Training and Accreditation of Healthcare Workers:

Are Training Guidelines Meeting Needs of the Community?

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By

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ABSTRACT

Purpose of the research

This paper presents an analysis of, and recommendations for, the training and accreditation of healthcare workers in Canada.

The significant cost of education and healthcare, as well as the current and ongoing national shortage of healthcare professionals, warrants a critical look at the educational training requirements of healthcare workers in Canada. This topic includes reviewing the historical background of training for a variety of healthcare professionals in Western cultures, the common philosophy of education trends for these workers, and the future directions for various professions, focusing specifically on Medical Radiation Technologists in Canada.

Methods used

The methodology applied to this research is that of critical analysis, utilizing the following critical skills as proposed by philosopher Bertrand Russell: “(i) the ability to form an opinion for oneself” (tasks of recognizing, listening and questioning), “(ii) the ability to find an impartial solution” (dealing with biases and detachment for beliefs, judging on merit of issues), and “(iii) the ability to identify and question assumptions” (emphasis on judgment, critical reflection and constructive rather than destructive doubt)(Hare, 2001, pp8-9). Recommendations regarding pre-service and continuing educational training for Medical Radiation Technologists in Canada will be proposed.

Tied to any investigation of healthcare workers is a critical assessment of the healthcare system, as the needs of the community that is served by these professionals must be identified and successfully met. The literature review includes national statistics and summaries of health and lifestyle trends, as well as the trends for the education and training of healthcare workers.

Results obtained/Significance of findings

Reflective, critical assessment of the training and future trends of healthcare workers reveals that healthcare has undergone two major changes in focus: (1) healthcare as a business and (2) the holistic interdisciplinary trend of patient care.

After investigating the trends of health care professionals' training, and even though the arguments for degree as entry-to-practice are very strong on many levels, I don't feel that I can conclude that the degree is the only option. If diploma training can adequately provide the basic theory and skills needed, additional skills and training, when required for a particular task, should be, and currently are, made available to the individual.

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INTRODUCTION

The ideal health-care worker is informed, knowledgeable and able to engage in critical thinking skills independently. This description is not unique to one discipline, but rather encompasses everyone from the most specialized physicians to the least recognized technicians. The job description for each health-care profession has evolved, and will continue to evolve over time, but the necessity for adaptability by each individual has not changed. The codes, standards and guidelines for each profession are meant to promote the ideal health care worker, but how is this achieved through the education, training and certification of these professionals?

The focus of this paper is to review training and accreditation guidelines and requirements for health-care workers in general, and Medical Radiation Technologists (MRT) in particular, with emphasis on the needs within the training to meet the needs of the community that they serve. The issues include a diploma versus degree debate for entry-to-practice, expanded scope of practice opportunities, and the instillation of the desire for life-long/career-long learning.

In an effort to contextualize the current state of health care training and education, I will explore the philosophical approaches in training and education of health care workers, especially for the discipline of Medical Radiological Technologists (MRT, one of four disciplines of the Canadian Association of

Medical Radiation Technologists (CAMRT), in Canada. The significant cost of both education and healthcare motivates me to challenge the requirements of health care workers in general, and MRT in particular.

In order to investigate the value of any form of healthcare worker training, the healthcare system itself warrants a critical assessment. Ivan Illich's *Limits to Medicine*, although written over thirty years ago, still has a critical relevancy today for what he terms "*Medical Nemesis: The Expropriation of Health*". A more recent 2003 book about this topic, *Poor Health: Social Inequality Before and After the Black Report,* (Berridge, V., Blume, S.S. (Eds.), 2003), addresses these same themes, as Britain struggles with 21st century solutions to health policies and social health inequalities. I will address some of the common concerns that Illich brought forward in 1976 that are still relevant to Western healthcare, such as training trends, overall clinical health of the communities being served, and shortages of qualified healthcare professionals, leading to crisis.

The holistic, balanced approach that Illich refers to echoes the educational philosophy of Alfred North Whitehead, especially as Whitehead (1957) writes about it in relation to technical training in *The Aims of Education and Other Essays*. Whitehead's views will be referenced in this paper as background for the ongoing issue of the most appropriate education and training for technology-based professions, his philosophy of lifelong learning resonating with the ideal healthcare professional.

A further background specific to the education and training of Medical Radiation Technologists that I wish to incorporate in the introduction of this paper

references the 1948 thesis by Sister Mary DeLellis Crowley, who was pursuing higher studies through the School of Nursing of Saint Louis University to achieve a Bachelor of Science in Radiologic Technology degree at the time. Sister Crowley provides a comprehensive history of the beginning of organized training of MRTs in the British Commonwealth and the United States, from 1897 until her writing in 1948. Her writing also re-iterates the need for lifelong learning in healthcare professionals, specifically for the disciplines of Medical Radiation technologists.

Critical Analysis of Healthcare

In assessing how needs may be addressed to determine limits to healthcare, Illich refers to "…education that trains ever more people for ever higher levels of technical competence and specialized forms of generalized incompetence:" (Illich, 1976, p.8); technical competence seems to be based on specific skills that the healthcare worker would possess, but Illich seems to propose an either/or scenario for technical competence or incompetence.

Illich utilizes the term *Iatrogenesis* to describe the epidemic of professionals (specifically doctors) in control of medicine, to the point that the patient and patient care has been lost in favour of political maneuvering for specialty facilities, specialty equipment, and staff funding to run specialty areas. The reference is linked to competence (and conversely incompetence) and to *counterproductivity,* with high levels of technical competence at odds with general incompetence (p.8), and whereby the controlling efforts of healthcare

professionals may be making the spread of disease, or the lack of care, the obvious counter-productive results of actions and inaction. The spread of this 'disease' is not necessarily a specific pathogen, but the lack of care that the average patient may have to endure while in a healthcare facility denoting both incompetence and negligence.

The issue of healthcare allocation as a resource is explored on Richard Thurley's blog (2007)"International Network for Ethical Issues in Resource Allocation" in which he references the World Health Organization definition of health as follows: "health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". Thurley goes on to address the Health Care Analysis that authors Hoedemaekers and Dekkers (2003) make as they comment on a distinction between health and health care, citing this as rationale for health care planners and resource allocators to make their decisions. Restrictions in the health care system are made, primarily by health practitioners, who ignore the holistic aspect of health in favour of the bodily dimension only. (Thurley, 2007, p.1)

Economic disorder, confusion promoted by the media, "incompetence fostered by educators", and a "social measure for objective frustration" (p.8) are Illich's (1976), descriptors of the industrial society under the influence of iatrogenic disease. This iatrogenesis continues to be evident in health care inequality, as identified by Thurley (2007), as a problem of economic inequality (p.1,5). Thurley goes on to cite both socioeconomic factors and economic inequality in societies worldwide as having a negative impact on health care

(Thurley, 2007. p.5). As I will document later, the educators and their administrators are to be held accountable for the 'end product' of healthcare professionals as they enter the workforce. Illich's depiction of the iatrogenic disease parallels social injustice issues worldwide, with iatrogenesis a cause of oppression, as has any other form of colonization. Thurley's (2007) current analysis reviews the effects of inequalities in health care in developed and third world countries, with the same results that Illich found (p.5).

The International Poverty and Health Network (IPHN), created in 1997 to "integrate health into poverty eradication policies and strategies, promoting community partnership and intersectoral action, as a means to achieve effective and sustainable results" (Heath, I., Haines, A., Smith, R., 2007,p. 236) is a recent response to the continuing lack of health care for the poor due to their poverty. IPHN stresses the holistic aspect of health care, recognizing that socioeconomic challenges must be addressed, as well as the physical needs.

The disease trends that have been recorded for almost 150 years link the environment to a population's health, with environment including all external circumstances and conditions, including societal and political swings of power. At times of political and economic stability, the health of the population is more secure, until instability through over-population, war, failed crops, or an epidemic takes hold. Such instability always affects the poor, old and weak first, the very population we as healthcare workers are to protect from harm. Health indicators as summarized by the Canadian Institute for Health Information (CIHI) also cites non-medical determinants of health such as sense of community belonging, life

stress, current smoker, heavy drinking, fruit and vegetable consumption, and leisure-time physical activity, with life stress identified as “quite high” (CIHI, 2007,p.49).

Medical practice is critically assessed by Illich (1976) as devolving to negligence, callousness and incompetence, excused through “random human error”, “system breakdown”, “scientific detachment” or “a lack of specialized equipment”; “The depersonalization of diagnosis and therapy has changed malpractice from an ethical into a technical problem” (p.30). These trends are not limited to the physicians, but become the inexcusable excuses that many of us fall back on during hectic understaffed shifts, a model that the healthcare trainees quickly pick up, and so the trend continues.

Illich (1976) refers to medical nemesis as a “…self-reinforcing loop of negative institutional feedback” (p.34), the equivalent of a self-fulfilling prophecy of retributive justice, which is “resistant to medical remedies” (p.35). He warns of a critical threshold of biomedical intervention, resulting in malpractice through clinical iatrogenesis.

Physicians are only one of many healthcare professions referred to by Illich as having control over “class power which the university-trained elites have acquired” (Illich, 1976, p.47); is Illich equating all university training with class power? I don’t believe the post-secondary institute itself is being attacked so much as the political and social results of such elitist training, so the question is, can pre-service training at non-university facilities avoid this elitist status and still provide the required skills to the healthcare professionals? It may be argued that

the upper class requirement still remains as the cost of education soars, virtually eliminating many who are unable to pay the required fees for higher education. Does this inequity reflect on the communities' needs for healthcare? We know that two- or three-tiered healthcare systems always benefit those who are able to pay, while those less able to pay extra fees will receive a different level of service.

Another aspect that negatively reflects on university training in Illich's writing is the cost of healthcare, ever escalating to pay the salaries of professionals who hold masters and doctorate degrees to work in administrative middle-management, supervising less-credentialed healthcare workers who perform the actual patient care. As these salaries increase, individual patient care has suffered cutbacks in the form of longer wait-lists for diagnostic testing, specialist appointments and surgeries, and shorter recovery-time stays post-op, often with more post-op complications. As recorded by CIHI data, Health Care in Canada 2006, spending on health care per capita tripled between 1975 and 2005, with private sector spending rising faster than public sector spending in the same time. CIHI also reports that graduate numbers are decreasing in dentistry, optometry and pharmacy, with increases in chiropractic, dental hygiene, occupational therapy, physiotherapy, and medicine (1993 to 2004 stats, Health Care in Canada 2006 Executive Summary). Almost half of health care personnel are registered nurses (RNs), licensed practical nurses LPNs) and registered psychiatric nurses (RPNs) as per CIHI's Health Care in Canada 2006 report.

A recommendation that Illich puts forward is from the World Health Organization (WHO, 1975), advocating "…the deprofessionalization of primary care as the most important single step in raising national health levels" (Illich, 1976, p.227), yet recognizing that the public's healthcare would be plagued by delays and denials if public controls were in place; in fact, this is what our current healthcare system has become! Healthcare, as delivered by physicians, still has a certain prestige that the other professions, in spite of certification and licensure requirements, does not have. Expanded roles and scope of practice trends, as well as crossover professions such as trained Nurse Practitioners, will be discussed at greater length in the next section of this paper.

The shortage of trained healthcare personnel, due to retirement or job burn-out and dis-satisfaction, has again reached a peak in the ebb-and-flow of 21st century economics. The cost of education is one aspect, as is the poor salaries of these female-dominated roles, an increase in numbers of chronic- and geriatric-care patients, the decreased role of religious motivation, and other high-paying career opportunities (Illich, 1976, pp.247-248).

Illich's critique of the healthcare system as it existed in 1976 continues to reflect current issues. Paraprofessional specialists are a necessary part of the overall healthcare scenario, not to replace the physician, but to complement diagnosis and treatment of the public. The question of what is acceptable as entry-to-practice training and credentials, as Illich describes it, seems to focus, not on technical specialization, but on achievement of an overall, balanced competence. In an effort to regain control over our health, public awareness of

the issues, such as training and accreditation of the healthcare workers, is prudent.

Philosophy of Education and Training

Whitehead writes at the end of the 1920s when different streams of curricula in Britain were under discussion, tending to become more specialized to the science or technology focus of studies. As a proponent of the three curricula of literature, science and technology, Whitehead emphasizes the complementary aspects of each stream, ultimately creating a liberal education that incorporates all three. His argument is for an alternating emphasis on the three curricula that creates a balanced education, integrating intellectual, manual, imaginative, aesthetic, and moral characteristics of each individual.

Whitehead refers to the Benedictine model of education to inspire a vision of communal work done by skilled, inventive workers who enjoy their jobs, a process that is "transfused with intellectual and moral vision and thereby turned into a joy"(Whitehead, 1957, p.44). Leaving the theological aspect out of education, joy in a job well done is to be encouraged universally.

Learning is a process of self-development, made up of cyclic periods of experiences, growth and reflection. Whitehead (1957) describes a threefold cycle that includes *romance* through adventure and the freedom of discovery, *precision* of learning specific details and skills through self-discipline that are then applied, and *generalization* that allows a broad understanding, enabling the cycle

of learning to continue as it leads back to the freedom of discovering something new. (Scarfe, A., Woodhouse, H.,2007)

Whitehead defines technical education to reflect what a craftsman would be required to know, but I have adapted his views to include the skills and knowledge that a technology and science-based healthcare worker requires for their 21st century job. He describes technical education as a connection between the intellectual activity of controlled hand-eye skills, which require scientific knowledge to judge the construction, with an aesthetic appreciation of the craft or object constructed; for a healthcare worker, this object may be the diagnostic or therapeutic service rendered to a patient, applying the required scientific background and technical skills.

Scientific education requires observation of natural phenomena, and knowledge of such laws and deductive skills concerning the phenomena. This is the theoretical base of technical education that Whitehead (1957) applies, encouraging a broader application of theory and practice in technology than the specialization that pure science studies often focus on (pp. 49-50). Technical education is seen as providing “reciprocal influence between brain activity and material creative activity” (Whitehead, 1957, p.50), valuing experience to develop further intellect. He sees technical education as a natural progression of first-hand observation to thought to manual skills, and manual activity to thought. He introduces scientific thought as logical thought, a concept that requires language to express as the concepts are put into practice; we might see this as the trend to

expect healthcare trainees to write research papers as part of their education requirements.

The spiral curriculum that Whitehead argues for alternates emphasis upon literary, scientific and technical, to achieve the goal of a balanced education for the postmodern society. The achievement of balance of intellect and character through the three cultures follow Whitehead's recommendation of co-ordination of studies for both intellectual curricula and manual training with six dominant sciences (1)geometry, (2)mathematics, (3)physics, (4)chemistry, (5)biology, and (6)techniques of commerce [history, geography, statistics, algebra] and social services)(Whitehead, 1957, p.55).

Whitehead (1957) encourages us to carry out technical training with creativity, striving for the balance between intellect and character. For Whitehead, knowledge, labour and moral energy are balanced. Since normal recreation is the re-creation of an activity through change, relaxation and recreation through art and literature provide energy and vision, which in turn allow control and direction in one's life. This creativity and energy through balance is definitely missing in most non-university programs, as they focus on specific knowledge and skills for a particular job; there is no room for electives that might allow creativity and a chance to re-energize and balance the stresses of heavy course-loads that most healthcare training programs deliver.

Whitehead (1957) believes that technical educators should apply "intellectual and moral vision" (p.45) to their techniques. This is possible only if

this vision is recognized in the 21st century as necessary to the balanced student and worker, and not a luxury.

Canadian Historic Background of Medical Radiological Technologists

Sister Crowley records Canadian involvement in the use of radiation for medical purposes at the University of McGill (Professor J. Cox), within the year after the discovery of Roentgen's rays (Crowley, 1948, p.5). During the first World War, standardized training courses were initiated, with special training for medical roentgenologists and for army technicians who were called 'manipulators' as they handled films and the care of the equipment. The first textbook for educating those who worked with this new technology was published in 1928, and provided a "systematic approach to the problem of teaching roentgenographic technique" (Crowley, 1948, p.9).

Throughout the 1920's and 1930's, American and British radiological technicians formed societies and registries to recognize their members, and to establish standardized methods of certification. Initially, Canadian radiographers joined with the American Society in 1920, but later formed their own Canadian Society in 1943; the British members included South Africa and New Zealand. In 1937, the British Society of Radiographers offered three methods of certification: thesis, ordinary examination, and special examination (Crowley, 1948, p.11). Canadians were able to receive their certification through the American Society of X-ray Technicians from 1922, and later through provincial examinations that

were approved by the new Canadian Society of Radiological Technicians (CSRT) in 1943.

The motto of the newly formed CSRT was adopted as “Scientia et mores” which means “Knowledge and Ethics” (CAMRT, 2007). The early establishment of training programs throughout Canada, following provincial and American or British examples, has always put both theory and practical knowledge at the forefront, with the patient first, and continues with this focus today. The first Canadian certification exams were held May 1945 after the introduction of new curriculum for the RT designation, and the first Training Syllabus or Curriculum was established in 1950 (CAMRT, 2007).

Sister Crowley, writing about the Canadian history of the CSRT for her thesis, describes one of the objectives of the Provincial Societies as follows:

To Contribute Towards the Adequate Education of the Radiologic Technician

> Rapid change is found in the science of radiology as elsewhere in contemporary society. Thus the radiologic technician must be able to adjust to new situations. If an attitude of mediocrity and routine is developed by the technician, it may not be possible to change professional habits as techniques are changed or adjusted because of new advances in roentgenology. The competent technician, on the other hand, is ever alert to improve his or her scientific knowledge in this profession.
>
> In order to become a skillful radiological technician, the educational preparation of the applicant must be one which provides an adequate

> scientific background. In Canada the educational requirements adopted by the provincial societies are fairly uniform. The results of the questionnaires which are sent to all the provincial societies show that one province requires their candidates to have Grade XII, four require junior matriculation, and the remaining three, grade XI. The advantage of matriculation certification, either junior or senior, is that it qualifies the student for university entrance should they later desire to pursue higher studies. (Crowley, 1948, pp.19-20).

Sister Crowley was herself pursuing higher studies through the School of Nursing of Saint Louis University to achieve a Bachelor of Science in Radiologic Technology degree, and had already served many years in her profession as a radiographer and educator in New Brunswick. Sister Crowley's observations of a rapidly changing work environment and the need for adaptation by the radiological worker is as appropriate today as it was almost 60 years ago. Professional education opportunities for the radiologic technician across Canada at the time were at established training centres, by formal study at a college or university, or by a directed 2-year course of study in a department of radiology with emphasis on clinical expertise and de-emphasis on the theoretical aspect of the work (Crowley, 1948, p.25).

The decisions leading to educational requirements were addressed by Sister Crowley in her thesis as follows:

> As early as 1943, the subject of university education for radiologic technicians was discussed at the annual meeting of the Canadian Society

of Radiological Technicians. The members attending the meeting unanimously passed a resolution to contact the deans of the various universities throughout Canada regarding the inauguration of a course in radiologic technique in the university curriculum.

In 1946…..At the annual meeting of the Canadian Society of Radiological Technicians..a committee was appointed to obtain information on the present facilities offered for training technicians, and to study the means whereby improved training and higher education for radiologic technicians might be obtained. (Crowley, 1948, p.27).

And further, relating to a specific Education Committee that met in 1947:

It is heartening to record that this committee is doing extensive work in an endeavour to set up standards of education for the technicians. In addition to standardized courses in the departments of radiology, *present trends appear to be toward a university course leading to a degree. University training will give the student, not only an adequate scientific background, but also a broad cultural background. Young men and women who avail themselves of this opportunity will be better prepared as teachers in radiologic technique and as leaders in their profession.* (emphasis mine) (Crowley, 1948, p.28).

Throughout the 1950's, advances were made in the standardization of training and certification for Radiation Therapists, who continue to be members of the national organization. Nuclear Medicine national certification exams were

added in the late 60's as well. Magnetic Resonance was added as an accredited program in 1999.

The development of a Fellowship Committee in the late 50's, which was changed to the Post-Graduate Education Committee in 1964, indicates the early recognition for continuing education throughout the technologists' working career. In 1968, the national membership accepted Alberta's Advanced Certification program for the national AC designation, a program that is only now in the first decade of the 21st century, being phased out. Continuing education opportunities for radiation workers have been offered at the local, provincial and national level through in-service training, correspondence courses, and specialty certifications (Management Studies Certificate 1988, Breast Imaging Certificate 1997, CT Certificate 2002). (CAMRT, 2007)

CASE STUDY – BACKGROUND

The healthcare workforce throughout the developed countries consists of professionals trained through on-the-job training, certificate or diploma programs, three year applied degree or four year baccalaureate degrees, usually with certification or registration exam requirements through state, province or country to enable the graduate to be employed. Graduates are from nursing programs and allied healthcare professions such as medical laboratory or medical radiation technologists, occupational-, physio- and speech therapists, pharmacists, and a myriad of other disciplines.

Credential granting status for Canadian training programs is typically achieved through an evaluation and accreditation process headed by the Canadian Medical Association (CMA) Conjoint Committee on Accreditation, whereby peers and government representatives review all aspects of the program, including successful graduate statistics. Curriculum, interview input from stakeholder representatives, and documentation of each aspect of the training program, both theoretical education and clinical components, are surveyed to ensure compliance with the “entry to practice” pre-requisites for the individual graduates.

The accreditation process of the training programs does not, however, determine the specific courses or methods of training. The training programs must comply with the agreed Standards of Practice and Scope of Practice for

their particular discipline, as well as any specific proficiencies required as an entry-to-practice health care worker.

In Canada, the main stakeholders for healthcare worker training are health-care facilities and clinical partners, educational facilities, (programs and educators) and the provincial government departments of health and education. The clinical facilities provide the forum for practical experience and application of theoretical and laboratory based knowledge with real scenarios, real patients/clients, and real health issues; nothing can replace this hands-on practicum, although simulations help to prepare the students for the realities of the “workplace.” (Highly technical and sensitive ‘simulation mannequins’ are used extensively in training programs for paramedics, nurses and physicians.) These clinical facilities are also employers to the new graduates, and as such provide a “job interview” type of atmosphere for the students to challenge.

The educational facilities provide the curriculum, in compliance with required knowledge and practice for each healthcare discipline, and the educators who help facilitate and evaluate the students’ progress. Each health care program bases their curriculum on the discipline-specific required skills (or competencies), needs assessment studies of what stakeholders feel should be priorities from those health care workers, and CMA requirements for adherence to accepted protocols and standards. Curriculum must be reviewed and revised in a timely manner to maintain up to date levels of training, and the educators must also maintain their own levels of knowledge and practical experience as their discipline requires.

The government of each Canadian province has departments of health and of education, and each is responsible for the allotment of funding for the healthcare facilities, the educational facilities, and the students themselves through student loans, bursaries and the like. American states, Australian states, and Britain have similar stakeholder divisions. The partnerships between education and healthcare facilities enables demands of each to be involved in dialogue, to be identified and hopefully achieved to the satisfaction of each. The type and length of training are not solely the responsibility of one facility or the other, so a degree versus diploma debate cannot be the decision of an individual partner. Job requirements, changes to discipline roles and expectations, expanded roles as per healthcare facilities, and legal changes within acceptable health codes require ongoing discussion and communication for the major stakeholders.

Historically, most healthcare disciplines have gone through the same evolution of training practices and credentialing, starting with on-the-job training with an experienced professional (apprenticeship), adding in theory and more formalized training over time. Each profession has formulated distinct job descriptions and requirements, evolving into specific skills that demand a certain level of displayed proficiency. Each discipline has some sort of regulated criteria to allow those who are trained to a certain standard to work in that field, whether through government or professional association affiliation.

The level of education and training required for each healthcare discipline, as alluded to in the introduction, depends on such factors as the needs of the

community to be served, political and socio-economic influences, supply and demand of that profession, as well as the influence of decisions made by other healthcare disciplines with similar factors. For example, decisions made by Canadian nursing associations or unions, by the proportionately larger population of nurses to other healthcare disciplines, often impact other healthcare professions in setting wage trends and educational requirements.

Although some health care professions have required a baccalaureate degree as entry-to-practice for many decades, such as pharmacists and speech- and physical therapists, many other disciplines such as respiratory therapists, medical radiation technologists and medical laboratory technologists are attempting to determine if a similar requirement is the best entry-to-practice training. Some disciplines, such as pharmacy, are considering the higher level of graduate degrees, both masters and doctorate levels, as entry-to-practice (CPJ/RPC 2006). Any changes must be assessed to best serve the interests of both the patients and the overall healthcare system.

Considerations of specialty areas of practice, such as Registered Nurses who work as a Public Health Nurse, senior management/supervisory positions in all health-care disciplines, and requirements for educators' credentials by training facilities, have driven the desire for higher levels of education and training to better enable the individual to perform their 'specialty ~~as~~ entry-to-practice'. Most of these specialty areas focus on theory and critical thinking skills, and less on practical skills, as these position opportunities are usually offered to healthcare professionals who already have some practical experience in their field.

Associate or baccalaureate degrees, or advanced certification credentials have met these demands for years, but have not been the norm for entry-to-practice for everyone within that healthcare discipline.

At the 2004 Annual Conference of the Federal/Provincial/Territorial Ministers of Health, in an effort to address national health care issues, a ten-year plan was developed to strengthen health care that included Health Canada and the Advisory Committee on Health Delivery and Human Resources placing a moratorium on approval of changes to entry-to-practice credentials for medical and health professions. The intent of the moratorium is to establish a new approach for assessing proposals for change, specifically to ensure the highest quality of health care in Canada while addressing supply and demand issues.

Health care issues that are common for all health care professions include staff shortages, a two-tiered system of human resources in the labour market with resulting compensation expectations when both diploma and baccalaureate credentials are possible as entry-to-practice, and the need for curricula to reflect common discipline practices or competencies (Koleba, T., Marin, J., Jewsson, P., 2006, p.48). The desire for timely, high quality health care in Canada is an ongoing issue for Health Ministers.

Staff shortages throughout the health care professions are reflected in recruitment and retention issues, as recorded in the CIHI document Health Human Resources in Canada, referring specifically to nursing. Statistics show older graduates from nursing programs, which may be due to longer training programs; other training programs that have changed entrance to practice

credentials from 2 year to 3 or 4 year programs are also seeing shortages, such as MRTs who train in baccalaureate rather than diploma programs, with current severe shortages in both Ontario and B.C. Female-dominated professions in healthcare also impact staff-shortages, as year-long maternity leaves are currently the national norm. The common practice of retiring, then returning to work part-time or casual ("double-dipping" into both pension funds and employment), does not alleviate the critical shortage of full-time staff. Suggestions made in the Health Human Resources in Canada report (p.21) to recruit and retain younger nursing staff include creating professional development opportunities and offering incentives to new graduates. These suggestions are from Edmonton's Capital Health Region, but are certainly being applied elsewhere in Canada and in other health care professions.

Current entry–to-practice trends in Canada:

Medical Laboratory Sciences – 2 to 3 years post-secondary education (CIHI 2006)

Medical Radiation Technologists – 2 to 4 years post-secondary education (CIHI 2006)

Nurse – dual degree (applied plus baccalaureate) or higher degree requirements (Nurse Educator 2005, Nurse Educator Perspective 2002)

Nurse Practitioner – RN, baccalaureate degree or graduate degree to practice, plus clinical experience and/or nurse practitioner program/certificate (CIHI 2006)

Pharmacists – 4 to 5 years post-secondary education (CIHI 2006); post-graduate upgrading and specialty training offered for graduate and doctorate level

Respiratory Therapy – associate or advanced degrees (Respiratory Care Clinics of North America 2005)

Alternative (unconventional) medicine (includes acupuncturists, homeopaths, and chiropractors) – varying program lengths; no formalized inclusion in schools of medicine for holistic, patient-centered focus, but most common for geriatric centers of health care (Scientific Review of Alternative Medicine 2005).

CASE STUDY – MEDICAL RADIATION TECHNOLOGISTS

In the Introduction to this paper, I referred to Sister Crowley's historic account of training and credentialing of MRTs in Canada up to 1948, and the CAMRT updates since then. It is obvious to me that so much has remained unchanged in the past sixty years, such as the focus on the patient care and management, collaboration with other health care disciplines to ensure patient care, and education directed towards the patient and the public. In fact, the current CAMRT Scope of Practice acknowledges the same role for the MRT to be essential health-care providers, professionals who "share common patient care values, including compassion, safety, and credibility as well as the professional values of organizational skills, interpersonal skills, effective communication, healthy work environment and work-life balance" (CAMRT Scope of Practice, 2007, p.1).

Another aspect that remains unchanged is the focus on the availability of appropriate training in the form of both pre-service and post-graduate educational and credentialing opportunities. Sister Crowley referred to the requirement of a high quality scientific-based education, awareness of adjusting to the ever-changing aspects of the technical profession, and a desire to go beyond the minimum in all things, reflecting the current CAMRT Scope of Practice. Besides discipline specific courses, the CAMRT is a proponent of ensuring that critical thinking skills, problem solving, and the value of life-long learning be included in the entry-to-practice educational and technical skills.

Life-long learning, a reflection of the educational philosophy of Whitehead, as well as the life-balance that Ivan Illich wrote of in *Medical Nemesis,* is supported in all four of the medical radiation disciplines of the CAMRT (nuclear medicine, radiography, radiation therapy and magnetic resonance technology). Each discipline is a proponent of continuing professional development opportunities to ensure ongoing cognitive, affective and clinical competence (CAMRT Scope of Practice) through CAMRT distance courses and specialty certifications, through post-graduate degree opportunities, and through local in-service and on-the-job skill certifications for advanced practices as they emerge.

The Standards of Practice for MRTs emphasize the accountability of each technologist as they provide the optimum in all aspects of patient healthcare, education and treatment management, with the understanding that such health care is the result of pre-service training plus ~~as~~ post-registration or post-licensing in the form of ongoing professional development. In order to adapt to the changing healthcare needs of the aging baby boomers as they become an increasing geriatric population, to address the publics' increasing knowledge level of their own health issues and treatment options, and to maintain patient information systems as they become available and in common use, are just a few of the on-going professional development requirement challenges for the technologists.

Current health care practices also emphasize the interdisciplinary aspect of patient care and management, and as such, the requirements of entry-level technologists to understand the collaborative approach. The new grad must be

prepared to understand the role of each discipline, and their place in the patients' care. Interpersonal skills, including critical thinking skills, are necessary as entry-to-practice requirements, and may be developed through such curriculum components as experiential and inter-professional opportunities, communication, leadership and team-building development, and exercises in decision-making.

Current requirements for MRT skills are reflected in the Competency Profile for each discipline, made up of specific critical tasks as per national surveys of expected skills at entry-level practice. Proficiency is expected in each critical task; evaluation of the students' proficiency must be demonstrated to professional standards, and be reflected in the successful challenge of the national registration exams. The CAMRT Competency profiles for each medical radiation discipline are reviewed and updated to reflect the ongoing technical changes, as well as the changing roles that each discipline is faced with as the communities that they serve change. Technical changes include the digitization of all imaging modalities with the subsequent computerized storage and retrieval systems for imaging, reports and patient information systems. Changing roles over the past decade or so include technologists performing intravenous injections and drug administration, participating in "Red Dot" reviews of emergency patients' radiological abnormalities, and an ever-increasing role in performing Gastrointestinal fluoroscopic procedures.

As the Competency Profiles for each discipline are updated, obsolete practices are discarded and new practices are included. In response to this changing profile, training facilities must also remain current and pro-active in the

knowledge and skill-levels provided to their entry-level graduates, with appropriate evaluation and demonstration of competence. For many training programs in Canada, the choice to grant a 2 year diploma and/or an Associate or Baccalaureate degree has become a reality over the last decade or so, combining the discipline-specific skills with clinical experience and the potential for ongoing studies involving research, critical thinking, and inter-professional health care.

The Debate over Degree As Entry-to-Practice for MRTs in Canada

In 1987, the Canadian Association of Medical Radiation Technologists (CAMRT; name changed from CSRT in 1978 to include the disciplines of Radiological Technologist, Radiation Therapist and Nuclear Medicine Technologist), through a co-sponsored program with Western Michigan University, offered working Medical Radiation Technologists the opportunity to achieve a Bachelor of Science in Health Studies Degree (CAMRT, 2007). Since then, opportunities to achieve associate or baccalaureate degrees pertaining to Medical Radiation Sciences have been available to Canadian technologists through distance courses from various locations the United States, Australia (Charles Sturt University-New South Wales through affiliation with the Michener Institute, Toronto) and Britain (e.g. Anglia Ruskin University-Cambridge). Some Canadian technical institutions have been able to offer post-diploma degrees, such as British Columbia Institute of Technology, Michener Institute, and Athabasca University.

In 1995, at the joint CAR-CAMRT annual conference (Canadian Radiologists Association and the Canadian Association of Medical Radiation Technologists) the CAMRT membership set a goal to have a diagnostic imaging and/or radiation therapy degree as entry-to-practice criterion by the year 2005. Rationale for this move as recorded by Richard Lauzon in the August 1999 edition of the Canadian Journal of Medical Radiation Technology, includes: enhanced patient care through more highly trained and educated technologists; liberal arts/humanities courses in combination with technological skill training to better prepare the technologists to perform their tasks, especially in remote locations; additional education would more likely enhance patient communication; the more varied training background gained through the more lengthy degree would produce a technologist able to do many functions, so would save money on specialists; graduate flexibility for potential supervisory positions, as these generally require degree or graduate-degree level qualifications; reciprocity with countries who now pursue entry-to-practice criterion of associate or baccalaureate degrees (entry-to-practice in UK and Australia/New Zealand since 1992, and The United States since the mid 1990s) would be restored; and soft, non-clinical skills acquired through a degree would encourage technologists to initiate such activities as research and published papers (p.136).

In 2001, Mr. Alain Cromp presented a lecture to the Annual General Conference of the CAMRT, echoing some of the degree rationale mentioned above, and adding encouragement to the professionalism of the Canadian MRTs

as follows: to better reflect the expanding role of the technologist and the technological revolution, to meet new requirements and opportunities, to acquire new skills to move forward in the changing healthcare systems of Canada, leading the way rather than following behind other professions. (Cromp, 2001, p.9). Mr. Cromp also encouraged the practice of continuing education to maintain competence in the rapidly changing technical and scientific fields that dictate to the MRT profession.

The necessity of health-care professions to constantly evaluate their roles and training requirements ensures accountability to the public 'client'. However, studies of degree versus diploma educated healthcare workers, specifically nurses, consistently report that there is no significant improvement in the performance of day-to-day duties and skills by degree credentialed nurses over diploma nurses, in spite of additional experiential critical thinking skills training (ARRT 2000 Annual Report, p.28).

Post-graduate Training

The dilemma for me then, is why bother with an additional 2 years of education, at significant cost to the student and/or public, if the public will not see a change for the better in their care? There are already shortages of qualified health care workers across Canada, with further shortages if longer programs mean delays in graduating professionals. What is the benefit to the profession if a two-tiered system of registered technologists exists with no difference in the scope of practice of each?

This question is not as simple as addressing the patients' needs by entry-level technologists, but goes beyond the new graduates' to the opportunities to participate in advanced practice or expanded roles as an MRT. The argument by both Whitehead and Illich for a balanced education and work habits, along with life-long learning, leads to the discussion of extended, expanded or advanced roles of health care workers, and MRTs in particular, and whether pre-service or post-graduate credentials fit these training requirements.

The CAMRT has offered additional specialty certification and training by distance for many years, including Advanced Certification for the disciplines equivalent to a post-diploma Associate degree (now discontinued), and specialties such as CT Imaging Certification, Breast Imaging Specialty Certification, and Certificate in Management Studies. Although a recent CAMRT Membership Survey indicated that less than 25% of the respondents hold a Bachelor's degree, and 50% do not feel that a degree should be a requirement for entry-level technologists, 88% strongly support a professional development requirement for the maintenance of competencies; over 60% of respondents perform front-line patient care and nearly 40% work in specialized areas where additional training and certifications may be required (CAMRT Membership Survey Highlights, 2007).

Post-certification and registration educational opportunities are not limited to achieving 'add-on' degrees to diploma grads, or specialty certificates to technologists working in specialty areas. In-service training for technologists who may be expected to perform designated medical functions are often offered

through the place of employment, as are ongoing health professional criteria such as certification in CPR, First Aid, and Patient Transfer Lifting and Repositioning (TLR) techniques. Many skills are learned on-site through peer teaching, such as image and patient retrieval computer system use (e.g. RIS, PACS), as well as the services of equipment systems specialists when new or upgraded equipment is installed. Each technologist is expected to familiarize themselves with updates, and to take advantage of in-services as they are provided.

The changing health care system has been discussed, with emphasis on collaborative, interdisciplinary health-care teams. Many health delivery institutions offer courses and opportunities for dialogue among various disciplines, promoting a holistic attitude, and patients who gain from the critical thinking skills and team approach to their care.

Expanded or advanced practice statistics, as per CAMRT Membership Survey Highlights 2007, indicates that 27% of respondents perform contrast media injections, and 10% currently perform Barium Enema studies, Gastrointestinal studies, and image management. The CAMRT is requesting additional information from its members in a CAMRT Advanced Practice Survey, to be completed by the members by December 4, 2007 (this information is not available at the time of writing). According to the CAMRT Scope of Practice webpage information (2007), advanced practice and emerging roles for medical radiation technologists may include any/all of the following: medical

research/clinical trials, PACS, Teleradiology, 3D Imaging, CT/PET Imaging, Bone Densitometry, Synchrotron radiation, Fusion Imaging, Molecular Imaging.

Internationally, MRT trends include advanced practice/expanded role opportunities such as: sonography reporting since the mid 1970's; IV injections by Nuclear Medicine Technologists since the mid 1980's; and since 1990's, IV injections for contrast, chemical cardiac stimulators, analgesia, lasix and laxatives by radiographers, as well as plain film reading/reporting, Barium Enema management by radiographers, and "red dotting" in Britain (Hogg, 2004, p.6). Professor Hogg (2004) also describes complex procedures that British radiographers are consistently performing as advanced practices, such as sialography, peripheral venography, colonoscopy, peripheral angiography, therapeautic procedures such as patient counseling, pre-stenting guide-wire insertion, assessment and review of breast cancer patients (p.7). In 1996, the American Society of Radiologic Technologists sought regulatory endorsement for technologists performing basic fluoroscopic procedures (*Initiatives for the Millenium*, 1997, 1.7)

The "Red Dot" system of reporting, commonly in use in Britain since the early 1970's, and widely advocated for an advanced radiographers' role, is a system of a radiographer 'reporting' radiological abnormalities on the images of emergency patients by placing an adhesive red dot sticker on the film. The presence of the red dot would alert the attending emergency physician to the presence of an abnormality that would then need further investigation.

Expanded Scope of Practice in Canada

As early as 1974, a CAMRT Ad Hoc Committee was struck to investigate the feasibility of developing a Radiologist Assistants program. (CAMRT, 2007) Such programs currently exist in Great Britain and The United States.

Concurrent with the ever-increasing CAMRT members' requests for more Continuing Education courses and more Professional Development opportunities in the late 1990s, were inquiries regarding expanded roles for medical radiation technologists in Canada. Collaboration on this topic between CAMRT representatives and the Canadian Association of Radiologists (CAR) began in 2001 with tentative discussions. Background papers researched and written by provincial members to support expanded roles had the support of the CAMRT, which, as the national supplier of educational material for continuing education and certification, increased its selection of courses to promote advancement opportunities. (Lauzon, 2002, p.2)

The CAMRT Committee on Professional Practices reported in the January/February CAMRT Newsletter of 2004 that a list of potential areas of expanded roles was on the rise, as was the interest in such 'enhanced duties'. This report noted that most provinces designated such duties as "Delegated Medical Acts" (Matheson, 2004, p.4), while Quebec had introduced Bill 90 in 2003 that "removed the MRT from the jurisdiction of the radiologist and allows MRT's to expand their role within a legal framework." Matheson (2004) reports that the expanded roles require adequate training as well as maintenance of these new skills, which range from patient care tasks, to 'radiologist assistant'

tasks during procedures, to research and training roles. The Committee on Professional Practices was to continue to keep members of the CAMRT and its Board of Directors apprised of further developments, while developing guidelines to reflect the changes.

In 2006, a joint task force was launched with CAMRT and the Canadian Association of Radiologists (CAR) to "identify ways to establish expanded roles and/or advanced practice. (Shields, 2006, p.2). Provincial associations have moved forward with specific advanced practice, such as "Clinical Specialist in Radiation Therapy" in Ontario, envisioned as "an advanced practice role that is founded on a masters degree" (Shields, 2006, p.2).

The future of the profession is being addressed at the time of writing of this paper through a survey available to CAMRT members to help determine a national initiative on advanced practice. The survey is meant to "capture the current state of advanced practice nationally" (Shields, 2007, p.3).

Internationally, radiographers continue to pursue advanced skills and role development. Documentation from *SYNERGY* and *SYNERGY News*, both newsletters of the British Society of Radiographers, as well as *The Radiographer*, the newsletter of the Australian Institute of Radiography, and newsletters of the American Registry of Radiologic Technologists such as *Annual Report of Registered Technologists,* have articles of ongoing discussions regarding advanced roles and practices, and how best to train and credential technologists to competently perform these roles. Radiographers reporting various imaging modalities is a common theme in these articles, for general radiography and

emergency ‘red dot’ reporting, as well as Gastrointestinal studies and specialties such as CT (*The Radiographer* articles in 2004 and 2006, Elton, 2007). Also of interest are programmes such as Radiologist Assistant, Advanced Practitioner or Specialist designations in areas such as Gastrointestinal fluoroscopic studies and Mammography, and Assistant Practitioners who may ladder to a radiography degree (*SYNERGY* News 2006 and 2007).

Some of the Specialty reporting, as well as the Radiologist Assistant’s programme, has gained popularity in Britain and the United States to help address the shortage of both radiologists and radiographers, and to stimulate advancement within the profession of radiographer. Dr Paul Elton, in the July 2007 issue of *SYNERGY*, describes the opportunity for radiographers to report CT head studies as having multiple positive outcomes, including the following: helps to meet the needs of patient-centered services by a multi-professional team; provides radiographers with a necessary skill mix and potential role advancement, with subsequent increased job satisfaction; career path advancement with potential increase in income; increased staff retention; and increased interest in the mix of cases to be reported, with stimulation within the role to promote participation in additional roles such as research (Elton, 2007, p.4).

Criteria for Advanced Roles

In the Summer 2005 issue of *The Canadian Journal of Medical Radiation Technology*, Amanda Bolderston (2005) makes a case for the Advanced Practice of Radiation Therapists in Ontario, one of the four disciplines of medical radiation

technologists in Canada. The issues regarding Advanced Practice (AP) that she raises, easily applied to the other three MRT disciplines as well, include the following: required education and skills, including the need for research skills; debatable benefits to patient care, as the new tasks may take experienced technologists away from one-on-one patient care; the necessity for additional clinical experience; the potential for "professional jealousy" between AP techs and those who choose to not pursue such a role; variable availability of AP opportunities across the province (and by extension to other MRTs, the country) (Bolderston, 2005, p. 8). Ms. Bolderston (2005) also touches on the Scope of Practice and the Professional Image issues that I have mentioned previously as they apply to medical radiation technologists.

Recommendations made by Ms. Bolderston (2005) regarding Radiation Therapists in Advanced Practice roles in Ontario may be made for all MRT disciplines:

1. Framework and Support – national framework needed to provide structure, preceptorship and mentorship to AP areas.
2. Reimbursement Issues – development of fee structures for additional responsibilities taken on.
3. Professional Confidence – moving beyond the normal, comfortable roles and barriers to roles that are deemed both legal and within scope of practice (as per reference to the United Kingdom's 4-tier system).
4. Education – pressing need for "relevant, locally accessible education" (Bolderston, 2005, p.13).

5. Evaluation – legal and ethical responsibilities require monitoring of "clinical, functional and satisfaction outcomes" (Bolderston, 2005, p.13)

The 4-tiered model for Advanced Practice is more fully described by Nicole Harnett (2007) in *The Canadian Journal of Medical Radiation Technology*. The UK 4-tiered model provides both an opportunity for career advancement, as well as being a recruitment tool from both the student practitioner and radiographer assistant programs. From either of these pools, the radiographer gains credentials through state registration, and may advance to be a preceptored Practitioner, to Specialist or Advanced roles, to the final tier as a Consultant Practitioner (Harnett, 2007, p.57). Ms. Harnett refers to the AP4RT project in Ontario that came up with a similar tiered system of radiographers reaching an Advanced Practice role; although she also writes from the viewpoint as a radiation therapist, the other 3 disciplines of the medical radiation technologies (radiological technologists, nuclear medicine technologists, and magnetic resonance technologists) are similarly pursuing advanced practice issues.

According to Ms. Harnett's (2007) article, Advanced Practice goes beyond Scope of Practice skills to the application of advanced knowledge, judgment and specialized tasks in the performance of new roles (Harnett, 2007, p.57). She also makes reference to the health care team, and the potential of AP roles to take over tasks previously performed by others within the team. Opportunities for research and for educating fellow health care professionals, including professional development, are to be embraced for those who pursue

AP. Ultimately, both the patients' care and the technologists' profession are to be 'advanced'.

CONCLUSION

I would like to include two parts in my conclusion of this paper: a summary of the issues put forth, and recommendations that I feel arise from the documentation that is referenced. Ultimately, there can be no hard and fast rules for global health care training; the patients' needs must always remain at the forefront of all decisions.

Summary

In summary, health care delivery has evolved over the past half century, in large part due to strategies initiated post-war(s). In order to incorporate the changing techniques and skills developed through research and innovative technology, the stake holders in healthcare must continually assess and review what the patients' needs are, and how best to provide service in a timely and efficient way.

The delivery of healthcare on a global scale has become big business, with soaring costs of new and innovative care for a myriad of diseases and injuries. The disease epidemics of third world countries echo the link between health and poverty that international organizations such as the World Health Organization attempt to monitor, and creatively address. Research dollars are aligned with the development of new drugs, equipment, and technology to attempt to keep pace with the growing needs of the public. In response to these

new developments, especially in technology and equipment, the education and training of healthcare workers must also continue to evolve.

A large part of every health care budget is dedicated to paying for the staff that provides the hands-on and supervisory care of the patients. As the economics of healthcare facilities becomes dictated by cost-recovery tactics, and as supervisory roles are taken on by staff with higher credentials (but often little to no hands-on experience), the front-line healthcare worker, of necessity must be well-versed in a team approach to the patients' care. Interdisciplinary, holistic services will better meet the needs of the patient, who is more knowledgeable about their health condition and treatment options.

Staff shortages also dictate the evolving role of healthcare workers, as specialty personnel are stretched to the limit, both humanly and economically. Traditional physicians' roles are being adapted by such positions as Nurse Practitioners, Registered Nurses who take additional training to perform roles such as patient assessment, ordering diagnostic services, and dispensing various medications. Other roles that have been the domain of a particular discipline, such as nursing staff providing patient counseling and prep for diagnostic procedures, are being taken on by professions such as medical radiation technologists, and Pharmacists are becoming more involved with patient counseling as medications are being dispensed.

To meet the challenges of new roles, education and training trends must change. Each health care discipline has established skills and tasks that represent competent patient care. As new roles are explored and taken on, they

will be incorporated into the required practice and skills of the discipline, as an entry-to-practice skill, or as an add-on skill that requires post-graduate education and credentialing, such as certificates or degrees. Pre-service training in most healthcare professions continues to undergo scrutiny, as stakeholders attempt to determine the best qualifications required for entry-level practice.

Health care facility managers consistently support the skills and competencies of the entry-level medical radiation technologist graduates from diploma programs, yet argue for the advanced roles and expanded practices as well. I believe that the shift in expanded roles will change competencies for these disciplines, to the point that a two year diploma will not afford enough time to cover new material well enough, or to develop the newly required skills to entry-level competence. The entry-level practices of critical thinking and inter-discipline team-work may warrant more maturity than a university course credit, but the fact remains that university educated and credentialed healthcare workers tend to be more well-rounded as individuals, and thus better able to interact with other health care team workers to focus on the patients' best interests. Studies in ethics, legal issues, and humanities in general are often not part of the diploma curriculum due to time constraints, yet are important –even vital- aspects of competent patient care.

Not every new grad will want to pursue advanced practice or extended roles, and so should have the option of gaining experience in more familiar settings. These individuals are still to be encouraged to develop life-long learning habits, and their participation in training students within their discipline, or to

interact with other disciplines in the overall patient care plan will provide experience and peer teaching opportunities.

Recommendations

1. Continued monitoring of stakeholder needs, with patient care the priority.
2. Emphasis on interdisciplinary training to provide holistic health care.
3. Recognize the varying needs for various job locations e.g. medical clinic versus rural hospital versus urban training hospital versus research centre.
4. Post-grad certification and training needs standardized and made available through employers/professional development opportunities.
5. Opportunities for expanded roles or advanced practice as per the individuals' motivation (status, position, financial gain).
6. Lifelong learning adapted in each health care workers' personal 'holistic' body, mind and spirit.

If trends toward advanced practice and expanded roles are to be the norm, as these tasks become part of the critical competencies for the profession, they must become part of the basic training required for entry-to-practice for that discipline. At that time a much longer training program of either associate or baccalaureate degree would probably be recognized, through needs assessment, as the requirement for entry-to-practice. Until these needs are demonstrated, both diploma and degree training meet the competency profiles

for health care workers in Canada, specifically the medical radiation technologists.

At the time of writing, the CAMRT is seeking feedback from its members regarding advanced practice and expanded roles that MRTs currently participate in, and what is anticipated for such needs in the near future. Until the results of this survey are collated and available to stakeholders, I feel that recommendations for major changes in the entry-to-practice requirement of a degree for all MRT disciplines is pre-mature.

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