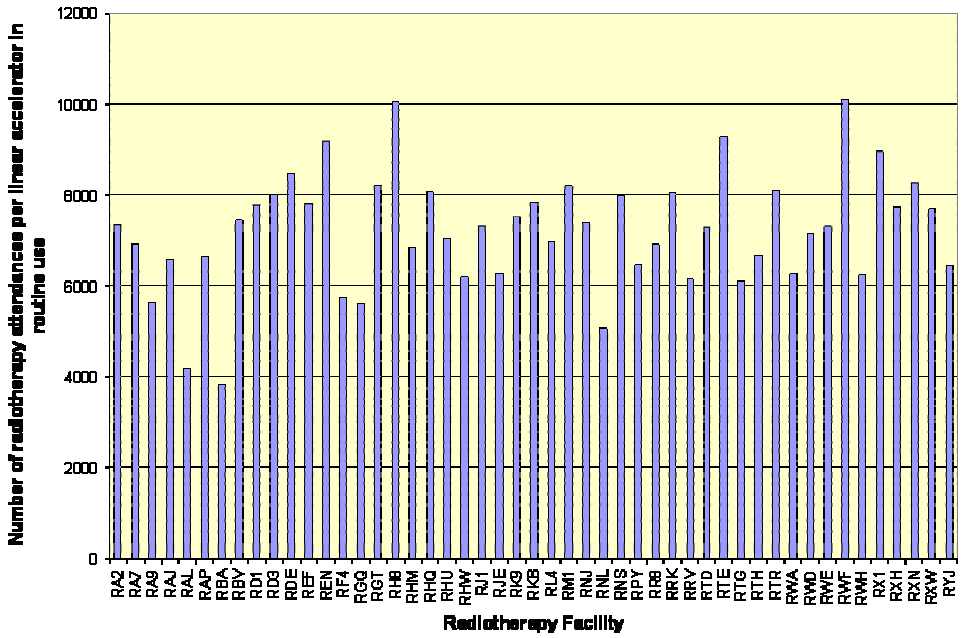


Figure 4.7-3 Number of attendances per linear accelerator in use shows the average number of attendances at each machine in routine use at a centre. This graph is similar to one included in the recent National Audit Office report: Managing high value capital equipment in the NHS in England[11]. However, it includes the final 09/10 data which were not available in time for the NAO Report.

Overall this represents an average of 6660 attendances per linear accelerator in England.

However there are a number of weaknesses in an approach which assesses the activity of a linear accelerator purely by the number of attendances per integer machine. Particularly for centres where machines have been commissioned and/or decommissioned during the year, where service continuity machines are in use, and where staffing dictates that a shorter or longer working day can be achieved. NATCANSAT plan to carry out analysis by the number of hours each linear accelerator is in use, which may give a better metric of the actual use of each machine against its throughput.

5. Data Completeness and Quality

5.1 Quality Assurance

Each submission is tested for data quality on receipt, and a quality assurance report is produced. A range of 218 checks ensure that the submission is in the correct format, that each field has been completed, and it contains a valid entry. There are also a number of cross-validation checks, confirming that combinations of fields are correctly entered (eg referral is not later than treatment), and a number of checks to ensure the integrity of the relational data structure (eg that there is an attendance record related to every radiotherapy exposure).

For the first year, it was decided that a subset of 55 of the quality assurance checks would be deemed to be 'critical'. These are tests for essential items such as patient identifiers, diagnosis, technical identifiers which link the dataset together, and radiotherapy delivery details. Some of these checks required a pass at 100%, and others had thresholds set to an acceptable level (eg: 95% of entries must have a valid diagnosis code).

Submissions which failed any of these 'critical' tests were rejected and returned to the submitter. Advice was offered on the nature of the failure and the likely resolution. Initially some submissions were made many times before a Quality Assurance 'pass' was achieved. However it is important to emphasise that ultimately all submissions have achieved a QA pass and enter the RTDS.

Figure 5.1-1 Radiotherapy Attendances per million population by Provider

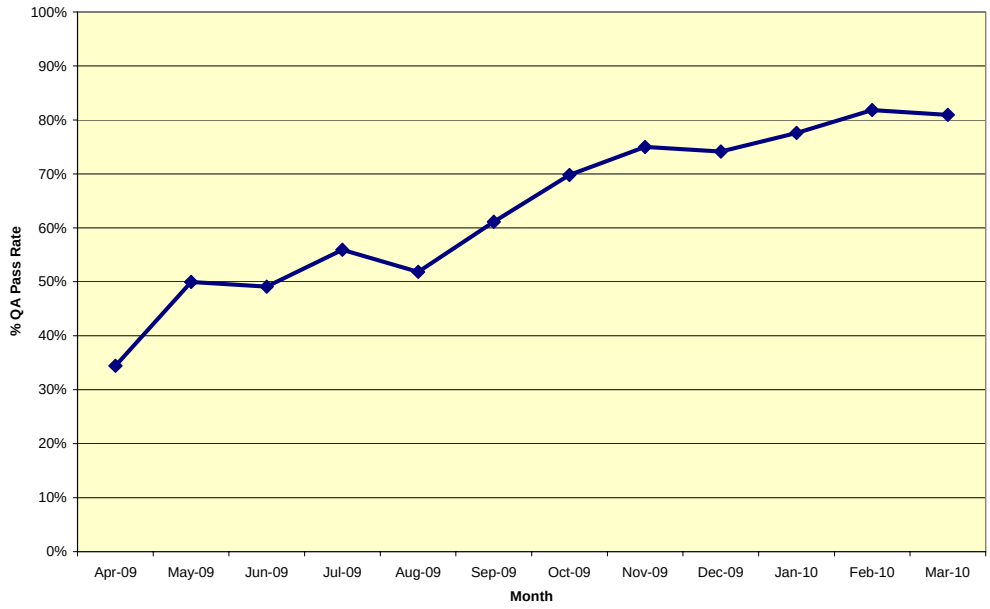


Figure 5.1-1 shows the percentage of RTDS submissions made which passed the Quality Assurance 'Critical' tests at the first submission, grouped by the month of data contained in the submission. Submissions which failed the quality assurance measures were resubmitted with corrections. The pass rate improved considerably during 2009/10. This demonstrates the efforts which have been made by radiotherapy providers to improve the quality of submissions to ensure that they meet the quality assurance standards.

Figure 5.1-2 QA Pass Rate by Centre

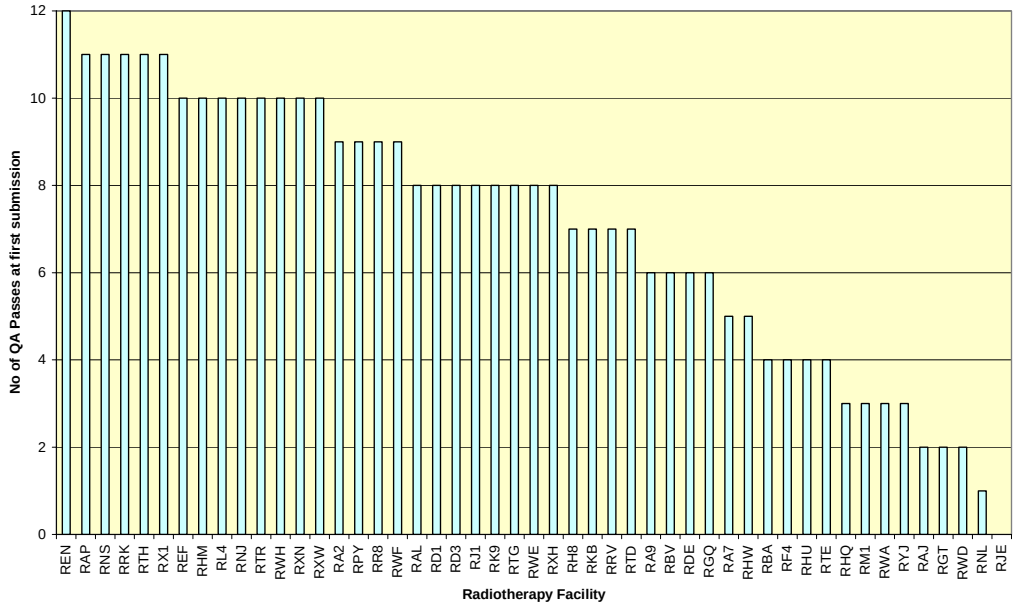


Figure 5.1-2 shows the variation in the number of first submissions for each month which pass quality assurance standards grouped by centre. Of course, all centres finally submitted an acceptable return for all twelve months in the year.

Other quality assurance tests are carried out which are not yet 'critical'. Submitters are provided with a detailed report which indicates the outcome of each of these tests on their submission, and also with summary data from the submission of the numbers of patients, radiotherapy episodes, prescriptions, exposures etc. broken down by machine, for checking against local records.

5.2 Quality Assurance Report

Detailed reports showing the completeness and quality of each data item submitted by each centre are attached in Appendix 4

The majority of fields have been submitted by all centres with 100% valid values. Some fields have very poor completion rates at some or all radiotherapy providers. These are generally the fields which have been added to OMSs for RTDS, and have required additional effort to collect.

The fields which are poorly completed are as follows:

Figure 5.2-1 RTDS Fields with a high proportion of invalid entries

		Number of centres with a completion rate of:		
Field Name	**Description**	**Zero**	**<75%**	**>95%**
Administrative Category	Records whether the patient is an NHS or Private patient on this attendance. This information has not historically been recorded on OMSs and has required new data entry	3	10	24
NHS Number	Important as it will be used to link the RTDS to other data sources (such as hospital admissions and cancer registration data). Some patients (eg: overseas patients) will legitimately have no NHS Number recorded, so a 100% return is not expected	4	4	33
Primary Procedure	Records the Primary OPCS 4 code for the radiotherapy preparation and delivery, it's completion is a reflection of the completion of all procedure codes, which are stored elsewhere in the database. It required new data entry for RTDS, but will support PbR for radiotherapy so will be essential for re-imbursement of radiotherapy activity in the future	5	8	21
Referral Request Received Date	Used to calculate the waiting time for radiotherapy	4	16	26
Earliest Clinically Appropriate Date	Used to calculate the waiting time for radiotherapy	4	8	31
Radiotherapy Priority	Records the priority for the case, and is therefore an important element of waiting times monitoring also	7	11	21
Treatment Region	Used to identify the area treated, as it relates to the diagnosis (eg: Primary, Metastases)	13	21	12

Figure 5.2-2 Percentage completion of problem fields by month

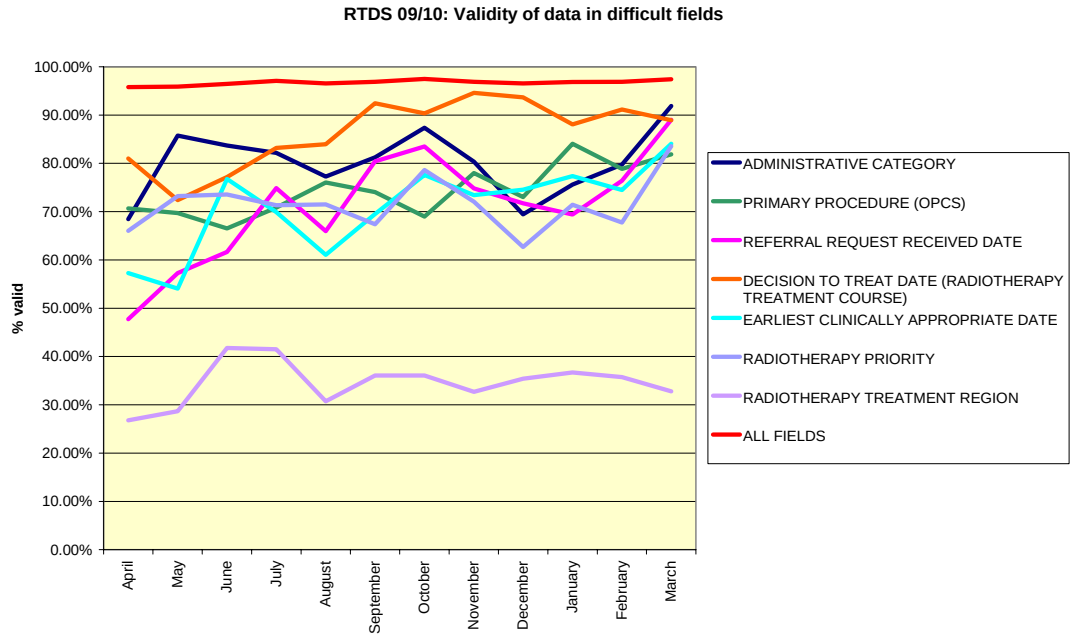


Figure 5.2-2 Percentage completion f problem fields by month shows that the completeness of data in most of these problem fields improved during 2009/10, and continues to do so.

The main focus of the data quality team during 2011 will be to improve data quality and completeness in these fields.

5.3 Data Reports available to Radiotherapy Providers and Commissioners

A reporting website was launched in late 2009 in order to allow Radiotherapy Providers to access the data they had submitted, and in July 2010 a further suite of reports were released aimed at commissioners.

The websites known as the RTDS Microsite, and the RTDS Cancer Network Microsite contain a range of reports, which are flexible in order to allow the user to extract the detailed analysis they require, whilst revealing only the identity of the logged Provider site, or group of provider sites within the commissioner's area, alongside national benchmarked data.

Access to the reports is currently available to Radiotherapy Providers and Commissioners only via a username and password. For details contact the NATCANSAT helpdesk on 0870 840 8033.

The microsites are accessible on:
RTDS microsite: http://nww.natcansat.nhs.uk/rtdsmicrosite/login.aspx
RTDS Cancer Network microsite:
http://nww.natcansat.nhs.uk/rtdsmicrosite/net_login.aspx

Figure 5.3-1 A sample report from the RTDS Microsite

Figure 5.3-1 A sample report from the RTDS microsite shows the number of new radiotherapy prescriptions. The user is able to limit the data showing in the chart by setting the filters for date, and tumour site at the top of the screen. The logged-in radiotherapy facility is highlighted in green, data for the other radiotherapy facilities is shown anonymously in blue for benchmarking purposes. The data are also shown in table form below the chart.

Both reporting websites were placed on the NHSNet, with username and password access, with data being shared under a non-disclosure agreement to ensure that no data containing small numbers which are potentially identifiable would be released.

The websites link directly to the live database, where the reports are run. This has the advantage that data are available on the reports within a few days of its submission, but unfortunately has resulted in considerable performance issues, some reports taking extended periods to run. Both websites are in the process of being re-engineered using a different technology, and faster versions will be launched in the Spring of 2011.

5.4 Radiotherapy Dataset Audit

An end-to-end audit of the data collection process for RTDS was undertaken in December 2010. As much of the RTDS was being collected and submitted using the approach described in section 3, and because OMSs had not previously been used for data collection, it was essential to audit the process to ensure that the data collected was being accurately transmitted to the central database.

Two separate areas were identified for audit:

- To ensure that a dataset for every patient treated was being received (***completeness***)
- To ensure that each data item submitted on RTDS was the same as the clinical records for the patient. (***accuracy***)

Sample forms used for the audit can be found in Appendix 5

5.4.1 Completeness

The completeness element of the audit was carried out by generating from the RTDS submissions, a list of all of the patients treated on a particular machine at each radiotherapy facility on a single day (a date in April or August 2010 was used). This list was supplied to the provider to be audited against an independent record of the machine activity for that day (usually the machine diary). They were asked to identify any patients on the list who were not treated on that machine on that day, and any patients who were treated and were not on the list.

The completeness audit identified a problem with the Aria extract with some centres having patients who had been treated but had not been included in the RTDS submission. On further investigation, it was identified that these patients were being omitted from some of the extracts from the Aria system. After further investigations with Varian, who had developed the extraction code, the reason for this was identified. It appears to have resulted in the omission of a very small cohort of patients from the RTDS (<1% of cases). This has now been resolved, and steps are being taken to try to extract the data for the remaining cases.

5.4.2 Accuracy

The audit of accuracy was carried out by generating from the RTDS submissions a complete record of the treatment for five sample patients from each radiotherapy facility. The provider was then asked to review the complete record against the original source data (ie: the casesheet and treatment prescription sheet in most cases), and identify any discrepancies. In the event that discrepancies arose, the auditor was asked to check whether the data was entered correctly on the Oncology Management System.

The accuracy audit identified some minor data entry issues at some sites but provided reassurance that the toolkits extract the correct data from the OMSs.

6. Radiotherapy Clinical Information Group Membership

Jane Barrett	RCR Representative
Charlotte Beardmore	SCOR Representative
Michael Chapman	Research Program Manager: NCIN
Tim Cooper	Associate Director – Radiotherapy: NCAT
Kim Fell	Cancer Network Director: North Trent
Helen Forbes	Manager: NATCANSAT
Russell Hart	Radiotherapy Services Manager: Nottingham
Stephen Hood	Patient Representative
Peter Hoskin (Chair)	Clinical Oncologist: Mount Vernon
Peter Kirkbride	National Radiotherapy Advisor: NHS Improvement
Ken Lloyd	Clinical Information Analysis Unit: OCIU
Teresa Moss	Director: NCAT
(and subsequently Stephen Parsons)	
Andrew Murphy	Registry Information Liaison Manager: ECRIC
Tony Murphy	Patient Representative
Tracy Parker	Cancer Policy Team: DH
Di Riley	Associate Director – Clinical Outcomes: NCIN
Linda Samuel	Patient Representative
Diana Tait	RCR Audit Lead
Stephen Tozer-Loft	IPEM Rep – Head of RT Physics: Sheffield
Amanda Travis	National Radiotherapy Project Manager: NCAT

7. Acknowledgements

The implementation of the RTDS has been a considerable team effort on the part of everyone involved in radiotherapy in England. Particular thanks go to:

Dr Brian Cottier
The RTDS team at NATCANSAT
Professor Sir Mike Richards
The members of the NRAG Implementation Group and the Radiotherapy Clinical Information Group and its predecessors
Sean McPhail NCIN
National Cancer Action team
National Cancer Intelligence Network
Department of Health Cancer Policy Team
The Manufacturers of Oncology Management Systems and their User Groups
Stephen Tozer-Loft and others at Weston Park Hospital in Sheffield
Kevin Skilton at Addenbrookes' Hospital in Cambridge

8. Glossary

Of abbreviations used in this document

DSCN	Dataset Change Notice
GMC Codes	General Medical Council Registration Numbers
NATCANSAT	National Cancer Services Analysis Team
NCAT	National Cancer Action Team
NCIN	National Cancer Intelligence Network
NRAG	National Radiotherapy Advisory Group
OMS	Oncology Management System
OPCDS	Out-patient Commissioning Dataset
OPCS	Office of Population, Censuses and Surveys Classification of Surgical Operations and Procedures
PAS	Patient Administration System
PbR	Payment by Results
RTDS	Radiotherapy Dataset

9. Appendices

Appendix 1 – Summary of Cancer Network Statistics

Figure A1-1 Summary of Cancer Network Statistics

CN	CN Name	RT Attendances per Million Population	RT Attendances per Thousand Cancer Incidence	RT Attendances per Patient	RT Patients per Million Population	RT Patients per Thousand Cancer Incidence	Breast Cancer RT Attendances per Million Population	Breast Cancer RT Attendances per Thousand Cancer Incidence	Breast Cancer RT Attendances per Patient	Breast Cancer RT Patients per Million Population	Breast Cancer RT Patients per Thousand Cancer Incidence	Adjuvant Breast RT per Thousand Cancer Incidence	Palliative Breast RT per Thousand Cancer Incidence	Radical Prostate RT per Thousand Cancer Incidence	Palliative Prostate RT per Thousand Cancer Incidence
N01	Lancashire & South Cumbria	30,861	5,595	14.28	2,162	392	8,014	9,574	12.58	637	761	0.58	0.20	0.41	0.22
N02	Greater Manchester & Cheshire	26,692	5,396	12.54	2,129	430	6,602	8,912	12.70	520	702	0.54	0.24	0.33	0.20
N03	Merseyside & Cheshire	39,613	6,626	15.54	2,549	426	10,500	12,670	15.65	671	810	0.63	0.16	0.37	0.16
N06	Yorkshire	23,813	4,904	12.90	1,846	380	6,861	9,451	13.92	493	679	0.58	0.10	0.24	0.11
N07	Humber & Yorkshire Coast	36,962	6,504	14.57	2,536	446	9,676	11,081	14.03	690	790	0.65	0.19	0.39	0.28
N08	North Trent	30,544	5,381	14.28	2,139	377	9,503	11,261	15.32	620	735	0.57	0.21	0.28	0.30
N11	Pan Birmingham	25,246	5,417	14.04	1,798	386	7,291	10,018	13.45	542	745	0.63	0.21	0.36	0.14
N12	Arden	33,685	6,768	13.54	2,489	500	11,717	14,563	15.82	741	920	0.73	0.26	0.31	0.24
N20	Mount Vernon	27,600	6,158	13.75	2,007	448	9,663	13,267	13.83	699	960	0.70	0.35	0.39	0.38
N21	North West London	27,113	8,054	15.67	1,730	514	7,599	13,743	15.82	480	869	0.65	0.30	0.44	0.35
N22	North London	28,780	7,214	15.49	1,857	466	8,178	12,231	16.06	509	761	0.62	0.17	0.34	0.24
N23	North East London	24,814	6,744	16.55	1,499	408	6,892	11,852	16.64	414	712	0.61	0.12	0.43	0.09
N24	South East London	26,698	6,717	15.33	1,741	438	7,391	12,775	14.47	511	883	0.62	0.43	0.28	0.32
N25	South West London	31,517	7,513	15.54	2,028	483	8,552	12,388	15.97	536	776	0.65	0.18	0.38	0.21
N26	Peninsula	37,435	6,072	13.60	2,752	446	10,559	11,209	13.63	775	822	0.59	0.31	0.27	0.37
N27	Dorset	45,541	7,062	15.52	2,935	455	11,120	11,579	13.44	828	862	0.68	0.25	0.37	0.31

N28	Avon, Somerset & Wiltshire	33,141	6,339	14.52	2,282	436	10,352	12,416	15.17	682	818	0.69	0.24	0.29	0.29
N29	3 Counties	39,965	7,183	13.30	3,006	540	10,080	11,253	11.36	887	990	0.66	0.33	0.40	0.35
N30	Thames Valley	26,559	5,774	12.16	2,185	475	9,231	12,187	12.51	738	974	0.56	0.42	0.30	0.32
N31	Central South Coast	33,445	6,228	14.36	2,329	434	10,491	11,700	14.78	710	792	0.58	0.25	0.34	0.31
N32	Surrey, West Sussex & Hampshire	35,908	8,242	15.82	2,270	521	10,913	14,744	14.49	753	1,018	0.63	0.43	0.52	0.47
N33	Sussex	32,893	5,954	14.01	2,348	425	10,385	12,185	14.00	742	870	0.68	0.24	0.35	0.28
N34	Kent & Medway	35,739	7,157	14.33	2,494	499	10,539	12,934	13.43	784	963	0.70	0.37	0.46	0.35
N35	Greater Midlands	33,284	6,346	15.07	2,208	421	8,544	10,017	14.32	597	699	0.58	0.14	0.32	0.17
N36	North of England	23,657	4,284	10.16	2,327	421	8,391	10,060	12.75	658	789	0.59	0.25	0.23	0.28
N37	Anglia	35,422	6,366	13.52	2,619	471	10,561	12,588	14.78	715	852	0.74	0.16	0.36	0.17
N38	Essex	32,929	6,508	13.45	2,449	484	9,123	11,180	13.18	692	848	0.61	0.28	0.39	0.35
N39	East Midlands	32,557	6,169	15.00	2,170	411	10,593	12,697	15.33	691	828	0.65	0.19	0.29	0.25
Range	Min	23,657	4,284	10.16	1,499	377	6,602	8,912	11.36	414	679	0.54	0.10	0.23	0.09
	Max	45,541	8,242	16.55	3,006	540	11,717	14,744	16.64	887	1,018	0.74	0.43	0.52	0.47
	England	30,989	6,157	14.00	2,214	440	9,116	11,611	14.20	642	818	0.63	0.24	0.34	0.26

Appendix 2 – The Radiotherapy Dataset

Each radiotherapy attendance to be reported using the dataset below, which consists of the standard CDS plus an additional radiotherapy tail. Attendance specific information will be taken from oncology management systems (OMS) at each radiotherapy facility, and combined with demographic and other non-'attendance specific' information taken from pas to generate the required file. This will avoid duplication of entry of radiotherapy attendances into pas and OMS.

CDS DATA GROUP: PATIENT PATHWAY: version 6 TYPE 020 version 3.5 August 2009
To carry the details of the Patient Pathway.
One optional occurrence of this Group is permitted.

Opt	CDS Data Element	PAS	OMS	Notes
O	UNIQUE BOOKING REFERENCE NUMBER (CONVERTED)	✓		(new field to monitor 18 week waits – may start to be recorded in PAS systems)
O	PATIENT PATHWAY IDENTIFIER	✓		(18 week waits)
O	ORGANISATION CODE (PATIENT PATHWAY IDENTIFIER ISSUER)	✓		(18 week waits)
O	REFERRAL TO TREATMENT STATUS	✓		(18 week waits)
O	REFERRAL TO TREATMENT PERIOD START DATE	✓		(18 week waits)
O	REFERRAL TO TREATMENT PERIOD END DATE	✓		(18 week waits)
*	LEAD CARE ACTIVITY INDICATOR (Not defined or approved by the Information Standards Board)			

CDS DATA GROUP: PATIENT IDENTITY:
To carry the identity of the Patient.
One occurrence of this Group is permitted.

Opt	CDS Data Element	PAS	OMS	Notes
M	LOCAL PATIENT IDENTIFIER	✓	✓	Data item can be used to link records from PAS and OMS
M	ORGANISATION CODE (LOCAL PATIENT IDENTIFIER)			Default *(Organisation code)*
M	NHS NUMBER	✓	✓	Data item can be used to link records from PAS and OMS
M	NHS NUMBER STATUS INDICATOR	✓		
O	PATIENT NAME	✓		Omit if validated NHS number is present
O	PATIENT USUAL ADDRESS	✓		Omit if validated NHS number is present

M	POSTCODE OF USUAL ADDRESS	✓		
M	ORGANISATION CODE (PCT OF RESIDENCE)	✓		

Note: For Security Issues and Patient Confidentiality, the PATIENT NAME and PATIENT USUAL ADDRESS (not including POSTCODE OF USUAL ADDRESS) must not be carried where a valid NHS NUMBER is present, even if the NHS NUMBER is not verified.

For patients with sensitive conditions (as defined in Security Issues and Patient Confidentiality), all patient identifiable information must be removed from Commissioning Data Set records. This includes LOCAL PATIENT IDENTIFIER, NHS NUMBER, PATIENT NAME, PATIENT USUAL ADDRESS, POSTCODE OF USUAL ADDRESS, and PERSON BIRTH DATE.

CDS DATA GROUP: PATIENT CHARACTERISTICS:
To carry the characteristics of the Patient.
One occurrence of this Group is permitted.

Opt	CDS Data Element	PAS	OMS	Notes
M	PERSON BIRTH DATE	✓	✓	Data item can be used to link records from PAS and OMS
M	PERSON GENDER CURRENT	✓	✓	Data item can be used to link records from PAS and OMS
O	CARER SUPPORT INDICATOR			Omit (not required)
M	ETHNIC CATEGORY	✓		

CDS DATA GROUP: CARE EPISODE - Person Group (Consultant):
To carry the details of the responsible Consultant.
One occurrence of this Group is permitted.

M	CONSULTANT CODE			Default to **H9999998** – *Other health care professional*
M	MAIN SPECIALTY CODE			Default to **960** – Allied Health Care Professional
M	TREATMENT FUNCTION CODE			Default to **800** - Clinical Oncology

CDS DATA GROUP: CARE EPISODE - CLINICAL DIAGNOSIS (ICD):
To carry the details of the ICD Diagnosis Scheme and the Diagnoses.

O	DIAGNOSIS SCHEME IN USE			Default to **02 -** ICD10
O	PRIMARY DIAGNOSIS (ICD)		✓	
O	SECONDARY DIAGNOSIS (ICD) Multiple Secondary Diagnoses may be recorded.			Omit (not required)

CDS DATA GROUP: CARE EPISODE - CLINICAL DIAGNOSIS (READ):
To carry the details of the READ Diagnosis Scheme and the Diagnoses.

O	DIAGNOSIS SCHEME IN USE			Omit (ICD10 codes to be used)
O	PRIMARY DIAGNOSIS (READ)			Omit (ICD10 codes to be used)
O	SECONDARY DIAGNOSIS (READ)			Omit (ICD10 codes to be used)

	Multiple Secondary Diagnoses may be recorded.			
CDS DATA GROUP: ATTENDANCE OCCURRENCE - Activity Characteristics: To carry the details of the Care Attendance or cancelled appointment.				
M	ATTENDANCE IDENTIFIER		✓	
M	ADMINISTRATIVE CATEGORY		✓	*01=NHS, 02=PP, 03=Amenity, 04=Cat II*
M	ATTENDED OR DID NOT ATTEND			Default to **1** – Attended (unless DNA information is available from OMS)
M	FIRST ATTENDANCE		✓	***01**=yes, **02**= subsequent / follow up*
M	MEDICAL STAFF TYPE SEEING PATIENT			Default to **04** – Care Professional team
M	OPERATION STATUS (per attendance)			Default to **1** - Treated
M	OUTCOME OF ATTENDANCE		✓	***01**=discharged, **02**= another appointment given*
M	APPOINTMENT DATE (This is the ***mandatory*** date used to derive the ***mandatory*** CDS ACTIVITY DATE)		✓	*format CCYY-MM-DD*
M	AGE AT CDS ACTIVITY DATE			Derived from APPOINTMENT DATE minus PERSON BIRTH DATE
O	EARLIEST REASONABLE OFFER DATE			Omit (18 week waits)
CDS DATA GROUP: ATTENDANCE OCCURRENCE - Service Agreement Details: To carry the details of the Service Agreement for the Care Attendance.				
M	COMMISSIONING SERIAL NUMBER	✓		*(eg OAT123(=))*
O	NHS SERVICE AGREEMENT LINE NUMBER	✓		
O	PROVIDER REFERENCE NUMBER	✓		
M	COMMISSIONER REFERENCE NUMBER	✓		
M	ORGANISATION CODE (CODE OF PROVIDER)			Default *(eg REN)*
M	ORGANISATION CODE (CODE OF COMMISSIONER)	✓		
CDS DATA GROUP: ATTENDANCE OCCURRENCE - Clinical Activity Group (OPCS): To carry the details of the OPCS coded Clinical Activities undertaken.				
O	PROCEDURE SCHEME IN USE		✓	**OPCS4**
O O	PRIMARY PROCEDURE (OPCS) PROCEDURE DATE (of Primary Procedure)		✓	*see appendix I*
O O	(Multiple Procedures may be recorded) PROCEDURE (OPCS) PROCEDURE DATE (of Secondary Procedure)		✓	OMS

CDS DATA GROUP: ATTENDANCE OCCURRENCE - Clinical Activity Group (READ): **To carry the details of the READ coded Clinical Activities undertaken.**				
O	PROCEDURE SCHEME IN USE			Omit (OPCS4 codes to be used)
O O	PRIMARY PROCEDURE (READ) PROCEDURE DATE (of Primary Procedure)			Omit (OPCS4 codes to be used)
O O	(Multiple Procedures may be recorded) PROCEDURE (READ) PROCEDURE DATE (of Secondary Procedure)			Omit (OPCS4 codes to be used)
CDS DATA GROUP: ATTENDANCE OCCURRENCE - Location Group of Care Attendance: To carry the details of the location and Site Code of Treatment. **One occurrence of this Group is permitted.**				
M	LOCATION CLASS			Default to **01** – Health Site (General Occurrence)
M	SITE CODE (OF TREATMENT)			Default *(eg RA702)*
*	LOCATION TYPE Definition and value list currently under review			Omit
CDS DATA GROUP: GP REGISTRATION: **To carry the details of the Patient's Registered GMP.** **One occurrence of this Group is permitted.**				
O	GENERAL MEDICAL PRACTITIONER (SPECIFIED)	✓		
M	GENERAL MEDICAL PRACTICE CODE (PATIENT REGISTRATION)	✓		
CDS DATA GROUP: REFERRAL - Activity Characteristics: **To carry the details of the referral.** **One occurrence of this Group is permitted.**				
M	PRIORITY TYPE		✓	*1=routine 2=urgent*
M	SERVICE TYPE REQUESTED			Default to **2** – Specific Procedure
M	SOURCE OF REFERRAL FOR OUT-PATIENTS			Default to **05** – referral from a consultant, other than in A&E Dept
M	REFERRAL REQUEST RECEIVED DATE		✓	Date of referral request from clinical oncologist to radiotherapy radiographer
CDS DATA GROUP: REFERRAL - Person Group (Referrer): **To carry the details of the referrer.** **One occurrence of this Group is permitted.**				
M	REFERRER CODE		✓	Consultant Clinical Oncologist's number

M	REFERRING ORGANISATION CODE			Default *Clinical Oncologist's Organisation*
CDS DATA GROUP: MISSED APPOINTMENT - Occurrence: **To carry the details of a missed appointment.** **One occurrence of this Group is permitted.**				
M	LAST DNA OR PATIENT CANCELLED DATE			Omit (unless DNA information is available from PAS)
CDS DATA GROUP: HEALTHCARE RESOURCE GROUP - Activity Characteristics: **To carry the details of the Healthcare Resource Group.** **One occurrence of this Group is permitted.**				
O	HEALTHCARE RESOURCE GROUP CODE			Omit (will be defined from OPCS4 codes by HRG 4 grouper)
O	HEALTHCARE RESOURCE GROUP CODE-VERSION NUMBER			Omit
CDS DATA GROUP: HEALTHCARE RESOURCE GROUP - Clinical Activity Group: **To carry the details of the HRG Dominant Grouping Variable - Procedure.**				
O	PROCEDURE SCHEME IN USE			Omit
O	HRG DOMINANT GROUPING VARIABLE-PROCEDURE			Omit

RADIOTHERAPY CARE DATASET – to form a tail for each radiotherapy attendance record

CDS DATA GROUP: RADIOTHERAPY TAIL IDENTIFIER v3.3 **To carry the details of the out-patient CDS to which this radiotherapy tail relates**				
M	ATTENDANCE IDENTIFIER		✓	*Alphanumeric (12)*
M	ORGANISATION CODE (CODE OF PROVIDER)			Default *(Organisation code)*
M	APPOINTMENT DATE		✓	*format CCYY-MM-DD*
CDS DATA GROUP: RADIOTHERAPY EPISODE **To carry the details of the Episode of radiotherapy being given at this attendance.**				
M	RADIOTHERAPY EPISODE IDENTIFIER		✓	*Alphanumeric (50)*
M	DECISION TO TREAT DATE (RADIOTHERAPY TREATMENT COURSE)		✓	*format CCYY-MM-DD*
M	EARLIEST CLINICALLY APPROPRIATE DATE		✓	*'Ready to start' date format CCYY-MM-DD*
M	RADIOTHERAPY PRIORITY		✓	**E,U,R** or **D**
M	TREATMENT START DATE (RADIOTHERAPY TREATMENT COURSE)		✓	Date of First Fraction of Radiotherapy in this episode.
CDS DATA GROUP: RADIOTHERAPY PRESCRIPTION **To carry the details of each Prescription of radiotherapy being given at this attendance.** **Multiple Occurrences of this group are allowed**				
M	PRESCRIPTION IDENTIFIER		✓	*Alphanumeric (50)*
M	RADIOTHERAPY TREATMENT REGION		✓	"Treatment To " **P, R, PR,A.O** or **M**
M	ANATOMICAL TREATMENT SITE (RADIOTHERAPY)		✓	OPCS 4 "Z" codes (Only complete for entries A, O or M in 'Treatment to')
M	NUMBER OF TELETHERAPY FIELDS		✓	*Numeric (2)*
M	RADIOTHERAPY PRESCRIBED DOSE		✓	*Numeric (5 including 2 d.p.)*
M	PRESCRIBED FRACTIONS		✓	*Numeric (3)*
M	RADIOTHERAPY ACTUAL DOSE		✓	*Numeric (5 including 2 d.p.)*
M	ACTUAL FRACTIONS		✓	*Numeric (3)*
M	RADIOTHERAPY TREATMENT MODALITY		✓	05 – Teletherapy; 06 - Brachytherapy
CDS DATA GROUP: RADIOTHERAPY EXPOSURE **To carry the details of each radiotherapy exposure delivered at this attendance.** **Multiple Occurrences of this group are allowed**				

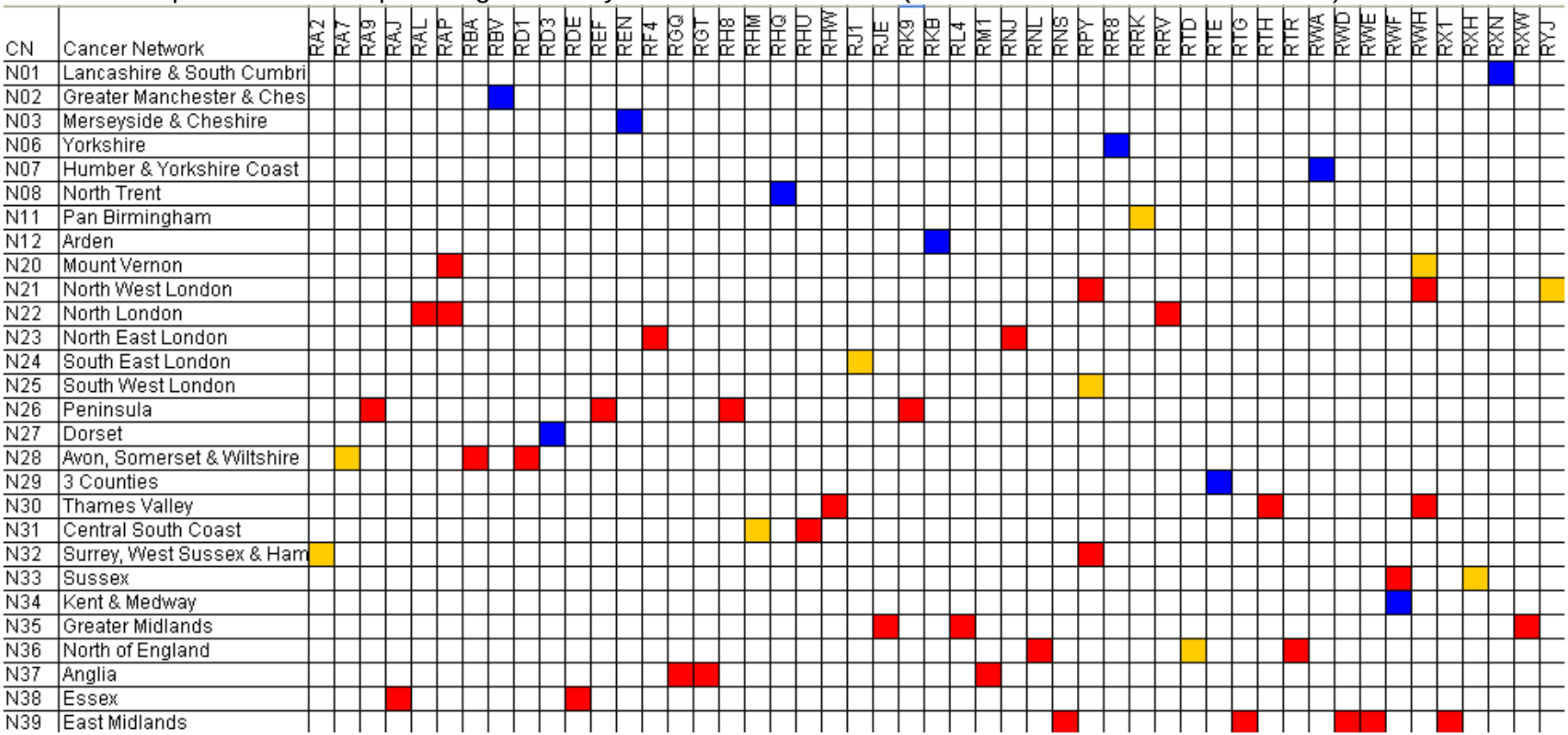
M	RADIOTHERAPY FIELD IDENTIFIER		✓	*Alphanumeric (50)*
M	MACHINE IDENTIFIER		✓	5 character site code & two character equipment type code & sequence number for this machine issued by NATCANSAT
M	TELETHERAPY BEAM TYPE		✓	**T1,T2,or T3**
M	TELETHERAPY BEAM ENERGY		✓	*Numeric (6 including 3 d.p.)* recorded in MeV/MV/MVp.
M	TIME OF EXPOSURE		✓	*Format HH:MM:SS* Time when the exposure was initiated

Appendix 3 – List of Radiotherapy NHS Provider Codes

Code	Trust Name
RA2	Royal Surrey County Hospital NHS Trust
RA7	United Bristol Healthcare NHS Trust
RA9	South Devon Health Care NHS Trust
RAJ	Southend Hospital NHS Trust
RAL	Royal Free Hampstead NHS Trust
RAP	North Middlesex University Hospital NHS Trust
RBA	Taunton & Somerset NHS Trust
RBV	Christie Hospital NHS Trust
RD1	Royal United Hospital Bath NHS Trust
RD3	Poole Hospital NHS Trust
RDE	Essex Rivers Healthcare NHS Trust
REF	Royal Cornwall Hospitals NHS Trust
REN	Clatterbridge Centre For Oncology NHS Trust
RF4	Barking, Havering And Redbridge Hospitals NHS Trust
RGQ	Ipswich Hospital NHS Trust
RGT	Cambridge University Hospitals NHS Foundation Trust
RH8	Royal Devon And Exeter NHS Foundation Trust
RHM	Southampton University Hospitals NHS Trust
RHQ	Sheffield Teaching Hospitals NHS Foundation Trust
RHU	Portsmouth Hospitals NHS Trust
RHW	Royal Berkshire And Battle Hospitals NHS Trust
RJ1	Guy's And St Thomas' NHS Foundation Trust
RJE	University Hospital Of North Staffordshire NHS Trust
RK9	Plymouth Hospitals NHS Trust
RKB	University Hospitals Coventry And Warwickshire NHS Trust
RL4	Royal Wolverhampton Hospitals NHS Trust
RM1	Norfolk And Norwich University Hospital NHS Trust
RNJ	Barts And The London NHS Trust
RNL	North Cumbria Acute Hospitals NHS Trust
RNS	Northampton General Hospital NHS Trust
RPY	Royal Marsden NHS Foundation Trust
RQN	Velindre NHS Trust
RR8	Leeds Teaching Hospitals NHS Trust
RRK	University Hospital Birmingham NHS Foundation Trust
RRV	University College London Hospitals NHS Foundation Trust
RTD	Newcastle Upon Tyne Hospitals NHS Trust
RTE	Gloucestershire Hospitals NHS Foundation Trust
RTG	Derby Hospitals NHS Foundation Trust
RTH	Oxford Radcliffe Hospitals NHS Trust
RTR	South Tees Hospitals NHS Trust
RWA	Hull And East Yorkshire Hospitals NHS Trust
RWD	United Lincolnshire Hospitals NHS Trust
RWE	University Hospitals Of Leicester NHS Trust
RWF	Maidstone And Tunbridge Wells NHS Trust
RWH	East and North Hertfordshire NHS Trust
RX1	Nottingham University Hospitals NHS Trust.
RXH	Brighton And Sussex University Hospitals NHS Trust
RXN	Lancashire Teaching Hospitals NHS Trust
RXW	Shrewsbury And Telford Hospital NHS Trust
RYJ	Imperial College Healthcare NHS Trust

Appendix 4 – Matrix of Radiotherapy Provision by Cancer Network of Residence

Attendances at each centre expressed as a percentage of the total attendances for patients resident in each cancer network
Blue Blocks represent a centre providing an exclusive service to the network (more than 90%)
Orange Blocks represent a centre providing a majority service to the network (more than 50% and less than 90%)
Red blocks represent a centre providing a minority service to the network (more than 10% and less than 50%)



Appendix 5 – Detailed Completeness and Quality Reports

The reports below show the completeness and quality of each of the data items submitted by each centre, with the omission of actual radiotherapy dose and fractions. The percentage shows the number of entries in the submission tested for each field which contained a valid value. Actual Dose and Fractions are omitted as they are reported only at the completion of each prescription, so are difficult to assess for completeness.

In the figures which follow values shown in green are over 95%, values in amber are between 75% and 95%, and values which fail to meet 75% validity are shown in red. Values shown in black are zero. Figure A5 1 Validity of RTDS Fields by Centre (part I) and Figure A5 2 Validity of RTDS Fields by Centre (part II)show the data broken down by submitting radiotherapy centre, and is broken down by month Figure A5 1 Validity of RTDS Fields by Centre (part I)

Figure A5-1 Validity of RTDS Fields by Centre (part I)

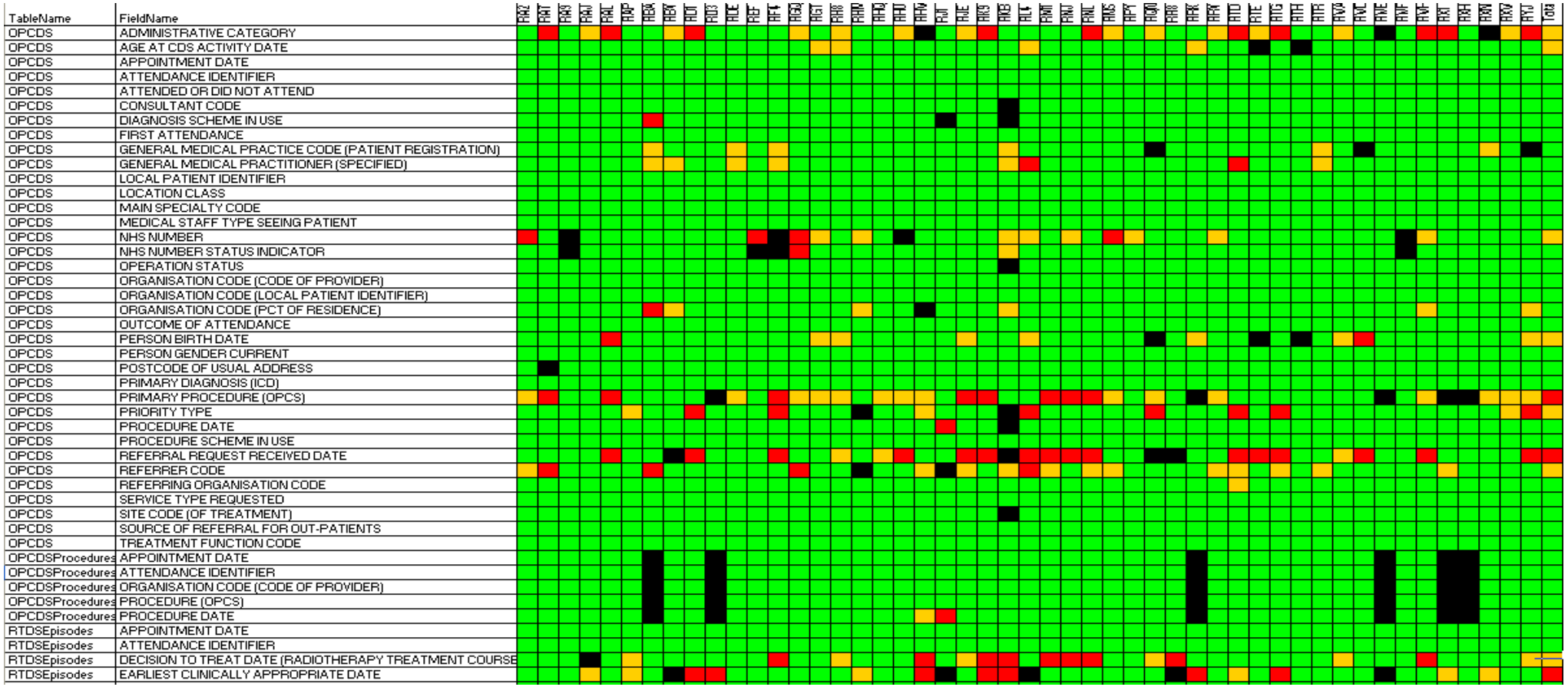
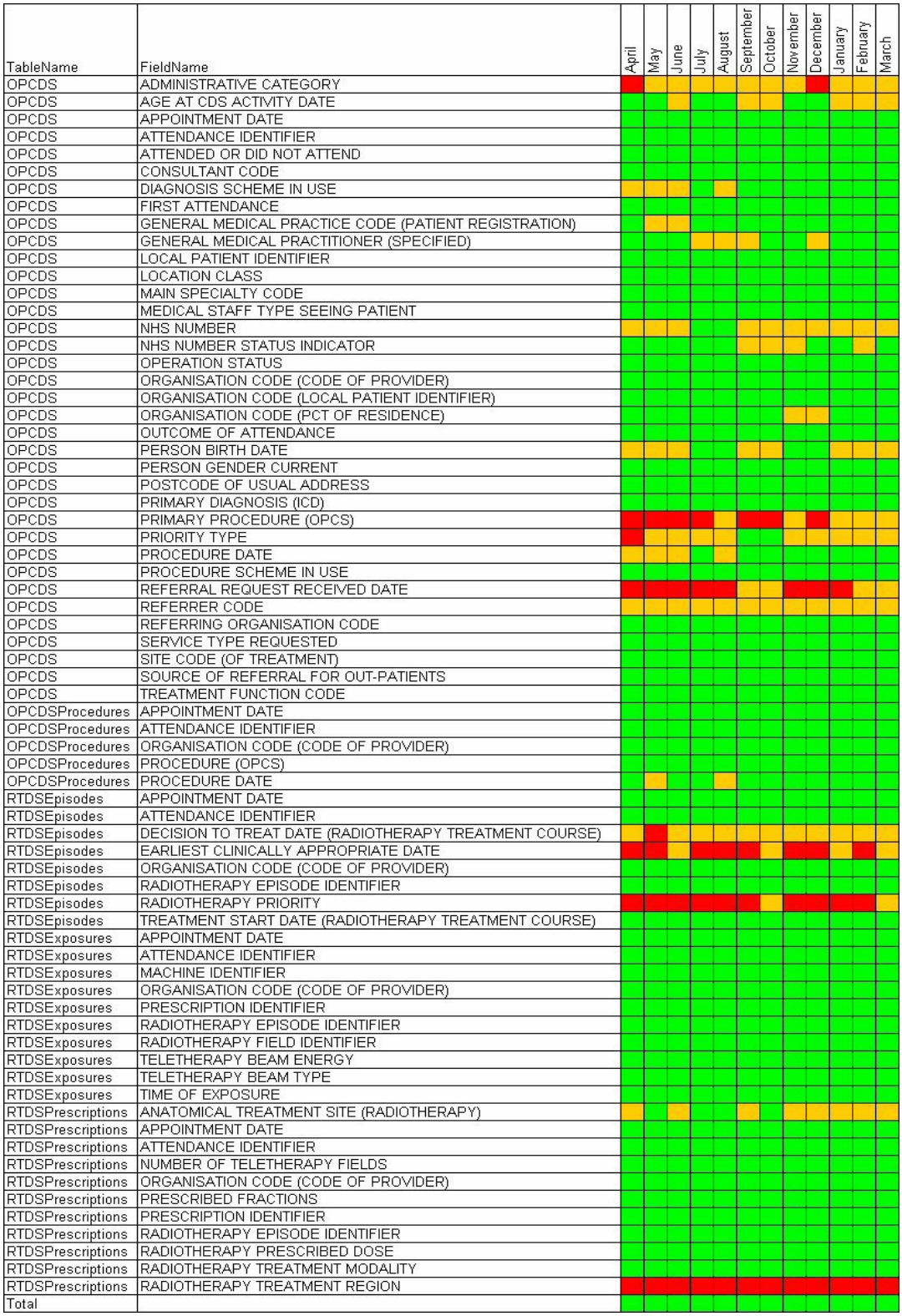


Figure A5-1 Validity of RTDS Fields by Centre (part II)

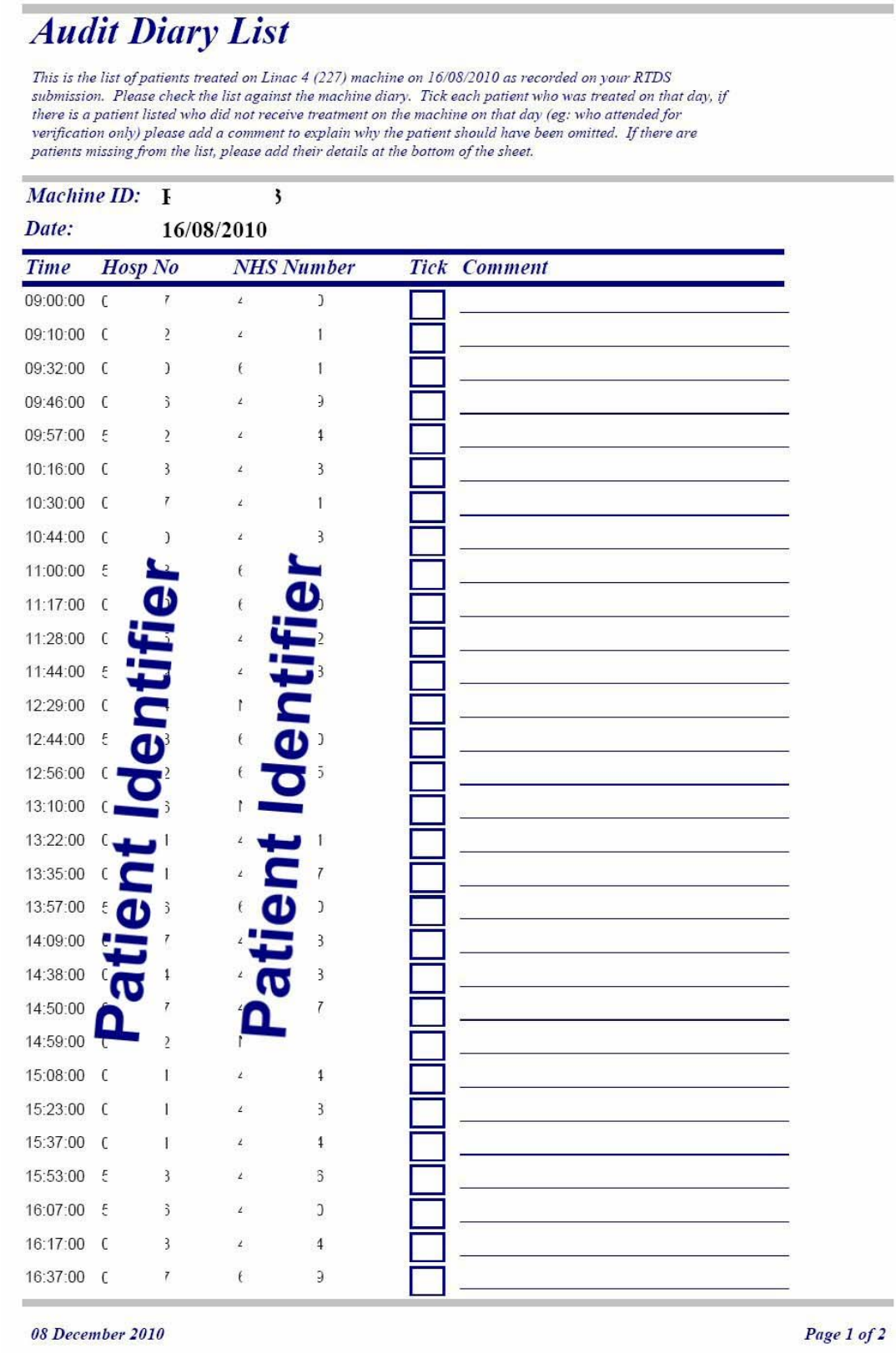
TableName	FieldName	RA02	RA07	RA09	RA0J	RA0L	RA0P	RE0A	RE0K	RJ01	RJ03	RJ0E	RJ0F	RF04	RG0Q	RG0T	RH08	RHMA	RHQJ	RHUJ	RHV7	RJ0T	RJ0E	RR09	RK0B	RL04	RM0T	RN0J	RN0L	RM05	RP0Y	RQM0	RR08	RP0K	RP0Y	RT0D	RT0E	RT03	RT0H	RT0S	RV04	RV0D	RW0E	RW0F	RW0H	RX0T	RX0H	RX0W	RX0V	RY0J	Total
RTDSEpisodes	ORGANISATION CODE (CODE OF PROVIDER)																																																
RTDSEpisodes	RADIOTHERAPY EPISODE IDENTIFIER																																																
RTDSEpisodes	RADIOTHERAPY PRIORITY																																																
RTDSEpisodes	TREATMENT START DATE (RADIOTHERAPY TREATMENT COURSE																																																
RTDSExposures	APPOINTMENT DATE																																																
RTDSExposures	ATTENDANCE IDENTIFIER																																																
RTDSExposures	MACHINE IDENTIFIER																																																
RTDSExposures	ORGANISATION CODE (CODE OF PROVIDER)																																																
RTDSExposures	PRESCRIPTION IDENTIFIER																																																
RTDSExposures	RADIOTHERAPY EPISODE IDENTIFIER																																																
RTDSExposures	RADIOTHERAPY FIELD IDENTIFIER																																																
RTDSExposures	TELETHERAPY BEAM ENERGY																																																
RTDSExposures	TELETHERAPY BEAM TYPE																																																
RTDSExposures	TIME OF EXPOSURE																																																
RTDSPrescriptions	ANATOMICAL TREATMENT SITE (RADIOTHERAPY)																																																
RTDSPrescriptions	APPOINTMENT DATE																																																
RTDSPrescriptions	ATTENDANCE IDENTIFIER																																																
RTDSPrescriptions	NUMBER OF TELETHERAPY FIELDS																																																
RTDSPrescriptions	ORGANISATION CODE (CODE OF PROVIDER)																																																
RTDSPrescriptions	PRESCRIBED FRACTIONS																																																
RTDSPrescriptions	PRESCRIPTION IDENTIFIER																																																
RTDSPrescriptions	RADIOTHERAPY EPISODE IDENTIFIER																																																
RTDSPrescriptions	RADIOTHERAPY PRESCRIBED DOSE																																																
RTDSPrescriptions	RADIOTHERAPY TREATMENT MODALITY																																																
RTDSPrescriptions	RADIOTHERAPY TREATMENT REGION																																																
Total	0																																																

Figure A5-3 Validity of RTDS Fields by Month



TableName	FieldName	April	May	June	July	August	September	October	November	December	January	February	March
OPCDS	ADMINISTRATIVE CATEGORY												
OPCDS	AGE AT CDS ACTIVITY DATE												
OPCDS	APPOINTMENT DATE												
OPCDS	ATTENDANCE IDENTIFIER												
OPCDS	ATTENDED OR DID NOT ATTEND												
OPCDS	CONSULTANT CODE												
OPCDS	DIAGNOSIS SCHEME IN USE												
OPCDS	FIRST ATTENDANCE												
OPCDS	GENERAL MEDICAL PRACTICE CODE (PATIENT REGISTRATION)												
OPCDS	GENERAL MEDICAL PRACTITIONER (SPECIFIED)												
OPCDS	LOCAL PATIENT IDENTIFIER												
OPCDS	LOCATION CLASS												
OPCDS	MAIN SPECIALTY CODE												
OPCDS	MEDICAL STAFF TYPE SEEING PATIENT												
OPCDS	NHS NUMBER												
OPCDS	NHS NUMBER STATUS INDICATOR												
OPCDS	OPERATION STATUS												
OPCDS	ORGANISATION CODE (CODE OF PROVIDER)												
OPCDS	ORGANISATION CODE (LOCAL PATIENT IDENTIFIER)												
OPCDS	ORGANISATION CODE (PCT OF RESIDENCE)												
OPCDS	OUTCOME OF ATTENDANCE												
OPCDS	PERSON BIRTH DATE												
OPCDS	PERSON GENDER CURRENT												
OPCDS	POSTCODE OF USUAL ADDRESS												
OPCDS	PRIMARY DIAGNOSIS (ICD)												
OPCDS	PRIMARY PROCEDURE (OPCS)												
OPCDS	PRIORITY TYPE												
OPCDS	PROCEDURE DATE												
OPCDS	PROCEDURE SCHEME IN USE												
OPCDS	REFERRAL REQUEST RECEIVED DATE												
OPCDS	REFERRER CODE												
OPCDS	REFERRING ORGANISATION CODE												
OPCDS	SERVICE TYPE REQUESTED												
OPCDS	SITE CODE (OF TREATMENT)												
OPCDS	SOURCE OF REFERRAL FOR OUT-PATIENTS												
OPCDS	TREATMENT FUNCTION CODE												
OPCDSProcedures	APPOINTMENT DATE												
OPCDSProcedures	ATTENDANCE IDENTIFIER												
OPCDSProcedures	ORGANISATION CODE (CODE OF PROVIDER)												
OPCDSProcedures	PROCEDURE (OPCS)												
OPCDSProcedures	PROCEDURE DATE												
RTDSEpisodes	APPOINTMENT DATE												
RTDSEpisodes	ATTENDANCE IDENTIFIER												
RTDSEpisodes	DECISION TO TREAT DATE (RADIOTHERAPY TREATMENT COURSE)												
RTDSEpisodes	EARLIEST CLINICALLY APPROPRIATE DATE												
RTDSEpisodes	ORGANISATION CODE (CODE OF PROVIDER)												
RTDSEpisodes	RADIOTHERAPY EPISODE IDENTIFIER												
RTDSEpisodes	RADIOTHERAPY PRIORITY												
RTDSEpisodes	TREATMENT START DATE (RADIOTHERAPY TREATMENT COURSE)												
RTDSExposures	APPOINTMENT DATE												
RTDSExposures	ATTENDANCE IDENTIFIER												
RTDSExposures	MACHINE IDENTIFIER												
RTDSExposures	ORGANISATION CODE (CODE OF PROVIDER)												
RTDSExposures	PRESCRIPTION IDENTIFIER												
RTDSExposures	RADIOTHERAPY EPISODE IDENTIFIER												
RTDSExposures	RADIOTHERAPY FIELD IDENTIFIER												
RTDSExposures	TELETHERAPY BEAM ENERGY												
RTDSExposures	TELETHERAPY BEAM TYPE												
RTDSExposures	TIME OF EXPOSURE												
RTDSPrescriptions	ANATOMICAL TREATMENT SITE (RADIOTHERAPY)												
RTDSPrescriptions	APPOINTMENT DATE												
RTDSPrescriptions	ATTENDANCE IDENTIFIER												
RTDSPrescriptions	NUMBER OF TELETHERAPY FIELDS												
RTDSPrescriptions	ORGANISATION CODE (CODE OF PROVIDER)												
RTDSPrescriptions	PRESCRIBED FRACTIONS												
RTDSPrescriptions	PRESCRIPTION IDENTIFIER												
RTDSPrescriptions	RADIOTHERAPY EPISODE IDENTIFIER												
RTDSPrescriptions	RADIOTHERAPY PRESCRIBED DOSE												
RTDSPrescriptions	RADIOTHERAPY TREATMENT MODALITY												
RTDSPrescriptions	RADIOTHERAPY TREATMENT REGION												
Total													

Figure A5-4 Sample Completeness Audit Form



Audit Diary List

This is the list of patients treated on Linac 4 (227) machine on 16/08/2010 as recorded on your RTDS submission. Please check the list against the machine diary. Tick each patient who was treated on that day, if there is a patient listed who did not receive treatment on the machine on that day (eg: who attended for verification only) please add a comment to explain why the patient should have been omitted. If there are patients missing from the list, please add their details at the bottom of the sheet.

Machine ID: [illegible]

Date: 16/08/2010

Time	Hosp No	NHS Number	Tick	Comment
09:00:00	[illegible]	[illegible]	☐	
09:10:00	[illegible]	[illegible]	☐	
09:32:00	[illegible]	[illegible]	☐	
09:46:00	[illegible]	[illegible]	☐	
09:57:00	[illegible]	[illegible]	☐	
10:16:00	[illegible]	[illegible]	☐	
10:30:00	[illegible]	[illegible]	☐	
10:44:00	[illegible]	[illegible]	☐	
11:00:00	[illegible]	[illegible]	☐	
11:17:00	[illegible]	[illegible]	☐	
11:28:00	[illegible]	[illegible]	☐	
11:44:00	[illegible]	[illegible]	☐	
12:29:00	[illegible]	[illegible]	☐	
12:44:00	[illegible]	[illegible]	☐	
12:56:00	[illegible]	[illegible]	☐	
13:10:00	[illegible]	[illegible]	☐	
13:22:00	[illegible]	[illegible]	☐	
13:35:00	[illegible]	[illegible]	☐	
13:57:00	[illegible]	[illegible]	☐	
14:09:00	[illegible]	[illegible]	☐	
14:38:00	[illegible]	[illegible]	☐	
14:50:00	[illegible]	[illegible]	☐	
14:59:00	[illegible]	[illegible]	☐	
15:08:00	[illegible]	[illegible]	☐	
15:23:00	[illegible]	[illegible]	☐	
15:37:00	[illegible]	[illegible]	☐	
15:53:00	[illegible]	[illegible]	☐	
16:07:00	[illegible]	[illegible]	☐	
16:17:00	[illegible]	[illegible]	☐	
16:37:00	[illegible]	[illegible]	☐	

Patient Identifier

Patient Identifier

08 December 2010 *Page 1 of 2*

RTDS Audit

HOSPITAL NUMBER: (

NB: Please complete this form using the case record and treatment sheet for FIVE patients. (we have supplied you with forms for 10 patients in case it is difficult to obtain records).

Please tick/cross the box under 'Is the RTDS record the same as the case record?' to indicate whether the RTDS submission agrees with the entry in the casesheet. If the entry is correct, there is no need to do anything else. If the entry is incorrect, please record the correct value on the line, and check the entry on OMS, tick the 'Is the RTDS the same as OMS' box if the value there agrees with the submission.

(;

RTDS SUBMISSION DATA:		Is the RTDS the same as the case record?	complete ONLY if incorrect: What is the entry on the case record?	complete ONLY if incorrect: Is the RTDS the same as OMS?
NHS NUMBER:	4)	☐	_____	☐
NHS NUMBER STATUS INDICATOR:		☐	_____	
POSTCODE:	F (	☐	_____	
PCT OF RESIDENCE:		☐	_____	
BIRTH DATE:	1 ;	☐	_____	
PERSON GENDER CURRENT:	Female	☐	_____	
PRIMARY DIAGNOSIS (ICD):	Malignant neoplasm of breast	☐	_____	☐
ADMINISTRATIVE CATEGORY:	NHS	☐	_____	☐
AGE:	64	☐	_____	
COMMISSIONER:		☐	_____	
GENERAL PRACTITIONER:	A M	☐	_____	
GENERAL PRACTICE CODE:	[I	☐	_____	
PRIORITY TYPE:	Routine	☐	_____	☐
REFERRAL REQUEST RECEIVED:	13/07/2010 00:00:00	☐	_____	☐
ONCOLOGIST:		☐	_____	☐
EPISODE	18306.44335			
ECAD:	23/07/2010 00:00:00	☐	_____	☐
RADIOTHERAPY PRIORITY:	R	☐	_____	☐
DECISION TO TREAT DATE:	13/07/2010 00:00:00	☐	_____	☐
TREATMENT START DATE :	11/08/2010 00:00:00	☐	_____	☐

10. References

[1] Data Set Change Notice 22/2008
http://www.isb.nhs.uk/documents/dscn/dscn2008/dataset/222008v1_1.pdf

[2]RES Steering Group Guidance Document April 2008.
www.canceruk.net/rtservices/rtds/rtdsdownloads/RT%20definitions%20April%202008%20final.doc

[3] NHS Data Dictionary: www.datadictionary.nhs.uk

[4] NRAG Report – Radiotherapy Developing a World Class Service in England
www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_074575

[5] Radiotherapy Equipment Survey: www.canceruk.net/rtservices/

[6]2007 mid-year estimates of population by census ward
www.statistics.gov.uk/statbase/product.asp?vlnk=15106

[7] www.canceruk.net/downloads/ukmaps/Cancer%20Networks/Version%206.1%20%282010%29/
Password required (obtainable for NHS/DH staff only from NatCanSat 0870 84 8033)

[8] Cancer Incidence figures 2008 supplied by NCIN via UKCIS (personal communiation Sean McPhail SWPHO)

[9] The UK Standardisation of Breast Radiotherapy (START) Trial A of radiotherapy hypofractionation for treatment of early breast cancer: A randomised trial The START Trialists' Group (2008) Lancet Oncology, Vol. 9(4), 331-341

[10] The UK Standardisation of Breast Radiotherapy (START) Trial B of radiotherapy hypofractionation for treatment of early breast cancer: a randomised trial The START Trialists' Group Lancet. 2008 March 29; 371(9618): 1098–1107

[11] Managing high value capital equipment in the NHS in England: National Audit Office
www.nao.org.uk/publications/1011/nhs_high_value_equipment.aspx