Rotation Title: Pediatric Anesthesiology

I. Definition: Pediatric anesthesiology is a 1-month rotation in the CA-2 year. CA-3 residents may choose more pediatric rotations for electives in their Senior Year. Complex pediatric electives may be available off campus in Denver, Colorado.

II. Curriculum: Development of the skill and knowledge necessary to administer anesthesia to infants and children that may be encountered in a general anesthesia practice. The anesthesia techniques and problems unique to the pediatric practice will be the principle concern. This will be divided into 3 general areas:

1. Preanesthesia assessments and evaluation of the pediatric surgical patient.
2. Development of an anesthetic plan and intraoperative management of anesthesia.
3. Postanesthetic recovery of the pediatric patient including alternatives for pain management.

III. Performance Assessments:

A. Self Assessment
You (the resident) are to check off each criterion as the material is mastered. Self reflection on your own competencies is critical.

B. Faculty Assessment
Faculty will periodically review your self assessment and discuss their assessments of your competencies. The overall scores on the six competencies will be reported to you at least weekly.

C. Mentor Assessment
Your mentor should meet with you quarterly and review your entire portfolio. The mentor should report areas in which you have deficiencies (for your level of training). This report may be to you and/or to the program director as determined by your mentor.

IV. Competencies Assessed (Performance Criteria):

A. Patient Care: At the conclusion of this rotation, the resident should be able to …

1. Understand the preoperative evaluation of children, including …
   a. Preoperative interview
   b. Preoperative sedation
   c. IV versus mask induction
   d. Role of parents
2. Manage children with a normal pediatric airway utilizing appropriate mask, bag and oral airway.
3. Intubate children with a normal pediatric airway with skill and quickness using appropriate blade, tube in the majority (>75%) of cases.
4. Obtain appropriate intravenous access in the majority (>75%) of cases.
5. Obtain appropriate interarterial access in most (>50%) of attempts.
6. Assemble a pediatric circuit.
7. Assemble blood warming equipment and filters for transfusion in pediatric patients.
8. Manage an appropriate anesthetic for routine pediatric cases, i.e., hernia repair, tonsillectomy, myringotomy tube placement.
9. Attempt simple pediatric regional anesthesia with staff supervision.
10. Manage laryngospasm in the pediatric patient.
11. Recognize and treat post-intubation croup.

B. Medical Knowledge: During this rotation, the resident will demonstrate increasing competency in …:

1. The pre-operative assessment and preparation of anesthetic plans for ASA l or 2 pediatric patients
2. The different breathing circuits used in pediatrics including indications and contraindications
3. Options for premedication in the pediatric patient
4. Differences in anesthetic drug effect for the pediatric compared to adult patient, i.e. sensitivity, onset, duration
5. Fluid replacement therapy and calculate estimated blood volume and allowable blood loss
6. Alternatives in management for difficult/problematic pediatric airways, i.e. Pierre-Robin, pyloric stenosis.
7. Alternatives for induction in the pediatric patient.
8. Common congenital anomalies and define the effect they will have on their anesthetic management, i.e., diaphragmatic hernia, gastroschisis, omphalocele.
9. Appropriate tube size and length for intubation.
10. Describe different blade options used for intubation for children.
11. Understanding of pediatric anatomy, physiology, and pharmacology
12 Understanding of persistent fetal circulation
13. Surgical emergencies of the neonate
14. Croup and epiglottitis
15. Pediatric regional anesthesia
16. Pediatric advanced life support

The CA-2 resident on their pediatric anesthesia rotation shall be responsible for mastering all material listed in Appendix A. These will be assessed by written and oral examinations.

C. Practice Based Learning and Improvement: During this rotation, the resident will demonstrate increasing competency in: …

1. Discussing important differences in treating neonates, children and adolescents in all the areas mentioned above.
2. Accessing current literature to delineate specific concerns regarding the perioperative care of all scheduled complex cases she/he is assigned.
3. Performing preoperative consultations of seriously ill children and communicate with staff anesthesiologists, surgeons and family.
4. Describing the combination of techniques and therapies for providing no pain, memory or movement of the child during planned procedures.
5. Evaluating the results of inducation methods

D. Interpersonal and Communication Skills: During this rotation, the resident will demonstrate increasing competency in:

1. Rapport with parents, caretakers, children and surgeons.
2. Reporting on patient status and needs to PACU staff

E. Professionalism: During this rotation, the resident will demonstrate increasing competency in:

1. Securing consent and providing assurances to parents of children about to have surgery.
2. Arranging and participating in a parent-present induction of anesthesia for a child.
3. Providing consultative services preoperatively for all kinds of pediatric surgery.
4. Establishing reasonable analgesia plans for all kinds of pediatric surgery.

F. Systems-Based Practice: At the conclusion of this module, the resident should be able to …

1. Understand the difficulties parents have when their children have surgery
2. Understand normal child growth and need for intervention
3. Understand child abuse
4. Know community resources for pediatric health care
5. Know vaccination schedules for children

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Appendix A: Medical Knowledge expected to be mastered during CA-2 Pediatric Anesthesia Rotation

Lecture 14

Blood and Patient Warmers

1) Blood Warmers, Autotransfusion Devices
2) Body Warming Devices: Forced Air, Heating Lamps, Insulation Devices, Warming Blankets, Water-Flow “Second Skin” Devices

Lecture 97

Central Temperature Regulation

a) temperature sensing; central, peripheral
b) temperature regulating centers; concept of set point
c) heat production and conservation
d) heat loss; mechanisms
e) body temperature measurement; sites; gradients
f) effect of drugs/anesthesia on temperature regulation
g) special pediatric considerations

Lecture 132

Equipment and Fluid Management in Pediatric Anesthesia

1) Apparatus: Breathing Circuits, Humidity, Thermal Control
2) Fluid Therapy and Blood Replacement, Physiologic Anemia, Glucose Requirement

Lecture 133

Premedication in Pediatric Anesthesia

1) Drugs
2) Dosage
3) Routes
4) Vehicles, Including Eutectic Mixture of Local Anesthetics (EMLA) Cream
5) Parental Presence

Lecture 134

Agents And Techniques in Pediatric Anesthesia

1) Induction Techniques
2) Anesthetic: Actions Different From Adults
3) Neuromuscular Blockers (Sensitivity, Congenital Diseases, Complications of Succinylcholine)
4) Regional Anesthesia

Lecture 135

Problems in Pediatric Intubation

1) Full Stomach
2) Diaphragmatic Hernia
3) Tracheoesophageal (T-E) Fistula
4) Pierre-Robin Syndrome
5) Awake/Fiberoptic Intubation
6) Dentition

Lecture 154

Neonatal Resuscitation

1) Apgar scoring
2) umbilical cord blood gas measurements
3) techniques and pharmacology of resuscitation
4) intrauterine surgery (maternal and fetal considerations, intrauterine fetal resuscitation