

Pediatric Anesthesia Rotation

ROTATION DIRECTORS:

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Rotation Overview

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Goals and Learning Objectives for CA-1, CA-2 and CA-3 Residents

The following Goals and Objectives are included in the Residency Handbook which was provided to you on entry into the program. An electronic version can be accessed at any time through the G Drive. Residents are required to review the Rotation Goals and Learning Objectives appropriate to their level of training prior to beginning their rotation. Any questions pertinent to these guidelines should be discussed with the Rotation Director and/or the Program Director.

I. Rotation Overview

Welcome to the Division of Pediatric Anesthesia under the auspices of the Department of Anesthesiology at Tufts Medical Center. The Division was founded in the mid 1950's by Dr. Robert. N. Reynolds, a very distinguished physician and teacher.

The Accreditation Council for Graduate Medical Education (ACGME) mandates a minimum of 2 months of Training in Pediatric Anesthesia. Our program however is structured to provide you with a minimum of 3 months of mandatory training. Additional time may be requested and granted by the Program Director in the CA3 year. You will be assigned to your first pediatric anesthesia rotation towards the latter half of your CA1 year.

During the Pediatric Anesthesia Rotation you will be exposed to the fundamentals of our subspecialty. You will gain understanding and learn clinical skills to take care of infants and children in the pre, intraop and postoperative period. You will begin with taking care of simple straight forward cases in your CA1 year and you will slowly advance to taking care of more complicated cases with complex medical problems during your CA2 and CA3 rotation months.

Your experience during this rotation will be directed toward achieving certain goals and objectives. These are intended to assist you in gaining an understanding of this subspecialty, achieving general competencies appropriate for all physicians, and building upon those attributes necessary to become Diplomates of the American Board of Anesthesiology.

Some of the Goals and Learning Objectives are marked ADVANCED (ADV) to help you better guide, plan and structure your course curriculum. The following goals and objectives are **progressive** in nature and different residents may reach them at different times. However minimal expectations at each level of training are summarized at the end of this document.

Concentrating and focusing on the BASICS will strengthen your fundamentals and help you manage more complex cases later in your training as you advance into your CA3 year. The CA3 Rotations will differ substantially from the experience of the previous two years. There will be an increase both in the complexity of patients and the level of responsibility.

Our program is unique in the sense that Pediatric Anesthesia is taught and experienced as a continuum throughout the residency training rather than just being restricted to the stipulated 3 months. This is because we have an integrated tertiary level Children’s Hospital (Floating Hospital for Children) on the premises and residents form an integral part of the pediatric anesthesia team after their first pediatric rotation. We take pride in the fact that our residents are very competent and comfortable in taking safe, high quality care of children by the time they graduate.

II. Pediatric Anesthesia Faculty

M. Iqbal Ahmed, MB;BS, FRCA	Interim Division Chief, Pediatric Anesthesia Program Director, Tufts Medical Center Anesthesia Residency Program Director, Pediatric Cardiac Anesthesia Assistant Professor of Anesthesiology, Tufts University School of Medicine
Aman Kalra, MD	Director, Pediatric Anesthesia Fellowship Program Assistant Professor of Anesthesiology, Tufts University

	School of Medicine
David Moss, MD	Staff Pediatric Anesthesiologist Assistant Professor of Anesthesiology, Tufts University School of Medicine
Thomas Sung, MD	Staff Pediatric Anesthesiologist Instructor of Anesthesiology, Tufts University School of Medicine
Henna Tirmizi, MD	Staff Pediatric Anesthesiologist, Pediatric Cardiac Anesthesiologist
Mariam Nakhaie, MD	Staff Pediatric Anesthesiologist (0.5 FTE)

III. Teaching Methodology

The ACGME has recognized six general competencies for resident education. These competencies are:

- Medical Knowledge (MK)
- Patient Care (PC)
- Interpersonal and Communication Skills (ICS)
- Professionalism (PROF)
- Practice Based Learning and Improvement (PBLI)
- Systems Based Practice (SBP)

Competency based education focuses on learner performance (learning outcomes) in reaching specific objectives (goals and objectives of the curriculum).

The Goals and Objectives of the rotation will be met utilizing the following methods:

- Didactic Activities: Core Lecture Series, Monday Grand rounds, Morbidity and Mortality Conferences, Monthly Journal Clubs , morning keyword and mini-topic sessions
- Clinical Teaching in the OR involving. Close supervision by faculty allowing for continuous discussion of patient care issues and the rational underlying decision-making
- Clinical Assignments and resident presentations
- ABA In-training Examinations
- Internal Review Written Exams based on didactic series
- Other Objective Cognitive Tests such as the Anesthesia Knowledge Test (AKT)

- Mock Oral Board Examinations
- PBLI and SBP Activities: (involvement in QA/QI, M&M conferences, Risk Management and Patient Safety Initiatives)
- Guided personal study
- Clinical Research Projects
- Simulation education

Recommended Texts, Reading Material and Electronic Resources:

- *“A Practical Approach to Pediatric Anesthesia”* by Robert Holzman and Thomas Mancuso is a very readable text that is recommended for our residents.
- *“A Practice of Anesthesia for Infants and Children”* by Charles J. Cote, David Todres has been recently updated and is available in both print and online format.
- *“Smith’s Anesthesia for Infants and Children”* by Davis, Cladis and Motoyama. Eighth Edition 2011 Elsevier Science. This book has also been thoroughly updated and is available in both print and online formats
- *“Clinical Anesthesia Procedures of the Massachusetts General Hospital”* by Peter Dunn and Keith Baker. The Pediatric Anesthesia and Neonatal Section give a good outline and is an easy read.
- Electronic Access via Tufts Health Sciences Library to multiple reference and research resources (OVID, Medline, MD Consult, Pediatric Anesthesia Journals etc.)
- Pediatric Anesthesia Sections from Major Anesthesia Texts (Miller, Barash etc.)

IV. Evaluation and Assessment Methods

Your clinical performance during the rotation will be assessed using a collection of assessment and evaluation tools to assure that the competency – set goals and objectives have been met. Constructive assessment and feedback will help you focus on areas which and skill sets which need attention so that you can improve in them. Assessment data also will help us improve our rotation and improve your educational experience. Competencies covered using each method are delineated in *italics* below

A. Focused Direct Observation and Feedback

During the rotation residents will receive direct observation and feedback from the rotation’s supervising faculty. This will include verbal feedback and Clinical Performance Rating utilizing the New Innovations System.

All 6 competencies.

B. 360 ° Global Evaluations

These are evaluation by different members of the patient care team (Self (*see below*), Surgeons, Nursing Staff, Ancillary Staff etc.). Helps provide multiple perspectives of resident's performance.

Professionalism, Interpersonal and Communication Skills, SBP

C. Self-Assessment

A commitment to ongoing self-assessment and self- reflection skills are taught and reinforced by the Self-Assessment and Reflection form. Each resident is needs to complete the Self-Assessment/Reflection Form prior to formal quarterly meetings with the Program Director / CCC Chair

All 6 Competencies

D. Review of Case Logs

Case logs will be reviewed by the Rotation Director and the Program Director to assess the breath of clinical experience and case load type. If deficiencies are found in certain skills sets or case types, the Program Director will coordinate with the OR Clinical Coordinators to get you involved in such cases

Medical Knowledge

Patient Care

E. Participation in Didactic and Educational Activities

Core Lectures, Participation in Case Conferences and M&Ms

PBLI

Interpersonal and Communication Skills

Medical Knowledge

Patient Care

F. Written Examinations

Medical knowledge will be assessed using the Annual In-Training Exams and Anesthesia Knowledge Tests.

Medical Knowledge

G. Mock Orals and Oral Board Review

Semi Annual Mock Orals are conducted by the department to prepare residents for the ABA Oral Exams. The Mock Orals also gives us the opportunity to assess your professional analytical and communication skills.

Medical Knowledge

Interpersonal and Communication Skills

PBLI

SBP

H. Scholarly Activity and Research

Residents are strongly encouraged to participate in scholarly activities, ongoing research projects, write case reports and participate in national meetings. They are expected to

present their academic projects at local, regional or national meetings at least once during their residency.

Medical Knowledge

Interpersonal and Communication Skills

Practice Based Learning and Improvement

I. Rotation Evaluations by Residents

Residents are required to evaluate the rotations at the completion of the rotation and also during the annual confidential program and faculty survey. The aim is for them to self-assess the successful achievement of rotation goals, provide feedback to the program and develop PBLI plans. Residents are required to fill out the "End of rotation evaluation" form or online via NI. This feedback is important for us to continue improving the rotation and address specific issues. In addition they should complete the annual confidential program survey for anonymous commentary. They are encouraged to submit any suggestions or concerns to the rotation director, their faculty advisor and/or the program director.

Practice Based Learning and improvement

The Rotation Director will give you feedback at the end of the month. The Program Director and/or the CCC Chair will give a summative assessment on quarterly basis.

V. Goals and Learning Objectives

The detailed Goals and Learning Objectives of the Pediatric Anesthesia Rotation for residents are outlined below. The curriculum has been developed based on the new ACGME competency based education guidelines. The contents of the course curriculum have been compiled based on the *ABA Part 1 Exam Content Outline* and the Course Guidelines developed by the *ASA Committee on Pediatric Anesthesia*.

As mentioned in detailed under the Rotation Overview Section, some of the goals, learning objectives and skill sets are marked **ADVANCED (ADV)** and are geared more towards CA3 residents.

A. Medical Knowledge

1. Goals:

Residents will learn about the fundamentals of pediatric anesthesia practice. They will gain a broad understanding of the anatomical, physiological and pharmacological characteristics relevant to administering anesthesia to neonates, infants and children. They will understand how specific medical problems and syndromes in children effect

their anesthetic management. Over the allocated 3 months of pediatric block time, the residents should have read pertinent sections from major anesthesia textbooks.

2. Learning Objectives

a) *Pediatric Developmental Principles*

1. Define Preterm, Prematurity, Neonate, Infant, and Child.
2. Understand the terms Gestational Age and Post-Conceptual Age.
3. Understand the transition from fetal to neonatal circulation including the effect on vascular and cardiac structures (conversion from parallel to series circulation), fetal hemoglobin and blood gas values, arterial and pulmonary artery pressure changes, and ventricular function.
4. Understand normal airway and respiratory development, cardiac development, neurologic development, renal development and hematopoietic development including the conversion of fetal to adult hemoglobin.
5. Understand the effect of prematurity upon organ system development and the short and long-term risks of prematurity including respiratory distress syndrome, bronchopulmonary dysplasia, apnea, anemia, intraventricular hemorrhage, retinopathy of prematurity, and hypoglycemia.
6. Understand and assimilate the rapidly increasing evidence of anesthesia induced neurotoxicity on developing animal brain models and the current epidemiological and lab evidence of human neurotoxicity. Be able to address and communicate this issue to concerned parents using the best available evidence

b) *Pharmacokinetics and Pharmacodynamics of Drugs Used in Children*

1. Understand broadly how the pharmacokinetics and pharmacodynamics of drugs differs in infants and children as compared to adults.
2. Understand how Protein Binding, Body Composition, Hepatic and Renal function affects drug dosages and their duration of action.
3. Define MAC and how it differs with age.
4. Review and learn the pharmacology of inhalation agents, intravenous anesthetics, neuromuscular blockers and opioids as relevant to pediatric patients.

c) *Fluid and Blood Therapy*

1. Learn and understand basics of fluid therapy in children.
2. Residents will be able to calculate fluid requirements and choose the appropriate fluid type.
3. Learn about glucose metabolism and requirements particularly in the neonatal population.
4. Understand fundamentals of blood replacement therapy. Pediatric dosages and special concerns.

d) *Coexisting Disease States*

Residents will learn how the following common disease states affect anesthetic management:

1. Understand the anatomy and pathophysiology of common cyanotic and acyanotic congenital heart lesions including ventricular septal defect, atrial septal defect, patent ductus arteriosus (PDA), critical aortic stenosis and coarctation, pulmonary stenosis, Tetralogy of Fallot, and transposition of the great arteries. (ADV)
2. Understand the anesthetic implications for children with congenital heart disease including associated syndromes, preoperative assessment, SBE prophylaxis, anesthetic cardiovascular effects, and the effects of an intracardiac shunt on intravenous and inhalation induction of general anesthesia. (ADV)
3. Understand the pathophysiology and anesthetic implications of obstructive sleep apnea, asthma, and acute upper respiratory tract infection.
4. Learn the common congenital syndromes that include difficult airways, e.g., Pierre Robin, Treacher-Collins, etc. (ADV)
5. Know the anesthetic implications of cerebral palsy, seizure disorders, hydrocephalus, neuromuscular diseases, muscular dystrophies, and diseases of the neuromuscular junction and neuromuscular transmission.
6. Understand the anesthetic implications of musculoskeletal diseases: scoliosis, achondroplasia, osteogenesis imperfect etc. (ADV)
7. Understand the anesthetic implications for pyloric stenosis, gastro-esophageal reflux, renal disease and liver disease in the pediatric patient. (ADV)

8. Understand the anesthetic implications and perioperative management of inherited disorders of coagulation (e.g. Hemophilia, Von Willibrands Disease) and hemoglobinopathies (e.g. sickle cell disease).
9. Know the anesthetic considerations for children with oncologic disease and who have had chemotherapy. (ADV)
10. Know the anesthetic implications of children with a newly diagnosed anterior mediastinal mass. (ADV)
11. Understand the anesthetic considerations for Trisomy 21.
12. Understand the anesthetic considerations for a child with a latex allergy.
13. Know the residual medical problems in children born premature (e.g., bronchopulmonary dysplasia) and the potential impact on anesthetic care. (ADV)
14. Learn about Malignant Hyperthermia in Children: susceptibility, associated diseases, anesthetic management of MH susceptibility, intraoperative diagnosis, treatment
15. Learn about the anesthetic implications Endocrine diseases: childhood diabetes, congenital adrenal hyperplasia, childhood obesity etc. (ADV)

e) *Anesthesia for Specific Neonatal and Pediatric Surgical Conditions*

Residents will learn about pathophysiology, indications for surgical intervention and anesthetic management of common neonatal surgical emergencies, and other common pediatric surgical conditions.

1. Congenital diaphragmatic hernia (CDH) (ADV)
2. Inguinal hernia (ADV)
3. Intussusception
4. Necrotizing enterocolitis (NEC) (ADV)
5. Omphalocele and Gastroschisis (ADV)
6. Pyloric stenosis
7. Otitis media requiring myringotomy and tube placement
8. Obstructive sleep apnea or recurrent tonsillitis requiring adenotonsillectomy
9. Acutely bleeding tonsil
10. Esophageal foreign body

11. Tracheal or bronchial foreign body (ADV)
12. Retropharyngeal abscess (ADV)
13. Epiglottitis
14. Hydrocephalus requiring ventriculo-peritoneal (VP) shunt insertion or revision
15. Myelomeningocele (ADV)
16. Blocked tear ducts requiring lacrimal duct probing and irrigation
17. Open globe injury
18. Strabismus
19. Scoliosis
20. Craniosynostosis (ADV)
21. Cleft lip or palate (ADV)
22. Tracheoesophageal fistula (TEF) (ADV)
23. Pediatric trauma
24. Pediatric burns (ADV)

f) Anesthetic Technique:

Preoperative Evaluation and Assessment, Intraoperative and Postoperative Management.

1. Understand the pre-operative issues relevant to the anesthetic care of neonates, infants and children including: coexisting morbidities, medications, allergic reactions, labor and delivery history, maternal history, family history, the normal pediatric physical exam and the evaluation of abnormal findings.
2. Know the ASA guidelines for preoperative fasting including clears, breast milk and formula based upon patient age. Understand the appropriate ordering of preoperative laboratory testing and evaluation.
3. Know the options available for premedication including agents, routes and side-effects.
4. Understand the differences between the various pediatric breathing circuits to provide oxygen and anesthesia.
5. Understand the factors determining the speed of inhalation induction in pediatric patients and the various agents currently available for inhalation induction including the benefits and side-effects of each.

6. Understand the regulation of temperature in infants and children and compensatory mechanisms, effects of anesthesia on temperature and the consequences of hypothermia.
7. Know the differential diagnosis and management of perioperative hyperthermia.
8. Know the age-related fluid and electrolyte requirements for infants and children including calculation of deficit, intra-operative fluid requirements, glucose requirements and the guidelines, indications and side effects for blood and blood product administration in the pediatric patient.
9. Understand the differences between the pediatric airway and the adult airway and the effects on pediatric airway management.
10. Know the various sizes of oral/nasal airways, facemasks, LMAs, blades for laryngoscopy and endotracheal tube sizes (cuffed and uncuffed) and their appropriate use in children of all ages.
11. Know the prevention, management and consequences of laryngospasm.
12. Know the pediatric doses of intravenous anesthetic medications including induction agents, opiates, muscle relaxants, reversal agents and emergency medications including side-effects and contraindications.
13. Know the criteria for tracheal extubation and how to perform a deep extubation safely.
14. Know the therapeutic and toxic doses of local anesthetics in infants and children.
15. Understand the indications and contraindications for spinal and epidural anesthesia and peripheral blocks in infants and children plus side effects and complications.
16. Understand the post-operative anesthetic complications for pediatric patients including stridor, croup, nausea/vomiting and emergence delirium and their management.

B. Patient Care

1. Goals:

1. Residents must be able to provide anesthetic care that is compassionate, appropriate and effective. They should be able to communicate effectively with the care team.

2. They should demonstrate caring and respectful behavior with the team members, patients and their families.
3. They should be able to gather essential and accurate information about their patients and be able to formulate an anesthetic care plan.
4. They should be able to competently perform airway management and invasive anesthetic procedures.

2. Learning Objectives:

1. Perform appropriate preoperative evaluation of neonates, infants and children.
2. Obtain informed consent from a parent and assent from an appropriately aged child.
3. Be able to address and communicate to concerned parents regarding the available evidence on anesthetic induced neurotoxicity in neonates, infants and small children.
4. Be able to formulate an anesthetic plan based on patients medical history and planned surgical procedure.
5. Administer premedication to a child.
6. Perform a parent-present induction of general anesthesia, if allowed by the institution.
7. Use a precordial or esophageal stethoscope for an anesthetic.
8. Perform inhalation inductions on pediatric patients of all ages.
9. Be able to place an intravenous catheter in a pediatric patient.
10. Develop a plan when intravenous catheter placement fails.
11. Monitor patient temperature and perform warming methods on a neonates, infants and children.
12. Be able to place an arterial catheter and central venous catheter in a pediatric patient. (ADV)
13. Appropriately choose and administer fluids to pediatric patients of all ages.
14. Estimate Blood Volume and be able to calculate allowable blood loss for children of all ages.
15. Perform mask ventilation, LMA placement and intubation on pediatric patients of all ages.
16. Appropriately manage upper airway obstruction, laryngospasm, and bronchospasm in pediatric patients.
17. Develop the ability to appropriately manage intraoperative hypoxemia.

18. Develop the ability to appropriately manage intraoperative hypocarbia or hypercarbia.
19. Develop the ability to appropriately manage intraoperative hypotension or hypertension.
20. Develop the ability to appropriately manage intraoperative bradycardia or tachycardia.
21. Perform commonly used regional analgesic techniques in pediatric patients (Caudal Epidural Block, Epidural Blockade etc.). (ADV)
22. Perform a preoperative evaluation and participate in an anesthetic for a pediatric patient with congenital heart disease. (ADV)
23. Perform a preoperative evaluation and present an anesthetic plan for a pediatric patient with an upper respiratory tract infection (URI). Develop a decision process for proceeding with elective surgery in a child with an acute or recovering URI.
24. Identify and evaluate the child with a difficult airway. (ADV)
25. Plan an anesthetic for a child with a neuromuscular disease. (ADV)
26. Develop a plan for the perioperative management of a child with sickle cell disease. (ADV)
27. Develop a plan for the perioperative management of a child with a congenital bleeding disorder. (ADV)
28. Plan an anesthetic for the prematurely born child. (ADV)
29. Develop an anesthetic plan for neonates and infants with common surgical problems (TEF, Gastroschisis, Diaphragmatic Hernias, etc.) (ADV)
30. Using PALS, the resident is able to preside over the resuscitation of a child in cardiac arrest, or with a life-threatening hemodynamic disturbance or arrhythmia. (ADV)

C. Interpersonal and Communication Skills

1. Goals:

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange. They should be able to work effectively with others as a member or leader of a patient care team. They will learn how to effectively gather information using effective listening, explanatory, questioning and writing skills.

2. Learning Objectives:

1. Resident will be able to establish a sustained and therapeutic and ethically sound relationship with the patient and his/her parents /family.
2. Will be able to effectively retrieve pertinent medical information from the patient, parents and patient care team members.
3. Obtain informed consent and clearly communicate the anesthetic options and risks to the patient / parents.
4. Will coordinate care and work effectively with other patient care team members (surgeons, operating room and ICU nurses, child life specialists etc.)

D. Professionalism

1. Goals:

Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

2. Learning Objectives:

1. Resident will demonstrate respect, compassion and integrity.
2. Resident will demonstrate a commitment to ethical principles
3. Resident will demonstrate sensitivity and responsiveness to the needs of parents and children.
4. Will demonstrate sensitivity towards patient's culture, gender and disabilities.
5. Resident will demonstrate ability to manage conflict
6. Resident will show commitment to excellence in the care of children and their families.
7. Resident will demonstrate ongoing commitment towards professional development.
8. Resident will demonstrate consistent follow up of patients they have cared for including **Post-Operative Visit** or phone call where appropriate. The post-operative follow-up should be discussed with the appropriate faculty.

E. Practice Based Learning and Improvement

1. Goals:

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

2. Learning Objectives:

1. Learn about the ASA Standards and Guidelines as pertinent to the practice of Pediatric Anesthesia. They will analyze and improve on their practices based on the guidelines and standards set forth by the ASA.
2. Will be able to locate, appraise and assimilate evidence from peer reviewed scientific articles related to our subspecialty. (ADV)
3. They will explore various ways to find information using information technology (e.g. PubMed, Ovid, MD Consult etc.). They will learn to use our institutions Patient Information System to effectively gather information.
4. They will be able to apply knowledge based on the appraised literature and strive to practice evidence based medicine.
5. Senior residents will assist juniors as they rotate through their pediatric anesthesia rotation and will be introduced to a teaching role. (ADV)
6. They will develop a solid understanding of recent developments and controversies in the management of pediatric patients by searching for and critically reading recent publications. (ADV)
7. They will take active part in departmental and institutional Quality Improvement and Risk Reduction projects. (M&M, Ticket to Safety etc.)

F. Systems Based Practice

1. Goals:

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide effective safe care

2. Learning Objectives:

1. Residents need to understand the functioning of the operating room and understand how anesthesia services integrate with the rest of the perioperative services. (ADV)
2. Residents will learn to promote patient safety and understand ways to reduce medical errors (e.g. ticket to safety initiative, drugs error prevention program etc.)
3. Residents will have an opportunity to understand the fundamentals of billing and coding pertaining to the practice of anesthesia. (ADV)
4. The resident will strive to use medical supplies and equipment in a cost effective manner. Will learn strategies to reduce wastage and minimize cost of care.
5. Senior residents will be expected to plan for and provide appropriate care in the context of the wider health care system. They will be expected to initiate and organize appropriate peri-operative consultations, help the service in discharge planning and ensure coordination of pertinent information transfer to caregivers in referring facilities such as rehabilitation facilities or primary care physicians. They will learn to advise primary services on appropriateness of ICU admissions or same day discharges.(ADV)
6. Residents will become familiar with the working and development of Anesthesia Information Management Systems (AIMS). They will recognize the strengths and limitations of such systems.

G. Summary of Minimum Expectation at Each Training Level

1. At the conclusion of the CA-1 year, the resident should:

1. Have read the basic chapters on pediatric anesthesia from a comprehensive text.
2. Have read much of the "Pediatric Anesthesia Handbook"
3. Be able to provide anesthesia for the relatively uncomplicated pediatric patient, including, but not limited to the following skills:
 - a. Basic pre-op evaluation and obtaining consent including NPO guidelines
 - b. Inhalation induction (with and without parental presence)
 - c. Set up the OR for pediatric patients over one year of age
 - d. Calculate fluid requirements/deficit
 - e. Know doses based on body weight in Kilograms of all commonly used anesthetic and antibiotic drugs

- f. Know how to choose proper sizes of airway equipment for patients of varying age/size.

2. At the conclusion of the CA-2 year, the resident should

1. Be investigating via pediatric anesthesia texts, journals and/or edited internet sites specific, challenging pediatric anesthesia issues that come up regularly in our practice; be beginning to bring new and challenging information for discussion with his/her attending regarding cases
2. Have developed some comfort with obtaining IV access in the anesthetized, and non-anesthetized pediatric patient
3. Have become more skillful in the placement of caudal epidurals
4. Have become more familiar with the anesthetic issues occurring in PICU and NICU patients
5. Be regularly taking care of a greater proportion of ASA 2-3 patients.

3. At the conclusion of the CA-3 year, the resident should

1. Be competent to safely and comfortably anesthetize independently the vast majority of ASA 1-3 pediatric patients and provide them with quality post-operative analgesia via a variety of techniques.
2. Have the knowledge-based discretion to appropriately determine whether a procedure should proceed, and explain the decision clearly and logically to the patient's family and surgical service.
3. Be able to work in a calm, cooperative and reasonable fashion with ICU and surgical colleagues to facilitate care to gravely ill infants and children.
4. Be able to recognize situations which require more extensive pediatric anesthesia skills than one might be able to offer, and recommend an appropriate resolution.

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