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Adverse Outcomes Associated with Cardiac Catheterization in Children with Pulmonary Arterial Hypertension

Pulmonary hypertension is a rare, but extremely morbid condition in children. Hemodynamic measurement obtained via right heart catheterization is an important tool in the diagnosis, classification, and longitudinal care of these patients. However, it appears to be a significant source of iatrogenic mortality. The risk of death in children with pulmonary hypertension appears higher than in children with other forms of heart disease and adults with pulmonary hypertension. The predictors of periprocedural morbidity and mortality are not well defined. We propose to determine the risk factors for right heart catheterization-associated adverse outcomes in a multi-center cohort study and develop a prediction rule based on these factors. We hypothesize that higher catheterization laboratory volume will be associated with lower risk of mortality, and that individual/case level factors (older age, smaller size, general anesthesia, patient status, and etiology of pulmonary hypertension) will increase the risk of adverse outcomes. Our study will utilize administrative data from 40 centers in the United States that contribute data to the Pediatric Health Information System (PHIS) database. All children ages 0-18 years with the diagnosis of pulmonary hypertension who underwent heart catheterization between 2007 and 2012 at a PHIS center will be included. We will exclude patients undergoing electrophysiology studies. Our primary outcome will be mortality within 24 hours of the catheterization and initiation of mechanical circulatory support. Identification of modifiable risk factors provides an opportunity to intervene and improve safety of catheterization in children with pulmonary hypertension and to identify centers of excellence in the field.