

CTRad Challenges and Opportunities in Data Analysis in Clinical Trials in Radiotherapy Meeting report

Date: 25 May 2017

Organisers: David Cutter (DC), Phil Evans, Maria Hawkins and Carolyn Chan

Aim:

- 1) To discuss principles and methodologies for realising the potential of routinely collected radiotherapy data in the UK.
- 2) To identify specific studies (or proposals for infrastructure development) that could utilise radiotherapy data (with or without other data) to answer research questions and achieve patient benefit

Attendance:

The meeting was well attended by 60 individuals from a variety of RT Centres and disciplines including Medical Physics, Clinical Oncology, Treatment Radiography, Epidemiology, Statistics, Information Technology and Public Health.

Agenda: (For the agenda please see Appendix 1)

The agenda covered the principles and technology that have been used for data exchange including the pros and cons of the two main methods of data sharing – ‘Centralised’ and ‘Federated’. There were also examples given of the types of research study (ranging from classical epidemiology to artificial intelligence and deep learning) that could be performed using radiotherapy data.

The break-out sessions saw the 60 attendees divided into 3 groups of around 20. 2 groups heard about 6 suggested studies that would require the combination of individual RT (DICOM) data with more detailed clinical information to answer research questions. The third group heard about 3 studies that could be performed using the combination of DICOM data and routinely collected (national) data only.

Feedback from attendees:

97% of attendees rated the meeting ‘very useful’ (47%) or ‘useful’ (50%).

The format of the meeting was rated ‘excellent’ or ‘good’ by 79%.

The morning plenary speakers were rated ‘excellent’ or ‘good’ by more than 95%.

Opinion/Summary of meeting organisers:

There could be two main complimentary strategic approaches to the utilisation of multi-centre radiotherapy data in research in the UK:

- 1) Dissemination of the required knowledge and infrastructure to support federated data sharing (this may only be applicable to larger centres/those with specific funding for development).
- 2) The use (with funding and ethical permissions) of the RTTQA upload portal for RT data collection for non-trial related research (e.g. case-control studies or similar)

Specific Outputs:

- Summary of meeting proposed as an editorial for publication in Clinical Oncology
- DC to liaise between Katie Spencer (Leeds), Una Findlay (RTDS Program Manager, PHE) and David Adlam (CRUK/BHF Cardio-oncology programme lead, Leicester) re proceeding with the

study titled “Taking advantage of natural experiments to investigate the impact of fractionation patterns on survival outcomes for limited stage small cell lung cancer”

- DC to liaise between PHE and the RCR regarding Romuald Lucek’s proposal regarding using RTDS data to audit the management of treatment gaps across England and Wales.

General Outputs:

- To further discuss and determine how CTRad could continue to support the development of studies in this area:
 - o Would further networking or ‘sandpit’ style meetings be appropriate?
 - o Could NCRI/CTRad host a webpage/forum listing the details, interests and skills of groups and individuals and summarising data sources and how to access them?
- CTRad to consider possible ways to fund ambitious infrastructure development for federated data sharing for UK ‘big data’ in oncology. E.g. A possible CRUK Grand Challenge Application (expressions of interest required by 12th October). This could be written to correspond with the challenge “Define mechanistic rules for combinatorial treatments to overcome resistance and avoid toxicity”
- CTRad (Workstream 4) to consider development of a ‘proof of concept’ study utilising the RTTQA upload portal for non-trial based research

Appendix 1: Final agenda

CTRad Challenges and Opportunities in Large Scale Radiotherapy Data Collection and Analysis

Thursday 25 May 2017

The Blue Hall, Lift Islington, 45 White Lion Street, London N1 9PW

9:45am – 4:00pm

Agenda

9:30am	<i>Registration and refreshments</i>	
9:45am	Introduction and setting the scene	David Cutter
	Principles of, and Technology for, data exchange	
10:00am	Challenges in the sharing of health data for Research	Steve Harris
10:15am	RTTQA – Plans for ‘upload portal’	Rushil Patel
10:30am	The SABR solution	Antony Carver
10:45am	Federated data-sharing	Gareth Price / Marcel van Herk
11:00am	Centralised data collection	Jonas Westberg
	Possible types of research study utilising RT data	
11:15am	Studies using trial data	Elizabeth Miles
11:30am	Going beyond the trial data	Sarah Darby
11:45am	Cohort and Case-Control Studies	Mike Hawkins
12:00pm	Modelling TCP and NTCP	Sarah Gulliford
12:15pm	Integration with RTDS/other routinely collected data sets	Úna Findlay
12:30pm	<i>Lunch</i>	
1:30pm	Briefing for breakout groups – ‘Working towards specific research ideas’	David Cutter
1:45pm	Breakout into 3 Working Groups Group A: Blue Hall (Corinne Faivre-Finn, Phil Evans) Group B: Penton Room (Sarah Gulliford, Maria Hawkins) Group C: St Pancras Room (Colin Baker, David Cutter)	All
3:15pm	Feedback from Groups, discussion and close	All
4:00pm	<i>Close</i>	

Appendix 2: List of attendees

First name	Last name	Organisation
Sophie	Alexander	The Royal Marsden Hospital
Ane	Appelt	University of Leeds
Marianne	Aznar	University of Oxford
Colin	Baker	Royal Berkshire NHS Foundation Trust
Russell	Banner	Singleton Hospital
Neil	Burnet	University of Cambridge
Michelle	Campbell	Barking, Havering & Redbridge University Hospitals NHS Trust
Antony	Carver	University Hospital Birmingham
Jason	Cashmore	University Hospital Birmingham
Catharine	Clark	Royal Surrey County Hospital
Ian	Cowley	HCA International / Harley Street Clinic
Tom	Crosby	Velindre Cancer Centre
David	Cutter	Oxford Cancer Centre
Sarah	Darby	University of Oxford
Dominic	Dwyer	Public Health England
Trevor	Esward	National Physical Laboratory
Philip	Evans	University of Surrey
Corinne	Faivre-Finn	The Christie NHS Foundation Trust
Una	Findlay	Public Health England
Alexandra	Gilbert	St James' University Hospital
Rowena	Griffiths	Swansea School of Medicine
Sarah	Gulliford	Institute of Cancer Research
Shaista	Hafeez	The Royal Marsden Hospital
Emma	Hall	The Institute of Cancer Research
Mark	Halling-Brown	Royal Surrey County Hospital
Steve	Harris	University of Oxford
Clare	Hartill	Guy's & St Thomas' NHS Foundation Trust
Maria	Hawkins	Oxford Institute for Radiation Oncology
Mike	Hawkins	University of Birmingham
Stacey	Holloway	University College London
Arjun	Khetia	University Hospital Coventry and Warwickshire
Sarah	Lawton	Public Health England
Ian	Lewis	National Cancer Research Institute
Kerlann	Le Calvez	Imperial College Healthcare NHS Trust
Rom	Lucek	Colchester Hospital University
Ranald	MacKay	The Christie NHS Foundation Trust
Elizabeth	Miles	Mount Vernon Cancer Centre
Rollo	Moore	The Royal Marsden Hospital
Jonathan	Nelson	Imperial College Healthcare NHS Trust
Rushil	Patel	Mount Vernon Cancer Centre
Ros	Perry	The Ipswich Hospital NHS Trust
Norman	Poh	University of Surrey
Gareth	Price	Manchester Cancer Research Centre
Lynsey	Rice	The Harley Street Clinic
Diana	Robinson	National Cancer Research Institute
John	Sage	University Hospitals Coventry and Warwickshire NHS Trust
David	Sebag-Montefiore	University of Leeds
Matthew	Seithel	The Royal Marsden Hospital
Ana Rita L	Simoos	Radiotherapy Trials Quality (RTTQA) Group
Kirstie	Smith	Hull and East Yorkshire Hospitals NHS Trust
Katie	Spencer	University of Leeds
Angela	Stewart	Children's Cancer & Leukaemia Group
Martin	Sykes	Hull and East Yorkshire Hospitals NHS Trust
Amy	Taylor	Sheffield Teaching Hospitals NHS Trust
Timothy	Taylor	Royal United Hospital Bath NHS Trust
Sarah	Testori	Cancer Research UK
Tracy	Underwood	University College London
Ladislav	Urban	Dynocortex
Marcel	van Herk	University of Manchester
Vessela	Vassileva	Imperial College London
Gareth	Webster	Worcestershire Acute Hospitals
Leonard	Wee	Maastro Clinic
Jonas	Westberg	Odense University Hospital