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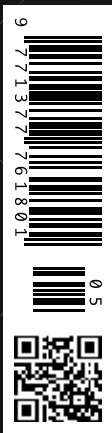
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Fostering clinical research in imaging departments

Discusses the important roles of radiographers in imaging research, and highlights some essential considerations for establishing a research culture, and fostering clinical research.



Jonathan McNulty

Associate Dean, Graduate Taught Studies and Head of Subject, Radiography School of Medicine University College Dublin Ireland

President European Federation of Radiographer Societies, Utrecht, The Netherlands

jonathan.mcnulty@ucd.ie

@McNulty_J

eprs.eu

The invitation to write this article followed my participation in a very interesting session at this year's European Congress of Radiology (ECR).

This session was developed by the European Society of Radiology (ESR) Research Committee, chaired by Professor Olivier Clément (Paris/FR), and was titled *How to foster clinical research in imaging departments* (<https://iii.hm/jj3>). The session included a presentation from Professor Clément on the results of a recent ESR survey on European research, a presentation from Sabine Mallard on the successful approach to structuring a management unit for imaging research in the Bordeaux region, and Dr. Yan Liu, head of translational research, radiotherapy and imaging with the European Organisation for Research and Treatment of Cancer (EORTC), gave the final presentation in the session on the implementation of quality imaging in multicentre trials, which was followed by a panel discussion with the audience. My contribution to the session was a presentation on the roles of radiographers in research. This contribution was based on my role as President of the European Federation of Radiographer Societies (EFRS), and I am also an active researcher. In this article I will touch on some of the discussion points arising from the ECR session, will discuss the important roles of radiographers in our research, and highlight some essential considerations if we truly want to establish a research culture, and foster clinical research, in our departments.

For us to undertake research of the highest quality there are a multitude of factors which can impact on this. Factors highlighted in the ECR session which can impact both positively and negatively on our research included:

- Access to funding
- Career progression for researchers
- Clinical engagement
- Education and training in research
- Evolving imaging techniques and technologies
- Growing demand for clinical imaging services
- Politics
- Protected research time

- Research capacity
- Research infrastructure
- Research opportunities

Each of these factors can present both challenges and opportunities. Few research groups or research studies can escape the need to consider and engage with any one of these. The academic and clinical environments we work in vary considerably both nationally and internationally. Similarly, the professions directly involved in clinical imaging research, radiologists, radiographers, medical physicists and many more, will have varying backgrounds in terms of their education and training, their preparedness for research, and their roles, responsibilities and scope of practice within some countries, and, certainly, between countries.

Research is not for everyone; not every clinical radiologist or radiographer is suited to be a researcher, nor do they all wish to be a researcher. We need radiologists and radiographers who are completely focused on the provision and development of quality imaging services. Likewise, not all academic faculty are suited to be researchers or crave involvement in research; there is a need for faculty who are dedicated to teaching, learning and assessment. Having said that, it is essential that all health professionals, and all health professions educators, have the ability to engage with, and critique, published research so that their clinical and educational activities can be evidence-based.

Research and evidence-based practice (EBP) underpin modern healthcare and can lead to enhanced patient safety, improved patient outcomes, and efficiencies in service delivery. Some groups can say that they have a very well-established evidence base underpinning their profession, and/or specialty, and this is an area of international focus within radiography, my own profession. The contribution of radiographers, academic and clinical, to this evidence through undertaking quality research, on any scale, and subsequent dissemination is essential and will also serve to raise the profile and standing of radiography beyond our profession. Sackett et al. (1996) define such EBP as:

the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient.....integrating individual clinical expertise with the best available external clinical evidence from systematic research.

This definition captures the importance of individual clinical expertise, the ‘best available’ evidence, and, most importantly, the individual patient. In terms of the individual clinical expertise and the available evidence, it is important to look beyond the radiologist, the medical physicist, and the other medical specialties utilising imaging services. Similarly, we must look at the wider evidence base in terms of the literature we engage with. Of the professionals who contribute to clinical imaging services, and to the evidence base underpinning this, radiographers are often overlooked. Radiographers are at the heart of all examinations and interventions within the department, and as such we have a professional obligation to contribute to the evidence base through active participation in research. Within imaging departments radiographers need to move from being seen as the facilitators, or data collectors/providers, of research, to being equal partners in research, and leaders in research related to our profession, our professional roles and responsibilities, and the wider imaging evidence base.

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For us to advance clinical imaging research over the coming decades, radiographers must move beyond the role of research assistants, to become full collaborators, co-investigators, and principal investigators on local, national and international research projects. A true multi-professional approach to research is now a requirement for many funding agencies. Many of the leading radiography researchers in the world can be found across Europe. These individuals lead large research groups, successfully compete for national and international research funding, collaborate beyond their profession, and publish in high-impact peer-reviewed journals.

The EFRS, the ESR, and the European Federation of Organisations for Medical Physics (EFOMP) all have clear agendas when it comes to developing, supporting,

and promoting research. Indeed the development and promotion of radiography, and radiographer-led, research has been an area of considerable focus of the EFRS for the past few years. Many areas of collaboration between these three European organisations have a strong research focus. The coming together of the EFRS, the ESR, EFOMP, the European Association of Nuclear Medicine (EANM), and the European Society for Radiotherapy and Oncology (ESTRO) to form the European Alliance for Medical Radiation Protection Research (EURAMED) is a nice example of multidisciplinary collaboration with the goal of jointly improving medical care and its medical radiation protection issues through sustainable research efforts (<https://iii.hm/jj4>). Key aspects of EURAMED’s vision and mission are to make sure that medical radiation protection research activity is translated into clinical practice, that practice across Europe is harmonised based on the best available evidence, and that a radiation protection safety culture becomes ubiquitous. Of course beyond radiation protection research we must also work towards similar goals at the local, national and international levels.

In 2016 the EFRS published a *Statement on Radiography Research in Europe*, which clearly sets out the EFRS position on encouraging, supporting and developing high-quality radiographer-led research in order to strengthen the knowledge base underpinning our profession. This statement, together with the 2015 *Statement on Evidence-Based Practice in the Undergraduate Curriculum* and the *European Qualifications Framework (EQF) Level 6 (Bachelors) and Level 7 (Masters) Benchmarking* documents for radiographers, clearly set out the importance of a clear research focus in educational programmes. Radiographers can add value at all stages of the research process, and for medical imaging research to have true impact and to benefit our patients it must be inclusive and multidisciplinary and span the academic-clinical divide. The EFRS *Statement on Evidence-Based Practice* states that a radiographer’s work should be based on the best available, current, valid and relevant evidence; that radiographers must be able to attain, evaluate, apply and integrate new knowledge and have the ability to adapt to changing circumstances throughout their professional life; and it references the importance of the provision of evidence-based education. Of course this is not unique to the EFRS or to the radiography profession; the ESR similarly highlights the importance of research with their *European Training Curricula at Levels I, II, and III* (2008).

In a 2016 editorial in *Radiography*, the official journal of the EFRS, the Editor-in-Chief, Professor

Julie Nightingale discussed “Establishing a radiography research culture - Are we making progress?”. The need to train more radiographers at doctoral level, the positive progress being made, and the significant improvements still required, are discussed. However, there are issues with accommodating sufficient doctoral students and major issues in the availability of doctoral programmes for radiographers, as highlighted by a 2016 EFRS survey. A lack of formal education at masters and doctoral levels has several potential consequences, including lack of transferability between hospitals, reduced recognition, and lack of opportunity for career advancement. Radiographers should be encouraged to seek postgraduate study; however, there is an onus on many countries to make masters and doctoral level programmes available to radiographers, as only 39% of educational institutions currently offer masters programmes for radiographers while only 14.6% offer doctoral programmes (McNulty et al. 2016). This places radiographers at a disadvantage compared to graduates from medicine, medical physics, nursing and other healthcare professions, who we work with on a daily basis. While producing more doctoral radiographers, who go on to work in both the academic and clinical practice environments, will help the profession progress toward a research culture, it is essential that the quality, quantity, and impact of research progress to allow radiography to be defined as an independent and strong profession, as radiology is viewed as a strong medical specialty (Nightingale 2016).

Moving back to the research session at ECR 2018, beyond the professional level, very strong organisational structure, and clear strategies for research are essential at the institutional and departmental level. Resourcing research, facilitating some protected research time, providing research training opportunities, having clear research leadership, offering mentorship, and having the insight to see the true value of clinical research at all levels, must all be addressed. This should all be

multidisciplinary and multiprofessional, as is the case in our clinical practice where the value of multidisciplinary team meetings is clearly seen. Yet in some departments with clear multidisciplinary and multiprofessional approaches to clinical service delivery, research activity operates in silos. Academic institutions also have an important role to play in improving their interactions and communication with clinical departments and clinical staff. University researchers must spend more time in clinical departments engaging with and listening to clinical staff. We must make sure that our understanding of clinical research opportunities and needs aligns with the views of our clinical colleagues. We must discuss our work, at every opportunity and at all levels, with clinical staff. In doing this we can really move towards a research culture across medical imaging. ■

KEY POINTS

- ✓ Radiographers are at the heart of all examinations and interventions in the imaging department and have a professional obligation to contribute to the evidence base through active participation in research
- ✓ Radiographers must move beyond the role of research assistants, to become full collaborators and investigators in research projects
- ✓ High-quality radiographer-led research strengthens the knowledge base underpinning our profession
- ✓ For medical imaging research to have true impact and to benefit patients it must be inclusive and multidisciplinary and span the academic-clinical divide.
- ✓ Research in imaging departments should be multidisciplinary and multiprofessional, as in clinical practice



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