Educational Program Database Fields – (Medical Student, Residency, Fellowship, PostDoc)
Fellowship
Name of Program (TMB): Pediatric Cardiovascular Intensive Care
Program Number: 503482108
Program Director: Ronald A. Bronicki, M.D.
Program Co-director: Paul A. Checchia, MD
Program Coordinator: Lindsey Gurganious
lxgurgan@texaschildrens.org
About Us:
The Department of Pediatrics and the Section of Critical Care Medicine would welcome applications from individuals interested in pursuing one year of additional training in Pediatric Cardiac Critical Care. The positions are available to those who have completed fellowships in Pediatric Critical Care Medicine or Pediatric Cardiology.

Our Cardiovascular Intensive Care Program provides a unique interface among Critical Care Medicine, Cardiology, Cardiothoracic Surgery, and Cardiac Anesthesia. Candidates would experience a wide breath of Cardiac Critical Care from over 1000 admissions per year, including pre-operative care of newborns with congenital heart disease, thoracic organ transplantation, ECMO, ventricular assist devices, and one of the largest cardiomyopathy/heart failure populations in the country.

The clinical content would be designed for the individual candidates’ previous experience and training and would focus on developing clinical knowledge and skills specifically in the area of Pediatric Cardiac Critical Care. The Sections of Pediatric Cardiology and Pediatric Critical Care Medicine are the sites of NIH funded Research Training Grants in Cardiology and Pulmonary Development. Additionally, the candidate would be exposed to a quality research experience available through Texas Children’s Hospital and Baylor College of Medicine.

Our curriculum is a mixture of didactic lectures, directed reading conferences, morbidity and mortality conferences and journal clubs. The fellows and staff play an active role in both scheduling and participating in these conferences. Conferences occur three times a week. All fellows are expected to engage in research (basic science, translational, clinical) according to ABP guidelines and requirements for fellowship.

Faculty:
Critical Care Medicine:
Paul Checchia, M.D, F.A.A.P., F.C.C.M., F.A.C.C
Ronald Bronicki, MD
Patricia Bastero, MD
Eric Williams, MD
Aarti Bavare, MD, MPH
Cesar Mella, MD
Sebastian Tume, MD
Parag Jain, MD
Heather Chandler, MD
Javier Lasa, MD

**Cardiology:**
Jack Price, MD
Heather Dickerson, MD
Rinna Ocampo, MD
Antonio Cabrera, MD

**Anesthesia:**
Dean Andropolous, MD
Blaine Easley, MD
Ken Brady, MD

**Cardiovascular Surgery:**
Charles Fraser, MD
Dean McKenzie, MD
Jeff Heinle, MD
Carlos Mery, MD
Iki Adachi, MD

**Cardiovascular Anesthesia:**
Dean Andropoulos, MD
Emad Mossad, MD

**Pulmonary/Lung Transplant:**
George Mallory, MD

**Heart Failure/Cardiac Transplant:**
Jeff Dreyer, MD
Jack Price, MD
Antonio Cabrera, MD
Susan Denfield, MD
Aamir Jeewa, MD

**Trainees:**
Objectives

Operational
State the benefits of a multidisciplinary collaborative approach
State the systems approach to presenting and managing patients
Demonstrate competence in managing multi organ dysfunction
Demonstrate competence in the evaluation, triaging and management of critical cardiac disease
State the benefits of providing a service continuum from the pre- intra- to postoperative settings
State the benefits of individualizing patient care
State the benefits of anticipatory care
Demonstrate the capacity to manage the airway & place intravascular catheters
Describe operational efficiency as it relates to admissions and transfers to and from the unit
Describe the benefits of policies and minimizing practice variation
Describe the process and benefits of completing a quality improvement initiative
Identify the essential elements needed for medical documentation

Scholarly: Cardiac Critical Care
Describe why infants have significantly diminished respiratory reserve
Describe the pathophysiology & treatment of impaired ventilatory capacity & gas exchange
Describe the pathophysiology & treatment of cardiogenic & permeability pulmonary edema
Describe the pathophysiology of pleural effusion
Define how to interpret the different modalities for hemodynamic monitoring
Define how to interpret the different modalities for monitoring tissue oxygenation
Describe the response of the ventricle to volume and pressure loading
Describe how respiration disease impacts cardiovascular function
Describe how cardiovascular dysfunction impacts respiratory function
Describe the pathophysiology & treatment of low cardiac output syndrome (LCOS)
Describe the pharmacologic approach to treating LCOS & shock
Describe the pharmacologic approach to treating congestive heart failure
Describe the pathophysiology & treatment of cardiomyopathies
Describe the physiology of the cerebral circulation
Describe how venous arterial ECMO functions
Describe the different modalities for ventricular assist devices and how they function
Describe the management following cardiac transplantation
Describe the pathophysiology and treatment of pulmonary hypertension and RV dysfunction
Describe the pathophysiology of diastolic & systolic ventricular interdependence
Identify the types of arrhythmias
Describe the pharmacologic treatment of arrhythmias
Describe the use of epicardial pacing
Describe the pharmacology of sedation, analgesia & muscle relaxants
Describe the neurologic injury associated with cardiac surgery for congenital heart disease
Describe the nutritional management of children with critical cardiac disease
Describe the incidence of & strategies for preventing nosocomial infection
Describe the incidence & treatment of AKI

**Scholarly: Congenital & Acquired Heart Disease**
Describe the conduction of CPB
Describe the inflammatory response to CPB and its treatment
Demonstrate the anatomy and pathology of congenital heart disease
Describe the definition and pathophysiology of single ventricle physiology
Describe the pathophysiology, surgical correction & post operative management of septal defects
Describe the pathophysiology, surgical correction & post operative management of LVOTO
Describe the pathophysiology, surgical correction & post operative management of RVOTO
Describe the pathophysiology, surgical correction & post operative management of abnormalities of the origin of the great vessels
Describe the pathophysiology, surgical correction & post operative management of the cavopulmonary anastomosis
Describe the pathophysiology & treatment of valvular heart disease (MS, MR, AS, AR)

**Elective: Cardiac Catheterization**
Differentiate measured from calculated hemodynamic data
Describe normal hemodynamic data for the atria, ventricles & pulmonary vasculature
Identify the methods available to determine CO & pulmonary & systemic vascular resistance
Describe the limitations of using an assumed VO$_2$ for determining flow & resistance
Describe the assessment of valvular & septal defect pressure gradients
Describe the hemodynamic evaluation of congenital heart disease, including the evaluation of shunt percentages
Describe catheter interventions utilizing balloon angioplasty & valvotomy
Describe catheter intervention for defect closure, coil embolization & stent placement

**Elective: Echocardiography**
Identify the structures appreciated in the parasternal (long & short axis), subcostal & apical views
Describe the assessment of LV systolic function using the modified Simpson rule method, & it’s limitations
Describe the assessment of RV systolic function
Identify pericardial effusion & the criteria for tamponade physiology
Identify normal chamber size for the right & left ventricles
Identify normal thickness for the RV free wall, IVS & LV free wall
Describe the principles of Doppler in measuring the velocity of fluid, & therefore pressure gradient (prograde & retrograde)
Identify findings consistent with moderate & severe MR
Describe the assessment of aortopulmonary shunt function
Describe the determination of RV systolic pressure based on the TR jet
Describe the estimation of RV systolic pressure based on the position of IVS during systole
Describe the normal orientation & position of the IVS during diastole & systole
Describe the abnormal orientation & position of IVS during diastole & systole
**Elective: Heart Failure**

Describe the molecular and cellular mechanisms of heart failure
Describe the role of neurohormonal activation in the development of heart failure
Describe the response of the ventricle to volume and pressure loading
Describe the pathophysiology of diastolic and systolic heart failure
Describe the impact of heart failure on pulmonary vascular and RV function
Describe the pathophysiology of dilated, hypertrophic and restrictive CMPs
Describe the pharmacologic strategies to treat chronic heart failure
Describe the clinical determinants for proceeding to mechanical circulatory support
Describe the pharmacologic approach to preventing cardiac rejection

**Curriculum:**

Didactic lecture series: provided by multi-disciplinary faculty twice monthly

Case conferences: led by 4th year instructors twice weekly

4th year Instructor – Faculty rounds: weekly, discussing a wide breadth of clinical & non-clinical topics

Weekly didactic discussion on selected topic (see below): 4th yrs & faculty, based on reading assignment

Research conference twice monthly

Monthly morbidity & mortality conferences
  - Heart center: monthly
  - CVICU: monthly
  - Joint CVICU – Emergency medicine: quarterly
  - Joint CVICU – NICU: monthly

Monthly heart center quality improvement conferences

Access to an extensive digital cardiac critical care literature repository and index with over 4000 manuscripts from PubMed

**Rotations**

**Critical Care Medicine trained:**
Cardiac intensive care as 4th year instructor: 3 months
Cardiac intensive care as junior faculty: 3 months
4 months of electives:
  - Echocardiography
  - Heart failure
  - Cardiac catheterization
Electrophysiology
Cardiology consult service
Cardiac OR
Research: 1 month
Vacation: 1 month

Cardiology trained:
Cardiac intensive care as 4th year instructor: 3 months
Cardiac intensive care as junior faculty: 3 months
4 months of electives:
  Pediatric intensive care
  Neonatal intensive care
  Anesthesia (airway management)
Research: 1 month
Vacation: 1 month

Training Sites:
Texas Children’s Hospital - Cardiovascular intensive care unit
http://www.texaschildrens.org/

Research: Expectation to engage in basic science, translational or clinical research. Monthly research conferences with multi-disciplinary faculty to vet research projects and bi-weekly Cardiac Critical Care Research Group meetings.

Admissions: We will consider applications from individuals who have completed fellowships in Pediatric Critical Care Medicine or Pediatric Cardiology. Please contact Lindsey Gurganious at 832-826-6214 for more information and details on how to submit an application and CV.

Benefits:
http://www.baylorclinic.com/careers/employee-benefits.cfm

Contact Us:
Texas Children’s Hospital
Pediatric Critical Care Medicine
6621 Fannin W6006
Houston, Tx 77030
Main office telephone number: 832-826-6230
Main office fax number: 832-825-6229

Notes/Questions: