

Department of Anesthesiology: Regional Anesthesiology and Acute Pain Medicine
Fellowship

Curriculum for Pediatric Regional Anesthesiology Rotation

Description of Educational Experience

The Pediatric Regional Anesthesiology Rotation is a 1-month rotation that the fellows will rotate through during their fellowship training. During this time, fellows will advance the knowledge and skills necessary to evaluate and manage the care of a variety of surgical and non-surgical patients experiencing acute pain in pediatric patients. Fellows will be expected to demonstrate multiple regional anesthesiology techniques and acute pain management techniques for pediatric patients. Fellows will assume the leadership role on a team of other trainees and nurses under the guidance of a regional anesthesia and acute pain medicine faculty. Fellows will ultimately be able to perform a multitude of peripheral and neuraxial nerve blocks for pediatric patients and manage an acute pain medicine service.

1. Patient Care and Procedural Skills

Goal

The fellow must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. By the end of the rotation, the fellow will be expected to:

Competencies/Objectives

- Demonstrate competence by following standards for patient care and established guidelines and procedures for patient safety, error reduction, and improved patient outcomes
- Perform pre-operative patient evaluation and optimization of clinical status
- Provide management of the analgesic needs of patients undergoing inpatient and outpatient surgical procedures
- Perform a detailed patient history and physical including neurologic history. Paying particular attention to pre-existing neurologic deficits and their impact on the anesthetic plan
- Understand appropriate analgesic choices including regional anesthesia techniques and multimodal techniques for various clinical situations
- Accurately obtain, interpret, and apply information about analgesic options
- Formulate a regional and multi-modal anesthesia plan for inpatient and outpatient surgical procedures
- Demonstrate selection of regional versus general anesthesia for various procedures and patients regarding patient recovery, patient outcome, operating room efficiency, and cost of care

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- Demonstrate management of inadequate operative regional anesthetic and post-operative analgesic techniques, including the use of supplemental blockade, alternate approaches, and pharmacological interventions
- Identify patients who can undergo a regional or neuraxial technique as the primary anesthetic
- Demonstrate the skills and knowledge necessary to perform and to effectively teach a wide range of advanced practice block techniques, achieving a high success and low complication rate
- Demonstrate competence in performing blocks of the brachial plexus including interscalene, supraclavicular, infraclavicular, axillary, and forearm blocks
- Demonstrate competence in performing blocks of the lower extremity including femoral, saphenous, sciatic and ankle blocks
- Demonstrate competence in performing truncal blocks including TAP, erector spinae, and paravertebral blocks
- Demonstrate competence in performing neuraxial blocks including spinals, epidural, and combined spinal-epidurals
- Demonstrate competence in providing anesthesia and peri-operative pain management for patients undergoing orthopedic surgery
- Demonstrate competence in providing anesthesia and peri-operative pain management for patients undergoing non-orthopedic surgery that is amenable to regional anesthesiology.
- Demonstrate competence in bedside point of care ultrasound for the use in placement and management of neuraxial and peripheral blocks
- Follow up on all techniques including management of any complications
- Apply current literature in the management of inpatient and ambulatory surgical patients and their analgesic needs
- Administer orthopedic and non-orthopedic surgery specific medical management
- Understand how the acute pain medicine service addresses: surgical regional anesthetic techniques, the peri-operative use of analgesic techniques by the acute pain medicine service, the peri-operative management of acute pain medicine intervention, the provision of acute pain medicine services directed toward the patient with chronic pain who is also experiencing acute pain, the provision of acute pain management to select non-surgical patients
- Demonstrate acute pain management including multimodal analgesic techniques (such as neuraxial and peripheral nerve catheters, local anesthetic and opioid infusions, non-opioid analgesic adjuvants)

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2. Medical Knowledge

Goal

The fellow must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social behavioral sciences, as well as the applications of this knowledge to patient care. By the end of the rotation, the fellow will be expected to:

Competencies/Objectives

- Advance Knowledge of local anesthetic pharmacology including mechanism of action, properties of different anesthetics, and appropriate dosing
- Explain the symptoms of Local Anesthetic Systemic Toxicity (LAST) and explain how to treat it
- Describe the different multi-modal analgesic choices and their characteristics including opioids, NSAIDs, COX-2 inhibitors, N-methyl_D-aspartic acid antagonists, alpha-2 agonists, anticonvulsant drugs, and GABA agents
- Describe nerve-localization techniques including nerve-stimulation and ultrasound
- Demonstrate knowledge of anatomy and clinical pharmacology
- Demonstrate knowledge of central neuraxial and peripheral nerve anatomy including: anatomy of neural pathways, differences between motor and sensory nerves, microanatomy of the nerve cell
- Demonstrate knowledge of local anesthetic pharmacology including: mechanism of action, physicochemical properties, pharmacokinetics and pharmacodynamics, appropriate dosing, selection and dose of local anesthetics, advantages and disadvantages of local anesthetic adjuvants, signs and symptoms of local anesthetic systemic toxicity or neurotoxicity of local anesthetics
- Demonstrate knowledge of neuraxial opioids including: indications/contraindications, mechanism of action, physiochemical properties, effective dosing, duration of action, complications and adverse effects, differentiation of intrathecal versus epidural opioid administration
- Demonstrate knowledge of nerve localization techniques, including: principles, operation, advantages, and limitations of the peripheral nerve stimulator to localize and anesthetize peripheral nerves; principles of paresthesia-seeking, perivascular, or transvascular approaches to nerve localization; principles, operation, advantages, safety and limitations of ultrasound to localize anesthetize peripheral nerves
- Demonstrate knowledge of spinal anesthesia including: anatomy, indications, contraindications, management, cardiovascular/pulmonary physiologic effects, common mechanisms for failed spinal anesthetics, advantages, and disadvantages of continuous spinal anesthesia
- Demonstrate knowledge of epidural anesthesia including: anatomy, indications, contraindications, management, cardiovascular/pulmonary physiologic effects,

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- outcome benefits of thoracic epidural analgesia, reference guidelines for antithrombotic and thrombolytic medications
- Demonstrate knowledge of upper extremity and lower extremity anatomy and nerve block choices
 - Demonstrate knowledge of truncal anatomy and nerve block options
 - Demonstrate knowledge of intravenous regional anesthetics
 - Describe complications of regional anesthetic techniques and management skills
 - Demonstrate knowledge of systemic opioid pharmacokinetics, mechanism of action, chemical structure, contraindications, use of patient controlled analgesic system, post-procedure analgesic management, and management of acute or chronic pain in the opioid tolerant patient
 - Demonstrate knowledge of multimodal analgesia and its impact on recovery after surgery

3. Practice- Based Learning and Improvement

Goal

The fellow must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. By the end of the rotation, the fellow will be expected to:

Competencies/Objectives

- Follow up on peripheral/neuraxial nerve blocks and discuss opportunities for improvement
- Demonstrate proficiency in reading scientific literature and applying choosing analgesic options for patients
- Appreciate the importance of life-long learning in the rapidly changing world of regional anesthesiology, and the importance of analyzing clinical and scientific information toward optimal patient care
- Utilize data to institute a change in one's practice
- Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement
- Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems
- Identify strengths, deficiencies, and limits in knowledge and expertise
- Identify and perform appropriate learning activities, including didactic lectures and hands-on demonstrations that promulgate safety
- Incorporate formative evaluation feedback into daily practice
- Evaluate and apply evidence from scientific studies, expert guidelines, and practice pathways to patients' medical conditions

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- Apply information technology to obtain and record patient information, access institutional and national policies, and guidelines, and participate in self educations
- Analyze their own practice with respect to patient outcomes and compare to available literature
- Advocate for acute pain management

4. Interpersonal and Communication Skills

Goal

The fellow must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. By the end of the rotation the fellow will be expected to:

Competencies/Objectives

- Obtain information from patients and provide effective communication with patients and their families
- Provide appropriate communication with surgical and intensive care teams when caring for patients
- Demonstrate ability to coordinate care by communicating with nursing staff in the preoperative, intra-operative, and post-operative care areas
- Obtain informed consent from patients and families
- Counsel and provide clear and specific verbal and/or written instructions to patients, families, and other healthcare team members related to risk and benefits of the anesthetic options and assess their comprehension
- Effectively communicate complex, difficult, or challenging information to patients, families, and other healthcare team members
- Utilize clinic information system for timely and accurate documentation and communication of patient care information
- Summarize information to the patient and family with respect to the options, alternatives, risks, and benefits of regional anesthesia and/or acute analgesic techniques in a manner that is clear, understandable, and ethical
- Develop effective listening skills and answer questions appropriately in the process of obtaining informed consent
- Operate effectively in a team environment, communicating and cooperating with surgeons, other physicians, nurses, pharmacists, physical therapists, and other members of the perioperative team

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5. Professionalism

Goal

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. By the end of the rotation, the fellow will be expected to:

Competencies/Objectives

- Demonstrate responsiveness to diverse patient needs that supersedes self-interests
- Seek and accept constructive feedback
- Adhere to principles of confidentiality, scientific\academic integrity, and informed consent
- Demonstrate respect, compassion, integrity, reliability, and dependability in their role as an anesthesiologist
- Respond in a timely manner to requests by surgeons and nurses for assistance in patient management issues.
- Follow up on patients and any complications or concerns
- Recognize individual limits in clinical situations and ask for assistance when needed
- Appreciate and be able to admit one's lack of knowledge when appropriate. Acknowledge and communicate when an error has occurred. In both situations, take steps to assess knowledge gaps, self-educate, and share learned information and/or practice changes with colleagues, patients, families.
- Demonstrate integrity, honesty, and accountability in conducting the practice of medicine
- Demonstrate a commitment to life-long learning and excellence in practice
- Demonstrate consistent subjugation of self-interest to the good of the patient and the health care needs of society
- Demonstrate commitment to ethical principles in providing care, obtaining informed consent, and maintaining patient confidentiality

6. Systems Based Practice

Goal

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. By the end of the rotation, the fellow will be expected to:

Competencies/Objectives

- Effectively choose regional anesthesiology techniques and approaches to promote per-operative efficiency and improve patient outcomes

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- Understand the interaction of the regional anesthesia and acute pain medicine service with other elements of the health care system, including primary surgical and medical teams, and other consultant, nursing, pharmacy, and physical therapy services
- Demonstrate awareness of health care costs and resource allocation, and the impact of their choices on those costs and resources
- Advocate for patients and their families within the health care system, and assist them in understanding and negotiating complexities in the system
- Provide direct acute pain management and medical consultation for the full spectrum of injuries, medical etiologies, and surgical and other invasive procedures that produce acute pain in the hospital setting
- Safely and effectively perform a comprehensive range of advanced regional anesthesiology procedures for appropriate indications, in a safe, consistent, and reliable manner, understanding the individual risks and benefits of each
- Act as a consultant to other anesthesiologists, surgeons, physicians, nurses, pharmacists, physical therapists and other medical professionals, operating room managers, hospital administrators, and other allied health providers
- Provide leadership in the organization and management of an acute pain medicine service within the hospital setting
- Understand the role as a patient care advocate
- Become familiar with costs associated with specific interventions
- Emphasize safety and well-being of patients in the ambulatory setting
- Become aware that safe and quality patient care takes a multi-dimensional, collaborative approach beyond individual competency
- Demonstrate familiarity of best practice regarding regional anesthesia and anticoagulation
- Describe Local Anesthetic Systemic Toxicity treatment plan and how to utilize available resources to optimize patient safety
- Recognize areas within a healthcare system that are vulnerable to medical errors, near misses, and sentinel events
- Utilize the institutional infrastructure for reporting system errors and for implementing potential systems solutions
- Engage in patient safety and quality improvement initiatives within a system
- Utilize healthcare resources responsibly
- Lead multidisciplinary team projects for patient safety and/or quality improvement within a system

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| Teaching Methods |
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| Didactic Lecture |
| Problem Based Learning Discussions |
| Reading Assignments |
| Written QI Projects |

| Assessment Method (fellows) |
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| Each resident must complete a QI project that must be submitted in writing to the Program Director for evaluation |
| Performance on written examinations |
| 360 evaluations |
| Self and portfolio evaluation |
| Simulation and OSCE scenario |
| Direct Observation |