Certification of international allied professionals in cardiac pacing and electrophysiology: Opportunities?

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Allied professionals with diverse backgrounds and training are essential to the delivery of quality care to patients with heart rhythm disorders. There is a growing worldwide demand for defined educational requirements and certification pathways to ensure uniformity of knowledge and competence of those practicing in electrophysiology. The present viewpoint article reviews the current deficiencies of education and training, and advocates for the establishment of certification pathways by professional societies.

Key Words: *Allied professionals; Certification; Credentialing; Electrophysiology; Pacing*

La certification des professionnels paramédicaux en entraînement cardiaque et en électrophysiologie : Des possibilités ?

Les professionnels paramédicaux aux expériences et aux formations diversifiées sont essentiels pour la prestation de soins de qualité aux patients ayant des troubles du rythme cardiaque. La demande est croissante dans le monde pour définir les exigences de formation et établir des voies de certification afin de garantir l'uniformité des connaissances et des compétences chez les personnes qui exercent en électrophysiologie. Le présent point de vue analyse les lacunes actuelles en matière d'éducation et de formation et préconise la mise en œuvre de voies de certification par des sociétés professionnelles.

The life so short, the craft so long to learn

—Hippocrates

EMERGENCE OF CARDIAC PACING AND ELECTROPHYSIOLOGY AS A SUBSPECIALTY

One of the early crucial developments in cardiac pacing took place in the garage of Earl Bakken, a young biomedical engineer who was commissioned by a surgeon to build a wearable pacemaker in 1957 (1). Likewise, one of the early milestones in invasive cardiology was achieved by Werner Forssmann, a radiologist who experimented with self-catheterization in 1929 (2). These monumental discoveries sparked the explosive emergence and evolution of a unique subspecialty of electrophysiology that entails both device management and clinical electrophysiology. The rapid achievement of sophisticated technological innovations and their application in increasingly complex patient populations challenged physicians and allied professionals to continuously update their knowledge and skills.

ROLE OF ALLIED PROFESSIONALS

A diverse group of allied professionals (technologists, nurses and engineers) are central to the delivery of quality care in heart rhythm disorder management. Services provided by these professionals include transtelephonic recording of arrhythmias, Holter monitoring, clinical assessment, patient education and counselling, technical support during electrophysiological procedures, device implant operations, follow-up in device clinics, clinical research, and support for manufacturer-driven research and product development. Each individual's unique and specialized skills contribute to the common goal of providing safe and optimal care of the arrhythmic patient population. These roles are performed under varying degrees of physician supervision (direct, indirect or independent) depending on the criticality of the tasks and the background training of the allied professionals. Unlike other subspecialties that might incorporate one specific group of allied professionals, such as nursing within critical care or technologists within echocardiography, electrophysiology

involves allied professionals from multiple disciplines. As such, defining education, training and certification in electrophysiology is uniquely challenging.

EDUCATION, TRAINING, CAREER PATHWAY

In Canada and the United States (US), most technologists and nurses enter the electrophysiology field through on-the-job training. The most common transitions or cross-trainings are from the catheterization laboratory, electrocardiography, telemetry unit, emergency department, ambulatory clinic or critical care unit. In most cases, the minimum educational requirement to enter electrophysiology is a baccalaureate or undergraduate degree. It is not uncommon for many of these technologists or nurses to transition to industry after a few years in clinical electrophysiology.

Nursing

In both Canada and the US, nurses constitute the predominant group of allied professionals involved in all aspects of electrophysiology including conscious sedation, scrubbed procedural assistance, operation of electrophysiological equipment, device implant testing, device clinical follow-up, and patient education and counselling.

Advanced practice nursing

Graduate level nursing education is a mandatory requirement for advanced practice nursing. The American model of advanced practice nursing incorporates four distinct roles that extend the scope of nursing practice through the application of advanced nursing knowledge: nurse practitioner, nurse midwife, clinical nurse specialist and nurse anesthetist (3-6). Additional roles are continuously evolving and we may see a clearly defined move into arrhythmia management in the future. In clinical electrophysiology, nurse practitioners work autonomously as part of the health care team to manage patients in the arrhythmia clinic, as well as pre- and postprocedural care in relation to catheter ablation or device implantation. However, at the present time, there is no standardized formal curriculum or certification that accords recognition to the specialized practice in clinical electrophysiology.

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Technologist

In the US, cardiovascular technologists working in the catheterization laboratory are commonly credentialed as Registered Cardiovascular Invasive Specialists and, more recently, as Registered Cardiac Electrophysiology Specialists for those who work specifically in the electrophysiology laboratory. These technologists provide scrubbed procedural assistance, and operate electrophysiological recording and mapping systems, stimulators and ablation equipment (7). In many Asia-Pacific countries, technologists do not have an established role in the electrophysiology laboratory or device clinic. These environments are typically managed by the nursing staff, frequently with the help of industry-employed allied professionals (IEAPs), such as clinical or sales representatives, to provide technical support. The Heart Rhythm Society provided an updated policy guideline on the clinical role of IEAPs in 2008 (8). According to this document, these individuals should only provide technical assistance on manufacturer-specific products that they represent. They may work only under the direct supervision of the responsible physician. Concerns arising from substantial reliance on IEAPs include lack of continuity of care, suboptimal patient education and counselling, inefficient clinic function, and issues of liability and accountability.

Physician assistants

This profession began in the US military in the 1960s as a response to a geographical shortage of physicians. Physician assistants (PAs) are trained through a graduate-level university program and perform tasks such as history taking, physical examination, diagnostic tests and some types of treatment under direct physician supervision. This is an attractive career option for those who are interested in medicine but cannot afford the expense or the long training pathway of going through medical school. In the US, PAs often assist with catheter ablations and device implants. They also perform patient assessment, diagnosis and management including writing medical prescriptions. There are now more than 63,000 practicing PAs from 139 accredited programs in the US. The Canadian Medical Association recognized PA as a health profession in 2003. In 2007, the Ontario Ministry of Health and Long-Term Care included PAs in its health care system (9). PAs can pursue subspecialty training in postgraduate programs such as surgery, orthopedics or emergency medicine. However, a subspecialty program in clinical electrophysiology is not currently available.

Clearly, there is a consistent lack of a formal educational curriculum in electrophysiology, regardless of the allied professional's background. Defining a curriculum is essential to ensure that everyone in the field meets a uniform knowledge base for entry to practice. In the US, the Heart Rhythm Society issued a policy statement in 2003 that defined the core knowledge or standards of professional practice for allied professionals in pacing and electrophysiology (10).

In general, a cardiovascular or health care background is a prerequisite to entry in the field; in practice, however, hiring may sometimes occur despite a lack of previous health care experience. Industry-sponsored educational programs serve as the main supplement to on-the-job training. New staff members are highly encouraged to take specialty or certification examinations, but in most cases, there is no incentive for taking these examinations. These issues are likely the same in many countries around the world.

WHY IS CERTIFICATION IMPORTANT?

Specialty certification is a formal recognition process for individuals to demonstrate that they have met predefined and standardized criteria of proficiency and knowledge in an area of expertise. The process is comprised of the individual meeting eligibility criteria in terms of education, duration of clinical experience and successful completion of the certifying examination. To maintain certification, the individual must achieve the required number of continuing education hours and/or re-examination. The value of specialty certification for the allied professional is multitude, including a sense of pride and accomplishment, enhanced professional credibility and recognition, and

increased clinical competence. Above all, certification signifies an individual's commitment to excellence.

Certification is also important from the perspectives of the employer and the public because it is a way to ensure that competent people work within the specialty. However, unlike licensure, which is a mandatory process within a regulated profession that recognizes and grants the right for an individual to practice, certification is often a voluntary process. Certification also differs from registration, which is a listing of registered practitioners maintained either by a registry body or by a professional organization with or without any educational or competency requirements.

WHAT ARE THE BARRIERS AND CHALLENGES TO CERTIFICATION?

Cost is one of the most significant barriers to specialty certification (11). Other important obstacles include fear of taking tests, fear of failure, lack of organizational recognition or reward for achieving certification, the time necessary to prepare for certification examinations, and maintenance of continuing education (11). The lack of a formal educational program, coupled with the diversity of allied professionals in this field, makes a uniform certification process for all types of stakeholders uniquely daunting. The first crucial step is for the various professional organizations to promote, support and recognize specialty certification in electrophysiology.

Such is the case for the Heart Rhythm Society. One of the Society's strategic goals is to promote development of electrophysiology education and certification. Similarly, the Italian Society of Arrhythmology and Cardiac Pacing is establishing a formal educational program and certification examination to validate the competency of allied professionals in the field of electrophysiology. Recently, the Japanese Ministry of Health mandated that all allied health professionals in the medical device industry with direct patient contact must meet national certification requirements. The Canadian Society of Cardiology Technologists, with its provincial chapters, is a national association affiliated with the Canadian Cardiovascular Society that is lobbying for professional regulation under the Regulated Health Professions Act. The Registered Cardiology Technologist designation includes those who assist in device follow-up clinics and cardiac diagnostic procedures. The minimum standards for entry to practice are defined in the Canadian Society of Cardiology Technologists' National Occupational Competency Profile, which specifies the level of proficiency or the expected knowledge outcome from an accredited college or educational program in this field (12). Regulation of a profession by the government, college or a self-regulatory body restricts entry to practice only to those who meet predefined criteria of education, professional qualifications, completion of a licensure examination and maintenance of competence. Furthermore, the regulatory body has the authority to handle disciplinary issues that fall within its jurisdiction.

INTERNATIONAL BOARD OF HEART RHYTHM EXAMINERS

Dr Seymour Furman founded the International Board of Heart Rhythm Examiners (IBHRE), formerly known as NASPEXAM Inc, in 1985 to raise the level of professionalism in the practice of cardiac pacing and electrophysiology. The IBHRE, based in Washington, DC, USA, is an independent organization under the auspices of the Heart Rhythm Society. Currently, three certification examinations are offered: Cardiac Rhythm Device Therapy for physicians and allied professionals, and Cardiac Electrophysiology for allied professionals. Plans are underway to launch a Cardiac Electrophysiology examination for physicians. Committees of subject matter experts, including physicians and allied professionals, develop these examinations in conjunction with the National Board of Medical Examiners (Philadelphia, Pennsylvania, USA). The educational guidelines for allied professionals serve as the basis of the examination blueprints (13,14). The designation of 'Testamur' was previously given to those

who passed the specialty examinations. In 2008, the designation was changed to 'Certified Cardiac Device Specialist' and 'Certified Cardiac Electrophysiology Specialist'. In 2008, IBHRE collaborated with the Japanese Heart Rhythm Society and delivered the first Japanese version of the Cardiac Rhythm Device Therapy examination to more than 600 Japanese allied professionals.

Certification is a very resource-intensive process. The credentialing organization must meet an accredited provider's requirements. There are a number of important considerations in the development of certification examinations. The examinations must be psychometrically sound and validated to reflect current practice and standard knowledge in the field. In partnership with a psychometric vendor, the credentialing organization constructs examinations through a rigorous item development procedure, using well-established methods to set the passing score and equate the examinations from year to year. The setup and maintenance of a certification program may entail substantial investment.

FUTURE TRENDS IN THE ELECTROPHYSIOLOGY PROFESSION

The aging population of 'baby boomers' will increase the demand for services in cardiovascular disease and heart rhythm management (15,16). Health care costs will continue to escalate, partly due to continuing reliance on costly advancing technologies in diagnostic and therapeutic interventions, imposing a greater burden on consumers, hospitals and governments. Our patient population will increase in complexity due to prolongation of survival among people with chronic diseases and due to the survival of congenital heart disease patients into adulthood. The US census has projected that individuals older than 65 years of age will constitute approximately 17% of the population by 2020, and 21% by 2040 (14,15). The delivery of care to these patients will no longer be limited to centres of excellence but distributed across community hospitals and private clinics. As a consequence of economic pressures, there will be an increased use of mid-level practitioners, such as nurse practitioners and PAs, to supplement physician care in regions that are grappling with physician shortages. With increases in industry competitions and care provider competitions, such as nonelectrophysiology-trained personnel performing therapeutic electrophysiological interventions, there will be greater concerns regarding litigation and liability. This will result in increased lobbying toward regulation and credentialing.

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CONCLUSIONS AND IMPLICATIONS FOR OUR PROFESSION

As science and technology continue to evolve in this field, the areas of future specialization and growth will include genetics, heart failure, stem cell research and clinical management of adult congenital heart disease patients with rhythm disorders. The lack of a formal electrophysiology educational curriculum and certification process in many parts of the world may have a deleterious impact on patient safety, outcome and the quality of care provided. Initiatives aimed at meeting the needs of education and certification must be launched by the various professional organizations to meet their unique regional requirements and practices; to commit appropriate resources and manpower in this development; to create employment mechanisms and professional development opportunities; and to lobby for employer, payer and public recognition of this specialty practice. At the same time, there are tremendous opportunities to develop international collaborations, and to build on or adapt successful models of curriculum, training pathways and certification programs. The roles for allied professionals are expanding as the model of care continues to evolve in response to economic pressure, gaps in service, physician shortages and public expectations. These will be challenging times of immense opportunities for our profession!

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