

Original Article

Radiotherapy research activity and radiographer involvement in the UK

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Abstract

In the UK, radiotherapy research is being conducted at national and international levels which include multi-centre clinical trials. Local initiatives and trials are also ongoing where work is being performed to develop techniques or protocols for new technologies and service development. Active participation within these studies is now leading to a culture change with radiographers (radiation therapists) becoming an integral part of the research process. There are currently 70 radiographers in the UK participating in research. This accounts for 2.5% of the UK profession. With the extension of role diversification, research radiographers are undertaking many new roles; however, there is still scope for further development. The therapists' role in working within this research environment is to ensure improved standards of care focussed on evidence-based practice.

Keywords

Radiotherapy research; trial activity; research radiographer; role of the radiographer

INTRODUCTION

Participation in research is an essential role for all therapists as the knowledge, experience and skills they possess ensure that they are best placed to be involved in radiotherapy trials. Historically nurses have filled these research posts, but with the introduction of the four-tier structure, the role of the radiographer has diversified.¹ Radiographers should not underestimate their ability or capacity to diversify and by promoting new roles, extending current roles and advancing practice, the

research radiographer (RR) has become more established and accepted within radiotherapy departments.

Developing and establishing a role in research as a radiographer can be extremely difficult. Currently there are approximately 18,000 registered radiographers in the UK, the ratio of diagnostic to therapeutic being 10:1.² Within the therapeutic profession recent published data suggest that there are 70 known radiographers or radiation therapists in the UK participating in research at some level,³ this represents approximately 2.5% of the total workforce. With such a limited group of individuals a cohesive, structured approach is required to make a significant impact in the field of research.

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The Society of Radiographers (SCoR) and more recently the Academic Clinical Oncology and Radiobiology Research Network (ACORRN) RR Working Party (WP) have aimed to highlight the importance of research and the role of the RR. The publication of the SCoR 5-year research strategy and the ACORRN analysis of role definition^{3,4} aim to ensure that all radiographers become research aware and use evidence-based practice in their work. It is vital that key areas for education and training are continually identified and addressed for the progression and development of the profession.

In the UK, radiotherapy research is being conducted at a national and international level which includes multi-centre clinical trials aiming to recruit large numbers of patients to answer hypotheses concerning fractionation, chemo-radiation, techniques, toxicity and survival. Local initiatives and trials are also ongoing where work is being performed to develop techniques or protocols for new technologies and service development.

This article will discuss the role of the RR and their research activity within the UK.

THE ROLE OF THE RR

The role of the RR varies greatly across the UK, adapting to the needs and research requirements of individual trusts. This diversity makes it difficult to define a uniform role.³

Within national radiotherapy trials, RRs are usually responsible for the day-to-day running and quality assurance (QA) of the trial and as a result they may require additional skills including patient review and toxicity scoring, venipuncture and advanced communication.

In local trials, the radiographer is fundamental to effective and efficient translation of research into service, bridging the divide between what is possible theoretically and the practical implications of introducing change clinically. This again leads to the development of the radiographers' role, acquiring new skills such as statistics

and audit, and greater involvement with planning and physics departments.

Whether the advanced practice of the RR is defined as role extension, role expansion, role development, or expert practice is debatable;⁵ however, regardless of how we choose to classify ourselves, or our roles it is vital that as a profession we are part of the research process. The therapist contribution gives trials and service development a practical perspective. Involvement with the multi-disciplinary team leads to increased versatility with therapists playing an integral part of the research process, optimising evidence-based practice in the clinical setting and ensuring the best interests of the patient.

ESTABLISHING A CULTURE CHANGE

The role of research can be misunderstood with often a view that research rarely impacts on service and that the therapist should remain focussed on treating patients. Research should, however, be seen as an inherent part of our work, improving the quality of care delivered, introducing new technology, technique development and audit, and hence evidence-based practice. This concept is enforced by 'a workforce that recognises its personal accountability, able to explain, justify, and defend its actions and decisions. Radiographers are an important part of this workforce and must be committed to lifelong learning and developing the professional body of knowledge'.⁶

For those not directly active in research it is important to realise its importance in daily practice. Throughout radiotherapy departments, research using knowledge and evidence to evaluate treatments and techniques and to implement change focussed on evidence-based practice is fundamental. When delivering treatment regardless of complexity it is governed by Standard Operating Procedures, by following this procedure you believe that you are offering best practice. With time, best practice may change. When changing any procedure, the process is governed by findings that show an improvement

or reflect a positive outcome. Audit plays a fundamental role in assessing change.

Most therapists will participate in some technique development, audit or evaluation and this knowledge and experience should be developed and shared. A professional research approach to the methodology of audit, statistical analysis, reporting and disseminating information is where we need to progress and this will require a large culture change as well as the positive support individuals need. Therapists can participate in research but the framework and career structure for individuals to follow needs further development. The RR gap analysis identified time, funding, support and training as the main barriers to research,³ support from the SCoR, ACORRN and National Cancer Research Network (NCRN) may help redress these.⁷ The ACORRN RR WP are developing research starter packs with the aim of informing therapists and offering practical advice, directions of support and educational resources that can be accessed. It is hoped that by highlighting the role of the therapist in research, it will encourage and enthuse individuals to take the steps towards research.

RADIOGRAPHER INVOLVEMENT IN RESEARCH AND NATIONAL ACTIVITY

Currently therapists are invited on to trial management groups to assist with technical aspects of the protocol. In some cases protocol writing groups are convened to gauge support for the study and to encourage ownership of the trial. These tend to be multi-disciplinary involving clinical oncologists, physicists, radiographers, nurses, statisticians and patients. Protocol development, authorisation and funding through to initiation of recruitment may take as long as 5 years.

This is an opportunity to acknowledge good practice and to discuss future developments. A therapist's role in this scenario is important as trial protocol requirements need to be achievable for several centres to ensure adequate recruitment.

As a member of the trial management group, the therapist may be required to speak at investigator meetings to explain the radiotherapy aspects of the study or any management issues. They may also be asked to visit centres before trial activation at that centre, to meet with the multi-disciplinary team and report back to the trials office on any difficulties in setting up the trial. Several national trials have radiographers on the trial management group, for example, IMPORT, CHHiP and BC2001.

Trial types within current research activity

IMPORT

Intensity modulated radiotherapy (IMRT) trials include the IMPORT LOW trial evaluating IMRT and partial breast radiotherapy for low risk breast cancer patients. The IMPORT trial group is also exploring techniques to visualise the breast tumour bed during treatment planning and treatment to enable delivery of IMRT ahead of the trial being open to recruitment.

CHHiP

Prostate cancer patients are being recruited to the CHHiP trial to study IMRT delivered with a standard regime of 74 Gy in 37 fractions or hypofractionated treatment giving 60 Gy in 20 fractions or 57 Gy in 19 fractions. The CHHiP trial also has a technology team who propose to develop protocols for bowel and bladder preparation for prostate patients and also has members who sit on the trial management group to allow dialogue between the groups. Three radiographers are members of the trial management group and have presented aspects of the trial and their particular areas of interest during an investigators' meeting.

BC2001

BC2001 is now closed to recruitment and has compared radiotherapy in muscle invasive bladder cancer with the addition of chemotherapy and also whole bladder irradiation to a bladder boost.

Chemo-radiation studies include the ACT II study for anal cancer and SOCCAR for non-small cell lung cancer. Trials studying the effect

of different fractionation regimes include SC20 comparing single versus multiple fractions for re-irradiation of painful bone metastases and SCORAD which is comparing single and multiple fractions of radiotherapy for metastatic spinal cord compression. The role of radiotherapy is being tested in the PRIME II trial recruiting minimum risk elderly breast cancer patients. SUPREMO is evaluating the use of radiotherapy following mastectomy.

The role of prophylactic cranial radiotherapy is being tested in the HER-PCI trial and other trials such as the EaStER study compare radiotherapy to other treatment modalities such as surgery, in this instance endoscopic excision, or drugs such as Ibandronate in the RIB trial.

These trials not only consider the treatment itself but aim to evaluate the social, economic and psychological impact on patients.

Information pertaining to UK radiotherapy trials may be accessed through the NCRN database by searching the radiotherapy section or by individual tumour study group trials. The NCRN database (www.ncrn.org.uk) lists all the

national clinical trials that are in set-up, open to recruitment or closed. A description of each trial may be accessed with information regarding the recruitment to date, date of closure, entry criteria, chief investigator and study contact. Copies of protocols are available to health-care professionals via e-mail or by links to the trial office website. An example of the layout of the NCRN information is seen in Figure 1.

Research leading to improved care and improving standards

RRs involvement in data collection and QA for clinical trials have prompted discussion of current trends in best practice; this is evident at investigator meetings where radiographers are involved on the trial management groups or part of the protocol writing party. The national trials QA team has a useful website at www.rtrialsqa.org.uk which lists current trials and the necessary QA programme for the individual trials.

Therapists have been involved in trials in the past and in particular the RT01, a prostate cancer trial comparing standard radiotherapy with conformal radiotherapy which stipulated



Figure 1. UK clinical research network study portfolio.

a portal imaging protocol for the centres recruiting patients. This trial resulted in the adoption of a portal imaging protocol for prostate patients.

An audit of portal imaging practice in the UK demonstrated that, even after the trial closure, centres had adopted this protocol for treatment verification purposes. Immobilisation techniques were also stipulated in the trial protocol.⁸

The START trial which looked at standardisation of fractionation across the UK evaluated 15 versus 25 fractions regimes for breast cancer patients. Before departments could begin to recruit patients and during the course of the trial, QA visits from a dedicated team from Mount Vernon hospital were mandatory. The QA involved irradiating a custom made phantom to obtain dose information using films and dosimeters. The QA team which included therapists and physicists was able to present several papers discussing the result of these visits including an overview on the different techniques being used around the country. This followed a meeting concerning breast techniques held in London in 2001, where discussions included immobilisation techniques, problems associated with equipment when CT scanning due to CT bore size, therapist mark ups, tattoos and techniques used. This meeting was a good multi-disciplinary forum to exchange examples of good practice; the trial would then prepare the radiotherapy community for the FAST trial which would encourage centres to adopt full dose compensation for breast radiotherapy. Preliminary results from the START trial would suggest that 15 fraction treatment 'offers rates of loco-regional tumour relapse and late adverse effects at least as favourable as the standard of 50 Gy in 25 fractions'.⁹⁻¹⁴

The team co-coordinating the FAST trial organised a planning and treatment workshop to showcase practices throughout the country enabling both large and small departments to demonstrate their planning and treatment techniques. Most of the national clinical trials teams will encourage centre's recruiting patients into the studies to attend Investigator or Participants

meetings providing a forum for good practice and an exchange of ideas.

DEVELOPMENTS IN THE RADIOOTHERAPY COMMUNITY

The ACORRN website (www.acornn.org) shows that research activity is thriving. Registered members can register to join topic specific groups of interest which include altered fractionation, late effects/normal tissue effects, particle therapy, radiobiology modelling, radiotherapy and chemotherapy, technical radiotherapy advances and hypoxia. The ACORRN RR WP consists of therapists actively involved in research either as dedicated RRs, academics, department managers or technical lead radiographers.

Members may set up alerts based on their research profiles and will also receive forum threads for discussion. To encourage multi-disciplinary team working it is possible to access information regarding other professional groups within ACORRN with contact details and information concerning research work being performed by the groups.

Most clinical trials units produce individual newsletters though these may not be available to all therapists, the frequency of circulation is normally bi-annual. The Medial Research Council clinical trials team newsletter also list peer-reviewed journal articles written by the trial teams.

CONCLUSION

Research and development is essential to ensure that work is conducted within an evidenced-based environment, striving to improve the standard of care provided for patients. Government targets for recruitment into studies and attempting to offer fairness of access across the UK for patients and health professionals to take part in multi-centre studies, will also encourage small centres and individuals to participate.

Therapists are a vital component in research, it is essential to grasp the opportunity to undertake this developing role.

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