



# Getting into Research: A Guide for Members of the Society of Radiographers

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## GLOSSARY OF ACRONYMS AND TERMS

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Below is a summary of acronyms and terms used in this guidance.

Acronym	Meaning
<b>AcoRD</b>	Attributing the costs of health and social care Research and Development
<b>AHP</b>	Allied Health Professional
<b>CAHPR</b>	Council for Allied Health Professions Research
<b>CI</b>	Chief Investigator
<b>CINAHL</b>	Cumulative Index to Nursing and Allied Health Literature
<b>CPD</b>	Continuing Professional Development
<b>CRF</b>	Case Report Form (or electronic CRF: eCRF)
<b>CRN</b>	Clinical Research Network (or local CRN: LCRN)
<b>DOI</b>	Digital Object Identifier
<b>EMBASE</b>	Excerpta Medica database
<b>FoRRM</b>	Formal Radiography Research Mentorship
<b>GCP</b>	Good Clinical Practice
<b>HCPC</b>	Health and Care Professions Council
<b>HRA</b>	Health Research Authority
<b>ICH GCP</b>	International Conference on Harmonisation Good Clinical Practice
<b>IRAS</b>	Integrated Research Application System
<b>MDT</b>	Multi-Disciplinary Team
<b>MHRA</b>	Medicines and Healthcare products Regulatory Agency
<b>NIHR</b>	National Institute for Health Research
<b>PI</b>	Principle Investigator
<b>PPI</b>	Patient and Public Involvement
<b>PPPP</b>	Patient, Public, and Practitioner Partnership
<b>R&amp;D</b>	Research and Development
<b>RaCTR</b>	Research and Clinical Trials Radiographers
<b>RCT</b>	Randomised Controlled Trial
<b>RDS</b>	Research Design Service
<b>RES</b>	Research Ethics Service (formally NRES)
<b>SIG</b>	Special Interest Group
<b>SIIC</b>	Sociedad Iberoamericana de Informacion Cientifica
<b>UKIO</b>	United Kingdom Imaging and Oncology congress
<b>Term</b>	Definition
<b>INVOLVE</b>	A national advisory group associated with and funded by NIHR
<b>MEDLINE</b>	The US National Library of Medicine (NLM) literature database
<b>SCOPUS</b>	Elsevier's abstract and citation database

A comprehensive glossary of terms and acronyms has been published by [NIHR research support services](#). *The NIHR INVOLVE jargon buster* is also a useful glossary of terms for health research.

## EXECUTIVE SUMMARY

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It is with great pleasure that I introduce this updated research radiographer starter pack for the 2019 workforce and beyond. Aptly titled 'Getting into Research: A Guide for Members of the Society of Radiographers', this document ambitiously aims to be a one-stop shop for Society of Radiographers (SoR) members interested in embedding research activities into their roles, and for those taking the first steps towards developing a clinical academic career.

Research is all of our business, and developing our research capacity and capabilities as a profession is important to ensure we offer the best service and healthcare outcomes for our patients based on the highest quality evidence. Working in a technology driven environment, radiographers are well versed in rapid changes to clinical practice and service delivery, and are uniquely placed to be leaders in the clinical validation, evaluation, deployment and implementation of new medical, healthcare and technical knowledge. I see this in my day to day work as a research sonographer, where machine learning algorithms and developments in robotics could incrementally change the way we offer the fetal anomaly screening service. In the future, advances such as these will affect members in many ways, such as: the way we are educated and trained (with changes to the core curricula to include advances in digitisation, big data and artificial intelligence), the automation of repetitive and low cognitive demand tasks, changes to the workflow within departments, the decentralisation of services into the community, and an increased emphasis on high-quality patient-clinician interactions. SoR members must be conversant and be leaders of knowledge generation in these areas to ensure that patient needs are ultimately met.

I must thank the working party for their commitment on producing this guidance: Dr Rachel Harris for her insight into the changing landscape of radiography research, Pamela Shuttleworth for her contribution and vast experience in clinical trials, Dr Tracy O'Regan whose knowledge in qualitative methods and overview of the wider membership was invaluable, and Kathryn Taylor who provided important insight from the perspective of consultant radiographers. Also, a thank you to the SCoR Research Group whose diverse skills and attributes ensured key information was included. Whilst not comprehensive, this guide will provide a good starting point for any member wishing to 'get into research'.



**Jacqueline Matthew**  
*Former chair of the SCoR Research Group*

## BACKGROUND

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Throughout this guide the term ‘members’ will be used to refer to student, assistant practitioner, radiographer, nuclear medicine technician, and sonographer members. This approach is taken in recognition that the development of a research culture requires the involvement of a whole team in all roles and at every stage of their careers. The purpose of this guidance is not to offer comprehensive information, but to provide a useful aid and support mechanism for members, and to enable their roles in research.

In simple terms, research is intended to provide new knowledge and/or understanding. The research design must be clear in order that the research study can be reproduced in similar circumstances. The results should be of value to those facing similar challenges that underpin the research. The findings must be accessible in the public domain, for critical examination, to be accessed by those who would benefit from them.

In the healthcare setting, research activity ranges from the high-level scientific generation of new evidence that has the potential to change health technology, drug administration, disease interventions, and ultimately health outcomes; to the more ‘every day’ utilisation of research findings to ensure that clinical practice and patient-centred, values-based care in radiography is always informed by an up-to-date evidence base (as depicted in Values-based Practice in Diagnostic and Therapeutic Radiography: A Training Template, 2018).

## RESEARCH AND MEMBERS – The Principles

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All members of diagnostic and therapeutic radiography teams can undertake research. Members initially gain experience of research during their foundation, undergraduate and/or postgraduate programmes of study. Beyond that, there are opportunities to undertake or facilitate research in a variety of settings including clinical, academic, educational, management, and business arenas; working independently or as part of a team.

Current Health and Care Professions Council (HCPC) Standards of proficiency: Radiographers (HCPC, 2013) state that registrant radiographers must engage in evidence-based practice and be able to evaluate research. A core function of radiography research is to provide and update the evidence base for practice. Research and evaluation activities are therefore integral to delivering high-quality patient care. Reflecting the importance of research, there are increasing numbers of competitive funding opportunities available to Allied Health Professionals (AHPs), including clinical imaging and therapeutic radiography staff (see Finding Funding).

The SCoR Research Strategy 2016–2021 (SCoR, 2015) has three key aims:

- Aim 1:** Embed research at all levels of radiography practice and education.
- Aim 2:** Raise the impact and profile of radiography through high-quality research focused on improving patient care and/or service delivery.
- Aim 3:** Expand UK radiography research capacity through development of skilled and motivated research-active members of the profession.

To meet the aims and vision of the SCoR Research Strategy, the College of Radiographers Research Priorities for the Radiographic Profession (SCoR, 2017), which identifies key areas for radiography research, has enabled a focus on five themes for members' research activity:

- Technological innovations
- Patient and public experience
- Accuracy and safety
- Service and workforce transformation
- Education and training

There are many ways that members can be involved in research including: image acquisition or data collection, study recruitment, leading a small local project, or being the principle investigator of a research group. However, beginning to build research into your career, perhaps even for those who have obtained a Master's or Doctorate degree, can be challenging. This document offers an overview of research processes; it includes case studies and provides signposts to further information.

### Case study 1 (excerpt): Why I got into research

I was a clinical diagnostic radiographer for around 10 years and as my radiography career developed I saw my career either going towards clinical speciality and management, or education and research. I felt my skill set and personal preference was for the latter. I like the idea of being able to change practice on a larger scale through research and innovation. It's great to work with people who are enthusiastic, creative and open minded about ideas for improving practice in the future.

My research involves investigating ways of measuring bone health in terms of oxygenation and blood perfusion. I am comparing traditional measurement protocols (DXA, MRI and blood testing) with a novel application called near infrared spectroscopy (NIRS). NIRS has potential as it is a safe non-invasive measurement technique that could be a useful addition to current bone health screening which is predominately based on bone density.

I am in the final year of my part-time PhD which I have been carrying out alongside my lecturing post at the University of Exeter. The project has also benefitted from support through the CoR Doctoral Fellowship Grant.



**Robert Meertens**  
**Senior Lecturer**  
**University of Exeter**

## CLINICAL AUDIT AND SERVICE EVALUATION

Audit and service evaluation share similarities with research in that they are employed to answer specific questions. However, research is designed to generate new knowledge and test a hypothesis, while audit and service evaluation test the application of current knowledge. Although not strictly research, audit and service evaluation can be a good way of getting used to undertaking an investigative project, collecting data, and presenting and acting on results.

### Clinical audit is a process that can be defined as:

A quality improvement cycle that involves measurement of the effectiveness of healthcare against agreed and proven standards for high quality, and taking action to bring practice in line with these standards so as to improve the quality of care and health outcomes.

**Healthcare Quality Improvement Partnership, 2016**

The key component of clinical audit is that performance is reviewed (or audited) to ensure that what you should be doing is being done, and provides a framework to enable improvements to be made if necessary. It was formally

incorporated into the NHS in 1993 and comes under the Clinical Governance umbrella, forming part of the system for improving the standard of clinical practice.

**Service evaluation** is another tool for assessing clinical performance and is:

- Designed and conducted solely to define or judge current care.
- Designed to answer: "What standard does this service achieve?"
- Measures current service without reference to a standard.
- Involves an intervention in use only.

**Health Research Authority, 2017**

Service evaluation results are not to be applied generally to other settings and situations. Both audit and service evaluation should be registered and approved by local research and development (R&D) bodies who are also a good source of advice and information when starting out.

It is important to understand the difference between audit and research as the rules governing the undertaking of these activities differ. To help decide if activities are research or audit use the **HRA's decision tool**. This tool is designed to help you decide whether or not your study is research, as defined by the UK Policy Framework for Health and Social Care Research.

## GETTING STARTED IN RESEARCH

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Research projects are complex and getting involved in someone else's study can be a good way of getting started. Undertaking your own project can be immensely rewarding, however, having regular access to the support of an experienced researcher, supervisor or mentor is invaluable. This will happen naturally if your project is for an academic qualification, but otherwise seek out a local research mentor even if they are from a different professional background.

### Research Training

As part of your undergraduate radiography degree you will have gained a good grounding in the basics of research methods and design. However, once in clinical practice it can be difficult to get access to further research experience and development. Informal training and continued professional development (CPD) activities, e.g. online or short courses, can provide training in specific research methods/design. Experiential learning as a member of a research team, in a research radiography role, or working in a research-rich environment (where you have access to experienced support and research networks) can increase your confidence to lead on smaller research projects. Building towards proficiency in research design is important in the longer term and usually requires formal training, for example within a Master's degree (which can be a gateway to a higher degree) or a Doctorate (see table below). For broad and in-depth coverage, postgraduate taught Master's in Research (MRes) degrees build advanced research design capabilities. If you decide to undertake Doctoral training, there are several routes to suit a range of desired career pathways and experience. These are summarised in the following table, and described by Dr L Robinson in her Doctoral Den presentation (Doctoral study resource link, below).



Full title	Abbreviation	Description
<b>Doctor of Philosophy</b>	PhD	PhD is the most common award title at Doctoral level. It is the traditional route to a Doctorate and is mainly <b>student driven with regular access (one hour per week) to supervision.</b>
<b>Doctor of Philosophy</b>	DPhil	Used for subject-specialist doctorates at a small number of higher education institutions, as an alternative to the title PhD. This title can also be used to refer to doctorates by publication (see PhD by published works, below). Again, this route is mainly <b>student driven with regular access (e.g. one hour per week) to supervision.</b>
<b>Professional Doctorate</b>	Prof Doc or DProf	Aims to develop an individual's professional practice and to <b>support them in producing a contribution to (professional) knowledge. Usually has a substantial taught element.</b>
<b>Doctor of...</b>	D[subject abbreviation] or [subject abbreviation]D e.g. For education. D.Ed or EdD	Professional and practice-based doctorates within a specialised subject, e.g.: Doctor in Health Sciences Doctor in Health Research Doctor of Education <b>Usually has a substantial taught element.</b>
<b>PhD by Published Work/s</b>	PhDPW PhD by portfolio DPhil	<b>Awarded in recognition of a substantial body of original research undertaken over the course of many years.</b> Typically a portfolio of work that has been published in a peer-refereed context is submitted for assessment along with an overarching narrative (e.g. 10,000 words).

Doctoral study resource links:

[\*Dr Leslie Robinson – Doctoral Den presentation\*](#)

[\*The SCoR Doctoral log\*](#)

### **The Society's Formal Radiography Research Mentorship (FoRRM) Scheme**

The Society has funded a Formal Radiography Research Mentorship (FoRRM) scheme since 2017 to help novice researchers build the knowledge, skills, and confidence to conduct independent research and to help build research capacity in the profession. Mentees for the scheme are selected according to their commitment to research, which is evidenced via a dedicated online questionnaire. They must have undertaken a Master's programme prior to the start of the mentorship and have at least three years' clinical experience in imaging or oncology. Normally twelve mentees are selected per round and paired with experienced radiography research mentors across the UK. The mentor-mentee partnership lasts one year and involves some formal training on mentoring and research methods. The scheme uses ongoing evaluation to ensure the best possible experience for both mentees and mentors. Participants from the scheme's first cohort have written extensively about their involvement and have produced videos to share their experiences. There is a dedicated page on the SCoR website where you can find out more about [\*FoRRM\*](#). Overall the scheme has been very rewarding; it has helped mentees submit abstracts, present at conferences, write papers, submit research funding applications, and begin funded doctorates. The second round of FoRRM began in the spring of 2019.

## The Research Cycle

Research usually starts with the identification of a problem or a novel research idea. SoR members are uniquely placed to identify research priorities in a diverse range of areas of practice that could have an important impact on health outcomes and professional radiographic activity. A good literature review will help you identify gaps in the professional evidence base, but there are also multiple research 'Priority Setting Partnerships' involving collaborations with clinicians and the public, which rank health questions considered to be those most important to patients (see the [NIHR James Lind Alliance](#) and the [The College of Radiographers Research Priorities for the Radiographic Profession](#)). Once you have your topic or area of investigation, to facilitate the scientific proposal writing process you will need to develop the study concept, assess feasibility, and consider its design – this is an important skill to have when seeking funding (see Finding Funding). Your local health library can provide support and training during this process; your regional NHS Research Design Service (RDS) can also provide help to develop a high-quality research proposal ([see the NIHR Research Design Service](#)). There are some differences in research support structures across the four UK nations; for more information and to find resources relevant to your locality, visit [NHS four Nations compatibility programme and UK-wide-working](#) and see Appendix 2.

If you are involved in clinical research, patient and public involvement (PPI) at the early stages of, and throughout, the research cycle is imperative. Importantly, well-considered PPI in research is a prerequisite for many funding bodies (see Patient Involvement). Remember that in 'co-produced' studies, service users/patients are members of the research team. Through their Guiding Principles, SCoR advocate that patient, public, and practitioner partnerships (PPPP) must be held as a core value in the research process.

### SCoR PPPP resource link:

**Patient Public and Practitioner Partnerships within Imaging and Radiotherapy: Guiding Principles**

The NIHR have developed a 'Research Cycle' (Fig. 1) intended to inform patients and the public of how they can get involved in clinical research.

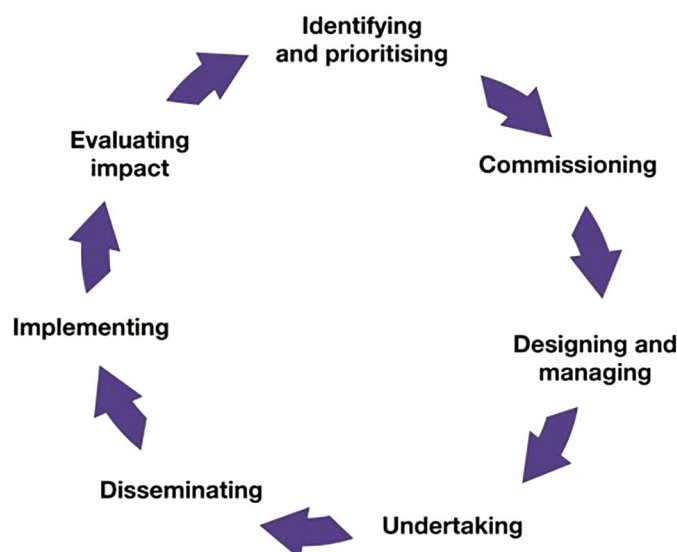


Figure 1. The NIHR Research Cycle (source: <https://www.invo.org.uk/posttypresource/where-and-how-to-involve-in-the-research-cycle/>).

Examples from the NIHR on how patients and the public can be involved in various stages of the Research Cycle include:

### **Identifying and prioritising**

- discussions with existing reference groups and networks
- inviting people to an event or holding a workshop or focus group
- attending meetings held by service user groups
- peer group interviews
- surveys and interviews
- asking organisations who support the public about the feedback they get from people who use services
- using an independent facilitator (this reduces the risk of researchers influencing the agenda too much).

### **Commissioning**

- reviewing research proposals
- as members on commissioning panels or boards
- being part of the monitoring process of research, once funded
- part of a user-controlled organisation which commissions research.

### **Designing and managing**

- membership of a study steering group or management committee
- as a research co-collaborator or in some cases as a PI.

### **Undertaking**

- assisting in looking at different types of evidence and interpreting the literature from a public perspective
- involvement as a peer review interviewer or running a focus group.

### **Disseminating**

- having been involved at other stages in the research patients/public will be more likely to disseminate the results to their own networks, will be able to help summarise research findings in clear user-friendly language, and ensure that information is accessible to a public audience.

### **Implementing**

- public involvement in research can influence, support, and add strength to the way research is taken into practice. Patient/public members can help ensure that research will effect change and improvement in issues which concern people most and so can lead to new improved services and changes in practice.

### **Evaluating impact**

- patients/public can monitor and evaluate their involvement and the impact of PPI throughout the project, e.g. co-writing information on the impact in journal articles.

## **Methodology**

The terms 'methodology' and 'method' are often used interchangeably but are different elements of the research process and it is important to understand the distinction. An overarching 'methodology' guides the methods that are chosen: the design of the research; it determines how the study will be conducted and informs on what type of data will be collected and analysed, and how. 'Methods' are the research tool(s) that are used to collect data, for example a survey or an interview, and the tools or approaches used to analyse and interpret those data. In very simple terms, it is useful to think of the methodology as a recipe and the methods as the ingredients of a research study (Creswell & Creswell, 2017).

The selection of an appropriate methodology should take a number of factors into account, including:

- the research question being posed;
- specific study requirements, including those stipulated by funders;
- academic criteria of education institutions and/or healthcare organisation regulations and policies; and
- philosophical underpinnings – the views, values, assumptions, and preferences of the researcher(s).

The choice of methodology is also somewhat influenced by disciplinary traditions. These traditions have an impact on the judgements and acceptance of selected methodologies within a professional discipline (in this case radiography and healthcare); think about what type of knowledge/evidence is acceptable, valued, and considered credible by a profession. In broad terms a methodology is usually described as either quantitative (where data is essentially numerical/represented using numbers) or qualitative (data is non-numerical, e.g. represented with words, images, etc.); increasingly, however, healthcare research combining elements of both methodologies (mixed-methods research) is being undertaken (Creswell & Creswell, 2017).

**Methodology resource links:**

[\*Emerald Publishing's Research Zone\*](#)

[\*Methods search on Science Direct\*](#)

[\*Sage Research Methods\*](#)

[\*Society of Radiographers Council for Allied Health Professions Research – CAHPR\*](#)

The SCoR provides an online workspace for members to discuss their research, ask questions, and network with research-active colleagues. For access to 'Glasscubes for researchers', please contact [pande@sor.org](mailto:pande@sor.org).

### **Data Analysis**

There are a wide number of approaches for the analysis of quantitative and qualitative data that can be selected by researchers. Ultimately, the research question, aims, objectives, methodology, methods, and results will guide the approach that is taken. For qualitative research, many texts and journals encourage critical thinking and application with regards to the analysis, from grounded theory or ethnographic studies with narrative syntheses to thematic analysis of phenomenological studies, for example.

Statistics are used to represent and analyse 'quantitative' (i.e. continuous and categorical) data. As with qualitative and mixed methods studies, the choice of analysis methods for quantitative data will depend on the research question being asked, the population being studied and the participant sampling/recruitment frame, the study design and the outcomes being measured, and the effects of any confounding variables; all of these factors are important and must be considered at an early stage of the research design process. Simple statistical analysis is achievable for novice researchers, and there are numerous online tools, eLearning programmes, and literature to help (see recommended reading below, and Resources and Document Links). We advise that you consult the literature, your colleagues, and researchers that are experienced in the use of qualitative, quantitative, and mixed methods approaches for data analysis before selecting an approach. If you don't have access to such expertise in-house, your regional National Institute for Health Research (NIHR) [\*Research Design Service \(RDS\)\*](#) can help identify/provide appropriate support. Getting it wrong can severely limit the impact of your research and the

ability to generalise your findings to a wider population. In some regions, RDS drop-in clinics are available for advice when considering statistical design and analysis.

#### **Recommended reading: Data analysis resource publications**

1. Adams, J. and Smith, T. 'Qualitative methods in radiography research: a proposed framework'. *Radiography*, 2003, 9:3, 193–199, DOI: [https://doi.org/10.1016/S1078-8174\(03\)00061-0](https://doi.org/10.1016/S1078-8174(03)00061-0)
2. Anvari, A., Halpern, E. F. and Samir, A. E. 'Statistics 101 for Radiologists'. *RadioGraphics*, 2015, 35:6, 1789–1801, DOI: <https://doi.org/10.1148/rgr.2015150112>
3. Blackmore, C.C. 'The Challenge of Clinical Radiology Research'. *American Journal of Roentgenology*, 2001, 176:2, 327–331, DOI: <https://www.ajronline.org/doi/10.2214/ajr.176.2.1760327>
4. Blackmore C.C. and Cummings, P. 'Observational Studies in Radiology'. *American Journal of Roentgenology*, 2004, 183:5, 1203–1208, DOI: <https://www.ajronline.org/doi/abs/10.2214/ajr.183.5.1831203>
5. Ng, C. K.C. and White, P. 'Qualitative research design and approaches in radiography'. *Radiography*, 2005, 11:3, 217–225, DOI: <https://doi.org/10.1016/j.radi.2005.03.006>
6. Obuchowski, N. A., Subhas, N. and Polster, J. 'Statistics for Radiology Research'. *Semin. Musculoskelet. Radiol.*, 2017, 21:01, 023–031, DOI: <https://doi.org/10.1055/s-0036-1597252>

#### **Roles in the Research Team**

Radiographers are ideally placed to investigate a multitude of areas and it is important to formulate an evidence base. There are many topics of research just waiting to be investigated, including: establishing practice, innovative practice, radiation protection, service provision, patient care, patient voice, the use and development of equipment/protocols, testing the efficacy of diagnosing disorders using new protocols, the biology/physiology of diagnosing conditions, patient information literature, the implementation of new ways of working, and many, many more. This is not an exhaustive list by any means, and as practising radiographers and educators there are many areas of practice to research.

#### **Research radiographer**

The title 'research radiographer' is a generic term, applicable when research activities occupy the majority of the working time.

A research radiographer's role is to undertake or facilitate research, applying their skills and knowledge of radiography/radiotherapy to research activities. Research radiographers can work in a variety of settings including clinical, academic, educational, management, and can specialise in many different aspects of research. Sometimes the specialisation is demonstrated by different role titles, which reflect the main responsibilities.

Research radiographer roles can be solely concerned with carrying out their own, or team, research or concerned with the delivery of clinical trials. Some posts are a mixture of these two elements and they can vary from trust to trust, or within one team. The need for specialisation of roles will depend on the research structure within a department; sometimes a specific person takes on a single role, sometimes a combination of roles.

Ideally, all radiographers should have a research component to their role, with the level of research activity increasing for advanced practice and consultant

roles, but research radiographers will have specific expertise in the application of research methodologies (see the CoR Careers Framework, below).

All radiographers should be encouraged to participate in research activities, starting out with data collection for a study. This instils experience of the research process, knowledge of research governance, and helps develop an analytical clinical culture. The radiographer's role within the multi-disciplinary team (MDT) will vary according to their specialisation and level of skills and experience; this means they can act as either the research manager or principal investigator, leading the project or programme.

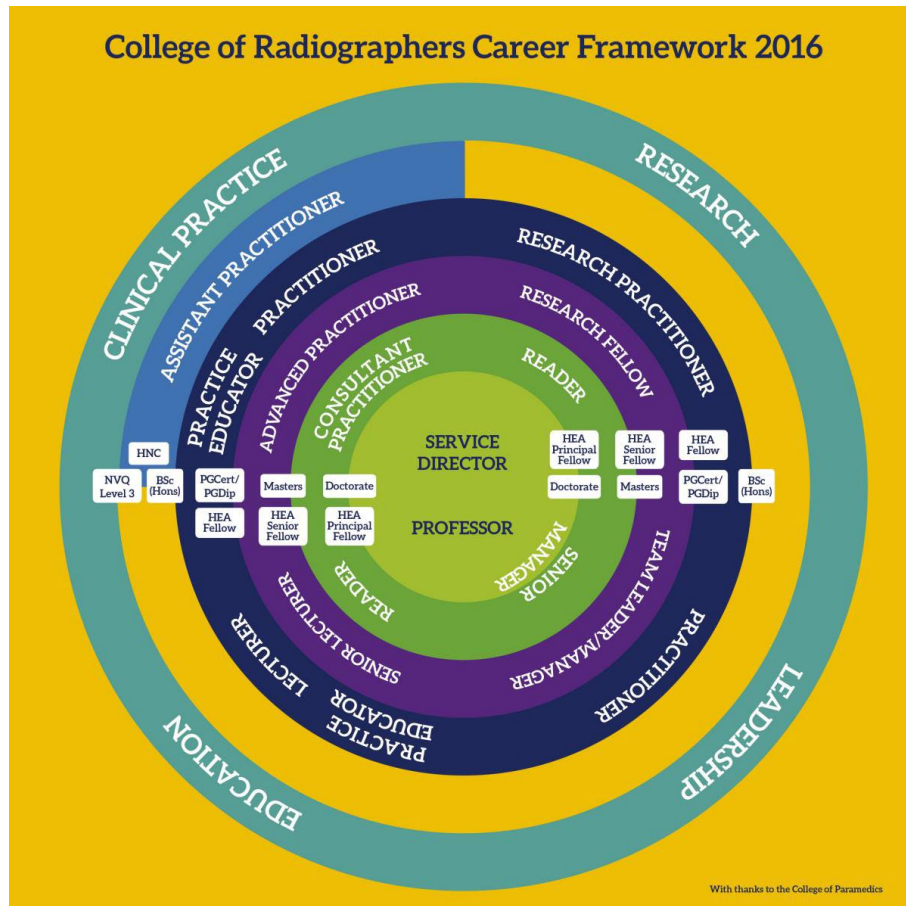


Figure 2: College of Radiographers Career Framework. (source: <https://www.sor.org/career-progression>)

### The role of research radiographer within a Multi-Disciplinary Team (MDT)

#### Resource link to clinical trials team roles:

*National Cancer Institute – Research team members*

Some radiographers may have had sole responsibility for a research project when working for their professional qualification and some may undertake their own independent self-led projects during their career, but most clinical research will be conducted as part of a MDT. MDT working is important in the clinical setting as it is rare to find an area of investigation that does not have an impact on other staff members or professional groups; most projects will require the expertise of many disciplines and good communication is essential to prevent misunderstanding or duplication.

The research MDT may include many other disciplines, dependent primarily



on the topic and placement of the study. Within the clinical setting, this team often includes experienced radiographers, physicists, clinicians, managers, and nurses, and is responsible for managing the research process for the project (single, time-limited study) or programme (portfolio of studies contributing to a specific goal).

For larger projects and programmes, a data manager, statistician, and trial co-ordinator may also form part of the team. Your local research structure is likely to vary depending on need; it can either be led by a dedicated research team or be formed from multiple teams, or sometimes a combination of both. The team members can either be from a specific department only or include staff from other services.

All hospital-based research teams report to an executive level R&D directorate that sets the research governance for the hospital. When there is a collaboration between a hospital and an academic research team, the principle investigator is responsible for ensuring research governance is adhered to in accordance with local protocols. When getting started in research, it is recommended that you take time to establish how research governance works in your department.

### **Other members of the research team**

Designing and running a clinical trial requires the skills of many different types of experts. Each team may be set up differently at different sites. Typical team members and their responsibilities include:

#### ***Principal investigator***

This person:

- supervises all aspects of a clinical trial;
- develops the concept for the trial;
- writes the protocol;
- submits the protocol to the Institutional Review Board (IRB) for approval;
- directs the recruitment of patients;
- manages the informed consent process; and
- supervises data collection, analysis, interpretation, and presentation.

A person with the responsibilities and overall conduct of the clinical trial is known as the Chief Investigator (CI); this is not site specific. A person responsible for the conduct of the clinical trial at a particular site is termed the Principal Investigator (PI). Any individual member of the clinical trial team designated and supervised by the investigator (whether CI or PI) at a trial site to perform critical trial-related procedures and/or to make important trial-related decisions is known as a Sub-Investigator.

#### ***Research nurse or research radiographer***

This person:

- manages the collection of data throughout the course of a clinical trial;
- educates staff, patients, and referring health care providers about the trial;
- communicates regularly with the principal investigator; and
- assists the principal investigator with the informed consent process, study monitoring, quality assurance, audits, and data management and analysis.

#### ***Data manager***

This person:

- manages the collection of data throughout the course of a clinical trial;
- records/logs the data;
- works with the principal investigator and research nurse to identify which data will be tracked;

- provides data to monitoring agencies; and
- prepares summaries for interim and final data analysis.

### **Clinical trials administrator**

This person:

- manages data and administrative duties throughout the course of the clinical trial;
- completes case report forms (CRFs);
- completes ethics submissions; and
- completes Medicines and Healthcare products Regulatory Agency (MHRA) applications.

### **Staff physician or nurse**

This person:

- helps take care of the patients during a clinical trial;
- treats patients according to the clinical trial protocol;
- assesses and records how each patient responds to the treatment and the side effects they may have;
- works with the principal investigator and research nurse to report trends of how patients are doing on the treatment; and
- manages each patient's care.

### **Other roles within research**

Although research teams are of different sizes and compositions, the basic research delegation structure above offers a generic model. For example, in non-clinical trial grant applications there is usually a named 'lead applicant' who in this context is the CI and PI. Additionally, the research team will have named 'co-applicants' and 'collaborators' to create a multi-skilled team.

Within the research environment key figures of responsibility are appointed, and in these roles they hold several duties which must be upheld; a summary of *investigator responsibilities* is outlined in the International Conference on Harmonisation Good Clinical Practice guidelines (see Good Clinical Practice).

### **Sponsor**

An individual, company, institution, or organisation which takes responsibility for the initiation, management, and/or financing of a clinical trial; hence, they hold responsibility for implementing and maintaining quality control and assurance, and for ensuring the codes of practice are followed.

## **Clinical Trials**

### **Resource link to clinical trial phases: National Cancer Institute – Phases of clinical trials**

A clinical trial is an experimental project that is designed to test the current 'gold standard' against a new intervention that may improve care. Clinical trials may be concerned with therapy, imaging, or patient experience and information. Increasingly, translational research trials are performed; these are studies that involve the collection of blood or tissue samples for genetic testing, either at the time of collection or for use in future research.

The majority of clinical trials are concerned with drug therapy testing, but can also take other treatments into account, e.g. radiotherapy and surgical treatments. According to the NIHR, clinical trials are used to determine whether



new biomedical or behavioural interventions are safe, efficient, and effective. Many newer drug studies involve the use of immunotherapy in combination with surgery, radiotherapy, or conventional chemotherapy.

Clinical trials of experimental drugs, treatments, devices, doses of radiotherapy, or behavioural interventions may be in one of four phases:

### **Phase I**

Phase I clinical trials test a new intervention in a small group of people (e.g. ten or more) for the first time to evaluate safety (e.g. to determine a safe dosage range and identify side effects). The objective is to look for possible non-toxic intervention candidates; often it is the first time the intervention will be used in humans.

### **Phase II**

Phase II clinical trials study the intervention in a larger group of people to determine efficacy and to further evaluate its safety. The objective of this phase is to look for possible therapeutic effects.

### **Phase III**

Phase III trials investigate the efficacy of the intervention in large groups of human subjects by comparing the experimental intervention to the 'gold standard' or to pre-tested interventions. These trials also monitor adverse effects and collect information that will allow the intervention to be used safely. The objective is to compare treatments in a scientifically valid and ethically acceptable way, often achieved by allocating treatments in a random way by the process of randomisation.

### **Phase IV**

Phase IV trials are conducted after the intervention has been licenced (by the relevant authority). These studies are designed to monitor the effectiveness of the approved intervention in the general population and to collect information about any adverse effects associated with widespread use. This phase can also test a licenced drug, known to be safe, in a new setting, i.e. for a different disease.

### **Feasibility studies**

Feasibility studies are completed before a larger phase II or III trial; these studies test that the treatment, device, or intervention is acceptable to both patients and healthcare staff and that delivering the intervention is actually achievable in practice.

The aims of feasibility studies are generally:

- to test the feasibility, practicality, and acceptability of the study design and protocol;
- to resolve practical issues for the conduct of a future randomised controlled trial (RCT), such as the reproducibility of the outcome measures, and recruitment and attrition rates;
- to investigate the acceptability of the care pathway to patients and clinicians and to refine it prior to the full randomised controlled trial (RCT); and
- to inform the sample size calculation for the full trial.

### How is the size of a clinical trial determined?

If you are considering initiating a trial or study, always seek the advice of a statistician before starting; this will ensure that the data gathered will be relevant to the trial objectives. The role of the statistician cannot be underestimated. Statistical tools are used to determine the number of patients needed to achieve the principal objectives of the trial, but practical matters such as the availability of patients and resources must also be taken into account. The main areas of involvement are: determining sample size, overseeing methods of randomisation, advising on data collection tools and databases, assessing the impact of trial deviations, analysing trial data and results, supporting the data management committee and the trial management group, and assisting and preparing reports and publications.

Required numbers of participants for a study vary greatly depending on the type of research being undertaken. A large randomised controlled trial may need one or two thousand participants, whereas qualitative research may only require ten to twelve in order to reach data saturation.

The estimated time period for patient recruitment into a trial will depend on the frequency of any given disease. For common cancers, patients can be recruited within one centre, whereas, for less common cancers patients are likely to be accrued across multiple hospitals in order to achieve the required sample size.

### How is a patient randomised in a clinical trial?

Each patient that might be considered suitable for inclusion into a clinical trial undergoes the following sequence of events:

1. The diagnosis is confirmed.
2. The required treatment is established.
3. The patient is eligible for inclusion into the trial (according to the protocol).
4. The patient has the trial explained to them and is given the Trial Information Leaflet.
  - i. Ensure that the patient understands the principle of randomisation (if it is involved in the study).
  - ii. Ensure the patient understands the aims of the trial.
  - iii. Ensure the patient understands their role within the trial, and the commitment asked of them.

Patient consent is obtained, generally after at least 24 hours' 'thinking time'; more often a week is allowed for the patient to consider trial entry. Patient registration and randomisation must be achieved promptly so that there is no delay in the commencement of treatment. Randomisation should be remote to the trial's chief and principal investigators, and should follow rules of good clinical practice to avoid opportunities for bias.

### Follow up

Many trials are conducted to see if a treatment can prevent or delay disease recurrence and increase survival. Such studies usually require long term follow-up data. Even when a trial is closed to patient entry (e.g. when the required number of patients has been recruited), follow up continues.

### The clinical trial process

The clinical trial process normally takes years to complete, from trial set up to the end of follow up, and there are many things to do in each stage. If this is an unknown area then it is best to seek advice, possibly shadowing an

experienced trials researcher to help navigate through the process. Speak to someone with experience, your local R&D department may be able to help.

### Monitoring

Whilst clinical trials are progressing through the trial process they can be subject to monitoring. The purpose of trial monitoring is to verify:

- that the rights and well-being of the subjects are protected;
- the reported trial data are accurate, complete, and verifiable for source data; and
- that the conduct of the trial is in compliance with the currently approved protocol, with good clinical practice (GCP), and with the applicable regulatory requirements.

The monitor will visit the site and examine all paperwork that relates to the trial and the participants. A report will be produced on the conduct of the trial.  
Clinical trials network

The Research and Clinical Trials Radiographers (RaCTR) network is a College of Radiographers' Special Interest Group (SIG) set up by radiographers involved in the delivery of clinical trials. It comprises of radiographers working in research and clinical trials roles across the UK.

The RaCTR network aims to:

- share knowledge, information, and best practice advice amongst network members;
- exchange information on training days, opportunities, and events;
- conduct horizon scanning for potential trials;
- provide a forum for clinical discussions around current issues;
- provide support for workforce development of radiographers and students; and
- gain recognition and raise the profile of radiographers working in clinical trials and research.

#### Other clinical trial resources:

*The RaCTR SIG web page*

*The NIHR clinical trials toolkit*

Ramlual, A. (ed.), Medical Imaging and Radiotherapy Research: Skills and Strategies (London: Churchill Livingstone Elsevier, 2010)

## PATIENT INVOLVEMENT

Most health organisations, and indeed many who participate in the financing of related research, now insist that patient input and the patient voice is a **fundamental requisite** for any research proposal. **With this in mind it is imperative that you plan from the design stage to have user involvement in your research.**

### Patient, Public and Practitioner Partnerships (PPPP) within Imaging and Radiotherapy: Guiding Principles

The CoR has published a set of guiding principles for Patient, Public and Practitioner Partnership (PPPP).

The document is divided into four sections, each related to key areas of radiography practice: Service Delivery, Service Development, Education, and **Research**. Within each section are a set of core values that are expanded upon using authentic patient stories to illustrate the impact such values have on patients, carers, and the public. These stories have been garnered from a number of sources including: statements from patient members of the PPPP task and finish group, quotes from research participants, and stories from [CareOpinion.org.uk](http://CareOpinion.org.uk). The document also includes examples of good practice and guidance that can be used by a range of stakeholders wanting to develop PPPP within their own areas of work.

### Person-Centred Radiography Research: Core values

*"When you are undertaking research related to radiography I would like it if you could"...*

#### 1. Understand the value patients and the public can bring to research and work in partnership with us rather than just using us as research participants:

*"I can provide insight into existing care from the patient perspective, I can highlight what matters most to patients and the public about your current service, about where your service or care is lacking or could be improved and I can provide different ideas about what interventions and care will be best tolerated"*

*"I can also give you feedback on your research method, making sure you explain clearly what your study is about; communicate more sensitively with people; design studies so they are easier to take part in; and share your results with people I know"*

*"We are the DiSCOVER group; a group of patients who have osteoporosis and have been working together for 6 months assisting researchers. We were involved in a number of workshops between January and June 2017 setting our priorities for osteoporosis research and one of the key themes we identified was to raise the profile of osteoporosis"*

#### 2. Ensure research involving patients and the public is informed by national guidelines and good practice:

*"It is important to ensure my input is managed correctly and with care. It is also important that my time and contribution is adequately reimbursed, so please make sure your research funding bid incorporates adequate costs to pay for my time and travel costs"*

*"As a patient working as part of the research team I need some training and support. In particular I need:*

- Help with jargon*
- Help in understanding what is meant by research*
- Training in how to carry out research*
- To know how the research will be funded and how I will be able to claim expenses – volunteers should not be expected to be out of pocket – childcare, travel should always be factored in. How it will affect my benefits*
- To know what will happen if I become unwell – a concern for patients with long-term illnesses*
- A system of mentoring*
- To receive feedback on my input"*

**3. Consider the diversity of patients – make sure people who are like me are involved in your research:**

*"I need to know that your research findings really do represent my own views and experiences. This will only happen if you try to engage with patients from relevant groups"*

**4. Share your research with me in a language I understand, at regular intervals throughout the project as well as at the end:**

*"As a patient I am a key stakeholder of research and need to be able to read and interpret the results so that I can use it to make informed choices about my care"*

*"If I have given my time to input into your research I deserve to be informed about the outcomes"*

**5. Make sure all your radiography research includes my voice at each stage of the research process from design to dissemination:**

*"I'd really like to get involved in more clinical research but I don't always get to know about such opportunities"*

*"I'd like to be involved as a participant but also as a member of the research team"*

**6. Make sure any images you take of me as part of the research study follow guidelines about incidental findings:**

*"I don't know if you will tell me if you find something unexpected and this worries me, surely you've an obligation to do that – right?"eo*

## Research – Guidance for Members/Practitioners/Staff

	Core value	Guidance	Resources
1	Understand the value patients and the public can bring to research and work in partnership with us rather than just using us as research participants	Healthtalk.org is a partnership between the charity DIPEX and the Health Experience Research Group (HERG) at the Nuffield Department of Primary Healthcare Science, University of Oxford. This site includes a section which provides the patient perspective on being involved in research, including topics such as ‘what is patient and public involvement (‘PPI’) in research?’ and ‘why does it matter?’	<a href="http://www.healthtalk.org/peoples-experiences/improving-health-care/patient-and-public-involvement-research/what-patient-and-public-involvement-and-why-it-important">http://www.healthtalk.org/peoples-experiences/improving-health-care/patient-and-public-involvement-research/what-patient-and-public-involvement-and-why-it-important</a>
		It is also important to give patients and public feedback on what their contribution to the research has been.	<a href="https://www.ncbi.nlm.nih.gov/pubmed/29654644">https://www.ncbi.nlm.nih.gov/pubmed/29654644</a>
2	Ensure research involving patients and the public is informed by national guidelines on good practice	INVOLVE is part of, and funded by, the National Institute for Health Research and supports active public involvement in NHS, public health and social care research. It contains a wide range of guidance documents and tools.	<a href="http://www.invo.org.uk/">http://www.invo.org.uk/</a>
3	Consider the diversity of patients – make sure people who are like me are involved in your research	Explore currently available advocacy groups so that a wide range of representative people can be involved. Register your project with national groups such as the NHS National Institute for Health Research or INVOLVE’s Community groups	<a href="https://www.peopleinresearch.org/">https://www.peopleinresearch.org/</a> <a href="http://www.invo.org.uk/communities/invodirect/">http://www.invo.org.uk/communities/invodirect/</a>
		Regional research groups also exist such as the North West People in Research group	<a href="https://www.invo.org.uk/communities/invodirect-org/north-west-people-in-research-forum/">https://www.invo.org.uk/communities/invodirect-org/north-west-people-in-research-forum/</a>
4	Share your research with me in a language I understand, at regular intervals throughout the project as well as at the end	Ask patients to read lay versions of summaries or research results intended for public dissemination, they will be able to show you where your language makes the results difficult to understand, improving the readability of your outputs for lay consumption. Use the publication by National Voices to make your information and results easier to understand.	<a href="https://www.nationalvoices.org.uk/sites/default/files/public/publications/improving_information.pdf">https://www.nationalvoices.org.uk/sites/default/files/public/publications/improving_information.pdf</a>
5	Make sure all your radiography research includes my voice at each stage of the research process from design to dissemination	Think about the design of your recruitment strategy so that eligible patients for your research get the opportunity to participate, i.e. they aren’t missed. As well as registering your research on the sites listed for core value 3, consult patients and patient groups to ensure your recruitment strategy will allow you to reach as many eligible patients as possible. Consider using social media to increase access to a wide range of patients and public. INVOLVE guidelines on the use of Social Media are a useful resource.	<a href="http://www.invo.org.uk/posttypepublication/guidance-on-the-use-of-social-media/">http://www.invo.org.uk/posttypepublication/guidance-on-the-use-of-social-media/</a>
6	Make sure any images you take of me as part of the research study follow guidelines about incidental findings	Make sure you include full details of how incidental findings are handled in your consent form. The RCR has guidelines on the Management of Incidental Findings during Research Imaging (2011).	<a href="https://www.rcr.ac.uk/system/files/publication/field_publication_files/BFCR%2811%298_ethics.pdf">https://www.rcr.ac.uk/system/files/publication/field_publication_files/BFCR%2811%298_ethics.pdf</a>

## INVOLVE

**INVOLVE** was established in 1996 to support active public involvement in NHS, public health and social care research; it is part of, and is funded by, the NIHR. In its role as a national advisory group, INVOLVE brings together “expertise, insight and experience in the field of public involvement in research, with the aim of advancing it as an essential part of the process by which research is identified, prioritised, designed, conducted and disseminated”.

If you are doing research make sure you contact INVOLVE if you are unsure how to include patients and the public as partners in your research. INVOLVE guidelines on [payments for user activity](#) should also be consulted.

### Case study 2 (excerpt): Involving patients in the research cycle

Drawing on critical and person-centred theories, I am using a participatory inquiry (Heron and Reason 1997) methodology to explore in-depth, with up to twelve participants, their experiences of cancer treatment in Scotland. I particularly want to establish how cancer treatment in health care services, especially radiotherapy, impacts on personhood for LGB persons. Participants are being asked to share insights into who they are and what matters to them, as these notions are core to personhood (McCormack et al 2010). After this is established, participants will reflect on how their experiences of cancer treatment have affected aspects of their personhood. To facilitate this person-centred exploration, participants will co-create the methods they use to explore their experiences and examine their healthcare. To gain insight into the perceptions, feelings, and life events of participants, we will create identity maps. Methods such as writing exercises, metaphors, sculpting, photography and videography, art and drawing and timelines will be offered (Deacon 2000). The aim of employing these methods is to help focus participants in the exploration of their own narratives and past care experiences, and engage them in a creative, dialogical and possibly therapeutic experience rather than simply interviewing them.

Therapeutic Radiographers are the only Allied Health Professionals to train solely within the field of oncology, thus I feel we are well placed to conduct research for the betterment of patients and their carers who undergo cancer care. My research is recruiting participants with experiences throughout the cancer pathway and will enable them to have a voice that informs the profession of radiography. This widens the evidence base for radiography practice, raises the profile of radiography research in Scotland and the UK, and permits the profession to take a guiding and leading role in the wider multidisciplinary team in this emerging area.



**Gareth Hill**  
**Programme Leader, MSc Radiotherapy**  
**Queen Margaret University**



## FINDING FUNDING

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Lack of funding is often cited as one of barriers to undertaking research. Certainly having support and funding for your research can really help with the research costs and even cover backfill for your time.

There are a number of organisations and charities that are prepared to support research work. When identifying possible funders remember to ensure your project reflects the priorities of the funding body as well as priorities of professional bodies, or government agencies. When completing funding applications it is important to follow guidelines stipulated by the funding body, failure to do so may jeopardise the success of the application. Funding bodies generally use some form of peer review so it is important to find out how the application will be assessed.

Applying for and securing project funding is not easy, even for experienced researchers. Competition is often high and funding bodies have limited budgets so proposals need to be high quality and value for money. Therefore, it is recommended that those new to research join established research teams on other projects to gain experience and develop a research reputation before attempting to go it alone. It may also be worth looking for funding bodies that target novice researchers or those who are in the early stages of a research career. These funding bodies often have a remit to broaden research activity and in order to capacity-build they may look positively on less-experienced researchers, offering support in order to nurture a research environment.

### **The Society of Radiographers' web page Finding funding has links to some funders**

The SCoR has a number of funding streams available to members (for post-registration and student radiographers) that will support research projects where a radiographer is the principle investigator.

### **What will we be looking for?**

You may want to consider some of the following when completing application forms for funding:

- Value for money – can your project produce results efficiently? The budget should be reasonable, believable and justified, with rational arguments for including consumables, equipment and other items. Personnel costs need to be considered carefully; do they meet the guidelines set out here? Have you obtained agreement from your employer that they will match the costs of staff time?
- Is the research topical and relevant within the current NHS/social care environment political context? Does it fit with national and CoR research priorities? Mention the research priorities that fit with your project.
- Is it designed well? Consider the scientific quality of your proposal; is it robust?
- Is there potential for follow on projects?
- What impact will the research have? Does it have the potential to change practice? To improve outcomes?
- Demonstrated ability to do the work – the panel will have greater confidence in the proposal if the research team has evidence of a good track record. This doesn't mean that you have to be an experienced researcher. If you are a novice researcher make contact with a local academic department that has research experience (or an experienced research practitioner within your institution) and ask if someone would consider mentoring you through the study. If you can't find a suitable



individual, contact the SCoR Research Group who can put you in touch with a suitable person. You can add a small cost to the budget to cover the mentoring.

- Quality of presentation – typos, formatting, etc. This is crucial; if the application form is littered with spelling mistakes and typographical errors, the panel may have limited confidence in your ability to complete the proposed research to a high standard. A well-organised proposal that is simple and logical will be expected.
- Demonstration of innovation.
- Demonstration of stakeholder involvement.
- Identify the impact you perceive your study outcomes (outputs) will have on service delivery or patient care.
- A clear dissemination strategy where you identify key audiences, journals, and conferences that are relevant to your research topic; identifying specific meetings/conferences and journals shows the panel you have thought hard about the best ways to disseminate your research findings.
- Matching to current professional and/or funders' research priorities. ([See the current CoR research priorities.](#))

If applying for funding, the NIHR Research Design Service can help researchers at all stages of preparing grant applications, for example they can:

- provide advice on the quality, practicality, and feasibility of research questions and methods;
- ensure that the research topic is within the scope of the chosen funding programme;
- identify enhancements to the proposal to improve chances of success;
- advise on the common pitfalls encountered with funding applications; and
- deal with feedback and failure from previous funding competitions.

### **The College of Radiographers Industry Partnership Scheme (CoRIPS) Student Research Award**

The purpose of the CoRIPS Student Research Award is to encourage radiography students to consider a career path in research by providing funding support for those seeking research experience, having demonstrated their potential through application. Application will require the student to propose an achievable project to be carried out within a twelve-month period with appropriate supervisory support. This award provides financial support of up to £1,000 to the student as a stipend, and/or for relevant equipment and resources required by the student to successfully complete their research project.

**Visit the Society of Radiographers website for more information about the CoRIPS Student Research Award.**

### Case study 3 (excerpt): Student CoRIPS funding awardee

Having the CoRIPS grant has been an incredibly valuable experience in so many ways. I could not recommend the grant enough to any students with an interest in research. This grant has enabled me to work closely with one of my lecturers to investigate a topic I am very interested in.

I have learnt a lot about the research process; whether that is gaining ethical approval, utilising the most appropriate form of analysis or presenting research to the widest audience possible.



**Steven Cox**  
*Diagnostic Radiography Student*  
*University of Exeter*

### Case study 4 (excerpt): Student CoRIPS funding awardee

As a final year diagnostic radiography student at the University of Bradford with a background in postgraduate level chemistry, I wanted to develop my research skills in the context of radiography. The CoRIPS research award gave me the opportunity to combine my passion for technological innovation and patient care in an exciting new challenge.

Collaborating with academic and industry experts has boosted my confidence and the experience has fostered my aspirations for a career as a clinical academic radiographer.

The results of the project were truly exciting and I had the opportunity to present my work to academic experts and industry representatives. The encouragement I received was overwhelming and it was so rewarding to see the impact of my research on the profession.

Engagement in research is really important to me and I am a huge advocate of the value of research experience for undergraduate students. The advice I would give to any students who are considering applying for the grant is to go for it! You have nothing to lose and so much to gain!



**Ciara Lees**  
*Diagnostic Radiography Student*  
*University of Bradford*

#### **Case study 5 (excerpt): Student CoRIPS funding awardee**

My research is mainly centred on breast radiotherapy and my aim is always to improve the patient experience during radiotherapy.

I started with a small student CoRIPS funded project that allowed me to have 6 weeks to carry out a research project. The topic stemmed out of the Support4All study and looked at the feasibility of tattoo avoidance within breast cancer radiotherapy, the TACT study.

When I began working clinically I knew I wanted to continue my research career and continue to advance practice. I began by getting involved in audit work in my clinical department. My background and my interests lead me to want to continue bettering the care we give to breast cancer patients. I undertook an audit of skin reactions for breast cancer patients.

This audit gave me the confidence to apply for the NIHR & HEE Integrated Clinical Academic Programme. The programme is aimed at individuals wanting to develop a clinical academic career. It provides nine months of academic support and funding for salary backfill and CPD and is facilitated by Sheffield Hallam University. The programme has allowed me to develop my audit work to a higher level and it is in the process of publication.

The NIHR and CoRIPS are true supporters of research and investors in people that they believe will deliver results for research.



**Anna Hollands**  
*Radiotherapy Practitioner*  
*St James Hospital, Leeds*

#### **The College of Radiographers Industry Partnership Scheme Research Grant**

As part of the College of Radiographers' commitment to implementing the research strategy and research priorities, the organisation funds small grants for projects related to any aspect of the science and practice of radiography. Bids up to £5,000 for small projects and up to £10,000 for one large project are available and grant submissions are accepted in April and October each year.

The aim of the grant is to support at least one applicant who has little or no previous experience of undertaking research and development projects. The final selection is made by the SCoR Research Group and the College Board of Trustees, but feedback is given to all who submit a proposal. All funded projects are listed on the Society of Radiographers' research web pages.

**Visit the Society of Radiographers website for more information about the CoRIPS Research Grant.**

#### **Case study 6 (excerpt): CoRIPS Research Grant awardee**

Successfully obtaining a College of Radiographers Industry Partnership Scheme Research Grant enabled me to be a primary investigator in a small research project even though I had no previous research experience. The grant has been crucial to the success of the research project; having the funds to be able to pay for professional transcription services, for example, has enabled me to undertake a greater number of interviews, which should increase the validity and robustness of the research. The matched funding from my employer was also beneficial as it encouraged them to be supportive and helped to justify the time spent on the project during busy periods.



**Jane Arezina**  
*Diagnostic Imaging Programme Leader*  
*University of Leeds*

#### **Case study 7 (excerpt): CoRIPS Research Grant awardee**

A few years ago, I was fortunate to be awarded £7,000 from the College of Radiographers Industry Partnership Scheme (CoRIPS), supporting Radiography research to complete a research project, 'Therapeutic Radiographers' perceptions of the barriers and enablers to effective smoking cessation support.'

Perhaps most importantly, the CoRIPS funding has also enabled development of others. I was fortunate to be able to cost a 6 week student internship into the application. This provided funding for a newly qualified pre-registration, post graduate Therapeutic Radiography graduate to lead the systematic review. We also provided the opportunity for a further newly qualified Radiographer with an interest in public health to be involved in the remainder of the research project.



**Laura Charlesworth**  
*Course Leader and Senior Lecturer, BSc Radiotherapy and Oncology*  
*Sheffield Hallam University*

### **The College of Radiographers Doctoral Fellowship Grant**

The CoR Doctoral Fellowship Grant supports two appropriately qualified, experienced members of the Society of Radiographers to undertake Doctoral-level projects; awards are advertised annually.

The main focus of each project must be in one of the following programme areas which are aligned to the CoR Research Priorities:

- Technological innovations
- Patient and public experience
- Accuracy and safety
- Service and workforce transformation
- Education and training.
- 

A key condition of each grant is that the successful individual will implement and disseminate the work into practice for the benefit of patients, their families, and carers. Applications for funding to the value of £25,000 are considered.

**Visit the Society of Radiographers website for more information about the CoR Doctoral Fellowship Grant.**

#### **Case study 8 (excerpt): CoR Doctoral Fellowship Grant awardee**

I qualified in the pre degree era, first doing a Diploma of the College of Radiographers (DCR) as it was and as radiography moved towards a graduate profession I decide to upgrade my qualification to an MSc. In 2015 I was awarded the inaugural CoR Doctoral Fellowship for my study, 'MRI assessment in newly diagnosed coeliac disease and following gluten-free diet treatment'.

The £24,206.13 award allowed me to buy out some of my NHS time and spend a focused year on my studies, and also to attend an international meeting in Singapore in 2016.

As well as the financial support, support from the CoR Doctoral Fellowship Grant was an immense confidence boost and I have now finished the clinical trial and am analysing the data and writing up my PhD dissertation at the moment, and have already presented some preliminary results at the ISMRM in Paris in 2018.



**Carolyn Costigan**  
**Principal Research Radiographer**  
**Nottingham University Hospitals**

#### **Case study 9 (excerpt): CoR Doctoral Fellowship Grant awardee**

The College of Radiographers Doctoral Fellowship has provided me with financial support to dedicate time to my PhD research programme, pay PhD fees, and support my patient research partners. This fellowship has made my research, to develop a comfort intervention for patients receiving radiotherapy, a reality.



***Simon Goldsworthy***  
***Research Radiographer***  
***Musgrove Park Hospital***

#### **The National Institute for Health Research (NIHR)**

There are a wide range of NIHR training and career development awards and programmes of research available at different levels and accessible by different professional backgrounds. The NIHR have published a *useful handbook* suitable for aspiring clinical academics and managers about careers in research.

#### **Case study 10 (excerpt): NIHR Research Training Fellowship**

Soon after my MSc, I was awarded a one year secondment, funded by National Institute for Health Research, as a Research Training Fellow. I completed a Masters in Research and, most importantly, was immersed in a clinical academic group aligned with my research interests. My student cohort had a range of nurses and allied health professionals, and this exposure helped me see Radiography Research in a broader context. The fellowship experience was invaluable and was, in-part, possible because of meeting my current Research Supervisor (Prof. Mary Rutherford) during my MSc years. Via coaching and mentoring by my supervisors and other members of the clinical academic team, I have been able to keep my ambitions high but with realistic goals. Since completing the MRes I have been continued to gain real world clinical-academic research experience, expand my networks and potential collaborators, develop ideas, and seek further funding/PhD fellowship opportunities.



***Jacqueline Matthew***  
***Lead Research Sonographer***  
***The Intelligent Fetal Imaging and Diagnosis Project***  
***King's College London***

## GETTING HELP WITH YOUR RESEARCH

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### **The Council for Allied Health Professions Research (CAHPR)**

**CAHPR** is supported by 13 Allied Health Professions organisations and is a free resource for radiographers to access. The council comprises a strategy committee, a professoriate and a UK-wide regional hub network.

The council's mission is to develop AHP research, strengthen evidence of the profession's value and impact for enhancing service user and community care, and enable the professions to speak with one voice on research issues, thereby raising their profile and increasing their influence.

With excellent opportunities for learning, sharing, networking, collaborations, and access to advice and support, CAHPR strengthens the profession's research activities and outputs, facilitating the translation of research findings into practice and education.

CAHPR resources are produced by subject experts in CAHPR hubs and committees to support researchers and research capacity. There are CAHPR hubs across the UK that run a range of activities to support AHPs, such as small award schemes, events, and mentoring. Join your [local CAHPR hub](#) and find out how they can help you. CAHPR's [Top Ten Tips](#) series is written and produced by CAHPR hubs and offers advice on key topics for novice, early career, and experienced researchers.

As a starting point CAHPR also recommend working through the short eLearning module [Attributing the costs of health and social care Research and Development \(AcoRD\)](#). This module explores how AcoRD guidance is applied to commercial and non-commercial research, the categories of research activities described in the AcoRD guidance, how costs associated with these categories should be met, and special arrangements for charity funded research. These key principles are demonstrated through real-life examples and scenario-based questions. Although only arrangements in England are referred to, the principles of AcoRD have been agreed across all UK countries. Northern Ireland, Scotland and Wales each have an AcoRD policy and links to further information on these policies can be found in the eLearning module.

Your Local [Clinical Research Network](#) (LCRN) is a great place to find further support. LCRNs have AcoRD specialists who can help you tailor specific questions about costing grant applications. Some LCRNs also run workshops on AcoRD to help people who are new to this complex area. Details can be found through [NIHR Learn](#).

### **The NIHR Clinical Research Network**

The SCoR is an NIHR non-commercial partner. This means that those conducting studies funded by the SCoR may be eligible to access the NIHR *Clinical Research Network* (CRN).

The NIHR CRN supports researchers and the life sciences industry in planning, setting up, and delivering high-quality research to agreed timelines and study recruitment targets, for the benefit of patients and the NHS, including relevant research in public health and social care in England.

In partnership with your local R&D office, we encourage you to involve your local CRN team in discussions as early as possible when planning your study to fully benefit from the support that the NIHR CRN offers, as outlined by their *Study Support Service*.

## **DISSEMINATION OF RESULTS**

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For dissemination of results you will need to have a dissemination strategy. In your strategy you should identify, by name, the journals, conferences, and organisations that will be targeted. The following resource may be helpful.

### **Dissemination resource:**

**Lavis, J., Ross, S., McLeod, C., and Gildiner, A. 'Measuring the impact of health research'. *J. Health Serv. Res. Policy*, 2003, 8:3, 165–170, DOI: <https://doi.org/10.1258/135581903322029520>**

*Radiography* is the official peer-reviewed journal of the College of Radiographers and the European Federation of Radiographer Societies. The journal promotes evidence-based practice by disseminating high-quality clinical, scientific, and educational research related to all aspects of diagnostic and therapeutic radiography. Radiography is indexed/abstracted by: MEDLINE, SCOPUS, CINAHL, EMBASE, and SIIC.

The SCoR also runs or has co-ownership of a variety of events and conferences where you may wish to proffer a paper and/or poster.

You will need to ensure that you add costs into your research budget to achieve the dissemination strategy. The Society and College of Radiographers has two schemes that can help to support the dissemination of research, namely the Overseas Conference Grant (Legacy Fund) and the UKIO Attendance Grant.

### **The College of Radiographers Overseas Conference Grant (Legacy Fund)**

The College of Radiographers Overseas Conference Grant (Legacy Fund) supports a qualified member of the Society of Radiographers, or a small team of members, to travel overseas to present the findings of their research and/or service evaluation as an oral paper at an international conference. Applications for funding to the value of £1,000 are considered although, for exceptional applications, more may be available.



This grant is also available to educators who are non-members of the Society wishing to present radiography-related research at an international conference.

**Visit the Society of Radiographers website for more information about the CoR Overseas Conference Grant (Legacy Fund).**

**Case study 11 (excerpt): CoR Overseas Conference Grant (Legacy Fund) awardee**

In 2018 I was the recipient of the CoR Overseas Conference Grant which allowed me to attend ASTRO in San Antonio, Texas to present work on the selection of MRI sequences for MRLinac based radiotherapy treatments. I think this is a very progressive and forward thinking initiative by the society and college as it allows UK Radiographers to present work on a large international stage, and network with foreign colleagues.



**Dr Cynthia Eccles**  
**Consultant Research Radiographer**  
**Christie NHS Foundation Trust**  
Full case study available [here](#)

**The College of Radiographers UKIO Attendance Grant**

The United Kingdom Imaging and Oncology (UKIO) Attendance Grant supports qualified members of the Society of Radiographers based in the United Kingdom, to travel and to present the findings of their research and/or service evaluation as an oral paper at the UKIO congress.

**Visit the Society of Radiographers website for more information about the UKIO Attendance Grant.**

**Case study 12: UKIO Attendance Grant awardee**

I applied for a UKIO grant to promote a small piece of research I was due to publish. The money paid for my travel, accommodation, attendance at the conference and also the printing of a poster. It was a valuable experience which highlighted some of the pitfalls you can fall foul of. I shared my experience as an article in Synergy News.



**Philip Mowlem**  
**Advanced Practice Reporting Radiographer**  
**Poole Hospital NHS Foundation Trust**

## LEGAL AND COMPLIANCE ASPECTS OF RESEARCH

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As mentioned earlier, it is really important to have determined whether your project is classed as *audit or research*, because the rules governing these activities differ.

The following example projects are categorised as research, but this is not an exhaustive list:

- A Clinical Trial of an Investigational Medicinal Product (CTIMP) (with the exception of phase I trials in healthy volunteers taking place outside the NHS).
- A clinical investigation or other study of a medical device.
- A combined trial of an investigational medicinal product and an investigational medical device.
- A clinical trial to study a novel intervention or randomised clinical trial to compare interventions in clinical practice.
- A basic science study involving procedures with human participants.
- A study administering questionnaires/interviews for quantitative analysis, or using mixed qualitative/quantitative methodology.
- A study involving qualitative methods only.
- A study limited to working with human tissue samples (or other human biological samples) and data (specific project only).
- A study limited to working with data (specific project only).

If the type of project you are undertaking is on the list above you will need to apply for HRA approval.

### Planning your Application for HRA Approval

If your project is eligible for HRA approval there are four main steps that should be completed in the following order:

1. Complete a research application form on the *Integrated Research Application System (IRAS)*.
2. Prepare your study documents.
3. Book your application in through the *Central Booking Service for ethics* review.
4. Submit your application via IRAS.

### Ethics

All research needs to be reviewed by an ethics committee and permission must be sought for all NHS organisations involved if using NHS resources. Universities often have an ethics review process which can be utilised for research carried out in an academic setting.

Within most hospitals there is an ethics approval process. All research conducted must be registered with, and approved by, the trust's research and development (R&D) department prior to any research activity commencing. This generally ensures that the trust has the resources and finances to undertake such research and also that the liability and insurance aspects of the project are covered.

R&D departments are also invaluable for providing help when deciding whether a study requires ethical approval, and in completing the Research Ethics Committee (REC) submission, should the study require such permission. If the research is to be conducted within a university or other clinical department, refer to local protocols to determine from where ethical permission needs to be obtained.

If your research needs to be reviewed by an ethics committee, it may be worth asking your local panel if you can 'sit in' on a panel meeting before presenting your study for review. This will give you an idea of the kind of information and discussion taking place around research so that you can be better prepared for questions and concerns. Contact your local panel for details of their meetings.

The purpose of the ethics committee is to protect the safety, dignity, and rights of subjects participating in research. The committee must comprise of at least seven members from scientific and lay backgrounds. From the date an application is received, they have a maximum of 60 days to make an approval decision and 35 days to offer an opinion on amendments. Ethical approval is required for all research involving patients and/or using human tissues.

The committee will give ethical consideration to several aspects of a research proposal; these will include recruitment, study design, confidentiality, and informed consent. To achieve this, they will require all paperwork complete with version number; however, as many members of the committee will not have expertise in your field of work, it's worth putting technical details into an appendix and writing the main proposal for a layperson audience. Further details about the research ethics and the approval process can be found on the [HRA website](#).

Data collection **MUST NOT** begin until ethical approval and informed consent from each participant has been gained.

### UK Policy Framework for Health and Social Care Research

The Research Governance Framework has now been replaced by the [UK Policy Framework for Health and Social Care Research](#). The new framework includes 19 principles of good practice for the management and conduct of all health and social care research.



Figure 3: UK Policy Framework for Health and Social Care Research, Health Research Authority (2017).

### Good Clinical Practice

Since 1997 the International Conference on Harmonisation Good Clinical Practice guidelines ([ICH GCP](#)) have standardised how research in clinical practice has been conducted.

Good Clinical Practice (GCP) is an international ethical and scientific quality standard for designing, conducting, recording and reporting research that involves the participation of human subjects. Compliance with this standard provides public assurance that the rights, safety and wellbeing of trial subjects are protected and that the research data are credible (ICH, 2016).

Usually referred to as GCP, these international guidelines are now statutory, that is they are the law in the UK, and were put in place to establish a uniformly high standard for all research being carried out.

GCP training is usually an attendance-based session initially, with online options for refresher courses. Current MHRA guidance stipulates that all staff working in research must update their understanding of GCP at least every two years. Anyone involved in conducting research is advised to attend a GCP course to ensure the principles are upheld through all stages.

The principles of GCP in practice remain a key aspect of research and are summarised as follows:

- The rights, safety and well-being of research subjects shall prevail over the interests of science and society.
- Individuals involved in conducting research shall be qualified by education, training, and experience.
- Research should be scientifically sound and guided by a clear, detailed protocol.
- Research should be conducted in compliance with the protocol having prior independent ethical approval.
- Freely given informed consent should be obtained from every subject prior to participation.
- Quality assurance and quality control are paramount.
- All trial information should be recorded, handled, and stored in a way that can be accurately reported, interpreted, and verified.
- Confidentiality of records must remain protected (GDPR).

### **Informed Consent**

The process of consent is complicated; however, it is critical in the field of research. The consent process and legal requirements vary for certain groups of patients, such as minors or those with mental incapacity. It is essential that those who work in research are familiar, and regularly updated, with changes in legislation.

The following information is by no means comprehensive but aims to highlight key points regarding informed consent:

- Informed consent is defined as “A process by which a subject voluntarily confirms his or her willingness to participate in [research], after having been informed of all aspects of the [study] that are relevant to the subjects’ decision to participate” (ICH GCP, 1997).
- Prior to the start of any study the relevant ethical committee(s) must have approved the consent process and documentation for a particular study. The length of time given to the person to consider participation in the study varies and must be stipulated in the consent documentation; however, the standard minimum time is 24 hours (excluding emergency treatment research), though longer (one week) is usually preferred by ethics committees. Consent throughout a study is continuous and the person holds the right to withdraw at any time.
- When people are being recruited into research studies they should be informed of all aspects of the research in a language that is easily understood and they should not be bribed or coerced in any way.
- Consent must be obtained prior to any participation in research.

Informed consent training often forms part of the GCP training course, if not, it may be worth looking for a course dedicated to obtaining informed consent. The NIHR deliver such a course, which usually takes half a day to complete.

When consent is being given, the person should print, sign, and date their name on the consent form, and the practitioner obtaining consent must then do the same. The ICH GCP states that the subject must be given a copy of the consent form and that the original is to be filed in the site file.

If you are responsible for obtaining consent, ensure that you are covered for indemnity purposes by your employer. Radiographers can conduct the consenting process if they are the CI or PI, or if the study does not involve medical intervention, such as for quality of life studies. It is vital that you know your role and scope of practice in relation to the research project. An explanation of CI and PI can be found within the clarification of *certain investigator responsibilities* section of the ICH GCP.

The ICH GCP covers 20 elements of informed consent that are required and guidelines are also available on the *HRA website*. The College of Radiographers have published guidance on *obtaining consent* for imaging and treatment and many of the same principles of informed consent for research apply.

Adherence to the regulations and principles governing informed consent when conducting your research is imperative. Make friends with your R&D department for advice and direction with the research consent questions.

## SUMMARY

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These guidelines are aimed to provide a useful starting point for SoR members who are interested in becoming more research active and developing their research capabilities. Developing a culture of research requires involvement from the whole team, in all roles, and at every stage of their careers.

When starting out in research it is useful to clarify:

- how research activities form (or could form) part of your role;
- what the local research structure and local research policy is;
- how you currently fit into the research structure, and how you could develop within it;
- what your current specific responsibilities are;
- how you can develop your authority to initiate and participate in research (for example as a patient advocate, clinical specialist, or manager); and
- who you need to communicate with and what networks you need to access to take things further.

In this way, members can understand what is required of them within their role and know how and where to find help when they need it, avoiding the common problems of isolation associated with progressive working. All radiographers should be encouraged to participate in research activities, in various capacities, as part of their professional role. This instils experience of the research process, knowledge of research governance, and helps develop an analytical clinical culture, ultimately informing health and practice outcomes.

The many links and resources provided in this guide cannot replace the experience of support and help from face-to-face contact with other researchers, but aspires to provide some useful signposting as a starting point. Research as part of your role can be immensely rewarding and carrying out research with radiologists, oncologists, and other health professionals enables one to gain expertise and knowledge – with a vision to initiate and carry out radiographer-led research, perhaps within a multi-professional group.

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## Appendix 1: Resources and Document Links

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### Links and resources used within this document

Organisation	Web address (last accessed October 2019)
CAHPR	<a href="https://cahpr.csp.org.uk/content/cahpr-top-ten-tips">https://cahpr.csp.org.uk/content/cahpr-top-ten-tips</a> <a href="https://cahpr.csp.org.uk/content/regional-hubs-and-contacts">https://cahpr.csp.org.uk/content/regional-hubs-and-contacts</a>
Care Opinion	<a href="http://www.CareOpinion.org.uk">http://www.CareOpinion.org.uk</a>
Emerald Publishing: Research Zone	<a href="https://www.emeraldgrouppublishing.com/research/index.htm">https://www.emeraldgrouppublishing.com/research/index.htm</a>
Health Talk	<a href="http://www.healthtalk.org/peoples-experiences/improving-health-care/patient-and-public-involvement-research/what-patient-and-public-involvement-and-why-it-important">http://www.healthtalk.org/peoples-experiences/improving-health-care/patient-and-public-involvement-research/what-patient-and-public-involvement-and-why-it-important</a>
Health Research Authority	<a href="https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/uk-policy-framework-health-social-care-research/">https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/uk-policy-framework-health-social-care-research/</a> <a href="http://www.hra-decisiontools.org.uk/research">http://www.hra-decisiontools.org.uk/research</a> <a href="http://www.hra-decisiontools.org.uk/research/docs/DefiningResearchTable_Oct2017-1.pdf">http://www.hra-decisiontools.org.uk/research/docs/DefiningResearchTable_Oct2017-1.pdf</a> <a href="https://www.hra.nhs.uk/about-us/committees-and-services/res-and-recs/research-ethics-service/">https://www.hra.nhs.uk/about-us/committees-and-services/res-and-recs/research-ethics-service/</a>
INVOLVE	<a href="http://www.invo.org.uk/">http://www.invo.org.uk/</a> <a href="http://www.invo.org.uk/communities/invodirect/">http://www.invo.org.uk/communities/invodirect/</a> <a href="http://www.invo.org.uk/posttypepublication/guidance-on-the-use-of-social-media/">http://www.invo.org.uk/posttypepublication/guidance-on-the-use-of-social-media/</a> <a href="http://www.invo.org.uk/posttypepublication/payment-for-involvement/">http://www.invo.org.uk/posttypepublication/payment-for-involvement/</a>
ICH GCP	<a href="https://ichgcp.net/">https://ichgcp.net/</a> <a href="https://ichgcp.net/clarification-of-certain-investigator-responsibilities/">https://ichgcp.net/clarification-of-certain-investigator-responsibilities/</a>
IRAS	Integrated Research Application System (IRAS)
James Lind Alliance	<a href="http://www.jla.nihr.ac.uk/">http://www.jla.nihr.ac.uk/</a>
National Cancer Institute	<a href="https://www.cancer.gov/about-cancer/treatment/clinical-trials/what-are-trials/team">https://www.cancer.gov/about-cancer/treatment/clinical-trials/what-are-trials/team</a> <a href="https://www.cancer.gov/about-cancer/treatment/clinical-trials/what-are-trials/phases">https://www.cancer.gov/about-cancer/treatment/clinical-trials/what-are-trials/phases</a>
National Voices	<a href="https://www.nationalvoices.org.uk/sites/default/files/public/publications/improving_information.pdf">https://www.nationalvoices.org.uk/sites/default/files/public/publications/improving_information.pdf</a>



NHS Scotland (UK-wide collaboration in research)	<a href="http://www.nhsresearchscotland.org.uk/services/uk-wide-working">http://www.nhsresearchscotland.org.uk/services/uk-wide-working</a>
NIHR	<a href="https://acord.netlify.com/">https://acord.netlify.com/</a> <a href="https://sites.google.com/a/nihr.ac.uk/crn-learn-help/accessing-nihr-learn#h.p_TKq1_5yBHhrJ">https://sites.google.com/a/nihr.ac.uk/crn-learn-help/accessing-nihr-learn#h.p_TKq1_5yBHhrJ</a> <a href="https://www.nihr.ac.uk/explore-nihr/support/clinical-research-network.htm">https://www.nihr.ac.uk/explore-nihr/support/clinical-research-network.htm</a> <a href="https://www.nihr.ac.uk/documents/building-a-research-career/20571">https://www.nihr.ac.uk/documents/building-a-research-career/20571</a> <a href="https://www.invo.org.uk/posttypesresource/where-and-how-to-involve-in-the-research-cycle/">https://www.invo.org.uk/posttypesresource/where-and-how-to-involve-in-the-research-cycle/</a> <a href="http://www.supportmystudy.nihr.ac.uk">www.supportmystudy.nihr.ac.uk</a>
NIHR: Clinical Trials Toolkit	<a href="http://www.ct-toolkit.ac.uk/routemap/">http://www.ct-toolkit.ac.uk/routemap/</a>
North West People in Research Forum	<a href="https://www.invo.org.uk/communities/invodirect-org/north-west-people-in-research-forum/">https://www.invo.org.uk/communities/invodirect-org/north-west-people-in-research-forum/</a>
People in Research	<a href="https://www.peopleinresearch.org/">https://www.peopleinresearch.org/</a>
Research Design Service	<a href="https://www.nihr.ac.uk/explore-nihr/support/research-design-service.htm">https://www.nihr.ac.uk/explore-nihr/support/research-design-service.htm</a>
Royal College of Radiologists	<a href="https://www.rcr.ac.uk/system/files/publication/field_publication_files/BFCR%2811%298_ethics.pdf">https://www.rcr.ac.uk/system/files/publication/field_publication_files/BFCR%2811%298_ethics.pdf</a>
SAGE: research methods	<a href="http://methods.sagepub.com">http://methods.sagepub.com</a>
Science Direct	<a href="https://www.sciencedirect.com">https://www.sciencedirect.com</a>
SCoR	<a href="https://www.sor.org/about-us/awards/corips-research-grants">https://www.sor.org/about-us/awards/corips-research-grants</a> <a href="https://www.sor.org/about-us/awards/corips-student-research-awards">https://www.sor.org/about-us/awards/corips-student-research-awards</a> <a href="https://www.sor.org/about-us/awards/cor-legacy-fund">https://www.sor.org/about-us/awards/cor-legacy-fund</a> <a href="https://www.sor.org/career-progression/researchers/council-allied-health-professions-research-cahpr">https://www.sor.org/career-progression/researchers/council-allied-health-professions-research-cahpr</a> <a href="https://www.sor.org/career-progression/researchers/doctoral-log-phd-edd-profd-dprof-etc">https://www.sor.org/career-progression/researchers/doctoral-log-phd-edd-profd-dprof-etc</a> <a href="https://www.sor.org/career-progression/researchers/finding-funding">https://www.sor.org/career-progression/researchers/finding-funding</a> <a href="https://www.sor.org/career-progression/researchers/research-and-clinical-trials-radiographers-ractr-special-interest-group">https://www.sor.org/career-progression/researchers/research-and-clinical-trials-radiographers-ractr-special-interest-group</a> <a href="https://www.sor.org/career-progression/researchers/undertaking-research">https://www.sor.org/career-progression/researchers/undertaking-research</a>

<https://www.sor.org/learning/document-library/college-radiographers-research-priorities-radiographic-profession>  
<https://www.sor.org/learning/document-library/patient-public-and-practitioner-partnerships-within-imaging-and-radiotherapy-guiding-principles>  
<https://www.sor.org/learning/library-and-publications/radiography>  
<https://www.sor.org/news/form-scheme-increase-research-capacity>  
<https://www.sor.org/practice/obtaining-consent>

### **Other useful online resources and organisations (last accessed May 2019)**

#### ***British Institute of Radiology (BIR) information centre***

The BIR Information Centre provides services to BIR members and to members of the College of Radiographers, the Royal College of Radiologists, and the British Medical Ultrasound Society. It incorporates a reference library available upon request, and at the library manager's discretion, to anyone with a need for information about radiology and its allied sciences.

#### ***Clinical academic careers video***

A video has been uploaded onto the NHS Careers website which highlights the positive impact of training clinical academics on patient experience and the NHS. It features three clinicians (two nurses and one AHP) talking about their clinical academic training and career pathways.

Council for Allied Health Professions Research (CAHPR)

CAHPR develops AHP research, strengthens evidence of value and impact, and enhances patient care.

#### ***E-Learning for Healthcare (e-LfH)***

Members working with NHS patients have access to many of the e-LfH resources. The programme titled 'Research, Audit and Quality Improvement' provides some useful training for those starting out in research or audit.

#### ***INVOLVE***

INVOLVE aims to ensure that public involvement in research and development in the NHS, public health, and social care improves the way that decisions are made about research priorities, how research is commissioned (chosen and funded) and how it is carried out, and the way that research findings are communicated.

#### ***Medical Research Council (MRC)***

The Medical Research Council is a national organisation funded by the taxpayer. Their aim is to promote research into all areas of medical and related sciences to improve the health of people in the UK.

#### ***National Cancer Research Institute (NCRI)***

The NCRI aims to challenge the way cancer research is carried out in the UK. It is a partnership formed of the major cancer research funding bodies from government, charity, and private sectors. Their purpose is to accelerate and advance cancer research for the benefit of patients and the UK cancer research community.

#### ***National Centre for Research Methods (NCRM) – ReStore repository***

ReStore is a sustainable repository of online research methods resources which preserves, sustains and actively maintains web resources developed as part of ESRC funding. This online facility aims to provide a resource for researchers who may not be able to attend training, in addition to forming a repository of social science knowledge.

A number of the online methods resources have been restored into the ReStore repository and there is a variety of information available which may be valuable to researchers, especially those working with a social science perspective.

### ***National Institute for Health and Care Excellence (NICE)***

Working with clinical bodies, NICE systematically appraises health interventions before they are introduced in the Health Service. It offers clinicians clear guidelines on which treatments work best for patients, and which do not.

### ***NICE Evidence Services***

NICE Evidence Services are a suite of services that provide access to high quality authoritative evidence and best practice. NICE Evidence Services are for everyone working in health and social care who make decisions about treatments, interventions or the use of resources.

The Evidence Search function provides free access to clinical and non-clinical information – local, regional, national and international. Information includes evidence, guidance, and Government policy. NHS staff who have an Open Athens account can also get free access to paid-for journals.

### ***Healthcare Improvement Scotland***

This site is host to the Scottish Network for Clinical Effectiveness and Practice Development in Radiography. The group, which is currently seeking additional representatives, aims to communicate and share best practice to provide a dynamic, evidence-based and quality service in Scotland.

### ***NICE e-newsletter***

View the latest NICE e-newsletter or register online for the latest edition to be delivered direct to your mailbox automatically.

### ***NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRCs)***

NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRCs) are collaborations between local providers of NHS services and NHS commissioners, universities, other relevant local organisations and the relevant Academic Health Science Network.

### ***Radiological Research Trust***

The Radiological Research Trust raises funds and distributes grants for research and education in medical imaging.

### ***Research Councils UK (RCUK)***

Research Councils UK (RCUK) is a strategic partnership through which the UK's eight Research Councils work together to champion the research, training and innovation they support.

The Research Councils are the main public investors in fundamental research in the UK, with interests ranging from biomedicine and particle physics to the environment, engineering and economic research; as of April 2018 they now form part of the UK Research and Innovation body.

### ***Research Fortnight***

Research Fortnight is a publication that connects research to funding and policy making.

### ***The Health Foundation***

The Health Foundation believes that leadership is central to improving the quality of healthcare. Currently they offer numerous award schemes which provide personalised coaching and development.

### ***The National Institute for Health Research (NIHR)***

This site includes information about health research and development, whether you want to apply for funding, view calls for proposals, understand the processes required for gaining ethical approval, or know more about the facilities and research networks provided by the NHS.

View the updated 'Best Research for Best Health' strategy implementation plans, find out more about the NIHR work streams and 'arms length' programmes, and read the latest news from the institute.

### ***The Wellcome Trust***

The Wellcome Trust is an independent charity that funds research to improve human and animal health. Established in 1936 and with an endowment of about £11 billion, it is the UK's largest non-governmental source of funds for biomedical research.

### ***UK Clinical Research Collaboration (UKCRC)***

The UKCRC brings together the major stakeholders that influence clinical research in the UK and particularly in the NHS. The collaboration includes representatives from the main funding bodies for clinical research in the UK, academic medicine, the NHS, regulatory bodies, representatives from industry, and patients.

### ***UK Clinical Research Network (UKCRN)***

The UKCRN forms one of the key components of the UKCRC. It was developed to support clinical research and to facilitate the conduct of randomised prospective trials, of interventions, and other studies. It is initially supporting the development of six Topic Specific Research Networks in the fields of cancer, dementias and neurodegenerative disease, diabetes, medicines for children, mental health, and stroke.

### ***UK Research and Innovation***

UK Research and Innovation is a new body which works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation to flourish.

## Appendix 2: Resources and Links Specific to Scotland, Wales and Northern Ireland

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### Accessing e-Learning in all four UK regions

- Users with an NHS England, 'ac.uk' or 'gov.uk' email address can register here <https://portal.e-lfh.org.uk/Register>
- Users in England who have a non-government email address can register with Open Athens <https://openathens.nice.org.uk/>. Registration will then allow these users to sign on here <https://portal.e-lfh.org.uk/OpenAthensDiscovery>.

If members have any problems with access there is an excellent support service <http://support.e-lfh.org.uk/e-lfh-support-home/> including live chat on the home page.

Users from Wales, Scotland and Northern Ireland should access the relevant service using the links below:

- Scotland: <https://www.athensregistration.scot.nhs.uk/>
- Wales: <https://register.openathens.net/wales.nhs.uk/register>
- Northern Ireland: <http://www.honni.qub.ac.uk/>

### Scotland

Scotland has the Scottish Radiographer Research Group – see bottom of page at <https://www.sor.org/career-progression/researchers/useful-links>.

Further resources in Scotland:

- Healthcare Improvement Scotland <http://www.healthcareimprovementscotland.org> and their research pages [http://www.healthcareimprovementscotland.org/about\\_us/what\\_we\\_do/research.aspx](http://www.healthcareimprovementscotland.org/about_us/what_we_do/research.aspx)
- NHS Research Scotland <http://www.nhsresearchscotland.org.uk/>
  - o NHS Research Scotland believes that Scotland is best suited to good-quality research due to its population size, quality data collection, and a single unified service (that is NHS Scotland) <http://www.nhsresearchscotland.org.uk/research-in-scotland/facilities>
  - o They run a centralised system to support researchers with, for example, applications for ethical approval, funding, governance and more <http://www.nhsresearchscotland.org.uk/services>
  - o They also publish monthly research news bulletins <https://mailchi.mp/92eff1857b2b/news-from-across-nhs-research-scotland-4517113>
- Cancer research:
  - o NHS Research Scotland <http://www.nhsresearchscotland.org.uk/research-areas/cancer>
  - o The Beatson Institute <http://www.beatson.gla.ac.uk>
- West of Scotland PET Centre – Research Activities: <http://library.nhsggc.org.uk/patients-and-visitors/main-hospital-sites/gartnavel-campus/west-of-scotland-pet-centre/west-of-scotland-pet-centre-research-activities/>
- NHS Education for Scotland – The Knowledge Network, for access to publications and more <http://www.knowledge.scot.nhs.uk/home/library-search.aspx>

### Wales

Research in Wales is the responsibility of Health and Care Research Wales, which is a virtual organisation funded and overseen by the Welsh Government's Research and Development Division; their latest strategic plan ends in 2020. There is a new organisation called Health Education and Improvement Wales, and as their website says they "are the only Special Health Authority within NHS Wales" and they "have a leading role in the education, training,

development, and shaping of the healthcare workforce in Wales.” It’s unclear at the moment what their role in research will be; they may provide funding for a new research group to be established under the auspices of the National Imaging Academy. For up-to date-information visit <https://www.healthandcancerresearch.gov.wales/>

### Northern Ireland

Resources for Northern Ireland include:

- CAHPR regional hub contacts

Northern Ireland

Dr Katherine O'Neill

k.oneill@qub.ac.uk

Prof Suzanne McDonough

s.mcdonough@ulster.ac.uk

- The Office for Research Ethics Committees Northern Ireland: <http://www.hscbusiness.hscni.net/orecni.htm>
- The Northern Ireland Statistics and Research Agency: <https://www.nisra.gov.uk/statistics/health-and-social-care>
- The HSC R&D Division, Northern Ireland: <https://research.hscni.net/>
- Northern Ireland Chest Heart and Stroke: <https://nichs.org.uk/>

## Appendix 3: Case Studies

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### Case study 1: Why I got into research

*Robert Meertens, Senior Lecturer  
University of Exeter*

#### What does your research involve and how does it impact your day to day practice in professional and practical terms?

My research involves investigating ways of measuring bone health in terms of oxygenation and blood perfusion. I am comparing traditional measurement protocols (DXA, MRI and blood testing) with a novel application called near infrared spectroscopy (NIRS). NIRS has potential as it is a safe non-invasive measurement technique that could be a useful addition to current bone health screening which is predominately based on bone density.

I am in the final year of my part-time PhD which I have been carrying out alongside my lecturing post at the University of Exeter. The project has also benefitted from support through the CoR Doctoral Fellowship Grant.

#### What motivated you to become involved in research?

I was a clinical diagnostic radiographer for around 10 years and as my radiography career developed I saw my career either going towards clinical speciality and management, or education and research. I felt my skill set and personal preference was for the latter. I like the idea of being able to change practice on a larger scale through research and innovation. It's great to work with people who are enthusiastic, creative and open minded about ideas for improving practice in the future.

#### What facilitators/enablers have helped you on this journey?

When I started out in research doing my MSc whilst a clinical radiographer I think it really was those lecturers, tutors and supervisors who inspired and supported me who were the biggest enablers. This really gave me the drive to put the time into my work. Likewise, I am now working as a lecturer, and having a supportive line manager and medical imaging team around me has been essential. As a department we have worked towards a culture of research and this has been a real motivator during the tougher periods of my PhD.

Through both my MSc dissertation and my current PhD project I have been fortunate enough to have support through CoRIPS grants. In particular the Doctoral Fellowship Grant has been a godsend. This has allowed me funding for materials and training, conference attendance, and allowed me to pay for additional support. Having the grant also opened up support through the NIHR Clinical Research Portfolio which meant I had clinical nursing and admin support through my recruitment and testing periods. This was a real time saver and I felt very well supported. Indirectly the grant has also given me opportunities to network with the wider spectrum of radiography research being undertaken through SCoR research group meeting and conferences.

#### Have you experienced any barriers? How were these overcome?

In short yes! There have been a lot of obstacles and my PhD has felt like a test of resilience at times. There have been a lot of hours put into protocols, grant applications, ethics applications, submitting papers and conference abstracts, and not to mention carrying out the actual research! Of course the hours put in are managed around your other work commitments and personal life. Again, this is why a support network is so important, talking to other people who have been through it and those who are currently doing the same is invaluable.

Having an impact with your research is also a big motivator that keeps you going through tougher periods.

### **What advice would you give to someone interested in becoming more involved in research?**

I think you need to have a genuine interest in research because it often involves putting in extra hours and some short term sacrifices when starting out. However with some persistence there is the potential to be working on some really interesting clinically relevant work.

I think networking and keeping eyes open is so important. There isn't a well-trodden path yet in radiography research so you really need to be open minded and take your opportunities as they appear. The good news is that there are increasingly more initiatives and opportunities in radiography research. It is an exciting time in that respect.

### **Case study 2: Involving patients in the research cycle**

*Gareth Hill*

*Programme Leader, MSc Radiotherapy*

*Queen Margaret University*

#### **PhD Thesis title**

The distinctiveness of Lesbian, Gay, Bisexual (LGB) persons affected by cancer treatment and impact on personhood: a participatory research study in Scotland

#### **My background**

I qualified as a Therapeutic Radiographer in 2007 from Cardiff University and then took up my first post at The Christie Hospital in Manchester. Having worked clinically for a number of years in the North West of England I relocated to Scotland and took up a teaching post as Programme Leader for the MSc in Radiotherapy at the Queen Margaret University. It was at this point that I was offered the opportunity to commence a PhD programme part-time. At this stage I was unsure what I wanted to do, but as I had a long standing interest in civil rights and LGB equality so I started to question whether there was a possibility of combining these interests with my professional endeavours. When examining the literature in my MSc I learnt that there was very little work that had been carried out examining the experiences of LGB people affected by cancer in the UK and then my PhD idea was born.

#### **My PhD Research**

Research for my Master's degree and subsequent publications have fuelled my interest in what the experiences of LGB persons are when they and their support givers are in hospital settings for cancer treatments; and what the longer term impact is on someone's identity (personhood). I believe that persons should have access to the same level and continuity of care regardless of social background, race, or sexuality or other 'special characteristics'. I argue that currently, the experiences of LGB persons in relation to cancer are not fully understood and it is necessary to establish any deficiencies that might affect care/treatment. As there is also a general trend towards more person-centred care in cancer services, I argue that person's sexual orientation should be considered as core to personhood and be given consideration when reviewing the services and support that they use.

Drawing on critical and person-centred theories, I am using a participatory inquiry (Heron and Reason 1997) methodology to explore in-depth, with up



to twelve participants, their experiences of cancer treatment in Scotland. I particularly want to establish how cancer treatment in health care services, especially radiotherapy, impacts on personhood for LGB persons. Participants are being asked to share insights into who they are and what matters to them, as these notions are core to personhood (McCormack et al 2010). After this is established, participants will reflect on how their experiences of cancer treatment have affected aspects of their personhood. To facilitate this person-centred exploration, participants will co-create the methods they use to explore their experiences and examine their healthcare. To gain insight into the perceptions, feelings, and life events of participants, we will create identity maps. Methods such as writing exercises, metaphors, sculpting, photography and videography, art and drawing and timelines will be offered (Deacon 2000). The aim of employing these methods is to help focus participants in the exploration of their own narratives and past care experiences, and engage them in a creative, dialogical and possibly therapeutic experience rather than simply interviewing them.

### **How the CoR Doctoral Fellowship has helped**

Recently I have taken a new position as the Head of Therapeutic Radiography in Ninewells Hospital, Dundee. The fellowship has provided me with salary for costs to ensure that I have protected time to undertake my field work with my participants. The fellowship has given me an ability to buy materials for the research such as a Dictaphone, and have also been able to use the funds to secure administrative support for the research. This was necessary so then I can have a continual point of contact for participants, handle the scheduling of visits, raising awareness of the study through social media and stakeholder contacts through sending out pre-prepared materials, carry out transcription of the inquiry sessions, and procure inquiry session materials.

I feel I need to emphasise how important I have found to have some excellent supervisors for my PhD who are both experts in their own write and are experienced researchers. I also work within a doctoral community of peers who are undertaking research using similar theoretical underpinnings to my own. I find that these colleagues and my supervisory team really push me to not only do my PhD but write as I go, publish and apply for funding. They have also encouraged me to really develop my thinking in my research area and have really opened my eyes to the possibilities of my research area. It was through their support and the encouragement of Rachel Harris that persuaded me that I could apply for the CoR Doctoral Fellowship. Honestly, I don't know how I would be able to progress my research without the assistance it has given me and I am very grateful.

Therapeutic Radiographers are the only Allied Health Professionals to train solely within the field of oncology, thus I feel we are well placed to conduct research for the betterment of patients and their carers who undergo cancer care. My research is recruiting participants with experiences throughout the cancer pathway and will enable them to have a voice that informs the profession of radiography. This widens the evidence base for radiography practice, raises the profile of radiography research in Scotland and the UK, and permits the profession to take a guiding and leading role in the wider multidisciplinary team in this emerging area.

In addition to the material support that being a CoR Doctoral Fellowship recipient has generated, it has also created an excellent platform to promote my research and engage with other researchers. The fellowship has allowed me the chance to undertake doctoral level studies, and develop my skills as a researcher and adding to the body of knowledge. I feel that being able to do my PhD develops my skills for other aspects of my professional life such as

developing person-centred cancer services and adds value to my practice as a radiographer. I would strongly encourage other radiographers to apply and feel you gain so much by having this opportunity.

### **Case study 3: Student CoRIPS funding awardee**

*Steven Cox, Diagnostic Radiography Student*

*University of Exeter*

Having the CoRIPS grant has been an incredibly valuable experience in so many ways. I could not recommend the grant enough to any students with an interest in research. This grant has enabled me to work closely with one of my lecturers to investigate a topic I am very interested in.

I have learnt a lot about the research process; whether that is gaining ethical approval, utilising the most appropriate form of analysis or presenting research to the widest audience possible. This experience has definitely opened my eyes to the world of research.

One of the most valuable aspects of this entire process has been having the chance to present my findings across numerous conferences. The fact that I can look back at the hard work undergone to transform what was just an idea into real life results that are of high enough quality to be presented alongside other vastly more experienced researchers, has been a wonderful experience. It has pushed me beyond my comfort zone developing skills I never thought I could achieve.

If a student has any interest in a career of research or auditing this is an amazing experience that will start you on the right foot, providing you with so much as well as giving you the chance to work and network with people across all aspects of the profession.

Steven's project, 'A Survey of the Extent and Impact of Peer Support within Diagnostic Radiography Undergraduate Programmes throughout UK Higher Education', widens understanding of peer support in diagnostic radiography undergraduate courses. It also looked at the types of peer support currently in use, as well as finding out where it is not used and why, and what HEIs would need to do to embed it in programmes. Working with Rob Meertens, a lecturer at the University of Exeter Medical School, Steven surveyed diagnostic imaging staff and students across the UK. They investigated the best ways for institutions to provide peer support, with the goal of forming a network of support programmes, so that students can share feedback and resources.

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### **Case study 4: Student CoRIPS funding awardee**

*Ciara Lees, Diagnostic Radiography Student*

*University of Bradford*

As a final year diagnostic radiography student at the University of Bradford with a background in postgraduate level chemistry, I wanted to develop my research skills in the context of radiography. The CoRIPS research award gave me the opportunity to combine my passion for technological innovation and patient care in an exciting new challenge. Radiography is a technology-led profession and the grant enabled me to align technological innovation with clinical best-practice. Scattered radiation is a common cause of image quality degradation and I wanted to investigate how image processing software as opposed to physical grids might be employed to remove scatter, improve image quality, and potentially reduce ionising radiation doses to patients. By investigating the dose reduction potential of 'virtual grid' technology, I was able to develop my research skills and my understanding of the technology that is central to our profession. Not only that, by undertaking the project I have actively contributed

to the evidence-base that drives positive change for radiographers and patients.

I worked closely with Professor Maryann Hardy who is a professor of radiography and imaging practice research at the University of Bradford. Her support and experience has been invaluable throughout the research process. I have also been fortunate enough to liaise with our industry collaborators on the project, Fujifilm, and with medical physics experts. Collaborating with academic and industry experts has boosted my confidence and the experience has fostered my aspirations for a career as a clinical academic radiographer.

The results of the project were truly exciting and I had the opportunity to present my work to academic experts and industry representatives. The encouragement I received was overwhelming and it was so rewarding to see the impact of my research on the profession.

Engagement in research is really important to me and I am a huge advocate of the value of research experience for undergraduate students. The advice I would give to any students who are considering applying for the grant is to go for it! You have nothing to lose and so much to gain!

Ciara's project, 'Evaluating potential of virtual grid technology as a dose reduction technique', proposes that by using virtual grid technology, the increase in exposure factors that would be necessary to compensate for attenuation of primary radiation when using physical anti-scatter grids can be quantified and therefore the radiation dose to patients can be reduced while maintaining the photon energy volumes required for diagnostic quality imaging.

#### **Case study 5: Student CoRIPS funding awardee**

*Anna Hollands, Radiotherapy Practitioner  
St James Hospital, Leeds*

#### **What does your research involve and how does it impact your day to day practice in professional and practical terms?**

My research is mainly centred on breast radiotherapy and my aim is always to improve the patient experience during radiotherapy. I believe that in order for research to directly impact clinical practice we must keep the link between the clinical setting and academic research, therefore I am a full time clinical radiographer and fit my research around my clinical duties.

I started with a small student CoRIPS funded project that allowed me to have 6 weeks to carry out a research project. The topic stemmed out of the Support4All study and looked at the feasibility of tattoo avoidance within breast cancer radiotherapy, the TACT study. Permanent tattoos can often be a reminder of the diagnosis the patient received and the treatment they endured. Tattoos can also have a negative impact patients self-esteem and body confidence. Therefore we should be investigating less invasive and temporary methods of skin marking to aid radiotherapy set up. The methods trialled in the TACT study proved inconclusive and further investigation into this important topic area is needed. This project allowed me to disseminate at my first national conference, Annual Radiotherapy Conference 2018, and I am currently in the process of being writing up the work for publication.

When I began working clinically I knew I wanted to continue my research career and continue to advance practice. I began by getting involved in audit work in my clinical department. My background and my interests lead me to want to continue bettering the care we give to breast cancer patients. I undertook an audit of skin reactions for breast cancer patients. My aim was to establish if the, previously anecdotal evidence, that larger breasted patients suffered

with more severe reactions was factually correct. I also wanted to be able to define more accurately what 'larger breasted' means. The audit did provide some sound conclusions and after local dissemination at the Leeds Oncology Research Day, it is working to improve patient care within my department.

This audit gave me the confidence to apply for the NIHR & HEE Integrated Clinical Academic Programme. The programme is aimed at individuals wanting to develop a clinical academic career. It provides nine months of academic support and funding for salary backfill and CPD and is facilitated by Sheffield Hallam University. I began the programme in September 2018 and will complete it in June 2019. The programme has allowed me to develop my audit work to a higher level and it is in the process of publication. During the programme I have also used the time to better my research skills by attending a number of research in healthcare courses, allowing me to identify where my skills can be bettered and working on them. I have also utilised the opportunity to observe and ethics approval board, this proved extremely beneficial as I now have a greater understanding of how research projects are assessed for ethical approval. The internship has also proved to be an excellent networking opportunity, it is open to all AHP's and has allowed me to learn from other professions and impart their knowledge into my own practice.

Both my audit work and the internship have lead into my current project which is my MSc dissertation. This is investigating the prophylactic use of a spray on barrier film within the inframammary fold to prevent moist desquamation in this area. This project is still in the proposal stage and will hopefully go onto improve the care we give to breast cancer patients, initially within my department and hopefully the wider radiotherapy network once disseminated.

### **What motivated you to become involved in clinical research?**

My main motivation to join radiotherapy as a profession was to part of a field that was continually developing. By getting involved in research I knew that I was actively influencing and encouraging the development of my own profession. I want to know that I am giving the best possible care to all my patients and by being part of research I know that I am working towards that. Practice must move forwards and an evidence base is needed to aid that advancement, I became involved in research to help to create the evidence base and disseminate what I know to others, to help us learn from each other.

As I have said, I think the key to relevant research is keeping the academic and clinical world closely linked. Therefore, I want to encourage all clinical radiographers to get involved in service improvement. If we continue to improve our own departments and speak more openly about the work we do, the profession will continue to advance and we can be confident knowing that we are providing the best possible care to our patients.

### **What facilitators/enablers have helped you on this journey?**

I have been extremely proactive in getting involved in research, I believe that I have taken an enthusiastic approach that has meant I have applied for all opportunities available to myself. I have also been extremely lucky to have been accepted for all programmes I have applied for, this in part is probably a testament to my enthusiasm and commitment to clinical research in radiotherapy.

The NIHR and CoRIPS are true supporters of research and investors in people that they believe will deliver results for research. Through my experience of both of these organisations I have seen how they look for an individual's enthusiasm for research and not necessarily their actual project, hence they can play a vital role in encouraging and nurturing one's research career.

I also have a very supportive department and department manager, they understand that research is necessary for the department to develop and so have encouraged me to apply for many external courses and opportunities.

### **What advice would you give to someone interested in becoming more involved in clinical research?**

My main advice would be to keep enthusiastic about your profession and field. If you have enthusiasm for a subject it is easier to talk others into seeing the importance of it. Network with other likeminded people, especially those from other AHP backgrounds as they often have more experience of clinical academic research than us as radiographers. Look for all opportunities to get involved in research, be this an audit within department, external research course or funding from larger providers like the NIHR and CoRIPS. Remember to keep the link between clinical research and academia, make your research relevant to your patients and always keep them in mind as research should always be about bettering patient care and experience. Finally, remember that research doesn't have to mean a full scale randomised control trial; small scale audits and service improvement work still goes a very long way to developing the profession and improving patient care.

### **Case study 6: CoRIPS Research Grant awardee**

*Jane Arezina, Diagnostic Imaging Programme Leader  
University of Leeds*

Successfully obtaining a College of Radiographers Industry Partnership Scheme Research Grant enabled me to be a primary investigator in a small research project even though I had no previous research experience.

The grant has been crucial to the success of the research project; having the funds to be able to pay for professional transcription services, for example, has enabled me to undertake a greater number of interviews, which should increase the validity and robustness of the research. The matched funding from my employer was also beneficial as it encouraged them to be supportive and helped to justify the time spent on the project during busy periods.

The grant has given me an opportunity to utilise my own research in my teaching, to publish papers and to deliver presentations at conferences, all of which has increased my national profile. I would like to thank CoRIPS for all their support – I am extremely grateful as I would not have been able to do this without you!

The project by Jane and her colleagues, 'What training in difficult news delivery do sonographers have and what impact do sonographers who regularly deliver difficult news think this has on their levels of wellbeing and burnout?', focuses on the aspects of delivering difficult news to parents during a fetal ultrasound examination as a key aspect of an obstetric sonographer's role. This project aimed to understand how these experiences impact on sonographer burnout and wellbeing, and to identify which kinds of training may support sonographers with this aspect of care.

### **Case study 7: CoRIPS Research Grant awardee**

*Laura Charlesworth, Course Leader and Senior Lecturer, BSc Radiotherapy  
and Oncology  
Sheffield Hallam University*

A few years ago, I was fortunate to be awarded £7,000 from the College of Radiographers Industry Partnership Scheme (CoRIPS), supporting Radiography research to complete a research project, 'Therapeutic Radiographers' perceptions of the barriers and enablers to effective smoking cessation support.'

This research has been conducted over a 2 year period and has involved:

1. Completion of a systematic Review (Attitudes of oncology healthcare practitioners towards smoking cessation: A systematic review of the facilitators, barriers and recommendations for delivery of advice and support to cancer patients)
2. Understanding of the barriers and facilitators to delivery of effective smoking cessation in Radiotherapy practice through 5 focus groups and pre and post focus group questionnaires
3. Development of a training resource to build confidence and competence in Therapeutic Radiographers delivery of smoking cessation.

It would not have been possible to complete this research without the CoRIPS funding, the funding supporting transcription of focus groups, and travel to enable facilitation of the focus groups. Some funds were also allocated to release time from my employment. This time has been so important to allow for completion of the health research authority process, facilitate the focus groups, design the training resource and analyse data, with a few days left to start the write up and dissemination process.

Perhaps most importantly, the CoRIPS funding has also enabled development of others. I was fortunate to be able to cost a 6 week student internship into the application. This provided funding for a newly qualified pre-registration, post graduate Therapeutic Radiography graduate to lead the systematic review. We also provided the opportunity for a further newly qualified Radiographer with an interest in public health to be involved in the remainder of the research project.

With a CoRIPS award, there is also a commitment to publish your research. Utilising some of the allocated time has enabled the publication of 2 papers to date and 2 conference presentations, a final paper is also in preparation for submission to Radiography. This research was also included in a package of work submitted and shortlisted for the NICE into Action category at the Chief Allied Health Professions Officer's Awards in 2018, the submission is published on the NICE website.

Conlon K, Pattinson (Charlesworth) L, Hutton D. 2017. Attitudes of oncology healthcare practitioners towards smoking cessation: A systematic review of the facilitators, barriers and recommendations for delivery of advice and support to cancer patients. *Radiography* 23 (3), 256-263.

Pattinson, L. Therapeutic Radiographers perceptions of the barriers and enablers to effective smoking cessation support. Annual Radiotherapy Conference. Newcastle. 2017.

Charlesworth, L. Therapeutic Radiographers perceptions of the barriers and enablers to effective smoking cessation support, research findings. Annual Radiotherapy Conference. Newcastle. 2018.

Hutton D and Charlesworth L. 2018. No ifs, no buts; Clatterbridge's journey to a smoke free trust (using NICE guidance as a roadmap and a partnership approach as the vehicle). National Institute for Health and Care Excellence. <https://www.nice.org.uk/sharedlearning/no-ifs-no-butts-clatterbridge-s-journey-to-a-smoke-free-trust-using-nice-guidance-as-a-road-map-and-a-partnership-approach-as-the-vehicle>

Charlesworth L, Hutton D, Hussain H. 2018. Therapeutic Radiographers' perceptions of the barriers and enablers to effective smoking cessation support. *Radiography*, article in press.



<https://www.nice.org.uk/sharedlearning/no-ifs-no-butts-clatterbridge-s-journey-to-a-smoke-free-trust-using-nice-guidance-as-a-road-map-and-a-partnership-approach-as-the-vehicle>

### **Case study 8: CoR Doctoral Fellowship Grant awardee**

*Carolyn Costigan, Principal Research Radiographer*

*Nottingham University Hospitals*

I qualified in the pre degree era, first doing a Diploma of the College of Radiographers (DCR) as it was and as radiography moved towards a graduate profession I decide to upgrade my qualification to an MSc. In 2015 I was awarded the inaugural College of Radiographers Doctoral Fellowship for my study, 'MRI assessment in newly diagnosed coeliac disease and following gluten-free diet treatment'.

I had embarked on my PhD at the University of Nottingham's School of medicine the previous year, intending to complete it part time over 6 years whilst working as a Band 8a Principle Research radiographer at Nottingham University Hospitals NUH Trust.

The £24,206.13 award allowed me to buy out some of my NHS time and spend a focused year on my studies, and also to attend an international meeting in Singapore in 2016.

As well as the financial support, support from the CoR Doctoral Fellowship Grant was an immense confidence boost and I have now finish the clinical trial and am analysing the data and writing up my PhD dissertation at the moment, and have already presented some preliminary results at ISMRM in Paris in 2018.

I am very grateful for the scholarship and for the support of my supervisors and manager, and proud to be raising the profile of research radiographers nationally and internationally.

One in 100 people suffer from coeliac disease (CD). CD is an autoimmune disease affecting primarily the small bowel mucosa, with malabsorption of nutrients, increased fluid load in the bowel, dysmotility and gastrointestinal (GI) symptoms such as pain, bloating and diarrhoea. Despite a long-term and strict adherence to a gluten-free diet some coeliac patients have persistent symptoms despite reversal of coeliac enteropathy. Further work is required to understand mechanisms of symptoms in CD.

Magnetic Resonance Imaging (MRI) offers a unique tool to study GI fluid volumes, organ volumes and gut transit. Carolyn's study in 36 CD patients and a parallel group of 36 healthy volunteers aims to test the main hypotheses that: 1) before treatment, the water content of the small bowel will be increased compared to the control population; and 2) After 12 months on a gluten-free diet the small bowel water content will revert to normal values. The study will also explore association between the MRI parameters and GI symptoms and clinical phenotype.

These data will help explain the mechanisms driving GI symptoms and their persistence. Improved understanding will also allow clinicians a more informed discussion with CD patients and will ultimately reflect on CD management guidelines.

### **Case study 9: CoR Doctoral Fellowship Grant awardee**

*Simon Goldsworthy, Research Radiographer  
Musgrove Park Hospital, Taunton*

The College of Radiographers doctoral fellowship has provided me with financial support to dedicate time to my PhD research programme, pay PhD fees, and support my patient research partners. This fellowship has made my research to develop a comfort intervention for patients receiving radiotherapy, a reality.

Patients undergoing radiotherapy are positioned to restrict motion and ensure treatment reproducibility and accuracy. Immobilisation can be uncomfortable and research suggests that patient discomfort is associated with reduced treatment accuracy. Treatment times are increasing for stereotactic ablative radiotherapy, presenting further challenges for positioning. Radiographers are responsible for managing patient comfort, yet there is little evidence to guide practice.

Simon's project, 'Improving comfort for cancer patients receiving radiotherapy: integrating an acceptability study (COMFORT study)', aims to develop and test a comfort intervention for cancer patients undergoing radiotherapy with extended treatment times.

The findings of the study will provide an in-depth understanding of patient comfort during radiotherapy and develop a comfort intervention to improve the care and treatment of cancer patients. This comfort intervention will be tested in a feasibility RCT.

### **Case study 10: NIHR Research Training Fellowship**

*Jacqueline Matthew, Lead Research Sonographer for the Intelligent Fetal Imaging and Diagnosis Project King's College London*

I currently work as a Research Sonographer with a large multidisciplinary group of clinicians and researchers whose aim is to develop new computer guided ultrasound technologies to improve the screening of fetal anomalies at the time of the mid-trimester anomaly scan. The intelligent fetal imaging and diagnosis (iFIND) project received an Innovative Engineering for Health Award of £10 million (funded by the Wellcome Trust and the Engineering and Physical Sciences Research Council or EPSRC) and I have been involved (to various degrees) with the team at King's College London and Imperial College since 2014.

My role is quite broad and includes; leading on the fetal research ultrasound clinics on a number of projects; being the knowledge expert in fetal anomaly screening in a diverse clinical-academic multidisciplinary team; contributing and leading translational research strategies for the iFIND-project tools in development; teaching and research supervision of undergraduates, post-graduates and clinicians; independent research outputs (including publications, conference abstracts) as well as research collaboration outputs with the wider engineering and clinical team; facilitating patient/public involvement and stakeholder groups; public engagement activities (within the hospital setting or off-site opportunities including social media, for patients, public and/or professionals).

### **What motivated you to become involved in research?**

I have always been motivated to help ensure that our clinical practice is the best we can offer our patients. After 15 or so years of practice, working in various settings, and then in my speciality of choice, I felt that to progress in my career and to fully contribute, I had to make some choices. At the time the choice was to work towards being a Clinical Expert or a Senior Manager. Of



course career paths are not that simple, but I knew my skill set and interests were well suited to a career as a clinical academic, so I began looking for opportunities to gain experience and qualifications – and I am still on this exciting journey.

#### **What facilitators/enablers have you encountered?**

I know that facilitators and enablers play an important role in establishing a career in research. For me, I got to a point where I was willing to seek out opportunities and put myself out there. This involved being very focussed on completing my study to Masters level, however with a young family I could not afford to self-fund - I needed employer support. This was not a quick process, but eventually I found a supportive clinical department and manager, completed my MSc and along the way made some important contacts, many of whom I work with to this day.

Soon after my MSc, I was awarded a one year secondment, from the National Institute for Health Research, as a Research Training Fellow. I completed a Masters in Research and, most importantly, was immersed in a clinical academic group aligned with my research interests. My student cohort had a range of nurses and allied health professionals, and this exposure helped me see Radiography Research in a broader context. The fellowship experience was invaluable and was, in-part, possible because of meeting my current Research Supervisor (Prof. Mary Rutherford) during my MSc years. Via coaching and mentoring from my supervisors and other members of the clinical academic team, I have been able to keep my ambitions high but with realistic goals. Since completing the MRes I have continued to gain real world clinical-academic research experience, expand my networks and potential collaborators, develop ideas, and seek further funding/PhD fellowship opportunities.

#### **Have you experienced any barriers? How were these overcome?**

An early barrier was funding; I had to be patient but tenacious when seeking funding opportunities with my employer at the time, however eventually this paid off. Transitioning from a largely clinical role to one of a 'researcher' was also challenging. I regularly remind myself of the wide and unique insight I have as a radiographer/sonographer and the importance of communicating this with the other disciplines I encounter. Developing the organisational/project management skills to manage a busy family life with the omnipresent demands research is something I am still learning. Compared to my clinical role, where my shifts were clearly defined, in my research role technology facilitates me working in the evening, weekends, and whilst commuting! I soon appreciated the importance of realistic project management to maintain a good work-life balance. As is true of many projects, there are peaks and troughs of activity, so learning to anticipate and manage these has helped immensely.

#### **What advice would you give to someone interested in becoming more involved in research?**

For radiographers/sonographers interested in research I would say do your homework then go for it. There is a lot out there at the moment to support AHP research and so many exciting technological developments that could allow Radiographers to be in the driving seat when it comes to translational clinical research.

**Case study 11: CoR Overseas Conference Grant (Legacy Fund) awardee**

*Dr Cynthia Eccles, Consultant Research Radiographer  
Christie NHS Foundation Trust*

In 2018 I was the recipient of the CoR Overseas Conference Grant which allowed me to attend ASTRO in San Antonio Texas to present work on the selection of MRI sequences for MRLinac based radiotherapy treatments. I think this is a very progressive and forward thinking initiative by the society and college as it allows UK Radiographers to present work on a large international stage, and network with foreign colleagues. I have been attending ASTRO with some regularity since 2004, and although my met the 12% or so of abstracts submitted to garner a plenary session, having recently changed Trusts, was unsure if I'd have the opportunity to present the work myself. Fortunately, the support of the society and the college covered the cost of my registration, flights and much of my stay at the meeting. This was a great opportunity not only to show-case my work (which will imminently become a joint projects between my previous and new trust), but also to fly the flag for radiographer researchers on an international stage. Most radiographers are involved in research on some level, be it working with patients on a clinical trial, collating audit data for service development or testing technology, and it's important to sieve opportunities to recognise the impact of our activity the grander scheme of things.

So it is with sincere gratitude I acknowledge the support of the SCoR for this very important initiative.

**Case study 12: UKIO Attendance Grant awardee**

*Philip Mowlem, Advanced Practice Reporting Radiographer  
Poole Hospital NHS Foundation Trust*

I applied for a UKIO grant to promote a small piece of research I was due to publish. The money paid for my travel, accommodation, attendance at the conference and also the printing of a poster. It was a valuable experience which highlighted some of the pitfalls you can fall foul of. I shared my experience as an article in Synergy News.



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