A global overview of the changing roles of radiographers

Cynthia Cowling

International Society of Radiographers and Radiological Technologists (ISRRT), 143 Bryn Pinwydden, Pentwyn, Cardiff, Wales CF23 7DG, UK

Received 28 January 2008; accepted 11 June 2008
Available online 24 July 2008

Abstract The International Society of Radiographers and Radiological Technologists (ISRRT) provides a forum for information and discussion on developments and changes in the radiographic profession globally, with over 83 country member associations and through its official capacity of an affiliate of World Health Organisation (WHO). Role boundaries for radiographers are changing and expanding. A few countries, principally UK and USA, have established positions with specific scopes of practice. A global overview identifies a large gap between these countries and others who are still struggling to have the radiographic profession regulated and for whom recognized advanced practitioners are only a remote possibility. Factors such as skill shortages, cost containment, need for quality improvement, technological innovation, new medical interventions, new health sector programmes, health sector reform are driving these role changes everywhere. Some countries have moved further along the continuum of change than others. This article provides an overview of activities and developments in three regions. Some countries are working towards role extension and have substantive research in place while others have very little apparent information on this development. The article does not cover the established programs of USA and UK in depth, where there are many other publications available.

Crown Copyright © 2008 Published by Elsevier Ltd on behalf of The College of Radiographers. All rights reserved.

Radiographers around the world are bound by scopes of practice which define their responsibilities and boundaries. Some have found these restrictive and have sought ways to improve and expand them to fully realize their potential as practitioners in radiation technology. Some countries still have no regulatory body to enforce the scope of practice, resulting in a decrease in standards and quality in the profession and always a decrease of recognition. These two scenarios highlight the huge diversity of environments within which our profession works. This paper will demonstrate that the move towards an advanced practitioner is usually predicated on the level of official recognition given to the profession.

A few countries, led by UK, have developed expanded roles, with the consultant radiographer defined as the most advanced practitioner. Many other countries strive towards...
this level but most are far from achieving it. This article provides a global overview of the current status of advanced practitioners with a stronger emphasis on countries who have not yet achieved any clear expansion. Some countries have not even reached a point where serious discussion or research is being carried out so evidence has to be anecdotal.

Access to much of the information has been via the International Society of Radiographers and Radiological Technologists (ISRRT). The primary focus of the ISRRT has been the improvement of radiographic practice globally. It provides a global forum for discussions for issues such as role advancement. The International congress to be held in Durban, South Africa, in April 2008 has a major focus in this area. Forums such as teacher seminars have provided opportunity for discussions on role expansion and curricular change. Practical steps in this direction have begun by funding assistance for a WHO Pacific Regional Workshop on Image Interpretation for Radiographers offered in Fiji.1

The issues that concern the ISRRT are the same as those that arise when trying to present a cohesive overview of role advancement from a global perspective. There is huge diversity in needs, expectations and resources between the countries that lead the role advancement and those that seek basic recognition at the appropriate levels. Nomenclature is an issue where radiographers, radiologic technologists, X-ray technicians, and medical radiation practitioners are all performing very similar functions. To this are now added consultant and specialist radiographers. Even the discussion of this subject gives rise to a plethora of descriptive titles such as role extension, role expansion, assistant practitioners, radiology assistants, the precise definitions of each being beyond the scope of this article.2

In this paper, the term role advancement means an increase in scope of practice either within radiography, or beyond, involving cross-boundary working previously assigned to other health professionals. The categorization of radiographers also varies. In some instances nuclear medicine or ultrasound or MRI is included with diagnostic radiography or radiology. In some cases they are regarded as a profession in themselves. However, diagnostic radiography is by far the largest group. The term radiographer is used here to represent a practicing professional in medical radiation sciences which include therapy as well as diagnostic. The article looks at some of the issues and gives examples of developments in several countries and regions. The focus is not on UK and USA where extensive research has been carried out for which there is already a wealth of published material.3

Although the practice of radiography as a profession has some degree of homogeneity, many factors affect its current status around the world today. The American Society of Radiologic Technologists (ASRT) is currently researching the role of radiographers from an international perspective. A spread sheet cross-referencing 144 countries with 11 different pathways, additional responsibilities and advanced technologies is very daunting, not least because the starting point of this change is assumed to be the original scope of practice of the radiography in any given country. This in itself varies enormously. It is the first time that a survey of this scope has been attempted.

Education is often the key to any role progression.4 The ISRRT was asked to investigate the possibility of agreed international standards for educational programs. Guidelines for the Education of Entry Level Professional Practice in Medical Radiation Sciences5 were presented in 2005. It recognized the common areas of a unique body of knowledge and skills, the effective performance of professional role and recommended the degree as entry level. It could only offer very broad based statements given the existing diversity of educational standards in the international community. Nowhere is this more critical than the European Union where large gulfs in the educational process are still an impediment to any unified role advancement across the community members.6

As well as education, there are many other factors affecting any progression or change in a profession. As a general observation, it is evident that those countries with a longer history of formal radiography education combined with recognition through regulation have progressed further along the role boundary continuum. Other factors include professional recognition, key relationships, demographics, economics and even language. This article will describe some of the advancements that have occurred in the three main regions of the ISRRT, The Americas, Europe/Africa (E/A), and Asia/Australasia (A/A).

All countries are affected by the determinants to skill mix outlined by Buchan for WHO in 2002.7 Skill shortages, cost containment, need for quality improvement, technological innovation, new medical interventions, new health sector programmes, health sector reform and changes in the legislative regulatory environment all impact on any change to the scope of practice. As a rough guide the development of role advancement in countries can be considered at four levels.8 The first level includes UK and USA where high levels of governmental and medical discourse coupled with a driving force of research by professional associations and university graduate programs have clearly put this at the forefront of professional needs, resulting in actions and implementation. The second level includes Canada, Australia, New Zealand, Japan and South Africa where those same driving forces are in place, but implementation has not yet happened to any significant degree. The third level are countries which have recognition for their profession and are moving towards degree or something equivalent as an entry to practice. For them, role advancement is the next potential step. This includes such countries as Jamaica, Barbados and Trinidad and Tobago, Uruguay, Brazil, Kenya, Uganda, Malaysia, and Hong Kong. The fourth group are those countries which do not have formal recognition of the profession and no established national standard for radiography education. This includes Nepal, India, Bangladesh and some of the Central American countries and some English and French speaking African nations. The ISRRT Americas membership consists of USA, Canada, Jamaica, Barbados, Trinidad and Tobago, Guyana, El Salvador, Peru and Mexico. The ASRT has already established its Radiologist Assistant role,9 and has just adopted the resolution which advocates the associate degree as entry level to practice (the equivalent to a 3-year diploma program in the UK).10 The Canadian Association of Medical Radiation Technologists (CAMRT) has long adopted the degree as the entry to profession standard (still a work in progress) but is working collaboratively with the Canadian Association of Radiologists (CAR) to develop an advanced practice role.11 The Radiation Therapy community has been very
The Caribbean nations are struggling to achieve full recognition of their radiography professionals, ideally within a free market concept of the Caribbean Community (CARICOM). A recent survey undertaken in Trinidad and Tobago asked a number of questions of diagnostic radiological stakeholders related to role advancement. There was consensus on the need to make radiographers more technically proficient in the newer modalities and to include skills such as intravenous injection of contrast media within a regular scope of practice. However, there seemed to be little interest in development beyond the technical, to include the management, communication and leadership skills. Ninety percent felt that IV injections could become part of a scope of practice, 50% felt the inclusion of the Red Dot system was a possibility over the next 10 years; 40% believed single-handed barium studies could be a possibility over the next 10 years. Only 8% believed that a consultative role could arise in the next 10 years.

Radiographers in Central and South America are at various levels of recognition, but according to Ileana Fleitas, Assigned National Officer Radiological Health, Havana, Cuba, and Elena Cotelo, Senior radiographer and instructor, Montevideo, Uruguay, the concept of an advanced practitioner in any of these countries is still just that a concept. Education programs are improving. For example, in Guatemala 18-month programs and short 6-month on the job add-on training for nurses are being replaced by 3-year programs, one housed in University of Galileo in Guatemala City. Brazil appears to provide the best structure and recognition for radiographers. About 15 years ago, the government recognized a lack of structure to the profession and created a number of levels of training with associated levels in the health sector. At the current time, this does not include any moves towards an advanced practitioner (Fleitas I., Cotelo E., 8.11.2007).

Europe/Africa region is made up of 41 countries and includes many of the European community members, English and French speaking African nations. The complex issues related to the practice of radiography within the European Community are beyond the scope of this article. Organizations such as The Higher Education Network of Radiographers in Europe (HENRE) and the recently formed European Federation of Radiographer Societies (EFRS) are striving to find consensus in education and scope of practice. A recent presentation by Robert George, President ISRRT, shows a large variation in scope of practice between EU nations and a difference in an understanding of what constitutes advanced practice. The advancements in UK are well documented. They are unquestionably the world leaders in this area. Some EU countries such as Denmark and Netherlands have a record of incremental development and expansion of roles over the years. In Norway, radiography has had a close association with the nursing profession and has incorporated within it a very patient centered approach to the profession. It has an active research base. Other countries have worked to expand their scope of practice. For example, Austrian radiographers can now inject contrast media; German radiographers are now more closely involved with quality assurance. Finland has recognized the need for research in the area of radiography.

This diversity is also to be found in Africa. Dismal economies continue to constrain several of the French and English speaking African nations from making any real progress. A survey carried out in 2004 by the ISRRT (Conditions for the Education of Radiographers in Africa) does provide insight into the level of education. There are large disparities from a 6-month training program in the Democratic Republic of Congo to full University level 3- to 4-year programs in South Africa, Kenya and Uganda. It is not surprising that these are the leaders in the development of advanced roles. The extended role for radiographers is not yet a reality in South Africa, but is being addressed in new curricula. At the 24th ICR World Congress (Cape Town 2006), the increasing problem of unreported examinations in the Public Health Sector in South Africa was identified as a major issue by Dr. Richard Tuft, President of the Radiological Society of South Africa (RSSA), in his unpublished opening address. Dr. Michael Kawooya of Makerere Kampala Uganda emphasizes the problem of low doctor–patient ratio. The Professional Board of the Health Professions Council of South Africa has endorsed two important activities within the scope of radiographers; basic pattern recognition and basic reporting by a sonographer on ultrasound investigation if a radiologist is not available. Imelda Williams states that evidence has established the benefit of role to the patient and that South Africa should be able to benefit by the advanced practitioner role.

A landmark for radiographers has been reached in Uganda with the endorsement of a Pattern Recognition Curriculum by The Allied Health Professional Council, the professional arm of radiography within the Ministry of Health. This 1-year postgraduate diploma program will allow radiographers to provide an opinion on plain chest, skeletal and abdominal radiography. Kenyan therapy radiographer and Regional African Director ISRRT, Caesar Barare, comments on the situation in Africa.

"For radiography to be at par in all regions of the world and relative and relevant to other health professions, concerted and deliberate effort and provision has to be made through strategies such as peer review mechanisms, partnerships, integration, human capacity and technological development, to provide a seamless service throughout the world. In Africa, there is need to prioritize our urgent requirements incorporating universal intentions such as the UN Millennium Development Goals with a view of domesticating them. That is, think GLOBAL but act LOCAL."

Asia/Australasia is a large region incorporating over 25% of the global population. Not unexpectedly, this brings its own problems. India and China both with populations of over one billion struggle to achieve one national voice and any kind of national standards. India has many hundreds of programmes (the exact number is not clear). Only about 120 of them are recognized by their own professional organizations, about 15
offer a degree programme and only five of these are recognized internationally by bodies such as the Health Professions Council (HPC) in the UK and the College of Medical Radiation Technologists of Ontario in Canada. A recognized position of a consultant or advanced practitioner is a distant dream, although with the lack of regulation, there are probably radiographers performing a huge diversity of skills right across the spectrum of the profession. In India as general rule, politicians still see health as a low priority. About 0.9% GDP is spent on health while a large percentage of budgets are allocated to defense and non-vital infrastructure.

Although varied in standard, the Indian model of training and professional practice does have a familiar tone. It is loosely based on the British model. This cannot be said for China, where the training and practice are difficult to understand and comprehend. Dr. Maria Law, Vice President Asia/Australasia region, ISRRRT, and Associate Professor of Department of Health Technology and Informatics, Hong Kong Polytechnic University, describes the profession.

“There is training for radiographers in China which is not standardized and certainly below degree level. In recent years all radiographers are required to sit a professional exam (the equivalent of a licensing exam). However, whether the candidate passes or fails will not affect his/her job. I hope this is just a transition. The status of radiologists is not high in the mainland. The strange scene is to see radiologists compete with radiographers for the operation of CT or MRI” (Law M., 6.8.2007)

There is apparently little difference between the salaries of radiographers and radiologists and since radiographers appear to have more training in radiology than the radiologists, the roles and responsibilities of both become very confused. Economic prosperity and a more open international policy may change much of this.

Hong Kong Radiography education is situated in one centre, Hong Kong Polytechnic University, with a curriculum and scope of practice not unlike the UK. The radiographers strive for an expansion of their roles but with an apparent abundance of radiologists there is little progress being made. In radiation therapy, treatment planning was considered part of the scope of practice of the radiographer. However, with the introduction of new modalities, physicists made it part of their position. With a lack of medical physicists, radiographers who happened to have a graduate degree in physics were hired to become the physicists performing treatment planning. (This example demonstrates the variety of issues that can arise and how they are dealt with locally.)

According to Robert Shen, Director of the Asia/Australasia Region and chief radiographer at Veteran’s General Hospital in Taipei, Japan, Taiwan and South Korea all have 4-year college programs with opportunities to take masters and Ph.D. programs. Japan runs advanced technological programs in MRI and CT and does have some radiographers who perform diagnostic, therapy and nuclear medicine. In all of these countries there appears to be a close association between radiographers and medical physicists at all levels. There are radiographers performing CT, MRI and sonography independently but all image reading, interventional and fluoroscopy, is the dedicated work of the radiologist.

Australia and New Zealand are both actively working towards the expansion of role boundaries. Both countries have working parties set up by their professional associations, which are looking into career progression and role development. This is combined with very active academic research being carried out by the universities that house radiography programmes. In Australia there are image interpretation courses available but at this date there is no avenue to pursue this legally within the country. The impetus for change is not as critical as it was in UK, where the number of radiologists per million population is one-third lower than in Australia. However, Australia is still underserviced, with the majority of the radiology workforce favouring metropolitan areas (a problem frequently found in countries with large geographical areas to service).

This geography gives rise to its own unique problems of service provision. Australia has a strong lobby pushing for remote radiographers, trained to perform certain tasks and provide some image interpretation. Higher quality electronic transmission of images has reduced this demand somewhat, but like many other countries, Australia is looking seriously at significant health sector reform and the radiographic professional is seeking ways to be flexible while making full use of its capabilities. The models they are considering are those which could also work well in the Pacific region where many small nations are linked only by a vast ocean.

Conclusion

In June 2007, the Australian Institute of Radiography issued a press release entitled Role Boundaries in Radiography. The President, Mr. Chris Whennan, stated “the patient’s experience and outcomes is our central focus. All parties involved need to work together to develop plans which will deliver optimal quality healthcare that Australians require and expect.” These words echo the aspirations of radiography professionals globally. Depending on location, these boundaries are moving and becoming legitimized and recognized. It is ironic that it is those very nations which struggled to gain acceptance and respect are the very ones who could benefit the most from the changing roles. It is a step-by-step process. Dr. Harald Ostensen the former Coordinator for Diagnostic Imaging and Laboratory Technologies, WHO, and with whom the ISRRRT worked energetically and collaboratively identified succinctly the major issues. When the ISRRRT suggested developing programmes for mammography screening in India, Dr. Ostensen recognized the huge need but emphasized that without the accompanying infrastructure of surgical, pathological, administrative support such projects would be doomed to failure. The moves to advanced practice in any nation can only come with all the attendant structures in place (Ostensen H., 19.4.2007).

Similarly, a paradigm shift from the reality of a limiting subordination role still so prevalent in the profession to a positive, leadership model is the way to success. These innovations can only come with the rigour of research, inclusion of all stakeholders and the constancy of communications.
Professionals in many emerging countries are watching the progression of advanced roles and see the countries involved as mentors, learning the mechanisms and hopefully avoiding the pitfalls that may occur. Another snapshot in 5–10 years will tell us if the gulf is continuing to grow or has narrowed.

References

13. Professions related to medicine. Act No. 35 of 1985. Port of Spain, Trinidad and Tobago: Government of Republic of Trinidad and Tobago; 1985.
14. Division of Nursing and Health Sciences, College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT). Program development radiological sciences, stakeholders report. Port of Spain, Trinidad and Tobago; 9 February 2006.