Tufts Medical Center

The principal teaching hospital for Tufts University School of Medicine

Pediatric Anesthesia Fellowship Program
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Pediatric Cardiac Anesthesia Rotation

Children's Hospital Boston

ROTATION DIRECTOR:

Kirsten Odegard, MD

I. Rotation Overview

Children's Hospital Boston is one of the largest and most prestigious pediatric medical centers in the US. The Department of Anesthesia at Children's Hospital Boston and its Cardiac Anesthesia Service has been providing training in pediatric cardiac anesthesiology for more than 20 years. The breadth and depth of the abilities and responsibilities of the Service led to its reorganization as the Division of Cardiac Anesthesia within the Department of Anesthesiology, Perioperative and Pain Medicine in 2002. Members of the Division of Cardiac Anesthesia provide care for infants, children, and adults with various forms of congenital and acquired heart disease having

both cardiac and non-cardiac surgery, in the cardiac intensive care unit, cardiac catheterization, electrophysiology laboratories, and other invasive and non-invasive diagnostic and therapeutic procedures. The Division's caseload is the largest in the United States, comprising over 1000 cardiac surgical operations (including more than 800 that utilize cardiopulmonary bypass) and more than 1400 cardiac catheterizations and other procedures (e.g. cardiac magnetic resonance imaging, transesophageal echocardiography, consultation and management of non-cardiac surgery in patients with various forms of congenital heart disease).

The one-year fellowship program in pediatric cardiac anesthesiology at Children's Hospital Boston began in 1993. Twenty fellows have completed the program since its inception. In addition, the program provides training in pediatric cardiac anesthesia for approximately 30 other trainees per year (for 1-3 month periods) as part of their fellowship programs in either pediatric anesthesiology or adult cardiac anesthesiology. It should be noted that the pediatric cardiac anesthesia fellowship is directly associated with the ACGME-accredited program in pediatric anesthesiology at Children's Hospital Boston.

Our Fellows get this unique opportunity to rotate through the Pediatric Cardiac Anesthesia Division at Children's for 2 months during their fellowship training. **The primary purpose of the rotation is to train fellows to be proficient in the perioperative care of patients with both straightforward and complex forms of congenital heart disease.** As such, they are responsible for performing the initial preoperative assessment and designing the proposed intraoperative management plan for these patients. In conjunction with and under the direct supervision of a member of the attending staff of the Division, they are expected to understand the relevant pathophysiology, specific patient characteristics, and planned procedure and thereby formulate and implement appropriate pre-, intra-, and postoperative treatment.

During their rotation the Pediatric Anesthesia Fellow will function under the direct supervision and guidance of the assigned cardiac anesthesia staff attending.

Fellows are not expected to independently provide complex pediatric cardiac anesthesia care at the end of their 2-month rotation. Such competence requires many more months of special training in pediatric cardiac anesthesia.

The fellowship director will receive a summative assessment at the end of the 2-month rotation.

II. Pediatric Cardiac Anesthesia Core Faculty

Kirsten Odegard, MD	Program Director of Pediatric Cardiac Anesthesia Fellowship Program Associate Professor
James A. DiNardo, MD	Senior Associate Pediatric Cardiac Anesthesia Professor of Anaesthesia
Alfonzo Casta, MD	Associate Professor of Anaesthesia

Annette Y. Schure, MD	Instructor of Anaesthesia
Viviane Nasr, MD	Assistant Professor of Anaesthesia

For complete listing please visit:

http://www.childrenshospital.org/centers-and-services/programs/a-_-e/cardiac-anesthesia-services-program/meet-our-team

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: Pre-Surgical Conference (Tuesday 7-8.30am), Basic Topics in Pediatric Cardiac Anesthesia (Tue and Thu 6.30-7AM), Department Grand Rounds (Wednesday 7-8AM), and Department M&Ms (Mon 6.30-7am)
- Guided personal study
- Link to Conferences Page:

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
- *"Anesthesia for Congenial Heart Disease"* by Andropoulos, 2nd edition 2010
- Electronic Access via Tufts Health Sciences Library to multiple reference and research resources (OVID, Medline, MD Consult, Pediatric Anesthesia Journals etc.)
- Computer based learning through TUSK (Tufts University Knowledge Database)
- 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 fellows will receive direct observation and feedback from the rotation's supervising faculty. This will include verbal feedback and written assessments at the end of the rotation.
All 6 competencies.

B. 360 ^{0} Global Evaluations

These are evaluation by different members of the patient care team (Surgeons, Nursing Staff, and Ancillary Staff etc.). Helps provide multiple perspectives of fellow's performance.
Professionalism, Interpersonal and Communication Skills, SBP

C. Participation in Didactic and Educational Activities

Core Lectures, 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 training.
Medical Knowledge

Interpersonal and Communication Skills
Practice Based Learning and Improvement

E. Rotation Evaluations 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 CHB Pediatric Cardiac Anesthesia 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 on the Course Guidelines developed by the *ASA Committee on Pediatric Anesthesia* and *the ABA Pediatric Anesthesia Certification Exam Content Outline.*

A. Medical Knowledge

1. Goals and Learning Objectives:

1. Anatomy and Physiology
    a. Prenatal and postnatal development
    b. Fetal, transitional, and adult circulation
2. Clinical Science
    a. General considerations
        i. cardiovascular effects on anesthetic uptake and delivery
        ii. anesthetic effects on the cardiovascular system
        iii. vasoactive medications
    b. Disease states
        i. acyanotic lesions
        ii. cyanotic lesions

iii. palliative procedures
iv. pulmonary hypertension
v. infectious diseases
vi. cardiomyopathies
vii. pericardial disease
viii. intracardiac masses
ix. arrhythmic lesions
x. heart transplantation

c. Anesthesia for cardiac procedures
   i. complete anatomic and physiological repairs
   ii. single ventricle procedures
   iii. palliation surgery
   iv. management and consequences of cardiopulmonary bypass
   v. deep hypothermic circulatory arrest
   vi. anesthesia for pacemaker / implantable cardiac defibrillator insertion and replacement
   vii. anesthesia for diagnostic, interventional and electrophysical procedures
d. Anesthesia for the adult with congenital heart disease
e. Cardiopulmonary resuscitation

B. Patient Care

1. Goals:

1. Fellows must be able to provide care that is compassionate, appropriate and effective.
2. They should be able to communicate effectively with the care team.
3. They should demonstrate caring and respectful behavior with the team members, patients and their families.

2. Learning Objectives:

1. Fellows should be able to perform the initial preoperative assessment in patients coming for congenital cardiac surgery

2. They should be able to design and propose an intraoperative management plan for these patients.
3. They are expected to understand the relevant pathophysiology, specific patient characteristics, and planned procedure and thereby formulate and implement appropriate pre-, intra-, and postoperative treatment.
4. In addition to the standard components of general anesthesia (e.g. endotracheal intubation), fellows must demonstrate ability to safely perform insertion of arterial and central venous catheters using good technique.

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. They will learn how to effectively gather information using effective listening, explanatory, questioning and writing skills.

2. Learning Objectives:

1. Fellow will be able to establish a sustained and therapeutic and ethically sound relationship with the parents and/or health care proxy.
2. Will be able to effectively retrieve pertinent medical information from the parents and patient care team members.
3. Obtain informed consent and clearly communicate the options and risks to the parents and families.
4. Will coordinate care and work effectively with other patient care team members

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.

2. Learning Objectives:

1. Fellows will demonstrate respect, compassion and integrity.
2. Fellows will demonstrate a commitment to ethical principles
3. Fellows will demonstrate sensitivity and responsiveness to the needs of parents.
4. Will demonstrate sensitivity towards patient's culture, gender and disabilities.
5. Fellows will demonstrate ability to manage conflict

E. Practice Based Learning and Improvement

1. Goals:

Fellows 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 AAP and ASA Standards and Guidelines as pertinent to Pediatric Anesthesia and in particular to management and conduct of cardiac anesthesia. They will learn to 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.
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. Understand the complex emotional atmosphere surrounding patients with congenital heart disease.
2. Provide appropriate education to ensure parents or caregivers are well informed regarding perioperative management plans
3. Be aware of the ethical issues faced by anesthesiologists as they balance individual patient care requirements with limited global resources
4. Acknowledge the difficulties and decision-making involved in utilization and allocation of finite health care resources
5. 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.)
6. The Fellows will strive to use medical supplies and equipment in a cost effective manner. Will learn strategies to reduce wastage and minimize cost of care.

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