THE COLLEGE OF RADIOGRAPHERS

RADIOGRAPHY

Role Development Revisited:

The Research Evidence 2003

THE SOCIETY OF RADIOGRAPHERS

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Abstract

In the last decade, the scope of practice for radiographers has moved forward apace. Radiographers have seized role development opportunities within the modern health care environment and now undertake new responsibilities in every area of diagnostic imaging and radiotherapy. The Society and College of Radiographers have encouraged and supported radiographers to extend their scope of practice and it is anticipated that the evolving service will continue to provide opportunities for further role development in the future.

A longitudinal study was undertaken to identify current practice. This included a review of literature, and qualitative interviews with members of the various special interest groups in radiography, chairs of regional committees, representatives from higher education institutions, individual radiographers and officers of the Society and College of Radiographers.

The results clearly demonstrated that radiographers' roles have changed significantly, with the emergence of many new roles. Radiographers have embraced opportunities for role development primarily in response to the demands of the service. This should satisfy personal aspirations of many radiographers and is seen as a necessary part of the retention strategy. Additionally, education provision and the research base continue to develop to support the changing scope of practice.

The profession has responded successfully to the challenges presented by the rapidly changing health care environment. The profession has made significant progress and, looking to the future, there is optimism that radiographers can continue to satisfy expectations.

1. Introduction

Radiographers have responded to the changing needs of the service and have extended their scope of practice in recent years to take account of the diversity and complexity of health care. The Society and College of Radiographers has supported radiographers wishing to undertake role developments.

The scope of practice for radiographers in 2003 is significantly altered from a decade ago and radiographers now work in changed roles with different responsibilities.

Role development is fundamental change to the professional practice of radiographers. The College of Radiographers' publication *Role Development in Radiography*[1] (1996) defined role development as representing quantitative and qualitative change in the way radiographers contribute to patent management and health care services. Paterson[2] (1995) concluded that some activities that may have been considered role developments in the past, and which had become a routine part of radiographers' roles, would not then be considered as role developments. It is generally accepted that role developments are new types of activities which were not part of the traditional role of radiographers (and perhaps used to be done by others - especially radiologists, oncologists or physicists) and that are changing the boundaries of practice.

2. Study of role development

2.1 **Aims of the study**

This study aims to identify current practice in radiography and, hence, to define the scope of practice. The professional body will use this information to identify professional and training needs and to formulate policy to support radiographers.

2.2 **Nature of the study**

Two pathways have been followed to produce this report. Firstly, there is a great deal of literature relevant to radiography, the most salient of which was reviewed. Secondly, the information and comments contained in this report were gleaned from members of the various Special Interest Groups in radiography, Chairs of Regional Committees, representatives from Higher Education Institutions, individual radiographers and Officers of the Society and College of Radiographers.

3. Results of study

3.1 The literature

A major survey of developments in radiography by Paterson[2] was published in 1995. The survey demonstrated that radiographers' roles were changing and that the internal health service market was driving role development. It reached the conclusions that role development was being addressed on such a scale as to make it unstoppable. This report looks again at the trends identified in 1995 and demonstrates that, as anticipated, role development has indeed progressed both in terms of scope and extent of practice in both diagnostic radiography and radiotherapy.

In 1996, the revised *Code of Professional Conduct*[3] stated that radiographers should develop their professional role and that they should initiate and participate in role development activities. The 2002 *Statements for Professional Conduct*[4] although less specific, places responsibility on the radiographer to strive to improve professional knowledge and competence.

Role Development in Radiography[1] concluded that professional developments in the role of radiographers benefit patients, the National Health Service and the profession. It encouraged radiographers to seize all opportunities for development presented to them. In 1997, *Reporting by Radiographers: A Vision Paper*[5] encouraged radiographers further and concluded that reporting by radiographers was not an option for the future, but a requirement. Four years later, *Prescribing by Radiographers: A Vision Paper*[6] followed a similar format to inform radiographers of the imminent opportunities in the prescribing, supply and administration of medicines.

The two recent strategies produced by the College of Radiographers; *A Strategy for the Education and Professional Development of Therapeutic Radiographers*[7] (2000) and *A Strategy for the Education and Professional Development of Radiographers*[8] (2002), are designed to broaden the profile of the radiography workforce to meet the needs of the service and to extend and develop the skills and knowledge of the professional workforce. These will enable the profession to respond positively to the ever-changing context of health care. The examples given of what would be encompassed at advanced practitioner and consultant levels, are broadly those of role development.

Radiography journals; *Radiography, Synergy* and *Synergy News* have articles and news items on role development most issues, demonstrating the developing nature of the work of radiographers. A series of three articles this year in *Synergy* by Masterton & Cameron[9] looked at Paterson's work of 1995 and placed the sentiments expressed in a contemporary context. The authors identified competence, regulation, education and leadership as being key areas for consideration by the profession, alongside the need for the profession to involve itself in debating these issues with policy makers and other health care professionals.

December 2002 *Synergy* contained articles on role development for radiographers working in Accident and Emergency[10], and *Synergy News* contained news of the introduction of a system to reward radiographers for their many and continuing role extensions, a discussion on regrading versus allowances with regard to role developments and, every month, there are many opportunities within the Professional Noticeboard for radiographers to attend courses, seminars and study days on a variety of role developments[11].

The May 2002 edition of *Radiography* included two articles relevant to a discussion on role development. White and McKay[12] conclude that any role extension has associated legal responsibilities and the authors call for guidelines to be established which ensure that radiographers have the necessary skills and knowledge. In the same journal, a discussion paper on consultant practitioners (Price & Paterson[13]) explains that the four core functions of consultant practice are expert clinical practice, professional leadership and consultancy,

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education, training and development, and practice and service development. All of these functions are underpinned by role development activity.

Longitudinal changes in extended roles in radiography by Price, Miller and Mellor[14] identifies the extent and scope of changes to radiography practice. The article is based on 172 completed questionnaires returned by radiology managers. The results show role developments in the following specific areas:

- Administration of intravenous injections (161 out of 172)
- Barium enemas (119/172)
- Red dot system (141/172)
- Reporting by radiographers in ultrasound (124), skeletal (63), barium enemas (34) and also in mammography, nuclear medicine, paediatrics and chest radiography.

The study reports an increase in role development activities since a similar survey in 1998 and highlights the implications for future education and training needs for radiographers and for delivery of imaging services.

An extensive list of hundreds of references of books, journal articles and other publications relevant to role development has been developed.

Recently published (November 2002) is the joint document *Breaking the Mould: Roles, Responsibilities and Skills Mix in Departments of Clinical Oncology*[15]. This report makes recommendations. For example, each department of clinical oncology must:

- develop new roles crossing traditional professional boundaries and widen opportunities for professional development
- extend the role of staff to improve communications with patients
- develop new roles that cross existing boundaries, including the provision of care
- encourage extension of roles in radiotherapy planning, delivery, 'on treatment' review and follow-up.

3.2 Evidence from the profession

By reading the literature and talking to radiographers it is possible to consider existing role developments in radiography and radiotherapy as falling into three broad categories:

1) 'Widespread' role development, ie diagnostic radiographers reporting in ultrasound, barium enemas, intravenous injection and casualty reporting. In fact, it can be argued that intravenous injecting is so widespread as to render itself not a role development activity but part of normal practice. A radiotherapy radiographer providing information and support is an example of a role development that has become widespread practice.

2) 'Well established', ie diagnostic radiographers undertaking other forms of reporting, intravenous urography, other gastro-intestinal examinations, and radiotherapy radiographers undertaking on-treatment review and research.

3) 'Other' role developments include examples of radiographers responding to a local need. For example, provision of an ultrasound scanning service direct to orthopaedic specialists that includes monitoring and reporting on paediatric hips, specifically looking for congenital hip disorders. There are radiotherapy radiographers responsible for conformal radiotherapy, breast volume delineation and there are examples of radiographer led palliative care.

The curriculum framework project has been mapping current practice. This framework is informed by evidence of role developments in radiography. Within each of the identified functions there are examples of radiographers working in role developed practice.

3.2.1 Ultrasound

In the field of ultrasound, radiographers have operated as independent practitioners for a

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number of years. Obstetric scanning, including independent reporting, was one of the first established radiographer led services which then paved the way for much of the current role developments.
Many radiographers are responsible for audit and set their own standards. Almost all radiographers report independently, issuing a diagnostic report with recommendations for treatment and referral.

The post-registration education programme for sonographers is well established and there is a network of support and in-service training.

There are many areas of role development where ultrasound leads the field and numerous examples of radiographer led ultrasound services:

- echocardiography (including reporting of findings)
- vascular and cardiac services
- aortic screening trial
- early pregnancy assessment units
- community based services
- infertility services
- amniocentesis
- one stop shop services
- accident and emergency, ITU, ward and theatre services
- neonatal and paediatric services
- biopsies and drainages
- counselling
- development of protocols for service delivery

This list is not exhaustive but gives the essence of current ultrasound practice.

Radiographers are also involved in multiprofessional teaching and assessment of competencies. Involvement in research is widespread, with radiographers leading on research projects throughout the scope of ultrasonography. Manufacturers of ultrasound equipment involve radiographers in machine ergonomics and early testing of new products.

3.2.2 Radiographers administering intravenous injections

The facility of being able to administer intravenous injections has provided role development opportunities for radiographers, particularly for diagnostic radiographers working in gastro-intestinal, urological and nuclear medicine departments.

The College of Radiographers' Certificate of Competence in Administering Intravenous Injections was introduced in 1996 and is currently run at nine universities. Approximately 1600 certificates have been issued to successful candidates, with more than 200 currently in training. These figures obviously do not take account of the many radiographers who undergo in-house courses. Course administrators in higher education institutions report high interest levels because most clinical departments would expect radiographers to inject to increase efficiency. Some course participants have undergone in-house training but are then required to take the certificate course on changing employment. A recent development has been the move to place the theoretical component into the third year of the pre-registration programme to facilitate training in the administration of intravenous injections after qualification. Radiographers can also undertake training specifically for intravenous injecting for paediatrics.

3.2.3 Radiographers prescribing

In 1999. The Society of Radiographers set up a working party in response to *The Review of Prescribing, Supply and Administration of Medicines* (the Crown Report), which recommended an extension of prescribing rights.

To remain within the current law, radiographers either have to involve doctors, or prescribe under patient group directions, but there is evidence to suggest this hinders the smooth running of the department and that the service to the patient would be improved if radiographers were able to operate as supplementary and/or independent prescribers.

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Specific examples are:

- radiographer managed diagnostic examinations, eg gastro-intestinal imaging and intravenous urography
- radiographers giving contrast agents during diagnostic procedures, eg CT, MRI, US
- radiotherapy radiographers leading treatment review and follow up clinics who need to prescribe for treatment related conditions, eg skin reactions, nausea, etc

The post-registration module, Pharmacological Management of Treatment Related Toxicity in Oncology Pharmacology, provides education and training for radiotherapy radiographers wishing to prescribe (under patient group directions) for treatment related toxicity.

3.2.4 Gastro-intestinal radiography

The Gastro Intestinal Radiographers Special Interest Group (GIRSIG) was set up in 1997 to provide a focal point for radiographers in gastro-intestinal radiography.

The traditional route for radiographer role development has begun with barium enemas, having then established competence, progresses to upper gastro-intestinal work and, again, having established competence, to other examinations.

The scope of radiographer-managed practice within gastro-intestinal radiography includes:

- modified barium swallow (videofluoroscopy swallow)
- double contrast barium meal
- barium and gastrograffin enema
- small bowel enteroclysis
- barium follow through
- problematic intubations
- Less common examinations include:
- colostomy enema
- ileostomy small bowel examination
- fistulograms
- sinograms
- T-tube cholangiograms
- cholecystograms
- oesophageal stent insertion
- sialography
- endoscopy

Barium enema services are now radiographer managed in many hospitals and radiographers lead other gastrointestinal fluoroscopy services with minimal input from radiologists. This has had a marked effect in reducing waiting times.

There is a growing culture of multiprofessional approaches to the service and some specialist radiographer led services, eg swallowing service for speech and language. Within this multiprofessional framework are examples of radiographers teaching radiologists, registrars and clinicians.

Courses have existed in barium enemas since 1993, although qualification at Masters level has not been available until recently.

Many radiographers working in the field of gastro-intestinal radiography provide a report, ranging from radiographer report (tick list style) to writing the definitive report. Some radiographers operate within double reporting systems.

There are some examinations that radiographers would not perform, chiefly ERCP and oesophageal stents; these examinations carry a significant risk of perforation.

3.2.5 Urology

Radiographers now undertake paediatric micturating cystograms (including catheterisation), adult cystograms and nephrostograms. More common are radiographer led intravenous urography services, including reporting.

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3.2.6 Vascular

Radiographer managed venography is becoming more common practice, as are other angiographic procedures. There is involvement of radiographers in all aspects of vascular interventional work within the established multiprofessional team.

3.2.7 Nuclear medicine

In 2000, Peter Hogg[16] reported on the results of an interactive session held at the British Nuclear Medicine Society (BNMS) meeting in April of that year. The participants included radiographers, nurses, medical technical officers, medical practitioners and clinical scientists (radiographers representing 53 per cent of the total).

Hogg concluded that an increasing number of non-medical health care professionals were now interpreting nuclear medicine studies, and that these professionals were taking an increasing role in service delivery. This increasing role has resulted in many of them taking on tasks that were formally the exclusive domain of medical practitioners.

3.2.8 Reporting

The Special Interest Group on Reporting are an active multidisciplinary group that is working to broaden the interest and experience for radiographers reporting. The SIG includes representation from radiology, oncology and physicists. The group also intends to broaden the representation to include nurses.

In imaging departments across the United Kingdom, there are examples of plain film reporting (not just A&E), development of fast track A&E services (which include the facility to make a direct referral to appropriate department), chest radiography reporting, skeletal appendicular and axial reporting, and direct referral facility to, for example, computed tomography, or out patient, as appropriate.

It is clear that radiographers now report in a wide range of areas including ultrasound, mammography, magnetic resonance imaging, nuclear medicine, gastro-intestinal, and all general and accident and emergency radiography. Radiographers are also now reporting on CT head, urological and vascular examinations.

Higher education institutions have responded by providing a full range of post-registration courses to support the above developments (see 4. Education and training provision for role developments).

3.2.9 Radiographer led treatment review and assessment clinics

Radiographers working in radiotherapy have responded to the enormous technological advances and need to work flexibly to provide an efficient and effective service to the cancer patient, whilst supporting them throughout treatment. One major change in work practices has been the increasing number of radiographer led treatment review and assessment clinics. This service is well liked by patients and helps provide a seamless approach to patient care.

3.2.10 Radiotherapy site specialism

There are a growing number of radiographers operating as site specialists. These radiographers operate autonomously and responsibilities include working in the multidiscipinary team and liaising throughout the stages of pre/during/post treatment. An example of a site specialism are gynaecology site specialists who are also involved in brachytherapy and trained for tube insertions. Others are neurology site specialists with their own patient lists and responsibility for planning palliative care, in addition to being involved at new patient clinics, ward visits, etc, and breast site specialists with responsibility for the planning and review of patients.

There is at least one example of a radiographer leading a multiprofessional breast care team and radiographers undertake breast volume delineation.

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3.2.11 **Counselling**

Radiographers have had a significant counselling role for some years and appropriate education and training has been established. Indeed, so widespread is the practice, that perhaps counselling is no longer seen as role development but as a normal part of the radiographer's role.

The ease at which radiographers undertake this difficult role and, indeed, the fact that there are radiographers leading the service, is a tribute to the way radiotherapy radiographers respond to the needs of their patients.

3.2.12 **Macmillan radiographers**

There are currently 27 Macmillan radiographers.

3.2.13 **Research radiographers and clinical trials co-ordinators**

Both diagnostic and radiotherapy radiographers are heavily involved in research. Research radiographers are employed as independent and dedicated entirely to research. Responsibility extends from project design to publication of results for a large number of projects at a time. The projects include clinical trials as well as some in-house projects. Radiotherapy radiographers are employed as clinical trial co-ordinators.

3.2.14 **Conformal radiotherapy**

Conformal radiotherapy (a treatment technique which aims to shape the 3D high dose volume to the planning target volume whilst minimising dose to healthy tissue), has involved the radiotherapy radiographer operating highly sophisticated equipment within multiprofessional teams. Radiographers have responded positively to the challenge and take a leading role in the process. The document *Development and Implementation of Conformal Radiotherapy in the United Kingdom*[17] describes the role development requirements in order to promote conformal radiotherapy.

3.2.15 **Radiographer led palliative care**

This role development for radiographers involves pre-treatment work, eg palliative simulation for field placements and prescribing of radiation doses to protocol which would previously been conducted by oncologists.

3.2.16 **Electronic portal imaging**

Technical advances have provided role development opportunities. Electronic portal imaging services are provided by dedicated radiographers responsible for protocols and teaching, as well as authorising portal images.

3.2.17 **Dedicated liaison radiographer**

In order to improve the service to patients, there are dedicated liaison radiographers who support patients throughout treatment, organise appointments and who liaise across different departments and are involved in discussions at the start, during and after treatment, as well as involvement in review clinics.

3.2.18 **Dosimetry planning**

Dosimetry planning is a good example of a long established role development for radiotherapy radiographers. The service is equally well delivered by radiographers and/or medical physicists.

3.2.19 **Quality assurance**

With the increasing importance of quality assurance within the clinical governance agenda, and the move to formal quality accreditation of services, most radiotherapy departments now employ a quality assurance co-ordinator or manager, and this role is normally taken by a radiographer.

3.2.20 **Information and technology**

There are also examples of radiotherapy radiographers extending their roles in information and technology.

4. Education and training provision for role developments

Higher education institutions providing pre-registration programmes in radiography, also provide post-registration provision. Some are very comprehensive and offer PGC, PGD, Masters and PhD programmes in a wide variety of areas of clinical, educational and research topics.

Post-registration provision for radiotherapy radiographers can be individually designed, with education centres able to develop and deliver master level modules. These are work-based open modules designed to meet individual radiographer's specifications in relation to clinical and technological developments. In-house and masters level courses are provided, using a partnership framework between higher education institutions and a number of radiotherapy departments.

Higher education institutions report an increase in the number of applicants for courses involving role development. They are responding to local (and not so local) demands for a variety of types of courses in a wide variety of topics.

Specific reporting courses embedded within postgraduate certificate and postgraduate diploma exist in the following topics:

- musculoskeletal
- chest and abdomen
- appendicular skeleton
- axial skeleton
- gastro-Intestinal
- CT head
- chest

There are, of course, elements on reporting integral in other courses. Ultrasound, nuclear medicine, magnetic resonance imaging and mammography courses would all include some image interpretation and reporting.

Role development courses have been developed in intravenous urography and barium enemas (these courses include reporting).

Mammography post-registration pathway includes reporting, as well as breast ultrasound.

In general, higher education institutions report moving basic image interpretation skills into pre-registration. This may be interpreted as a natural progression and, for example, red dot short courses will no longer be needed when radiographers gain the skills and knowledge at pre-registration level.

5. Conclusion

Staff shortages in both diagnostic and radiotherapy radiography have, to a certain extent, increased role development activities but, ironically, acute staff shortages tend to have the opposite effect, as there is not time available for the necessary education and training. Increasingly, there is recognition that in order to deliver the service, radiographers need to develop their roles.

The traditional barrier put up by some clinicians has largely been overcome. Difficulties experienced by radiographers tend to be due to lack of time rather than lack of support in principle. For example, role developments which need work place mentoring involving a clinician (usually a radiologist, oncologist or physicist) may present a problem. Funding available from employers is better than it has been in the past, probably due to perceived need to deliver the service.

There is a positive attitude towards role development throughout the profession. Radiographers are realising their potential and, increasingly, recognise their own expertise and do not look to others for the 'gold standard'.

Radiographers have been pushing at the door of role development for a long time and have met resistance in the past. Now the resistance from others has lessened, radiographers feel more confident to push harder as they can see progress being made.

The education and training demands are considerable. Hospital trusts, clinical departments and higher education institutions are providing the necessary support for learning the skills needed and radiographers are able to practice and develop those skills.

Technology has increased the need for role development. In radiotherapy for example, the changes are moving so fast that technology drives working practice and there now needs to be on-the-spot decision making which affects patient treatment. The radiographer making the decision must be operating at an advanced level of practice.

Role development is necessary to meet the needs of the service, demands of continuing professional development, the need to satisfy the aspirations of radiographers, and as a necessary part of a retention strategy.

There is every reason to be optimistic. Radiographers are pushing against an open door; they have made great progress despite enormous challenges and have demonstrated that they are flexible and adaptable. They are willing to be innovative and practical in delivering services and meeting the expectations of the patient.

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