Shriners Burn Hospital Rotation

ROTATION DIRECTOR: Joseph Jeevendra Martyn, MB;BS

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I. Rotation Overview and Fellow Responsibilities

Anesthetic Management of Pediatric Burns is an integral part of the Pediatric Anesthesiology Training Curriculum as established by the SPA and the ASA Committee on Pediatric Anesthesiology. It has most recently been included in the new Pediatric Anesthesiology Subspecialty Examination Outline as proposed by the American Board of Anesthesiology.

Our fellowship in pediatric anesthesiology provides one year of comprehensive training and exposes are fellows to a wide gamut of pediatric surgical subspecialty procedures. However, exposure to management of burn patients has been lacking since we do not have such a facility within the medical center.

We are fortunate to have a world class burn facility like the Shriners Hospital for Children in Boston. Shriners Hospitals for Children in Boston is the only pediatric hospital in New England
verified as a Level I burn center by the American College of Surgeons Committee on Trauma and the American Burn Association.

Pediatric burn patients provide unique challenges to the anesthetist. These patients generally have severe airway abnormalities (neck contractures and limited mouth opening), poor IV access, complicated fluid balance and complex psychosocial issues.

This two week rotation will provide the fellows with an opportunity to work with these very special patients and their extremely dedicated care givers.

The fellows will work under the direct supervision of Dr. Joseph Jeevendra Martyn and other staff anesthesiologists at Shriners. They will participate in the preoperative assessment, intraoperative anesthetic management and postoperative management pediatric burn patients. Pediatric Anesthesia Fellows are generally in their 5th or 6th year of training (PGY-5 or PGY-6 level) and have completed an ACGME accredited residency in Anesthesiology.

Fellows will not take any overnight call during their two week rotation.

The Fellows experience during this rotation will be directed toward achieving certain goals and objectives. These goals and objectives are intended to assist the Fellow in gaining an understanding of this very important and challenging subspecialty area

II. Pediatric Anesthesia Faculty at Shriners

Joseph Jeevendra Martyn, MB;BS  Anesthesiologist in Chief. Shriners Burns Hospital

William Denman, MD

Charles Cote, MD

Erik Shank, MD

III. Teaching Methodology

The ACGME has recognized six general competencies for resident and fellow 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
• 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 fellows.
• “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. Copies can be borrowed from one of the pediatric faculty.
• “Smith’s Anesthesia for Infants and Children” by Peter J. Davis and Etsuro K. Motoyama (Elsevier 2011). Recently updated. Available in both print and online format.
• “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.)

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 fellows will receive direct observation and feedback from the rotation’s supervising faculty. This will include verbal feedback and a summative assessment at the end of the rotation.

*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 fellows’ performance.

*Professionalism, Interpersonal and Communication Skills, SBP*

C. **Participation in Didactic and Educational Activities**
Core Lectures and Conferences. Participation in Case Conferences and M&Ms

*PBLI*

*Interpersonal and Communication Skills*

*Medical Knowledge*

*Patient Care*

D. **Scholarly Activity and Research**
Fellows 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*

E. **Rotation Evaluation by Fellows**
Fellows do get an opportunity to evaluate the rotation at the completion of the rotation and more formally during the annual confidential program and faculty survey. The aim is for them to self-assess the successful achievement of rotation goals, and provide feedback to the program. This feedback is important for us to continue improving the rotation and address specific issues.

*Practice Based Learning and improvement.*

V. **Goals and Learning Objectives**
The detailed Goals and Learning Objectives of the Shriners Burns Rotation for Pediatric Anesthesia Fellows 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 course guidelines developed by the ASA Committee on Pediatric Anesthesia.

A. Medical Knowledge

1. Goals and Learning Objectives:

   1. Master the pathophysiology of both acute and chronic large surface area burns – particularly related to the following body systems:
      - Cardiovascular - Circulatory Shock, Sepsis
      - Pulmonary – tissue damage, shunting, hypoxia
      - Renal – ATN, myoglobinuria, hemoglobinuria
      - Hepatic – drug toxicity, hypo / hypermetabolic states
      - CNS – concurrent head trauma, coma, seizures
      - Hematologic: anemia of burn injury, fluid shifts, hemoconcentration, thrombocytopenia, clotting factor abnormalities
      - GI – Hyperalimentation, Enteral feeding, Stress ulcers
      - Skin – Hypothermia, depth and extent of tissue damage, body surface area, autoamputation
      - Metabolic – hypermetabolic states, cytokine releases, calcium hemostasis.

   2. Calculate appropriate airway sizing for LMA’s ET tubes and Laryngoscope blades

   3. Know the typical differences between chemical, flame and electrical burns

   4. Learn about peculiarities of fluid management and blood transfusion in children

   5. Learn about concurrent injuries such as CO and Cyanide poisoning.

   6. Learn about circumferential burns, compartment syndrome and methemoglobinemia

   7. Learn about a variety of narcotics and sedatives used in the management of burn patients such as benzodiazepines, ketamine, dexmedetomidine and clonidine
B. Patient Care

1. Goals:

   1. Fellows 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. Complete history and physical and review any medical records that accompany the patient.

   2. Obtain informed consent from a parent and assent from an appropriately aged child.

   3. Be able to formulate an anesthetic plan based on a patient’s medical history and planned surgical procedure.

   4. Be able to place PIVs in both typical (forearm, hand and feet) and atypical (let, groin, scalp and neck).

   5. Be able to intubate orotracheally as well as nasotracheally. Become competent in using a variety of difficult airway techniques to secure the airway in burn patients. These techniques include fiber optics, video laryngoscopy, LMA techniques etc.

   6. Be able to concurrently manage a variety of infusions involving narcotics, hyperalimentation, sedatives, blood products, insulin etc.

   7. Be able to competently induce infants and children with burns using both IV and inhalational techniques.

   8. Learn and master techniques to regulate patients body temperature.
9. Using PALS, the fellow is able to preside over the resuscitation of a child in cardiac arrest, or with a life-threatening hemodynamic disturbance or arrhythmia.

C. Interpersonal and Communication Skills

1. Goals:

Fellows 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. Fellows should recognize that pediatric burn patients often require long recuperations closely involving a variety of care givers, including MD’s, RN’s, psychologists, occupational and physical therapists, and social workers.

2. Learning Objectives:

1. Fellows will be able to establish a sustained, therapeutic and ethically sound relationship with the patient and his/her parents /family. They should recognize that certain patients and patient’s families (due to cultural background, education and/or previous OR experience) may need more detailed explanations regarding anesthesia and/or the entire perioperative experience. Fellows also need to realize that certain patient or patient family questions would be better answered by another care giver, such as a surgeon.

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 and empathetically communicate the treatment options and risks with patient / parents. Choose language which appropriate to the listener. E.g. it’s important to refrain from esoteric medical jargon when speaking with patients and patients’ families.

4. Accurately and legibly complete all perioperative paperwork, including pre-op, intra-op, and post-op PACU orders.

5. Will coordinate care and work effectively with other patient care team members (Attending, surgeons, operating room and ICU nurses, child life specialists etc.)

D. Professionalism
1. **Goals:**

   Fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. Recognize that patients often have disfiguring and life-altering illness that requires sensitive and empathetic care.

2. **Learning Objectives:**

   1. Fellow will demonstrate respect, compassion and integrity.
   2. Fellow will demonstrate a commitment to ethical principles.
   3. Fellow will demonstrate sensitivity and responsiveness to the needs of parents and children.
   5. Fellow will demonstrate ability to manage conflict.
   6. Fellow will show commitment to excellence in the care of children and their families.
   7. Fellow will demonstrate ongoing commitment towards professional development.

E. **Practice Based Learning and Improvement**

1. **Goals:**

   Fellow 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 Pediatric patients. Practice standard of care techniques and incorporate evidence based medicine when appropriate.
   2. Will be able to locate, appraise and assimilate evidence from peer reviewed scientific articles related to our subspecialty.
   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. They will take active part in departmental and institutional Quality Improvement and Risk Reduction projects.

F. Systems Based Practice

1. Goals:

   Fellows 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. Fellows need to understand the unique position which the Shriners Hospital holds in the community. Appreciate the cost-free care being provided to a group of severely injured, often challenging chronic patients.

   2. Fellows 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. Fellows are expected to provide high quality, but cost-effective health care.

   4. Acknowledge that patients and their families have often been in a variety of other hospitals and have potentially travelled long distances to receive care at the Shriners Burn Hospital.

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