



CANADIAN IOM NEWS

Official Newsletter of CANM

Message from the President

As I sit down to write this, I am reminded once again of just how talented and dedicated the IONM professionals in Canada truly are. This field is composed of people from varying backgrounds, all with valuable and unique skills, but each and every one shows a commitment to doing the very best for their patients and the profession. This was never more evident than during the inaugural CANM talks. IONM professionals from across Canada and worldwide joined in the discussion surrounding “who should interpret IONM?” If you missed it, you can listen to the presentation by David Houlden followed by two vibrant discussion periods by visiting www.canm.ca. Another session of CANM talks is planned for autumn 2014. Stay tuned!

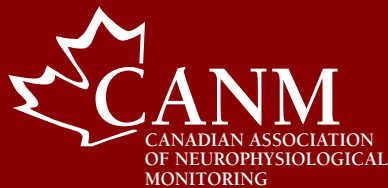
By the time this issue of the newsletter is published, we will have welcomed the inaugural class of students into the CANM-Michener Institute Graduate Certificate in IONM program. It is almost unbelievable to think that the idea of a formal education program in IONM spawned out of discussions in 2012 and less than two years later has come to fruition. This would not have been possible without the tireless hours volunteered by our education committee and subject matter experts. Together, they have developed a first-rate program in IONM education that will deliver the necessary knowledge to prepare students for clinical IONM training.

A huge debt of gratitude is also owed to our symposium organizing committee who has been hard at work planning the 7th Annual CANM IOM Symposium taking place in Toronto, Sept 19–20. I encourage everyone to attend this meeting as it represents a wonderful opportunity to collaborate, interact, and learn from one another. Registration details can be found on our website.

I am astounded by all of the work we’ve been able to accomplish in such a short time; however, the work is nowhere near done. The field of IONM continues to develop and CANM remains committed to being leaders in its evolution. We will be welcoming a new executive board this month so I’d like to take this opportunity to thank the existing board and remind our FULL members to vote. Opportunities also exist for members to join us on committees. If you’re interested in helping to shape the future of IONM in Canada please contact me. I’d love to have as many of you as possible along for the ride!



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7TH ANNUAL CANM IOM *Symposium*

September 19-20, 2014

Pantages Skyline Hotel | Toronto, ON



Please join us for the 7th Annual CANM IOM Symposium. This year's meeting will be held in Toronto, Ontario from September 19-20 at the Pantages Skyline Hotel. Our past symposiums have earned a reputation for being a high quality educational event and we endeavor to continue this tradition in 2014.

This year CANM is pleased to offer a 1-DAY Registration Fee for \$200. Registration forms and payment options are all available online at www.canm.ca.

The 7th Annual CANM IOM Symposium will include lectures in intraoperative neurophysiological monitoring (IONM), anesthesia, brain mapping, spine surgery, EMG, EEG, and many other topics. In addition, CANM is honored to have the distinguished Dr. Stanley A. Skinner from Abbott Northwestern Hospital, MN as this year's Keynote Speaker.

This is a University of Toronto accredited Continuing Medical Education (CME) event. Attendees will receive a total of 14 CME credits for their participation in this 2 day symposium.

For further symposium information please visit the official CANM website at: www.canm.ca

LOOKING FORWARD TO SEEING YOU THERE!

Sincerely,
CANM Symposium Organizing Committee 2014



WWW.CANM.CA



CANM Education Update – Fall 2014

The stated mission of CANM is “To promote the field of IONM and foster the development of the profession through education and certification, so as to provide optimum patient care.”

The CANM mission statement is an ambitious one because the road from words on a page to actualization of their intent is never an easy one. And the founding CANM executive team, led by Dr. David Houlden, chose a particularly challenging trail to blaze because there was simply no clear precedent or roadmap to follow. However, the leadership of CANM recognized that there was both a tremendous need and an opportunity and so they forged ahead despite the odds and obstacles.

The need was to standardize IONM education in Canada and create an education pathway that would produce highly educated and independent IONM practitioners. Our strong professional association comprised of talented IONM professionals from across the country created the opportunity. The educational and experiential background of IONM professionals in Canada may be diverse, but we operate in a transparent, collegial environment and with the common goal of elevating our shared profession. Fueled by the alchemy of need and opportunity, CANM’s mission statement continues its transformation into action.

Where Are We Now?

To continue with the analogy, we are still plodding along the difficult path toward educational standards in Canada; however, we have recently reached a major milestone on our journey. In early 2014, CANM and The Michener Institute for Applied Health Sciences joined forces to create what we believe is the first 2-year online graduate certificate program in IONM. The launch is scheduled for September of 2014 when the inaugural cohort will begin the first of six courses. The courses are designed to lead an individual step-wise from the basics of IONM to advanced/specialty techniques. The program is designed to enable people who are employed full-time to complete the courses

online and in their home environment.

About the CANM-Michener Program

All of the information about the new program can be found on our website (www.canm.ca). In brief, the 2-year Graduate Certificate Program in IONM consists of six courses, each of which is broken down into 12 modules (1 week per module). The courses, taken sequentially, guide a new learner through the following topics:

- Clinical Sciences for IONM
- Basic Principles of IONM
- IONM Modalities I
- IONM Modalities II
- Considerations for IONM
- Advanced Topics in IONM

Who Can Take the Program?

Michener will screen and review all applicants with final approval being granted by the CANM Board of Admissions.

Applicants must meet ONE of the following requirements:

1. Currently practicing IONM with an accredited hospital
OR
2. Full CANM membership
OR
3. Bachelor's degree in a health-related field (with preference given to courses in human anatomy or other health sciences)

NOTE: it is possible to take individual courses (same admission criteria apply)

What Do I Get at the End of the Program?

At the end of the 2-year program, the successful candidate will receive a *Certificate in Intraoperative Neurophysiological Monitoring*. This certificate will signify that the individual has completed a comprehensive course in IONM and has acquired the knowledge base necessary for a successful IONM clinical training residency. Although a certificate in IONM is not currently mandatory for practice in Canada, it is an excellent way to prepare for a career in IONM. As CANM progresses towards implementation of a national accreditation exam in IONM, the certificate will be one of the important paths leading to exam eligibility.

CANM and Michener have high hopes for the success of the new certificate program, and believe that it will serve as a foundation for future education initiatives in IONM. The recognition of need and opportunity combined with the willingness to take action has thrust CANM into a leadership role in IONM education. There is still much work to be done but we have reason to be proud of our accomplishments to date. We should also take time to recognize and thank Michener for believing in CANM and partnering with us to realize our educational goals.

So buckle up and hold on tight because we are about to be launched into territory unknown next month!

Susan Morris, PhD
Chair, CANM Education Committee
IWK Health Center
QEII Health Science Center
Assistant Professor (Surgery), Dalhousie University
Halifax, Nova Scotia

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Intraoperative Neurophysiological Monitoring Graduate Certificate Program

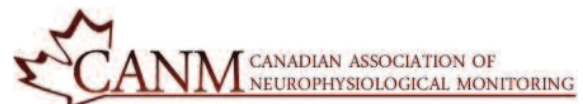
The Canadian Association of Neurophysiological Monitoring (CANM) and The Michener Institute have partnered to introduce a one-of-a-kind Intraoperative Neurophysiological Monitoring (IONM) Graduate Certificate Program.

- Prepare for a career in IONM
- Ensure that you are ready when certification becomes a requirement for practice

The online program covers six courses ranging from basic sciences to advanced topics in IONM

Application deadline for the first course is July 25, 2014. For program details, admission requirements and to register visit michener.ca/ce

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



INTERVIEW WITH:

Dr. Reinhard Zeller,

MC, FRCSC, Pediatric Spine Surgeon and IONM Advocate



Dr. Reinhard Zeller is the head of the orthopedic spine service at SickKids hospital and an associate professor of orthopedic surgery at the University of Toronto. He maintains one of the most active clinical practices in pediatric spinal deformity in the country. Prior to joining SickKids in 2006, he had a lengthy and prolific career in Paris, France where he originally trained with some of the world's most eminent spine surgeons. In addition to his clinical training, he holds a graduate degree in biomechanics that he has utilized in development of innovative spinal instrumentation. Throughout his career, Dr. Zeller has developed a reputation as an expert in the pediatric spine and is regularly invited to travel worldwide to lecture and train new surgeons.

In August 2014, our very own Laura Holmes had the pleasure of sharing a meal and discussing some of the important issues facing IONM and spinal surgery. Dr. Zeller shared his views on wake-up tests, surgeon-driven IONM machines, and more.

LH: You've been in clinical practice for over 25 years. In your view, what has been the biggest advance in the practice of pediatric spine surgery?

RZ: This depends on the viewpoint. From the patient's perspective, it was likely the move from the Harrington system (2 hooks, one rod) to a multi implant system with 2 rods and no bracing afterward. This was a dramatic change in the way care was provided. From the surgeon's perspective, there was a huge shift in the way the deformity was considered. It is now analyzed in 3 dimensions, taking into account sagittal contour rather than just considering scoliosis as a curved spine on an anteroposterior x-ray. This 3-D understanding has contributed to achievement of better corrections.

LH: The Stagnara Wake-Up Test was once considered the "gold standard" for assessing neural function during spine surgery. With today's multi-modality IONM, do you see any role for continued use of the wake-up test?

RZ: Very rarely. They may be useful to rule out false findings when you aren't sure about the reliability of the IONM results, but overall wake-up tests are a very stressful affair. They take a considerable amount of time to perform which impacts your ability to react quickly with important interventions. This time can be the dividing line between paraplegia and walking.

LH: In your practice, you've had to react to various IONM alerts and appear comfortable doing so. Do you see a role for standard protocols or checklists for how IONM alerts should be handled?

RZ: I think it's a good idea to have this for those who are just starting their practice or for those who only occasionally operate on pediatric spinal deformities. It's a stressful situation when alerts happen, so I think it helps to have a list about what needs to be done and in which order, especially if you don't encounter these situations very often.

LH: You are a member of many organizations across North America and Europe, what role, if any, do you see for surgeons advocating for IONM use?

RZ: There is certainly a need for a surgeon voice but public pressure is even more powerful. Decision-makers, whether they are politicians, government, or administrators, are highly influenced by the patient voice. If the public was more aware of how IONM can help prevent injury, I believe that they would insist on its use.

LH: What factors do you believe contribute to developing a good working relationship between the anesthesia, surgical, and IONM teams?

RZ: It is very important to have a team that works together often. When a team is comfortable working together they become very good at communicating and understanding each other's roles. Since pediatric spine is a subspecialty area, it would be ideal to have spine anesthesia specialists, particularly for complex deformity cases, who are very experienced dealing with the complexities of these particular patients and the surgical and IONM needs.

LH: Lack of trained IONM professionals presents a barrier for accessible IONM services. CANM is working to resolve this issue with the launch of our recent Graduate Certificate in IONM, in collaboration with the Michener Institute. However, some centres have chosen to resolve staffing issues by using what is commonly known as the “surgeon-driven IONM machine.” What are your thoughts on this?

RZ: In my opinion, this is asking for trouble because most surgeons do not have the necessary training in the field to know how to decode the findings. This type of machine might give you a false sense security or worry because you can't determine the difference between technical, anesthetic, or surgical causes. The machine is unable to analyze all of the environmental aspects in the same way a person can. I believe that IONM really needs to stay in the hands of specialists who are experienced with integrating all of the available information, but this highlights the need to train more people. I feel that such a machine does not provide the same level of security as IONM performed and read by a specialist, so I wouldn't recommend it.

LH: Spine surgery can be considered to be high risk. Based on your experience, has IONM had any impact on patient safety or outcomes?

RZ: IONM is clearly patient safety and it creates a safer operating environment for sure. Remembering the early days of my career, I am convinced that there were instances where modern IONM would have prevented some transitory postoperative deficits. It's impossible to know how many injuries IONM has prevented but historic reviews of neurological complications show that the incidence of neurological injury was much higher previously. This is not because we are doing things better nowadays but because we are doing it in a safer way and IONM is certainly part of that.

LH: Many surgeons believe that spinal deformity surgery should not be performed without IONM. What barriers do you foresee in making IONM standard of care in scoliosis surgery?

RZ: Many institutions claim that financial constraints prohibit IONM use; however, they have to consider that postoperative paraplegia in idiopathic scoliosis surgery occurs in 2 in 10 000 cases according to a recent report of the SRS morbidity and mortality committee. Knowing that and that each paraplegic patient can cost \$10 Million to treat, they may come to different conclusions. This is a far higher odd than winning the lottery. Hospital administration should consider this reasoning even if purely from a monetary standpoint. IONM makes sense for patient care, and this is not to mention the reputational fallout on the institution and the toll on the surgeon when preventable paralysis occurs.

LH: Many studies have shown the importance of timely interventions following IONM alerts on the outcome of patients, particularly in spine surgery. In your opinion, why is it vital that you receive timely IONM information?

RZ: It's important to react quickly and that's why MEPs are so important. Rapid feedback from IONM allows me to make quick interventions. The earlier I can react, the less risk to the patient of permanent deficit.

LH: The field of IONM remains relatively unknown to many Canadians. In your opinion, what will change this?

RZ: It is crucial that the importance of IONM becomes more widely known. Most people, even those within the health care sector, don't understand how vital IONM is for the security of patients. In spinal deformity, the immediate repercussions are fundamental to patient safety. To help promote the profession, more literature on IONM usefulness is needed. It is very important to get outcome numbers and validation for the use of IONM. Unfortunately, people are usually very reluctant to report and discuss adverse events.

(This interview has been edited for length. Full interview will be posted on www.canm.ca in September, 2014)

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



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Risk of Needle-Stick Injuries Associated with the Use of Subdermal Needle Electrodes during Intraoperative Neurophysiologic Monitoring

Tamkus A and Rice K. *J Neurosurg Anesthesiol* 2014;26(1):65–8. doi: 10.1097/ANA.0b013e31829b677c.

Reviewed by Nancy Lu, BSc (Hons), CNIM

In the field of intraoperative neurophysiological monitoring (IONM), subdermal needle electrodes are often the preferred choice for many IONM practitioners due to their ease of use, faster setup times and lower impedance values. Although it is widely accepted that the risk for a needle-stick injury exists in the operating room (OR), this occupational hazard in the field of IONM has not been well documented in the literature. The 2014 report by Tamkus and Rice is one of the first to evaluate the occurrence of needle-stick injuries associated with IONM. Tamkus and Rice's results regarding the frequency of needle-stick injuries are reassuring. They reported a very low incidence of needle-stick injuries thereby supporting the continued use of subdermal needle electrodes in the OR. In addition, the authors emphasize that the entire OR team can do their part to minimize the risk of needle-stick injuries.

Highlights of Tamkus and Rice's Study

Tamkus and Rice conducted a retrospective review of one IONM company in the United States to determine the rate and common causes of IONM related needle-stick injuries. After reviewing documentation of needle-stick injuries from 50,665 surgeries at over 300 hospitals, Tamkus and Rice found that the incidence of needle-stick injuries is rare (0.34%). The rarity of needle-stick injuries, as suggested by these findings, should allay any alarmist views regarding the use of needle electrodes in IONM.

In addition, the authors examined which group of

health care professionals were most at risk of a needle-stick injury. Their review revealed that IONM practitioners are most likely to have a needle-stick injury compared to anesthesiologists and surgeons (43.1%, 21.8%, and 9.2% respectively). This study implies that greater exposure to needle electrodes, typically by IONM practitioners and anesthesiologists, will result in an increased risk of a needle-stick injury.

While it may seem surprising that anesthesiologists have the second highest rate of needle-stick injuries and not surgeons, their report provides an explanation for this interesting finding. Most needle-stick injuries occurred when the health care professional was handling patients' wrist/hands (24.7%), legs (21%) and head/neck (13.6%). This is consistent with sites on the patient's body that are repeatedly handled among IONM practitioners and anesthesiologists.

There are two key stages in a surgical case where there is a greater risk of a needle-stick injury. Patient positioning at the start of the surgery was reported to have the highest number of needle-stick injuries (40.8%) followed by removal of needle electrodes at the end of the surgery (29.9%). A logical explanation for these results is that there is a typical rush of activity by all OR staff during these two stages of the surgery.

While the risk of contracting a blood borne virus from a needle-stick injury cannot be understated, this study found that infectious disease (human immunodeficiency virus, hepatitis B, hepatitis C, etc.)

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transmission was quite low. The authors reported needle-stick injuries with two hepatitis C patients and 1 hepatitis B patient; however, no infectious diseases were transmitted. This is consistent with other published articles regarding transmission rates of blood borne viruses from needle-stick injuries in the OR.

Final Thoughts

The findings by Tamkus and Rice show that needle-stick injuries are rare and the risk of disease transmission with contaminated needles is minimal. The authors emphasize that all OR staff should be cognizant about the use of needle electrodes.

Attention should be taken during the setup, patient positioning and removal of electrodes, as these are key periods when needle-stick injuries tend to occur. At the end of a surgery there is often haste to extubate the patient and/or transfer the patient from the OR table to the hospital bed. This rush may lead to unsafe handling of needle electrodes by the IONM practitioner or even the removal of electrodes by non-IONM personnel. The IONM practitioner should be given adequate time and space to properly remove and dispose all needle electrodes safely.

Furthermore, all OR staff (especially anesthetists, nurses, surgeons) should be educated on common electrode placement sites on the patient such as the wrists, ankles and head. OR staff should be cautious of these areas on the patient as forceful movements may dislodge needle electrodes. It is easy to become complacent about the risks of needle-stick injuries when IONM monitoring is such a regular occurrence in the OR.¹

In summary, the authors' results validate a common belief shared by many experienced IONM practitioners: While needle-stick injuries are a known occupational hazard in the OR, with proper care and attention needle electrodes can be used safely in the practice of IONM and the risk of needle-stick injuries can be minimized.

Nancy Lu, BSc (Hons), CNIM

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References

1. Perry J and Jagger J. Healthcare worker blood exposure risks: Correcting some outdated statistics. *Advance Exp Prevent* 2003;6:28-31.

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