

KGH AP

REGIONAL ANESTHESIA AND ACUTE PAIN MANAGEMENT

MEDICAL EXPERT

Residents are expected to make rounds on the patients on the pain service each day, with the Acute Pain Nurse and Anesthesia Attending when they are on the Acute Pain Management Service. Residents will manage acute pain patients after hours when on-call for Anesthesia throughout the duration of their Anesthesia training. They will also be available to the PACU to place peripheral and central neuraxial blocks when required.

Knowledge: The junior resident should be aware of the following concepts, whereas the senior resident should be able to demonstrate an appropriate knowledge depth in all the following areas and discuss

1. Understand general principles of local anesthetic pharmacology, including classification of chemical groups.
2. Understand pharmacokinetics and pharmacodynamics of various local anesthetics, including:
 - onset
 - duration
 - biotransformation and excretion
 - motor/sensory differentiation
 - toxicity
3. Understand principles and indications for various local anesthetic adjuvants, including:
 - epinephrine
 - phenylephrine
 - narcotics
 - sodium bicarbonate
4. Be knowledgeable about maximum recommended doses of local anesthetics, with emphasis on the variations that occur in relations to the site of administration
 - be familiar with the ASRA&PM guidelines on treatment of Local Anesthetic Toxicity
5. Be familiar with relevant anatomy for regional techniques, including:
 1. Spinal canal and its contents:
 - variations in vertebral configurations
 - spinal nerves (lateral exit, covering, sensory distribution)
 - epidural, sub-dural, and subarachnoid spaces
 - radiological anatomy of the cervical, thoracic, and lumbar spine
 - ultrasonography of the thoracic and lumbar spine to assist neuraxial blocks
 2. Neural plexuses of the limbs
 - relationship of nerves, arteries and bones
 - motor innervations of the nerves
 - brachial plexus
 - ulnar nerve
 - radial nerve
 - median nerve
 - musculocutaneous nerve
 - axillary nerve
 - lumbar plexus
 - femoral nerve
 - lateral femoral cutaneous nerve

- obturator
 - lumbosacral plexus
 - sciatic nerve
 - tibial nerve
 - peroneal nerve
 - somatic nerves of the trunk
 - iliohypogastric nerve
 - ilioinguinal nerve
 - genitofemoral nerve
 - intercostal nerve
 - paravertebral nerve
6. Understand the principles of sedation for providing regional anesthetic procedures and be able to describe alternative techniques
 7. Have a basic understanding of the principles of ultrasonography
 8. Understand indications and contraindications to regional anesthetic techniques, including:
 - central neuraxial blocks
 - peripheral nerve blocks
 - IV regional anesthetic blocks
 9. Understand the anatomy, pathophysiology and appropriate management of complications and side effects of regional anesthetic techniques, including:
 - local anesthetic complications
 - CNS toxicity
 - cardiac toxicity
 - allergy
 - preservatives
 - total spinal/epidural anesthesia, sub-dural blocks
 - spinal and epidural hematoma, abscess
 - anterior spinal artery syndrome
 - post-dural puncture headache
 - pneumothorax
 - physiologic side effects
 - cardiovascular
 - respiratory - phrenic nerve block, intercostal nerve block
 - perioperative nerve injury, including assessment of neurologic deficits
 10. The resident will be able to describe the anatomy and physiology of pain pathways, the neuroendocrine response to acute pain and its effects of major organ systems.
 11. The resident will have knowledge of the clinical pharmacology of medications used in treatment of acute pain, including:
 - i. Medications: opioids, local anesthetics, NSAIDS, alpha-2 agonists, NMDA antagonists
 - ii. Route of administration: oral, SC, IM, IV (including PCA) epidural, intrathecal
 - iii. Regional anesthesia techniques: neuraxial and peripheral nerve blocks (as outlined in the above objectives)
 12. The resident will be able to outline the advantages of one pain relief delivery system over another, and give specific doses, rates and details of these delivery systems.
 13. The resident will demonstrate knowledge of the policies which must be in place to safely and effectively treat acute pain, monitor its efficacy and promote safety within a multidisciplinary team.

Technical Skills: a junior resident is expected to perform these skills with assistance and constant supervision of the attending. The senior resident is expected to be able to independently perform these skills

1. Be able to identify major nerves using the ultrasound
2. Use the ultrasound to facilitate placement of peripheral nerve blocks

3. Residents will be expected to be able to perform the following technical and knowledge-based skills pertinent to regional anesthesia:
 - Neuraxial blocks
 - Subarachnoid blocks
 - Epidural blocks
 - Paravertebral nerve blocks
 - Peripheral nerve blocks
 - Upper extremity blocks
 - axillary block
 - supraclavicular block
 - infraclavicular block
 - interscalene block
 - intravenous regional anesthesia
 - Lower extremity blocks
 - femoral nerve block
 - saphenous nerve block
 - sciatic nerve block
 - popliteal block
 - ankle block
4. The resident will describe and treat common and life threatening adverse reactions to medications used to treat acute pain.
5. The resident will know the pathophysiology and management of post-spinal headache, including the indications for, and side effects of, an epidural blood patch.
 - The resident will have the skills and ability to perform an epidural blood patch

COMMUNICATOR

1. Residents must demonstrate effective communication skills in dealing with patient's problems.
2. Residents must demonstrate respect and compassion, be able to communicate that the patient's problems have been understood, and describe options, side effects and complications of therapy in a manner such that the patient can make an informed decision regarding treatment
3. For the patient's families, the resident must be able to accurately provide information on each patient's condition, and the prognosis for the treatment. The resident must demonstrate an ability to make decisions and when the family must be relied upon for substitute decision-making when the patient is incapable of deciding for himself or herself.
4. The resident must be able to interact with other physicians caring for the patient in a respectful and professional manner
5. The resident must be able to effectively communicate with nursing and other paramedical personnel in a manner that ensures the best possible care for the patient

COLLABORATOR

1. Residents must demonstrate a professional attitude and competent manner when acting as a consultant as well as be able to consult other disciplines when appropriate. This entails an implicit knowledge of his/her own limitations and those of one's colleagues.
2. Residents must involve the attending anesthesiologist in the room and the surgeon in all decisions pertaining to a patient's post operative analgesia management plans

MANAGER

1. The resident should demonstrate responsibility in providing consultations in a timely manner.
2. The resident should be aware of the cost of various treatment modalities and the necessity of allocating resources appropriately.
3. The resident should be aware of the monitoring requirements of various regional techniques according the CAS guidelines.

4. The resident should be aware of the value of quality assurance, and morbidity & mortality reviews for the Acute Pain Management Service.

HEALTH ADVOCATE

The resident should demonstrate that he/she is knowledgeable of all guidelines concerning the provision of regional anesthesia and in acute pain management to properly ensure the patient's well-being.

SCHOLAR

Understand and critically evaluate outcome studies related to the influence of regional anesthesia on perioperative outcome.

PROFESSIONAL

Residents will be expected to:

1. be responsible for the Acute Pain Service and manage the patients in a timely and professional manner
2. respond to calls from the PACU when they are needed for acute pain issues
3. continue to read around problems and cases to continually improve their knowledge base
4. follow up on patients who experienced complications and/or side effects
5. work with other members of the APMS
6. provide appropriate handover to residents on-call at the end of their day

Textbooks for Reference:

- Atlas of Regional Anesthesia. David Brown
- Complications of Regional Anesthesia. Brendan Finucane

Guideline articles:

- 2010 Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy, ASRA&PM Evidence-Based Guidelines (3rd Edition), RAPM, 2010; 35: 64-101
- ASRA Practice Advisory on Local Anesthetic Systemic Toxicity, RAPM, 2010; 35(2), p152
- ASRA Practice Advisory on Neurologic Complications in Regional Anesthesia and Pain Medicine; 33(5); 2008, p404
- Acute Pain Management: Scientific Evidence: Australian and New Zealand College of Anaesthetists Faculty of Pain Medicine, 3rd Edition 2010 (available as link on website)
- www.usra.ca
- www.nysora.com

Evaluation:

- Daily clinical evaluations
- Written exam for junior residents in November of PGY2

**Block Coordinator:
Dr. Melanie Jaeger
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