Cardiac Surgery

Determining Institutional Trends and Evaluating Predictors of Outcomes in the Congenital Cardiac Disease Patient Population

- The purpose of this study is to retrospectively determine historical trends from our institution and to better understand clinical outcomes in pediatric patients with congenital heart disease.

  Specific Aim 1: Determine institutional historical outcomes related to the diagnosis, treatment and management of congenital heart disease and comparative analysis to national data.

  Specific Aim 2: Determine patient characteristics and clinical predictors of short and long term outcomes related to congenital heart disease

  Specific Aim 3: Determine the economic impact, both from a health system and family unit perspective, of managing pediatric cardiac disease

  - Atrioventricular Septal Defect (AVSD) Repair: An Institutional Experience
  - Transposition of the Great Arteries (TGA) Repair: An Institutional Experience

Pediatric Heart Transplant Database

- The purpose of this study is to determine historical trends from our institution and to better understand our pediatric heart transplant population including determining clinical outcomes for pediatric heart transplant candidates and recipients.

  Specific Aim 1: Assess clinical factors influencing decision making related to the evaluation of heart transplant candidates.

  Specific Aim 2: Evaluate differences in diagnosis, treatment and management of pediatric heart transplant candidates versus recipients.

  Specific Aim 3: Determine clinical predictors of short and long-term outcomes related to heart transplantation.

  Specific Aim 4: Determine the economic impact of procuring hearts for transplant
Evaluating Clinical Predictors of Cardiac Homograft Failure in Pediatric Patients

- The purpose of this study is to retrospectively evaluate homograft durability in relationship to donor blood type, patient blood type and disease process. Evaluating and identifying potential predictors of outcomes including homograft failure for our pediatric patients will help inform the treatment and management that could potentially improve patient outcomes.

**Specific Aim 1:** Evaluate the diagnosis, treatment and management of patient who have received a cardiac homograft.

**Specific Aim 2:** Evaluate homograft failure between recipients of ABO-compatible and ABO-incompatible homografts.

**Specific Aim 3:** Determine clinical predictors of short and long-term outcomes related to patients receiving cardiac homografts.

Determining Trends and Evaluating Complications, Co-Morbidities, and Outcomes in Pediatric Heart Transplant Recipients in the Scientific Registry of Transplant Recipients

- The purpose of this study is to determine historical trends and evaluate outcomes using the Scientific Registry of Transplant Recipients (SRTR), a national de-identified database of solid organ transplant recipients, from our institution and to better understand our pediatric heart transplant population including determining clinical outcomes for pediatric heart transplant candidates and recipients.

**Specific Aim 1:** Assess clinical factors influencing decision making related to the evaluation of heart transplant candidates.

**Specific Aim 2:** Determine clinical predictors of short and long-term outcomes related to heart transplantation.

Diagnosis, Management and Treatment of Left Heart Hypoplasia: Evaluating Surgical Outcomes, Complications, Co-Morbidities, Short and Long Term Outcomes

- The purpose of this study is to determine historical trends from our institution and to better understand clinical outcomes in pediatric patients with left heart hypoplasia as well as assess differences in surgical techniques in terms of clinical outcomes.

**Specific Aim 1:** Determine historical patient outcomes related to the diagnosis, treatment and management of a spectrum of left heart hypoplasia patients and/or single ventricle patients.

**Specific Aim 2:** Determine patient characteristics and clinical and laboratory predictors of short and long term outcomes related to left heart hypoplasia and/or single ventricles.

**Specific Aim 3:** Evaluate surgical technique differences and assess possible clinical implications in order to determine recommendations for optimal management strategy.
including cost associated with diagnosis, management and treatment.

Perfusion Techniques in Aortic Arch Reconstruction

- This study sought to compare the effects of selective cerebral perfusion with deep hypothermia (18-20°C) versus selective cerebral plus splanchnic perfusion with moderate (30-32°C) hypothermia. Objective, quantitative clinical end points were chosen including serum lactate, elevated in tissue hypoxia, and 3 markers of renal perfusion and function: urine output, serum creatinine, and blood urea nitrogen (BUN).

Specific Aim 1: Preoperative and perioperative characteristics will be described and possible differences with the patient populations described in the literature will be identified

Specific Aim 2: Lactate levels, BUN, Urine Output and Creatinine will be compared between the two groups, mesenteric ischemia and mesenteric perfusion group

Effect of Right Pulmonary Artery Banding on Perioperative Hemodynamics and Left Pulmonary Artery Growth after Stage I Palliation in Infants with Hypoplastic Left Heart Syndrome

- Banding of the RPA during Stage I palliation is a relatively new modification, performed here at Vanderbilt Children’s Hospital since 2007. To our knowledge, this use of RPA banding in this setting has not been described in the literature. A formal evaluation of this surgical technique is required, not only to assess its effectiveness within our institution, but also to share these results with other centers who perform staged surgical palliation for infants with HLHS and its variants.

Specific Aim 1: To evaluate the effect of RPA banding on surgical outcomes in infants undergoing Stage I surgical palliation for single ventricle physiology.

Specific Aim 2: To evaluate the effect of RPA banding on LPA growth after Stage I surgical palliation for single ventricle physiology.

Impact of surveillance endomyocardial biopsy frequency on pediatric heart transplant outcomes

- The goal of this project is to determine if the intended frequency of surveillance EMB in the first year post-HTx impacts patient outcomes for infants and adolescents undergoing HTx.

Specific Aim 1: Assess differences in patient populations between low-EMB and high-EMB centers.

Specific Aim 2: Evaluate the impact of surveillance EMB frequency on the occurrence of rejection with hemodynamic compromise and rejection related death in the first year post heart transplant.
Specific Aim 3: Evaluate the impact of surveillance EMB frequency in the first year post heart transplant on secondary outcomes including all-cause mortality and freedom from major infection or post-transplant lymphoproliferative disorder (PTLD) at any time post heart transplant.

Evaluating the Timing of Removal of Chest Tube after Pediatric Cardiac Surgery

- The purpose of this study is to retrospectively determine if a change in the chest tube removal protocol effects hospital length of stay and improve clinical outcomes in pediatric patients who have undergone cardiac surgery.

Specific Aim 1: Evaluate the timing of chest tube removal after pediatric cardiac surgery

Specific Aim 2: Evaluate clinical outcomes including hospital length of stay after pediatric cardiac surgery and the effects of implementation of new criteria for chest tube removal

Single Ventricles and Turners Syndrome

- Case control study evaluating the effect of patients with single ventricles and Turners Syndrome compared to those patients with single ventricles without Turners Syndrome.