Curricular Components That Support the Functions of EPA 5: Diagnosis and Management of Patients with Congenital or Acquired Cardiac Problems

1. Knowing and understanding the natural and unnatural history as well as the unique cardiovascular anatomy and physiology seen in CHD
   - Demonstrates knowledge of the pathophysiology and natural history of left to right shunt lesions, cyanotic CHD, valve abnormalities, and other congenital systemic and arterial vascular abnormalities
   - Demonstrates knowledge of diagnosis, care, and management of critical CHD
   - Knows the different congenital coronary artery abnormalities, including pathophysiology and modes of presentation of congenital coronary artery abnormalities

2. Obtaining a complete history and physical examination
   - Demonstrates skills for obtaining a complete, age-specific history
   - Knows normal age-related vital sign values, including pulse, respirations, expected values for four-extremity blood pressures, and pre- and post-ductal oxygen saturations
   - Performs a successful and complete cardiac physical evaluation, including auscultation in infants, toddlers, children, and young adults
     - Accurately describes the location and intensity of cardiac sounds, clicks, snaps, murmurs, rubs, and gallops
     - Differentiates stridor, wheeze, rales, and rhonchi on auscultation of lungs
   - Recognizes abnormalities of cardiac performance by palpation of precordium, suprasternal notch, abdomen and peripheral pulses
   - Recognizes and differentiates infants, children, and young adults with primary cardiac disease from those with cardiac disease as part of a complex systemic disease process
   - Recognizes signs of respiratory distress and signs of impending respiratory failure
   - Recognizes physical signs of low cardiac output and signs of impending cardiac arrest
     - Differentiates central from peripheral cyanosis and cardiac from noncardiac causes of cyanosis
     - Differentiates acute from chronic hypoxemia

3. Obtaining a thorough family history with a focus on genetic abnormalities associated with an important risk of heart disease in childhood
   - Obtains a thorough family history, focusing on congenital and acquired heart disease
   - Recognizes common genetic syndromes and their associated cardiac abnormalities
   - Recognizes important noncardiac abnormalities associated with certain genetic abnormalities or syndromes
   - Demonstrates knowledge of the various methods of genetic testing that are available, along with appropriate and cost-effective use of this testing where applicable
4. Developing a prioritized, differential diagnosis
   - Knows the signs/symptoms of CHD and acquired heart disease across the spectrum of ages from neonate to young adult
   - Synthesizes clinical findings into an appropriate, prioritized differential diagnosis

5. Knowing the risks and benefits of noninvasive and invasive evaluation of infants, children, and young adults with congenital or acquired cardiovascular disease, and applying these when ordering diagnostic testing in a cost-effective manner
   - Prioritizes and orders diagnostic testing to optimize knowledge acquisition, minimize patient risk and discomfort, and be cost-effective
   - Interprets an electrocardiogram (EKG) for acute and/or chronic changes of rate, rhythm, P or QRS axis, ventricular hypertrophy, atrial enlargement, PR interval, QRS duration, corrected QT intervals, ST and T wave changes
   - Knows the indications for obtaining, and has the skills to interpret, chest x-rays based upon the differential diagnosis
   - Knows the indications for, and has the skills to perform and interpret, transthoracic echocardiograms based upon the differential diagnosis
   - Knows the indications and risks, and has the skills to interpret, hemodynamic and angiographic data obtained from diagnostic and interventional cardiac catheterization
   - Knows the indications and risks, and has the skills to interpret, advanced imaging such as CT angiograms and cardiac magnetic resonance imaging (MRI)

6. Developing a management plan that incorporates medical therapy, interventional catheter procedures, and surgical intervention as well as addressing the psychosocial aspects of acute and chronic disease
   - Demonstrates the skills to develop appropriate initial management plans based upon physiology, including recognizing ductal-dependent lesions and utilizing PGE1 appropriately
   - Knows and understands the medical and surgical interventions for the various types of acyanotic and cyanotic congenital heart disease, including the timing of the interventions and expected/unexpected complications
   - Knows and understands the medical and surgical interventions for the various types of acquired heart disease, including the type and timing of interventions and expected/unexpected complications
   - Coordinating both acute and chronic care with interprofessional management teams to meet the medical, social, developmental, behavioral, mental health, educational, and financial needs of the patient and family

7. Communicating with and counseling the patient/family regarding immediate, mid-and long-term management
   - Communicates the clinical findings, diagnosis, and management plan to the patient/family, using
understandable terms and concepts and avoiding the use of excessive jargon

- Explains and interprets the test results for the patient/family in a timely manner

8. Evaluating and managing acquired cardiac conditions found in pediatric patients

- Evaluates and manages basic arrhythmias (tachy/bradyarrhythmias) based on the type of arrhythmia, mechanisms of action, and available therapies
- Evaluates and manages cardiac masses, tumors, pericardial disease
- Evaluates chest pain (cardiac and noncardiac) in children and adolescents and manages chest pain of cardiac origin
- Evaluates and manages syncope
- Evaluates for cardiac etiology and effects of systemic hypertension
- Evaluates and manages hypercholesterolemia and other dyslipidemias
- Evaluates and manages Kawasaki Disease
- Evaluates and manages rheumatic heart disease and its associated cardiac manifestations/complications
- Evaluates and manages infective endocarditis

9. Identifying and applying key evidence-based guidelines

- Conducts a search to find and adhere to current clinical practice guidelines, if available, for management of the various types of congenital and acquired heart disease
- Explains the various grades of evidence and searches the literature for evidence, focusing on the highest-grade evidence available
- Finds and assesses medical literature for optimal management strategies in the absence of evidence and guidelines

10. Recognizing cardiac conditions and indications that might require additional sub-specialty expertise

- Recognizes and refers/co-manages patients with cardiomyopathy and end stage heart failure
- Recognizes and refers/co-manages primary pulmonary hypertension
- Recognizes and refers/co-manages patients with complex arrhythmias
- Refers as needed for pacemaker assessment and management
- Recognizes limitations and demonstrates help-seeking behavior by referring patients to invasive or noninvasive imaging experts as needed

Curricular Components Authors

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