This rotation is designed to strengthen your training and understanding of the management of infants with congenital cardiac disease post-operatively. Your experiences in the CICU will afford you the invaluable understanding of the complex decision-making that occurs in this critical period. We believe that this exposure will give you not only a greater appreciation for the care of these high-risk infants post-operatively, but also a better comprehension of how to effectively manage these infants pre-operatively.

To maximize your experience, it is your responsibility to actively participate and be involved with your patients. The NICU fellows will be assigned to Team B which manages the cardiac patients. You will be overseeing the entire team, in conjunction with the PICU fellow also assigned to Team B. There are approximately 12 patients per team. Due to your limited time in the CICU, you will be asked to be the primary care-giver for 1-2 post-op heart patients. This will allow you to know your patients in great detail and to get a better understanding of the rationale and indications of therapeutic interventions as well as day-to-day management. This will also afford you a chance to claim ownership of these babies so that you will not be “in the shadow” of the CICU fellow.

Since the rotation occurs once during the latter half of your training and the goal is not to demonstrate expertise but familiarity with the care of post-op cardiac neonates, the following objectives are universal for both 2nd and 3rd year NICU fellows.

1. **Patient Care**
   Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of neonatal health problems and the promotion of neonatal health. Hence, fellows are expected to:

   a. *Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families*
   b. *Gather essential and accurate information about their patients by:*
      - Obtain a focused history and perform a focused physical examination in order to initiate stabilization of infants with physiologic instability
      - Obtain a comprehensive history and perform a complete physical examination in order to compete the evaluation and development of an ongoing treatment plan relevant to the patient’s problems
      - Create a problem list and differential diagnosis for common diseases and problems presenting to a cardiac ICU (CICU)
   c. *Make informed decisions about diagnostic and therapeutic interventions*
based on patient information and preferences, up-to-date scientific evidence and clinical judgment by performing the following:

- Synthesize available information in order to create a valid treatment plan for common diseases and problems presenting to a CICU

d. **Develop and carry out patient management plans**
   - Provide appropriate stabilization in a timely fashion and describe procedures of transfer or referral
   - Recognize and order appropriate diagnostic tests for common and uncommon diseases and problems presenting to a CICU
   - Recognize and manage changes in patient status for common and uncommon neonatal disease/problems
   - Managing multiple, high-acuity patients during a typical day

e. **Counsel and educate patients and their families**

f. **Use information technology to support patient care decisions and patient education**

g. **Perform the following medical and invasive procedures considered essential for the area of neonatology**
   - Demonstrate competency in the management of post-op cardiac neonates requiring:
     1. Mechanical ventilation including but not limited to Synchronized Intermediate Mechanical Ventilation (SIMV) and High Frequency Oscillatory Ventilation (HFOV)
     2. Nasal Continuous Positive Airway Pressure (NCPAP)
     3. Inhaled Nitric oxide (iNO) therapy
     4. Inotropic support
   - Perform common technical procedures required in NICU and CICU care:
     1. endotracheal intubation (ETT)
     2. umbilical artery (UAC)/vein (UVC) catheterization
     3. percutaneous indwelling central catheter (PICC) placement
     4. peripheral arterial line placement
     5. needle thoracentesis (as indicated)
     6. chest tube insertion (as indicated)

h. **Work with health care professionals including those from other disciplines (pediatric surgery, cardiology, cardiovascular surgery, etc) to provide patient-focused care**

2. **Medical Knowledge**
   Fellows must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to the care of the neonatal patients. Hence, fellows are expected to:
   - **Know and apply the following basic and clinically supportive sciences of neonatology:**
     - Recognize general principles regarding:
1. Vital statistics that apply to morbidity/mortality rates of neonates at all gestational ages
2. Different levels of care provided at intensive care nurseries in the region
3. Ancillary health care team members and their role in neonatal care (RN, NNP, RT, OT/PT, SW, pharmacists, lactation consultants, nutritionists)
4. Interpretation of common indications for the following procedures:
   a. Echocardiogram
   b. Ultrasound (cranial, abdominal, etc.)
   c. XRAY (PICC, UAC/UVC, ETT placement)
   d. Computed Tomography (CT) - cranial/brain, thoracic, etc.
   e. Magnetic Resonance Imaging (MRI) - cranial/brain, cardiac, etc.
   f. Electronic Encephalogram (EEG)
5. Normal physiology parameters for infants at different gestational ages
   - Recognize and participate in the management of:
     1. Illnesses specific to the critically ill full-term or near term infant with a known cardiac defect, including (but not limited to) the following:
        a. Hypoplastic left heart syndrome
        b. Transposition of the great arteries
        c. Total anomalous pulmonary venous return
        d. Tricuspid atresia
        e. Turncus arteriosus
        f. Double inlet right ventricle
        g. Double outlet left ventricle
        h. Shone’s complex
        i. Ebstein’s anomaly
        j. Coarctation of the aorta
        k. Tetrology of fallot
        l. Absent pulmonary valves
        m. Pulmonary atresia
        n. Aortic stenosis
        o. And any variation and/or combination of the above
   b. Demonstrate an investigatory and analytic thinking approach in the following clinical situations:
      - Explain the physiology and pathophysiology of common and uncommon problems and diseases presenting to a CICU
      - Recognize and facilitate the addressing of ethical issues in the CICU

3. Practice-Based Learning and Improvement
Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. Hence, fellows are expected to:

a. **Locate, appraise and assimilate evidence from scientific studies related to their patients’ health problems:**
   - Seek information as needed and apply this knowledge appropriately using evidence-based problem solving to the care of your patients’ common and uncommon neonatal cardiac care issues
   - Demonstrate the ability to critically appraise the medical literature

b. **Facilitate the learning of students and other health care professionals:**
   - Provide effective feedback to students, residents and other members of the team
   - Reflect on own performance and develop a plan for self-improvement and include this in their Individual Development Plans
   - Ask questions of other members of the team to guide thinking
   - Use clinical encounters for teaching opportunities
   - Attend and participate in scheduled conferences

4. **Communication and Interpersonal Skills**
Fellows must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients’ families, and professional associates. Hence, fellows are expected to:

a. **Create and sustain a therapeutic and ethically sound relationship with patients:**
   - Recognize the impact of emotional responses to obtaining and providing information and adapt to patient/family’s need
   - Recognize personal biases that can affect information obtained and provided
   - Elicit patient’s cultural values and religious beliefs in a sensitive manner
   - Listen non-judgmentally and maintain a non-judgmental vocal tone and nonverbal language when obtaining patient information
   - Seek information from families to assure patient-centered care
   - Develop skills as a consultant for families with impending delivery of preterm infants or infants with prenatally diagnosed conditions
   - Produce the opportunity to discuss issues peripheral to the chief concern
   - Clearly explain diagnoses, actions and plans using language appropriate to patients’ situation, culture and beliefs
   - Maintain objectivity in settings of conflict
b. Work effectively with others as a member or leader of a health care team or other professional group:

- Become adept at the art of subspecialty consultation by telephone and in person, including consultation with obstetricians and pediatricians regarding common issues of perinatal management
- Clearly explain diagnoses, actions and plans using language appropriate to the health care workers’ situation, culture and beliefs
- Maintain objectivity in settings of conflict
- Document patient care in the medical record following accepted guidelines in a timely fashion
- Provide concise, direct declarations of difference of opinions or criticism of another’s concepts, promoting collegiality
- Construct/outline clinical questions pertinent to rounds

c. Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning and writing skills:

- Write and enter clear and accurate orders in a timely fashion
- Offer and defend opinions in a clear/cogent manner during rounds and patient care events
- Recognize the limits of one’s own knowledge, skill level and tolerance of stress; knowing when to ask for help, how to contact consultants and where to find basic information

5. Professionalism
Fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse neonatal patient population. Hence, fellows are expected to:

a. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society and the profession; and a commitment to excellence and on-going professional development:

- Maintain integrity and composure in complex situations
- Seek to exceed expectations and maintain a positive attitude amidst high-acuity and stressful situations
- Demonstrate accountability for one’s own actions and those of the health care team
- Advocate for best quality of care possible
- Accept assigned roles and responsibilities
- Make effective use of time

b. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent and business practices by also:

- Discussing concepts of futility, withdrawal and the withholding of care
• Identifying situations warranting consultation with the hospital ethics committee
c. Demonstrate sensitivity and responsiveness to patients’ culture, age
gender and disabilities by also:
• Identifying and respect personal issues of families that affect patient care decisions
• Recognizing personal biases that may conflict with those of a patient’s family and how this may impact decision-making and development of treatment plans
• Respecting the input and importance of the family

6. Systems-Based Practice
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 care that is of optimal value. Hence, fellows are expected to:

All fellows
a. Know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance:
• Work with specialized members of the health care team (discharge planners, case workers, social workers) to optimize health care outcome
• Use consultants and other resources appropriately during the patient’s hospital course and in discharge planning
• Learn limits and strengths of relationships with associated medical teams with independent expertise in one or more areas of neonatal medicine (i.e. pediatric cardiovascular surgery consultants)
b. Advocate for quality patient care and assist patients in dealing with system complexities:
• Demonstrate awareness of the unique problems involved in the care of neonates with congenital heart disease
• Develop expertise in the recognition of long term psycho-social impact of congenital heart disease on children and families
• Become familiar with concepts of individually based developmental care in the CICU environment and its impact on outcome
c. Practice cost-effective health care and resource allocation that does not compromise quality of care and know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources:
• Demonstrate awareness of costs and cost control in CICU care as well as the costs of future medical care after discharge
• Develop expertise at the safe and efficacious withdrawal of durable medical equipment in the outpatient setting (i.e. 
In addition, these are our expectations of you:

1. Arrive in the unit by 7AM. Receive report on the preceding night’s events from the post call team. Exam your patients, especially those with issues the night before, gather labs and data and prepare to round by 8 AM.
2. 8 AM: Rounds start. Everyone will go to the Radiology Department on the first floor together to review films.
3. 8:30AM – 11 AM: Teams round in the CICU
4. After rounds, you will need to dictate notes on your patients.
5. Noon conferences occur on Mondays and Wednesdays – topics will be announced during your rotation
6. 4 PM: Sign-out rounds
7. Post-call fellows will leave by 1pm
8. You will be assigned to be on call in the CICU on specific days when a neonate is anticipated to be transferred to the CICU post-operatively
9. You will be on-call in the CICU on weekdays only
10. You will have a great opportunity to observe cardiovascular surgery – please take advantage of it
11. Please do not hesitate to ask questions. You are there to learn, not to be an expert on cardiac management. Don’t be shy. Have fun!

Resource and the designated supervisor during your rotation in the CICU is:

- Karen Marcdante, MD
- Nancy Ghanayem, MD

Please do not hesitate to notify any of the above physicians or Dr. Konduri or Dr. Kim with any questions or concerns