

injury this condition would likely contribute significantly. The most frequently used diagnostic test, serum creatine kinase, may not predict who will develop AKI in patients who suffer from multiple insults.⁴ The sustained increase in creatine kinase levels on follow-up two months later may indicate that there may be a sustained muscle insult, stemming from sub-optimal treatment of hypothyroidism or ongoing polymyositis. 

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Elective Report: A European Take on Neuro-Anesthesia

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ABSTRACT

The LKH-Universitätsklinikum Hospital lies within Graz, Austria, a small city of approximately 250,000 residents. From a North American perspective this is an unrecognized medical university. It has an incredible dedication to teaching and is frequently visited by both European and Asian medical students as a part of their medical training. My opportunity to complete a four-week elective in the Department of Neuro-anesthesia was an invaluable opportunity that improved my understanding of this particular anesthesia subspecialty and the technological advancements specific to it. Unlike the more popular third world electives carried out by many of my peers, the focus of interest was not on the development of underprivileged healthcare systems. Rather, it was on the importance of international collaboration towards the betterment of medical care.

KEYWORDS: *anaesthesia, neuro-anaesthesia*

ELECTIVE REPORT

Graz, Austria, is well-known throughout Europe as a university town with upward of 44,000 students who attend the six universities situated within Graz.¹ Although a popular site of study for those residing in Europe, it is largely unknown internationally. With over 2,000 research profiles and

60,000 publications, it is surprising that the Faculty of Medicine in Graz remains largely hidden from international recognition and affiliation.² Furthermore, the faculty's extensive experience with the education and training of European medical students suggests that the University of Graz is a well-qualified site for Canadian medical student's elective experience.

Luckily, I was granted the opportunity to spend four weeks in the Department of Neuro-anesthesia at the LKH-Universitätsklinikum Hospital in Graz. During this period, my

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personal objectives and goals were to: 1) gain practical skills and techniques in pre-operative assessments, intubation, intravenous (IV) line insertion and arterial line insertion; 2) differentiate anesthetic type and delivery with respect to various surgical indications; and 3) outline the steps and possible complications of induction and extubation. Furthermore, I was interested in comparing the similarities and differences in healthcare delivery between countries. Specifically, I wanted to better understand how different cultures shape the medical profession, and the professionals that they craft.

Early in my elective, I was fortunate to be paired with an anesthesiologist who was fluent in English. This made my transition to medical life in Austria easier, and helped me to more easily fulfill my objectives. My preceptors were more than eager to teach, and facilitated sessions with models and simulations to allow me to master basic skills, both during and outside of the operating room (OR). At the LKH-Universitätsklinikum Hospital, anesthesiologists are not limited to one specific subspecialty, but rather deliver anesthesia in a variety of settings. Although my elective was to officially take place in the Department of Neuro-anesthesia, my opportunities were not limited to this division. I was also exposed to various subspecialties of anesthesia including Radiology and Critical Care. Throughout my experience, I was able to participate in the induction, maintenance, and emergence from anesthesia. As the majority of patients required post-operative admission into the associated neuro-surgical Intensive Care Unit (ICU), I commonly followed the patients' recovery with the appropriate guidance from my preceptors. Through the encouragement of the neuro-anesthetists, I gained a lot of hands on experience with various procedures for airway management and vascular access. Although the language barrier hindered my experience with direct patient encounters, my lack of German fluency did not serve as a barrier to the teaching opportunities from the various physicians working on site. Although broad, I believe this experience allowed me to achieve all of my previously outlined objectives.

Being within a subspecialized discipline, I had the opportunity to learn about the novel techniques neuro-anesthetists were utilizing in patient management. For instance, I was exposed to the use of intra-operative Bispectral Index (BIS) monitoring for the depth of anesthesia. BIS monitors employ an algorithm to convert a patient's brain activity (monitored via electroencephalogram leads) into a number, which is thought to represent the depth of anesthesia.³ BIS monitors are routinely utilized in intra-cranial surgeries at the LKH-Universitätsklinikum Hospital in order to ensure appropriate titration of anesthesia to allow for surgical intervention, while allowing for a controlled, precise emergence from anesthesia. Although the literature regarding the use of this technology remains largely inconclusive, many anesthesiologists in the LKH-Universitätsklinikum Hospital commonly employ its use.^{4,5} I believe this experience has allowed me to gain a better understanding for the use and implications of BIS monitors. Furthermore, through my clinical exposure to the BIS monitor, I believe I am now better equipped to interpret the literature regarding its efficacy. Similarly, through my experience in the neuro-surgical ICU, I was exposed to the routine use of

evoked potentials as a prognostic tool for those who had suffered severe brain trauma. Through the monitoring of responses of the central nervous system (CNS) to various neural stimulations, evoked potentials allow you to evaluate the brain's recovery of function post-insult.^{3,6} Through my four-week elective, I was able to evaluate the efficacy of evoked potentials as a prognostic tool. While I may have been able to gain this knowledge by analyzing literature, I believe that I have gained a superior understanding of the role of evoked potentials by actually having had the opportunity in Graz to gain hands-on experience.

Overall, my exposure to Neuro-anesthesia in Graz was fulfilling and it has given me a better understanding of the discipline and scope of Anesthesia. Moreover, I feel this experience has allowed me to better appreciate the variability of healthcare delivery between countries. This was best exemplified in my discussions with out-of-country professors who frequently visited the Neuro-anesthesia operating suite to gain better understanding of the uses and implications of these various neuro-monitoring techniques. I now understand why international meetings are such an important way to share innovation in medicine, and to foster collaboration towards advancements in medical practice. For me, this experience highlighted how studying medicine in one location may limit a student's perspective on the scope of practice. The simplicity of "doing as one was taught" can foster medical practice based on tradition, as opposed to innovation and evidence. This international elective experience has given me insight into the advantages of obtaining medical experience in different locations, be they inter-country or international. Furthermore, I now realize the value of identifying these differences as a student. As medical students in the 21st century, the world we are preparing to practice in is ever more globalized and connected. It has become necessary for us to evaluate the various approaches to medical practice that exist between cultures. In doing so, we can use this information to better improve the care we offer our patients, wherever we practice. 

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