Curricular Components That Support the Functions of EPA 6: Diagnosis and Management of Patients with Acute Congenital or Acquired Cardiac Problems Requiring Intensive Care

1. Evaluating and treating neonates, infants, and older pediatric patients with critical structural cardiac diseases
   - Establishes an accurate anatomic diagnosis and ascertains the relevant cardiopulmonary physiology compared to normal physiology across all pediatric ages, including interpretation of diagnostic studies, such as echocardiograms and catheterizations with an understanding of the limitations of those and other studies
   - Knows how to triage patients and which patients require ICU observation for potential risk of decompensation or to meet immediate medical needs
   - Provides appropriate medical therapy to stabilize the patient with confirmed or suspected critical cardiac disease (providing for adequate oxygen delivery and organ perfusion), including determining the need for the initiation of prostaglandin E1, intubation, inotropic support, and central line placement
   - Knows the indications for and limitations and risks of invasive testing and procedures, including issues related to sedation, anesthesia, and intrahospital transport of the critically ill patient with cardiac disease
   - Knows what medical and surgical treatments are appropriate for the cardiac condition and the short- and long-term outcomes of these therapies
   - Recognizes patients who are deviating from the usual postoperative course after commonly performed cardiac operations, specifically those patients who have a residual cardiac lesion, either due to an imperfect operation or incomplete preoperative diagnosis. Plans appropriate anatomic investigation and determines the need to recommend surgical or transcatheter intervention weighing the risks and benefits of the intervention
   - Manages the patient with many forms of congenital heart disease at many ages, with a focus on:
     - Neonates and young infants with ductal-dependent right heart obstructive lesions
     - Neonates and young infants with ductal-dependent left heart obstructive lesions
     - Neonates and young infants with severe Ebstein’s anomaly
     - Neonates and young infants with pulmonary atresia with ventricular septal defect and multiple aortopulmonary collateral vessels
     - Neonates with d-transposition of the great arteries
     - Neonates with total anomalous pulmonary venous connection with obstruction
     - Infants with anomalous origin of a coronary artery from the pulmonary artery
     - Single-ventricle patients with staged palliation
     - Mixing lesions
     - Pulmonary and systemic ventricles stressed by abnormal preload or afterload
2. Evaluating and treating neonates, infants, and older pediatric patients with other forms of critical cardiac disease
   - Establishes an accurate diagnosis and ascertains the relevant cardiopulmonary physiology compared to normal physiology across all pediatric ages
   - Knows how to triage patients and which patients require ICU observation for potential risk of decompensation or to meet immediate medical needs
   - Provides appropriate medical therapy to stabilize the patient (provides for adequate oxygen delivery and organ perfusion)
   - Knows the indications for and limitations and risks of invasive testing and procedures, including issues related to sedation, anesthesia, and intrahospital transport of the critically ill patient with cardiac disease
   - Knows what medical and surgical treatments are appropriate for the cardiac condition and the short- and long-term outcomes of these therapies
   - Manages the patient with other forms of critical cardiac diseases, including those with:
     - Primary myocardial dysfunction
     - Acutely compromised cardiopulmonary statues due to viral myocarditis or decompensated, end-stage cardiomyopathy
     - Acutely symptomatic arrhythmias
     - Acutely compromised cardiopulmonary status that is due to infectious endocarditis/sepsis and inflammatory (noninfectious) endocarditis
     - Pericardial effusion and tamponade, including supervised pericardiocentesis as indicated
     - Elevated pulmonary vascular resistance, with or without a structural abnormality of the heart

3. Providing consultation to those caring for postoperative cardiac patients
   - Provides interpretation of diagnostic studies such as echocardiograms and heart catheterizations, including a clear delineation of the limitations of such studies
   - Diagnoses and treats acutely symptomatic arrhythmias
   - Provides consultation regarding therapies to maximize oxygen delivery and cardiac output
   - Provides consultation regarding pharmacologic and other therapies for patients with single-ventricle physiology
   - Provides consultation regarding therapies for patients with high pulmonary vascular resistance and pulmonary hypertension
   - Knows the factors that predispose to common postoperative complications and the appropriate diagnostic techniques and therapies to address them

4. Providing direct care or consultation to those responsible for primary care for cardiac patients with illnesses of noncardiac origin
   - Knows the risks posed to the cardiac patient undergoing noncardiac surgery
Entrustable Professional Activities
Curricular Components Supporting EPA 6 for Pediatric Cardiology

- Recognizes when a different treatment approach is needed compared to a patient with a normal heart
- Communicates the cardiovascular physiological concerns for the patient to other care providers and collaborates in developing an appropriate care plan

5. Functioning as a member of a multidisciplinary team demonstrating professionalism and excellent communication skills
   - Provides nonbiased information to the patient/family regarding known causes of congenital heart disease, the genetic and developmental implications, and treatment options
   - Conducts oneself in a respectful and collegial manner in CICU, exhibiting the utmost professionalism in interactions with nurses, social workers, nutritionists, case managers, respiratory therapy, support staff, and other physicians
   - Communicates the entire clinical picture for the family and the care team in an ongoing fashion, providing patients, their families, other clinical team members, and referring physicians with realistic expectations, keeping them engaged as appropriate
   - Applies the general principles for providing effective and compassionate end-of-life and palliative care
   - Interacts effectively with subspecialty teams (e.g., heart failure, transplant, interventional cardiology, electrophysiology, cardiac surgeons)

6. Participating in quality improvement and patient safety initiatives
   - Demonstrates (via participation) the understanding of and rationale for quality improvement and patient safety initiatives in the intensive care unit setting; knows the impact (or potential impact) of these on day-to-day care and patient outcomes, including frequent assessment of the need for invasive monitoring/access, procedures to reduce iatrogenic infections, and techniques to reduce medication errors
   - Applies the principles behind a quality improvement process and recognizes and abides by the principles of safe care delivery in the hospital
   - Knows and applies the elements of an effective handover of care between services
   - Knows the common complications that occur in cardiac patients in the ICU and how they may be prevented and treated

Additionally, there are problems that generally require consultation where the role of the general cardiologist is to recognize, provide preliminary evaluation, and obtain consultation. This list depends greatly on context in which one practices. Those cardiologists practicing in areas/centers where access to cardiac subspecialists is difficult will likely provide more of this care and may do so with remote advice from a trusted consultant as needed.
   - Interpretation of intra-operative or bedside transesophageal echocardiographic data and the implications for management
   - Initiation of second-line or atypical pharmacologic therapies for difficult arrhythmias
   - Initiation and management of transesophageal pacing, complex temporary pacing (including poor thresholds and sensitivities), or complex permanent pacemakers and/or defibrillators
   - Management of immunosuppression in patients after heart transplantation
Entrustable Professional Activities
Curricular Components Supporting EPA 6 for Pediatric Cardiology

- Initiation and management of advanced ventilation strategies
- Initiation and management of renal replacement therapies
- Management of patients not responding to first-line agents for sedation, analgesia, and neuromuscular blockade
- Use of strategies to manage elevated intracranial pressure due to intracranial hemorrhage

Curricular Components Authors
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