The University of Arizona Pediatric Residency Program

Primary Goals for Rotation

Anesthesia

1. **GOAL**: Maintenance of Airway Patency and Oxygenation. Recognize and manage upper airway obstruction and desaturation.
2. **GOAL**: Participate in the care and management of pediatric patients requiring general and local anesthesia.
3. **GOAL**: Understand the principles of pediatric sedation and apply them in the appropriate setting.
4. **GOAL**: Recognize and manage pain occurring with common pediatric conditions.
5. **GOAL**: Demonstrate high standards of professional competence while working with patients under the care of a subspecialist.

1. GOAL: Maintenance of Airway Patency and Oxygenation. Recognize and manage upper airway obstruction and desaturation.

A. Recognize and manage upper airway obstruction.

1. Identify conditions that result in upper airway obstruction.
2. Know indication for and demonstrate use of oropharyngeal airway vs. nasal trumpet.
3. Discuss routine care of a tracheostomy and know how to recognize tracheostomy obstruction; demonstrate proficiency in replacement of a tracheostomy tube.

B. Recognize desaturation that requires intervention and know the indications for use of appropriate oxygen delivery devices (e.g., simple nasal cannula, simple O2 mask, Venturi mask, partial rebreather and non-rebreather masks).

2. GOAL: Participate in the care and management of pediatric patients requiring general and local anesthesia.

A. Assist the anesthesiologist or surgeon in addressing issues related to pre-anesthesia evaluation, risk assessment and preparation.

1. Complete pre-op evaluation, including history, physical examination, laboratory testing, and pediatric assessment of anesthesia risk, and communicate concerns to anesthesiologist or surgeon.
2. Participate in deciding whether a child is appropriate for day surgery or inpatient surgery.
3. Assist in airway assessment as it relates to the anticipated anesthetic.
4. Refer for cardiovascular assessment as it relates to the anticipated anesthetic.
5. Participate in the pre-anesthesia management of children with the following conditions: recent upper respiratory infection, reactive airway disease, upper airway obstruction (croup, epiglottitis, airway foreign body), congenital heart disease, neonatal apnea, obstructive sleep apnea, diabetes, seizure disorder.
6. Recognize special anesthetic considerations for children with the following conditions: genetic disorders, musculoskeletal disorders and conditions requiring emergency surgery.

7. Manage issues related to the continuation of chronically administered medications.

8. Recognize the importance of and describe in general terms the principles of pre-anesthesia sedation.

9. Participate in educating families regarding principles related to NPO status and PO intake prior to induction of anesthesia.

10. Assist in the psychosocial preparation of the child and parents for anesthesia.

11. Recognize the importance of and describe in general terms the complication of malignant hyperthermia.

B. Demonstrate understanding of the following principles of intraoperative anesthetic management:

1. IV access and fluid management during anesthesia
2. Non-invasive monitoring of blood pressure, heart rate, oximetry and capnography
3. Temperature control in the peri-anesthetic period
4. Anesthetic equipment
5. Bag mask ventilation devices (self-inflating bag, anesthesia bag)
6. Airway devices (oral/nasal airways, endotracheal tubes, laryngeal mask airways)
7. Laryngoscopes
8. Use of physical examination and monitoring methods for early detection of airway obstruction
9. Airway suction devices
10. Oxygen supplementation devices
11. Anesthetic induction and reversal techniques, including basic pharmacology of inhalation anesthetic agents, intravenous anesthetic agents, muscle relaxants, local anesthetics, narcotic analgesics, and agents to reverse muscle relaxation

C. Understand the basic pharmacology of commonly used agents for local anesthesia and their side effects.

D. Demonstrate understanding of the following principles of post-anesthesia management:

1. Management of post-anesthesia nausea and vomiting
2. Post-surgical pain management (in-hospital, day surgery, home)
3. Re-establishment of PO intake after anesthesia
4. Discharge criteria
5. Adequate follow-up

E. Identify psychosocial barriers to obtaining adequate post-operative care (e.g., parental anxiety, cost, distance, school attendance)

F. Describe the role and general scope of practice of pediatric anesthesiologists; recognize situations where children should be cared for by anesthesiologists trained in the care of children; work effectively with these specialists in the care of children.

3. GOAL: Understand the principles of pediatric sedation and apply them in the appropriate setting.

A. Participate in managing children in the outpatient setting who require sedation for diagnostic and/or therapeutic procedures performed outside of the operating room.

B. Discuss patient/procedural factors that increase risk of morbidity from sedation, scenarios requiring anesthesia consultation regarding sedation safety, and issues that drive a need for general anesthesia rather than sedation.

C. Understand the basic pharmacology of commonly used agents for sedation and their side effects.

D. Identify safe procedures for administering and monitoring sedatives and analgesics when general anesthesia is not used, e.g., for the following procedures commonly ordered by general pediatricians:

1. Magnetic resonance imaging
2. Computed tomography
3. Lumbar puncture
4. Wound management

E. Demonstrate familiarity with safe procedures for administering and monitoring sedatives and analgesics when general anesthesia is not used, e.g., for the following procedures ordered or performed by subspecialists:

1. Radiological procedures other than MRI, CT
2. Gastrointestinal endoscopy
3. Pulmonary endoscopy
4. Radiation therapy
5. Bone marrow aspiration
6. EEG

F. Explain current terminology for various levels of sedation, including terms used by hospital accreditation bodies and credentialing committees (e.g., "conscious sedation") and demonstrate that you understand your hospital's standards for safety for each type of sedation.

G. Recognize circumstances when optimal care of the child requires the services of an anesthesiologist.

4. GOAL: Recognize and manage pain occurring with common pediatric conditions.

A. Skillfully use tools to assess pain in infants and children.

B. Understand general principles of pharmacologic pain management.

1. Choice of analgesic agent (nonsteroidal anti-inflammatory, opioid)
2. Choice of administrative route
3. Dose escalation and weaning
4. Shifting between analgesics
5. Monitoring efficacy
6. Side effects

C. Recognize the utility of regional nerve blocks for post-surgical pain relief.

D. Recognize and explain the principles of:

1. Patient controlled analgesia (PCA)
2. Epidural infusion of analgesic medications
3. Patient-controlled epidural analgesia

E. Address issues surrounding the management of chronic pain.

1. Recognize the common scenarios associated with chronic pain.
2. Describe general principles about treatment for chronic pain syndromes, including approaches using pharmacology, behavioral/psychosocial, complementary or alternative therapies.
3. Recognize non-pharmacological treatment alternatives for chronic pain syndromes, including complementary and alternative methods.
4. Use behavioral and supportive care for pain management in acute situations.
5. Use psychosocial adjuncts for treatment of chronic pain syndromes in a variety of situations, such as neonatal intensive care treatments, sickle cell anemia, headache.
6. Consider special issues in the treatment of pain occurring in association with burns, terminal illness and emergency procedures.

F. Address issues surrounding common pain problems (e.g., circumcisions, immunizations, phlebotomy, otitis media, pharyngitis, teething).

5. GOAL: Demonstrate high standards of professional competence while working with patients under the care of a subspecialist.

A. **Competency 1:** Patient Care. Provide family-centered patient care that is development- and age-appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.

1. Use a logical and appropriate clinical approach to the care of patients presenting for specialty care, applying principles of evidence-based decision-making and problem-solving.

2. Describe general indications for subspecialty procedures and interpret results for families.
B. **Competency 2:** Medical Knowledge. Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by a pediatrician; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.
1. Acquire, interpret and apply the knowledge appropriate for the generalist regarding the core content of this subspecialty area.
2. Critically evaluate current medical information and scientific evidence related to this subspecialty area and modify your knowledge base accordingly.
C. **Competency 3:** Interpersonal Skills and Communication. Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.
1. Provide effective patient education, including reassurance, for a condition(s) common to this subspecialty area.
2. Communicate effectively with primary care and other physicians, other health professionals, and health-related agencies to create and sustain information exchange and teamwork for patient care.
3. Maintain accurate, legible, timely and legally appropriate medical records, including referral forms and letters, for subspecialty patients in the outpatient and inpatient setting.
D. **Competency 4:** Practice-based Learning and Improvement. Demonstrate knowledge, skills and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate, and improve one's patient care practice.
1. Identify standardized guidelines for diagnosis and treatment of conditions common to this subspecialty area and adapt them to the individual needs of specific patients.
2. Identify personal learning needs related to this subspecialty; systematically organize relevant information resources for future reference; and plan for continuing acquisition of knowledge and skills.
E. **Competency 5:** Professionalism. Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.

1. Demonstrate personal accountability to the well-being of patients (e.g., following up on lab results, writing comprehensive notes, and seeking answers to patient care questions).
2. Demonstrate a commitment to carrying out professional responsibilities.
3. Adhere to ethical and legal principles, and be sensitive to diversity.

F. **Competency 6:** Systems-based Practice. Understand how to practice high-quality health care and advocate for patients within the context of the health care system.

1. Identify key aspects of health care systems as they apply to specialty care, including the referral process, and differentiate between consultation and referral.
2. Demonstrate sensitivity to the costs of clinical care in this subspecialty setting, and take steps to minimize costs without compromising quality.
3. Recognize and advocate for families who need assistance to deal with systems complexities, such as the referral process, lack of insurance, multiple medication refills, multiple appointments with long transport times, or inconvenient hours of service.
4. Recognize one's limits and those of the system; take steps to avoid medical errors.

Procedures

A. GOAL: Technical and therapeutic procedures. Describe the following procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.

1. Anesthesia/analgesia: conscious sedation
2. Anesthesia/analgesia: digital blocks
3. Anesthesia/analgesia: local/topical
4. Anesthesia/analgesia: pain management
5. Arterial puncture
6. Central line: use/care
7. Endotracheal intubation
8. Endotracheal intubation: rapid sequence intubation
9. Intravenous line placement

10. Medication delivery: inhaled
11. Pulse oximeter: placement
12. Seldinger technique
13. Suctioning: nares
14. Suctioning: oral pharynx
15. Suctioning: tracheostomy
16. Ventilation: bag-valve-mask
17. Ventilation support: initiation
B. GOAL: Diagnostic and screening procedures. Describe the following tests or procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.
1. ECG: emergency interpretation
2. Monitoring interpretation: cardiac
3. Monitoring interpretation: pulse oximetry
4. Monitoring interpretation: respiratory
5. Monitoring interpretation: Capnometry/end-tidal CO2
6. Radiologic interpretation: chest X-ray
Adapted From Kittredge, D., Baldwin, C. D., Bar-on, M. E., Beach, P. S., Trimm, R. F. (Eds.). (2004). APA Educational Guidelines for Pediatric Residency. Ambulatory Pediatric Association Website. Available online: www.ambpeds.org/egweb.