

REGIONAL ANESTHESIA ROTATION

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REVISED JULY 11, 2008

Introduction

This new curriculum and guideline provides a brief overview on related issues and techniques for the rotation of regional anesthesia. The compiled documents were generously written and contributed by faculty and resident involved “regional anesthesia subcommittee” in consultation with Resident Training Committee (RTC) of the University of Alberta. The objective of issuing this document is to provide a supplemental instruction to the administration and an evaluated portion of the regional anesthesia rotation.

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in technique and approaches are required. One of the most exciting advances in technology in relation to regional anesthesia these recent years has been the introduction of anatomically-based ultrasound imaging. This is a quantum leap in technology for those interested in this pursuit and is sure to draw a substantial number of anesthesiologists back toward regional anesthesia. Learning methodology and gaining experience with specific techniques for individual ultrasound-guided nerve blocks as well as classical nerve stimulation are obvious goals for both beginner and experienced alike. Additionally, it is important to also obtain good technical skill in performing regional anesthesia, along with textbook knowledge of the anatomy and regional anesthesia for achieving effective regional anesthesia care to our patients.

The demand for education in the proper application and use of ultrasound guidance as well as classical nerve stimulation techniques for regional anesthesia has grown dramatically. Demand for time and training exceeds the available faculty, space and time. In response to this important educational need, the division of regional anesthesia has taken the initiative to set up a subcommittee (consisted of staff, fellow and residents) to address this major and important instructive task. With the task committee’s educational objectives in mind and generous guidance from RTC, a new regional rotation curriculum and guideline has been created.

This revised rotation is designed to meet the varied learning objectives of Royal college Can-MEDS objectives, but also will include practical aspect of regional anesthesia and pain management. In order to meet these goals, the rotation will be provided by faculty with relevant experience and enthusiasm for regional anesthesia.

We hope you will enjoy your experience and gain invaluable knowledge and insight during the regional anesthesia rotation.

Sincerely,

Ban Tsui, MD, regional rotation co-coordinator

Regional Anesthesia Rotation

(Coordinator – Dr Ban Tsui)

(updated and approved by Dr. Kearney on July 11, 2008)

OVERVIEW:

Regional anesthesia can offer many benefits to patients for perioperative care and chronic pain situations. The field of regional anesthesia is ever-expanding, with unlimited research and practice opportunities. Many of the skills learned in other rotations will be built upon during this rotation; although other methods of assessment, evaluation and treatment are learned (e.g. nerve stimulation and ultrasound guided blocks). A unique feature of the regional anesthesia rotation is the strong academic emphasis relating the practical hands-on approaches to theory. An example is an intensive anatomy education component. Each fall, all residents will be invited to participate in a weekend cadaver course where we will focus on a hands-on appreciation of the anatomy relevant to regional anesthesia.

Training during this 2-month rotation includes working at the University, Royal Alexandra, Leduc, Sturgeon and Misericordia Hospitals. The instruction locations include the regional block room at the University Hospital and the operating rooms at the four hospitals. The regional block room at the University Hospital is in operation 5 days per week and is staffed with faculty having special interest and skills in using the latest technology for block guidance when providing surgical anesthesia and perioperative analgesia. This staff also provides the Acute Pain Consulting service which focuses on perioperative pain management for complex patients upon primarily physician consultation. A phantom model for US guided nerve blocks is available in the block area and we strongly encourage you to practice on this model prior to attempting procedures on patients.

On Monday morning of each week, you should meet with the staff person assigned to the APS for that week. At this time a plan for the week will be formulated. The first block of the day is always a challenge, as we strive to get the block done and patient in the room as soon as possible, to avoid any delays and start the day smoothly. To help us achieve this goal, it is expected that, where possible, you will interview patients the night before and determine eligibility for a regional technique. Also, you should help facilitate timely presentation of patients to the pre-op holding area. The following morning you should have the operating room prepared prior to patient entry in the block area. Prior to commencing any block you will need to present a formal anesthetic plan to the supervising staff. Tardiness or lack of preparation may result in your inability to participate in patient care. When there are 2 residents on the rotation, the following apply:

1. Both residents on the regional rotation report to APS Staff for daily assignments (i.e. generally one resident will work in the block room and one will have a varying placement. This 2nd resident is not assigned into a specific room).

Resident and APS staff should communicate with each other regarding the plan for the following day.

2. The resident(s) and staff will work as a team to delivery regional anesthesia care and pain management to the patients (i.e. intraoperative as well as postoperative on the ward). The APS staff will facilitate proper balance of learning, book knowledge regarding regional anesthesia, as well as the performing and administering regional anesthesia procedures.
3. Any off site regional opportunities will be channeled to the APS staff only by off site staff. Off site staff are encouraged to contact and offer such opportunities for the resident. The APS staff will then facilitate such opportunities. (i.e. No staff will contact the regional resident themselves. The APS staff has the final say as to where the second resident works).
4. Clinical issues should be addressed with APS staff. Resident weekly evaluation will be done by APS staff of the week. In terms of general questions about the rotation, resident are expected to consult the written objectives. Dr. Mike Hogan will provide an overall introduction to the rotation, administer the examination and evaluation of the rotation. Residents are encouraged to discuss any issue directly with the staff involved. However, any concerns that unable to be resolved directly should be addressed to Drs Hogan and/or Tsui. If the issue remains unresolved after reasonable effort, the resident is encouraged to discuss it with the program director.

The objectives for this rotation are included, and were developed to meet the CanMEDs 2005 Framework. There is a strong emphasis and mentorship in research productivity, as we hope that residents will develop an ambition to continue with research and innovation throughout their careers. To this end, each resident will be required to present a 20-30 minute presentation during their 2-month rotation in regional anesthesia. This presentation should be on a current regional topic and should include a thorough review of the literature. Please approach the co-ordinator prior to starting the rotation to begin planning your rotation schedule and discuss an appropriate presentation topic. All presentations should be in powerpoint format and will be placed on an intranet folder to be accessed by future residents.

You are required to take home-call for the APS two days a week. You will not be required to take home call on weekends. While on call, you will deal with the relevant issues and call the covering APS staff should any issues remain unresolved. At 2200h you will handover to the Anesthesia resident on general call who will take first call for the APS. You may receive calls from this resident after this hour as you will be on 2nd call. The APS staff becomes 3rd call.

It should be stressed that the main focus of our efforts is that you gain the appropriate knowledge set to appreciate the peri-operative implications of regional anesthesia. While we will invite you to participate in as many blocks as possible, you must first display knowledge of the relevant anatomy and physiology. Also, there are several fellows present who have devoted a full year to acquiring specialist skills in regional techniques.

While they are always very eager to teach residents, realize that they may sometimes need to perform a block before the resident. This is particularly true for nerve catheters.

EVALUATION:

Rotation evaluation will be based on successful completion of the following:

- a case log
- daily evaluation sheets by supervising staff
- mid-point evaluation
- presentation
- end-of-Rotation test

** Please note that it APS staff have numerous other responsibilities and will not search you out to make sure these items are completed. As adult learners it is your responsibility to ensure that the above items are completed.

Case Log

Recognizing that not all regional techniques will be learned during a two-month rotation, each resident must maintain a log of all regional procedures and cases. This log will be used to evaluate your success in meeting the rotation objectives, both at the end of your rotation and at any other time in order to perform a needs assessment. This enables us to easily review your experiences with the various techniques and identifies areas that need more clinical exposure and teaching. If at any time you feel your educational needs are not being met, please approach Dr. Michael Hogan, and we will strive to make any arrangements necessary for you to meet your learning objectives

Failure to submit a completed case log will result in an “Incomplete” evaluation and a requirement to repeat the rotation.

Daily evaluation sheets by supervising staff

Please approach the supervising APS staff at the end of each day to ensure that an evaluation is done

Mid-point evaluation

After 1 month you should arrange a short sit-down meeting with Dr. Hogan. At this time a formal in-training evaluation report will be completed and your progress reviewed. You will also be given an opportunity to discuss any concerns you may have.

Presentation

Prepare a 20-30 minute presentation during the rotation. This presentation should be on a current regional topic and should include a thorough review of the literature.

Exam

On the Monday morning of your final week you should seek out the co-ordinator to receive an exam. The exam is a MCQ and short answer style assignment that has a strong focus on the anatomical and physiological knowledge most relevant to regional blocks (e.g. clinical and ultrasound anatomy, dermatomal distribution) with additional emphasis

on patient assessment and evaluation to decide the most appropriate block for the situation. Questions will be drawn from an intranet bank of regional anesthesia questions that residents will have access to at all times. A minimum score of 75% will be required. If you score less than 75% you will be expected to consult textbooks and return with the correct answers in order to improve your score.

Failure to submit a completed assignment will result in an “Incomplete” evaluation and requirement to repeat the rotation.

SUGGESTED READINGS:

Peripheral nerve blocks: Principles and practice. Eds. Admir Hadzic, Jerry Vloka
New York: McGraw-Hill, 2004.

Neural blockade in clinical anesthesia and management of pain. Eds. Cousins MJ, Bridenbaugh PO. Philadelphia: Lippincott-Raven, 1998.
New edition is expected this coming year

Atlas of image-guided intervention in regional anesthesia and pain medicine.
Rathmell JP. Philadelphia: Lippincott-Raven, 2006.
This will provide introduction to many advanced pain management techniques

Textbook of regional anesthesia. Ed. Raj PP. Philadelphia: Churchill Livingstone, 2002.

Atlas of regional anesthesia. Brown DL. Philadelphia: Saunders, 1999.

Complications in regional anesthesia. Ed Finucane BT. Philadelphia: Churchill Livingstone, 1999.
New edition published by Springer expected to be released mid-year 2007

Pain. Eds Cervero F, Jensen TS. Edinburgh: Elsevier, 2006

An Atlas of Nerve Stimulation and Ultrasound-Guided Regional Anesthesia. Tsui BCH. Springer, 2007.

Any book on essentials of ultrasound

For example:

Pickuth D. Essentials of Ultrasonography. A Practical Guide. Springer, Berlin, 1995.

Many publications in peer-reviewed journals regarding ultrasound guidance in peripheral and central blockade.

Useful websites

<http://www.EdmARA.ca>

<http://www.med.ualberta.ca/departments/anesthesiology/netscape/index.htm>

<http://www.nysora.com/>

www.neuraxiom.com

<http://www.rapm.org/>

<http://www.asra.com/>

<http://lipidrescue.squarespace.com/>

<http://depts.washington.edu/anesth/regional/welcome.html>

<http://www.nerveblocks.net/>

<http://www.esraeurope.org/>

Regional Anesthesia Rotation Assignment Sheet

At the end of the Regional Anesthesia rotation, the resident should be able to demonstrate performance (including the use of nerve stimulation and ultrasound guidance) and knowledge proficiency in all of the Basic Techniques and the advanced technique of the retrobulbar and peribulbar nerve blocks. The resident should have a good knowledge of most of the regional techniques listed below. Gaining good competency in ultrasound guidance during peripheral nerve blocks will assist greatly with many of the traditionally more challenging blocks (e.g. interscalene, infraclavicular). At a minimum, you are expected to become comfortable performing 1 upper extremity block and 2 lower extremity blocks (e.g. supraclavicular block, femoral block, and 1 approach to the sciatic nerve). At the end of residency you need to have completed a minimum of **40** peripheral nerve blocks.

Basic Techniques

- Superficial cervical plexus block
- Axillary brachial plexus block
- Intravenous regional anesthesia (Bier block)
- Wrist block
- Digital nerve block
- Intercostobrachial nerve block
- Saphenous nerve block
- Ankle block
- Spinal anesthesia
- Lumbar epidural anesthesia
- Combined spinal-epidural anesthesia
- Femoral nerve block

Intermediate Techniques

- Interscalene block
- Supraclavicular block
- Infraclavicular block
- Sciatic nerve block: posterior approach
- Genitofemoral nerve block
- Popliteal block: all approaches
- Suprascapular nerve block
- Intercostal nerve block
- Thoracic epidural anesthesia

Advanced Techniques

- Continuous interscalene, axillary and infraclavicular blocks
- Thoracolumbar paravertebral block: single injection or continuous
- Lumbar plexus block
- Combined lumbar plexus/sciatic block
- Continuous femoral and sciatic nerve and popliteal blocks
- Sciatic nerve block: anterior approach and parafemoral technique
- Obturator nerve block

OUTLINE OF WEEKLY TOPICS TO FOCUS ON DURING REGIONAL ROTATION

Week 1

- Local anesthetic pharmacology
- Basic Anatomy + Physiology of nervous system
- Ultrasound appearance of nerves
- Supraclavicular nerve block

Week 2

- Basic physics of nerve stimulation and ultrasound technology
- Femoral nerve block
- Sedation (i.e. midazolam, remifentanyl, ketamine)

Weeks 3

- Sciatic nerve block (anterior and 1 posterior approach)
- Contraindications and complications of regional techniques
- Adjuvants:
 - Epinephrine
 - Bicarbonate
 - Alpha-agonists (clonidine)
 - NMDA antagonists (ketamine)

Week 4

- Interscalene block
- Infraclavicular block
- Eye blocks

Week 5

- Ankle block
- Popliteal block
- Adjuvants:
 - Opioids
 - NSAIDS
 - Neurontin/Pregabalin

Week 6

- Paravertebral block
- Psoas block

Week 7

- Spinal, Epidural

Week 8

- Eye blocks

- Final exam

Regional Anesthesia Case Log

Name: _____ PGY Level: _____ Date _____

SITE		
UPPER EXTREMITY	Single shot	Catheter
Interscalene		
Supraclavicular		
Infraclavicular		
Axillary		
IVRA		
Interscalene		
Other :		
LOWER EXTREMITY	Single shot	Catheter
3 in1 /femoral		
Sciatic		
Popliteal fossa		
Ankle		
Other:		
Miscellaneous		
Cervical plexus		
Thoracic epidural		
Paravertebral		
Other		

Please store these in black binder in the block area. They will be collected by Dr. Hogan at the end of the rotation

DAILY EVALUATION SHEET OF RESIDENT BY APS STAFF

Resident _____ Date _____

	YES	NO	N/A (unable to assess)
Adequately prepared at start of day			
Displays appropriate knowledge for level of training			
-drugs			
-anatomy			
-physiology			
-equipment			
Effective communication			
Appropriate pt selection			
Appropriate block selection			
Appropriate follow-up			
Overall professionalism			

Comments



University of Alberta
 Department of Anesthesiology & Pain Medicine

In-Training Evaluation Report For
 Regional Anesthesia Rotation

Name of resident: _____ Date of rotation: _____
 Co-ordinator: _____

Categories: A = Adequate for level of training
 B = Requires focused study
 C = Requires additional directed assistance with some remedial work
 D = Unable to assess or N/A

	A	B	C	D
MEDICAL EXPERT				
Demonstrates knowledge of the pharmacology of local anesthetics and adjuvants (epinephrine, Bicarbonate, Opioids, Clonidine, Ketamine, NSAID's, etc)				
Demonstrates knowledge of the anatomy of peripheral nerves, including US appearance				
Demonstrates knowledge of physiology of nerve conduction, effects of neuraxial block, and the neuroendocrine stress response to pain				
Demonstrates knowledge of regional anesthesia equipment, including basic physics of nerve stimulation and ultrasound				
Demonstrates knowledge of the indications for peripheral nerve blocks, contraindications, and potential complications				
Demonstrates knowledge of anticoagulation and regional anesthesia				
Demonstrates knowledge of sedation principles related to regional anesthesia				
Demonstrates basic skills for safe performance of blocks, including choice of local anesthetics/adjuvants, positioning, landmarks, and monitoring				
Demonstrates knowledge knowledge of standard regional techniques, including spinal, epidural, upper/lower limb, trunk and airway blocks				
Demonstrates clinical skills and knowledge necessary for assessment of patients PRIOR to surgery and FOLLOWS PATIENTS AFTER SURGERY TO EVALUATE PAIN CONTROL AND ABILITY TO PERFORM PHYSIOTHERAPY				

Demonstrates knowledge of how to deal with LA toxicity				
Demonstrates knowledge of motor and sensory distribution to upper and lower limbs				
Describes anatomy relevant to interscalene, supraclavicular, infraclavicular, axillary, femoral, sciatic, popliteal and ankle blocks				

COMMUNICATOR				
Demonstrates consideration and compassion in communicating with patients and families				
Provides accurate information to the patient regarding nerve blocks and obtains consent with risks and benefits explained				
Communicates effectively with medical colleagues, nurses, and paramedical personnel in all environments				
Demonstrates appropriate oral and written communication skills				

COLLABORATOR				
Liaises with consultants to clarify specific issues relevant to the diagnosis and/or management of painful conditions				
Organizes and presents information on regional anesthetic plans to facilitate management of patients by referring physicians, consultants, and fellow anesthesiologists				
Demonstrates an ability to work effectively as an integral member of a multi-disciplinary team				

MANAGER				
Demonstrates knowledge of the management of operating rooms				
Demonstrates knowledge of the contributors to anesthetic expenditures				
Uses time appropriately in case management				

HEALTH ADVOCATE				
Demonstrates knowledge of the guidelines concerning anesthetic practice and equipment in Canada				
Recognizes the advantages and disadvantages of regional anesthesia, and then provides the appropriate information to patients, their families, and other members of the healthcare team				
Identifies issues for individual cases that threaten safety of patients and/or staff				
Identifies barriers to access and delivery of pain management				

SCHOLAR				
Critically reviews the literature to answer questions arising from patient care				
Maintains logbook of regional anesthesia cases for appropriate assessment of skill development and planning for future learning needs				

PROFESSIONAL				
Demonstrates knowledge of basic legal and bioethical issues encountered				
Includes the patient in discussions concerning appropriate diagnostic and management procedures				
Respects the opinions of fellow consultants and referring physicians in the management of patient problems and is willing to provide means whereby differences of opinion can be discussed and resolved				
Provides a role model of ethical and compassionate care for other members of patient care team				
Follows patients post-operatively to assess adequacy of pain control				