



CANADIAN IONM NEWS

Official Newsletter of CANM

Message from the President

Over the past few months, there has been a lot of misinformation circulating around about the Canadian reimbursement model and the state of the IONM profession in Canada. In my final address as president, I would like to dispel some of these myths and provide a realistic picture of IONM in Canada.

As of September 2015, there are approximately 70 IONM professionals working at 31 centres across the country, all of which are major academic teaching hospitals. IONM is a full-time clinical career for 26 professionals in Canada and nearly all have a university degree with 60% holding advanced graduate level education. Full time Canadian IONM professionals work in high volume centers and have up to 31 years of experience in the field. Together with part time staff, these professionals provide neuromonitoring services for around 5600 procedures per year. Nearly half of the cases are performed in Toronto and a quarter of the total are in the pediatric population. Overwhelmingly, the person in the operating suite performs all aspects of the IONM role including interpretation and direct communication with the surgical and anesthesia team, and as a result there is an almost non-existent practice of remote monitoring in Canada. With the sites that share staff aside, all IONM professionals in Canada are employees of the hospital.

Health care in Canada is government funded and the provinces and territories are responsible for distributing the health care dollars among the many facilities that must operate within a specific budget. This is important because it speaks directly to the issue of who covers the costs for IONM services in Canada. Currently, there are no direct billing codes for IONM in Canada. This means that hospitals offering IONM services must take on the cost burden within their operating budget with no reimbursement from the province. In times of tight fiscal constraints, allocating money for IONM is often not a priority for administrators. IONM exists in academic centres as a result of lobbying from strong physician champions. Small fee surgical add-on codes do exist in Alberta, Saskatchewan, and Manitoba but these are paid out directly to the surgeon and therefore provide no reimbursement for the actual costs related to the provision of IONM service. For this reason, Ontario, the largest user of IONM, eliminated the surgical add-on code in 2012 in a bid to save an estimated \$600000 per year in payouts to surgeons.

Recently it has been argued that the demand for IONM services outpaces the supply, that IONM staff are a scarce commodity, and that there is a lack of suitably trained and experienced IONM personnel in Canada. However, the IONM access issues in Canada are limited only by funding and therefore are easily solved. The reality is that hospitals fail to hire full time IONM specialists because of budgetary constraints, the costs of equipment, supplies, and staffing, their inability to recuperate expenses, and because there is a lack of physician champions or pressure to offer IONM. The silver lining to money being the rate-limiting factor for IONM profession growth is



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that there has not been, nor ever likely to be, a rapid hiring process leading to under qualified staff being placed in the operating room. Slower growth allows more time for training and subsequent delivery of higher quality IONM care for the Canadian population. Furthermore, CANM has developed a comprehensive education and training strategy to ensure that qualified personnel are available for expansion of IONM services and that neophytes will enter the field under the guidance of the many highly trained and experienced IONM professionals already practicing in Canada. Since IONM is not lucrative in Canada, the only motivation for its use is to ensure that patients in the Canadian health care system receive the best care and surgical safety and it only exists because surgeons insist on it for their patients.

CANM will continue to advocate for expansion of IONM services to improve access throughout the country by working with key stakeholders and with our multi-faceted education and training strategy we are well positioned to ensure that we can meet future demand. With that said, I have been exceptionally proud to lead our small group of dedicated practitioners over the past two years and although my term of presidency is coming to a close I will remain committed to furthering the mission and vision of CANM and promoting the growth of our profession.

Sincerely,



Laura M. Holmes, MSc, CNIM
President, CANM
The Hospital for Sick Children
Toronto, Ontario

Looking Ahead...

CANM represents the solid foundation of intraoperative neurophysiological monitoring (IONM) in Canada. The founding leaders of CANM planted the seeds of open-minded communication from the outset, nurturing the development of a strong and respectful community of IONM professionals across the country. Inclusiveness was a guiding principle for our national association, having learned a lesson from our American colleagues who did not always embrace participation of members with different academic and experiential backgrounds. The unique Canadian perspective combined with steady forward-thinking guidance from CANM's leadership has made our practice standards and professional direction the envy of our IONM peers worldwide. I would like to take this opportunity to thank all of CANM's founding leaders for their vision and continued dedication to the development of IONM in Canada.

As I look forward to assuming the role of CANM president over the next two years, I feel confident in the knowledge that I have two incredible role models in our two past presidents, David Houlden and Laura Holmes. CANM has accomplished so much under the direction of these two gifted leaders and we are on target to achieve so much more. CANM's partnership with The Michener Institute for Applied Health Sciences and the successful launch of our Graduate Certificate Program in IONM in 2014 is only the beginning. Our roadmap to success includes many milestones that we will need to achieve together if we expect the profession of IONM to reach its full potential within Canada's health care environment. Implementation of a national credentialing examination leading to eligibility to practice IONM and a network of residency programs to augment our didactic learning initiatives are the next critical steps. As we work towards putting these resources in place, we will begin to engage key stakeholders and lay the groundwork for the establishment of IONM as an independent and self-regulated Allied Healthcare Profession in Canada. The profession of IONM has matured at an impressive

rate and its development has long outgrown its current infrastructure in this country. One of the important roles of CANM will be to collaboratively create a formal framework that establishes, maintains and promotes the important position of IONM within the Canadian health care system.

CANM continues to have a strong team of executive board members and together we will work to serve the entire membership of CANM. Every CANM member has a distinct voice and I invite everyone to share their thoughts, ideas, hopes and dreams for IONM in this country. I would also encourage our membership to get actively involved by participating in some of CANM's important initiatives including symposium planning, fundraising and public awareness. The life of an IONM professional can be chaotic making volunteer work difficult, but even a small gesture will help our shared association to move forward.

I feel privileged to be a part of CANM's leadership and I pledge to work hard over the next two years to represent each and every CANM member to the best of my ability. Please do not hesitate to contact me directly because I truly do want to hear from you.

I can be reached via the CANM website, email (susan.morris2@iwk.nshealth.ca) or feel free to drop me a line at 902-470-3869.

Susan Morris, PhD
Neurophysiologist
IWK Children's Health Program
CDHA Division of Neurosurgery,
Assistant Professor (Surgery)
Dalhousie University
Halifax, Nova Scotia

Hospitals and Health Care Institutions in Canada with IONM

PROVINCE	CITY	HOSPITAL
British Columbia	Victoria	Island Health
	Vancouver	Vancouver General Hospital B.C. Children's Hospital Lions Gate Hospital
Alberta	Edmonton	Royal Alexandra Hospital Stollery Children's Hospital
	Calgary	Foothills Medical Centre Alberta Children's Hospital
Saskatchewan	Saskatoon	Royal University Hospital
	Regina	Regina General Hospital
Manitoba	Winnipeg	Health Sciences Centre
Ontario	London	London Health Sciences Centre
	Hamilton	Hamilton Health Sciences McMaster Children's Hospital
	Mississauga	Trillium Health Centre
	Toronto	University Health Network (Toronto Western Hospital, Toronto General Hospital), SickKids Hospital, Sunnybrook Health Sciences
	Kingston	Kingston General Hospital
Quebec	Ottawa	The Ottawa Hospital (Civic) Children's Hospital of Eastern Ontario
	Montreal	Jewish General Hospital Montreal Children's Hospital Shriners Hospital for Children
	Sherbrooke	Centre Hospitalier Universitaire de Sherbrooke
New Brunswick	Quebec City	CHU de Quebec – Hopital de l'Enfant-Jesus
	Saint John	Saint John Regional Hospital
Nova Scotia	Moncton	The Moncton Hospital
	Halifax	IWK Health Centre – Children's QEII Health Sciences Centre



**Dr. Maria Li, MD, CM, MSc., FAANS
Neurosurgeon
Maisonneuve-Rosemont Hospital
Clinical Assistant Professor of Neurosurgery,
University of Montreal
IONM Advocate**

Dr. Maria Li is a neurosurgeon at the Maisonneuve-Rosemont Hospital in Montreal, Canada. Since 2008, she has held the appointment of clinical assistant professor of neurosurgery at the University of Montreal. Dr. Li began her medical career at McGill University where she completed medical school, neurosurgical residency and her master's studies. Prior to her position at the Maisonneuve-Rosemont Hospital, Dr. Li practiced in the United States at Seattle Neuroscience Institute where she trained in cerebrovascular and skull base surgery. She also practiced neurosurgery in New York City, New York where she held the position of clinical assistant professor at State University of New York at Downstate in Brooklyn. Dr. Li is a member of a several prominent professional medical associations such as the American Association of Neurological Surgeons, the Congress of Neurological Surgeons and the North American Skull Base Society. The focus of Dr. Li's neurosurgical practice at the Maisonneuve-Rosemont Hospital is complex neuro-oncology (skull base surgery) and spine surgery.

Prior to your position at Maisonneuve-Rosemont Hospital in Montreal, much of your neurosurgical practice was in the U.S. In view of the fact that IONM is more commonly practiced in the U.S. than in Canada, do you believe that American neurosurgeons are generally more familiar with the field of IONM compared to their Canadian colleagues?

Maria Li (ML): Yes, given the litigious climate, US neurosurgeons use monitoring routinely. I do agree with Dr. Schwartz (keynote speaker at the 8th Annual CANM IONM Symposium) that neuromonitoring is over used in the USA. The indications are wide and nebulous and what is asked is not always indicated. A great example is its routine use in anterior cervical discectomies. Many feel that they are performing safer surgery when in fact the operation would never cause signal changes if there is no cord compression. Also, in indicated cases, I do not feel that most neurosurgeons really understand how to interpret the results or what to do should a change in signal strength occur.

You have voiced the challenges of procuring IONM at your current health care institution, Maisonneuve-Rosemont Hospital (HMR) in Montreal. Aside from a shortage of funding and training, what additional barriers do you believe are responsible for the dearth of dedicated neuromonitoring services in Canadian hospitals today?

ML: There are political barriers. Physicians are territorial. Anesthesiologists see the additional time in the OR as wasteful, not cost-effective, and cumbersome, given the rarity of events. At HMR, not all anesthesiologists are well versed in TIVA (Total Intravenous Anesthesia). In my environment they would rather do several shorter procedures than one long monitored surgery. The neurologists see it the same way. They do not believe monitoring adds any clinically relevant information. They view it as a monopoly on their equipment resulting in a loss of income and productivity for their service. Furthermore, even neurosurgeons question the pertinence of monitoring given the paucity of literature that they read about it and their lack of exposure to it. Many neurosurgeons feel that they have excellent results without monitoring.

Without access to a dedicated IONM team at your current hospital, you were still successful at procuring neuromonitoring for several of your high risk surgical cases. What recommendations do you have for surgeons at other Canadian health care institutions who are struggling to introduce IONM into their hospital?

ML: My experience at HMR has been negative because I do not have the support of my fellow colleagues. That experience contributed to professional alienation. Unfortunately, the great results did not speak for themselves because nobody follows our good results. The impression was that the same results would have been achieved without monitoring.

At this point I feel that the pressure has to come from an external source. CANM is doing the right thing. By publishing, by advocating, by educating, by maintaining high standards, the shift will naturally come. I would encourage other neurosurgeons to participate in CANM and learn about monitoring. Once a certain mental clarity is attained about the correct indications and uses of neuromonitoring, neurosurgeons will be less hesitant to insist upon implementing it.

There has been considerable debate within the IONM community regarding the use of “Remote Monitoring.” Many have expressed apprehension with a practice that allocates neuromonitoring oversight to an individual who is not physically in the operating room. Do you share in these concerns or do you believe that “Remote Monitoring” may perhaps offer Canadian hospitals increase access to IONM services?

ML: Remote monitoring would have to be done by someone with already high proficiency in neuromonitoring, and supervising very specialized, highly trained teams (nurses, technicians, anesthesiologists, neurosurgeons) in the room. An automatic algorithm for rapid troubleshooting would be useful. Otherwise, I believe that it would generate confusion and anxiety for all concerned.

Although IONM has been widely practiced in North America for several decades do you often encounter physicians or hospital administrators who are unfamiliar with this important adjunct to surgery? What are some erroneous views these individuals may share regarding the field of IONM?

ML: Hospital administrators consider costs associated with : time in the OR, equipment to buy or rent, personnel to mobilize, noncompliance, avoidance of litigation, implementing safety measures or following medical standards. Given that neurosurgeons are unfamiliar with the evidence, we cannot explain and justify the need very well and we cannot provide the evidence from the literature that neuromonitoring is standard of care. Many influential members of the medical staff erroneously tell hospital administrators that neuromonitoring prolongs and complicates anesthesia, produces uninterpretable unreliable data that one cannot manage, and if signals are true representations of injury, the damage is unsalvageable anyway.

As a neurosurgeon who utilizes neuromonitoring in complex surgical procedures, do you routinely make it a part of your practice to inform your patients that IONM will be performed during their surgery? What are the possible benefits and potential challenges of providing your patients with this information prior to their surgery?

If I had the technology, I would always tell them with great pride that the latest neuromonitoring is available and adds a measure of safety for them and reassurance for me. My biggest challenge is telling them that the technology is not available to me in my setting and that they must go elsewhere. For now I have decided to accept that this is my reality.

At this year’s 8th Annual CANM IONM Symposium in Montreal, a discussion ensued regarding the use of IONM for minor neurosurgical cases. Arguments were brought forward that neuromonitoring has a negligible impact on small surgical procedures (e.g., lumbar discectomies). As a neurosurgeon who has practiced in the U.S. and Canada have you made similar observations on the overuse of IONM? What are the possible advantages or disadvantages of this service being exceedingly allocated to “less” risky surgical cases?

ML: This is where CANM can make a big difference. Instead of blindly performing monitoring when asked, one must dialogue with the surgeons to educate them about the indications for neuromonitoring. The more we use monitoring

for unindicated cases, they less we will be able to show its utility in preventing real neural injury. The cases where signal loss is reversible will be diluted by the morass of unindicated monitoring where the signals would never have changed in the first place, thereby confirming to the naysayers that neuromonitoring adds nothing but cost and time to surgical cases.

For complex surgical procedures a wide array of neurophysiological tests are often required. This practice is referred to as multimodality monitoring and it first begins with preoperative planning in order to determine what sensory and motor neuromonitoring modalities should be applied. Can you describe your involvement in this planning process and elaborate on the communication between you and the IONM practitioner. Do you have any recommendations on how to enhance these preoperative discussions so as to ensure successful neuromonitoring of the surgery?

ML: There, I do not profess to be an expert. I try to think neuroanatomically. The way I think of it, one can monitor the central neuraxis (SSEP, EEG, MEP), one can monitor the brain (EEG, cortical mapping: motor, sensory, language mapping), one can monitor the peripheral nervous system (EMG, nerve root stimulation, anal sphincter), one can monitor cranial nerves (popularly CN 7), one can monitor the visual system (VEP). There is no point in monitoring EEG for a peripheral nerve sheath tumor or spinal stenosis.

I think that neurosurgeons are simple people. We just need broad guidelines:

1. carotids, aneurysms: EEG?
2. severe spinal cord compression: SSEP, MEP
3. brainstem cavernoma: SSEP, MEP
4. acoustic neuroma with brainstem compression: facial nerve monitoring and stimulation, SSEP, MEP
5. peripheral nerve tumour: EMG, nerve stimulation
6. epilepsy or tumour surgery in eloquent areas: (EEG, cortical mapping: motor, sensory, language mapping)
7. chiasmatic compression: VEP

CANM has a big role in educating us.

Although many neurosurgeons appreciate the value of IONM, lectures relating to neuromonitoring are not often featured at neurosurgical symposiums. As a member of several neurosurgical associations what IONM topic would you most like to see discussed at a future neurosurgical meeting?

ML: That would be an excellent idea! Courses about neuromonitoring would be much appreciated. They could be created for OR nurses, OR surgical technicians, as well as surgeons.

1. What are the different modalities available?
2. What are they used for?
3. When should we use them? For what lesions or surgeries?
4. What kind of signal abnormalities can occur?
5. What are the causes of diminished signals?
6. What manoeuvres should be tried if signals decline?
7. When should we stop operating?

(This interview was edited for length)

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CANM thanks Medtronic of Canada for their generous support of this education.





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CANM Executive Board: Election Update

The CANM Executive Board is pleased to announce that the election process is complete and 4 vacant positions on the board have now been filled. By unanimous decision CANM FULL members have voted these nominated candidates to the 2016 Executive Board:

Marshall Wilkinson, Laura Holmes,
Jamie Johnston, and Ekaterina Potapova.

The new 2016 CANM Executive Board will be composed of the following members:

President: Susan Morris, PhD
President Elect: Marshall Wilkinson, BSc (Hons), MSc, PhD
Secretary: Gina Bastaldo, MSc, CNIM
Treasurer: Nancy Lu, BSc (Hons), CNIM
Director: Laura M. Holmes, MSc, CNIM
Director: Jamie Johnston, PhD, MSc, CNIM
Director: Ekaterina Potapova, BSc (Hons), CNIM

Thank you to all CANM FULL members who contributed to this year's election process and we hope you continue to support CANM's mission by renewing your membership in 2016.

CANM invites all health care professionals affiliated with IONM (in Canada and abroad) to visit our website www.canm.ca and register with our professional association. Membership provides an opportunity to have your say in CANM's educational initiatives and position statements impacting the field of IONM today.

Highlights from the 8th Annual CANM IONM Symposium

On September 25-26th, CANM hosted its 8th Annual Symposium on Intraoperative Neurophysiological Monitoring. This year's event was held at the Marriott SpringHill Suites Hotel and it marks the first time a CANM event has taken place in beautiful Montreal, Quebec. Nestled in the city's historic district, this was a picturesque setting for yet another successful meeting on current advancements in the field of IONM.

CANM was privileged to have one of the foremost pioneers in IONM deliver the keynote address at this year's event. The esteemed Daniel Schwartz, PhD presented a historical overview of IONM and how this important adjunct to neurosurgery evolved from very modest beginnings. Attendees were treated to major milestones in IONM and homage was paid to those whose early work paved the way for how IONM is performed today.

In addition to our keynote speaker, a number of senior IONM practitioners were invited to speak on various topics relating to advanced techniques in neurophysiological monitoring. Samuel Strantzias, MSc, DABNM explored methods of cortical mapping in asleep patients while David Houlden, PhD followed with a riveting lecture on brainstem mapping. Presenters Russ Lyon MSc, DABNM and Lawrence Wierzbowski, AuD, DABNM both devoted special attention to spine surgery by speaking on current procedures used for spinal nerve root monitoring. To provide an American perspective on IONM, Michael Hopkins, PhD discussed U.S. models of oversight as well as challenges encountered by those practicing IONM for private services.

Similar to previous CANM meetings, physicians were included in this year's program to promote interdisciplinary collaboration. Canadian neurosurgeon Dr. Maria Li delivered an anatomy tutorial on blood supply to the brain and Dr. Jean Ouellet presented on risky maneuvers during spinal deformity surgery. Furthermore, Dr. Dana Iancu spoke on endovascular surgery which was the first time a neuroradiologist has been invited to present at a CANM meeting. To present



(Left to Right) Keynote speaker, Daniel Schwartz with past CANM President, David Houlden



(Left to Right): Willy Boucharel, Andrew Warrington, Michael Hopkins, Daniel Schwartz, Russ Lyon, Samuel Strantzias.

an anesthesia-based lecture, anesthesiologist Dr. Gary Simon discussed the effects of anesthetic agents on neurophysiological recordings.

The accomplishments of this year's symposium could not have been achieved without the efforts and dedication of the symposium organizing committee (Laura Holmes, Suzin Ilton, Ekaterina Potapova, Aleksandra Krajacic, Jamie Johnston, and Nancy Lu). Of course the tremendous support of our corporate sponsors must be recognized as well. Their commitment to CANM's education initiatives is reassuring and greatly appreciated. Lastly, special thanks go out to all of the attendees whose active participation and dialogue helped make this another memorable CANM event. On behalf of the symposium organizing committee and CANM executive board we hope you join us in 2016.

For further details on next year's 9th Annual CANM IONM Symposium, please visit the CANM website www.canm.ca.

Sincerely,
Gina Bastaldo, MSc, CNIM
Secretary, CANM Executive Board
2015 Symposium Committee
Toronto Western Hospital, University Health
Network
Toronto, Ontario

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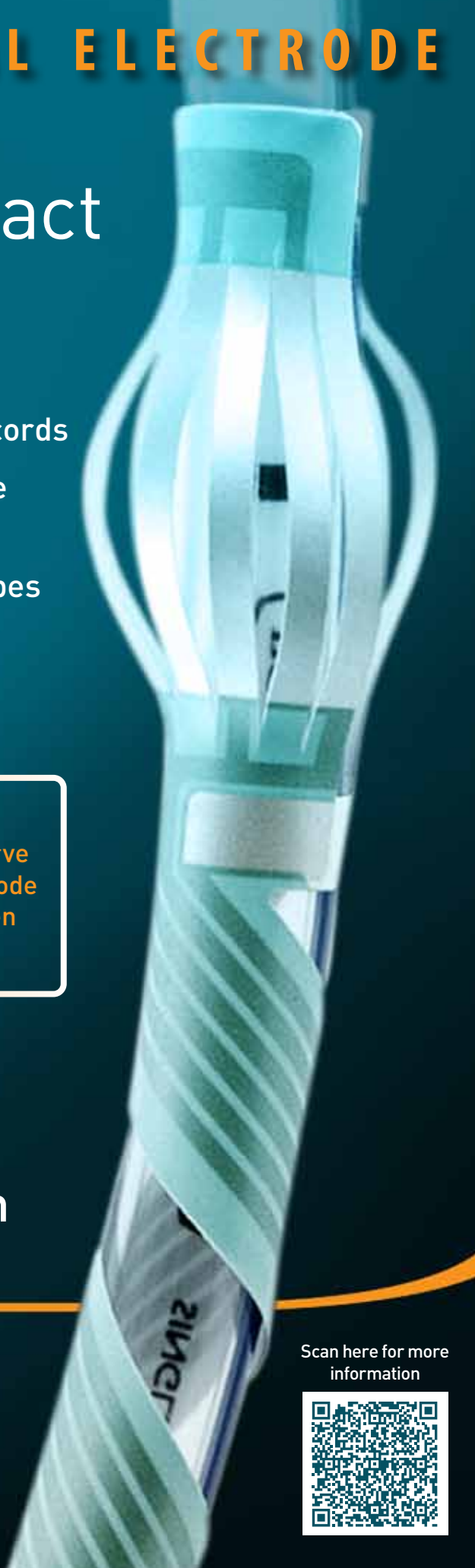
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