Development of a Registry to Identify Patent Ductus Arteriosus Treatment Patterns in Preterm Infants at Peyton Manning Children's Hospital

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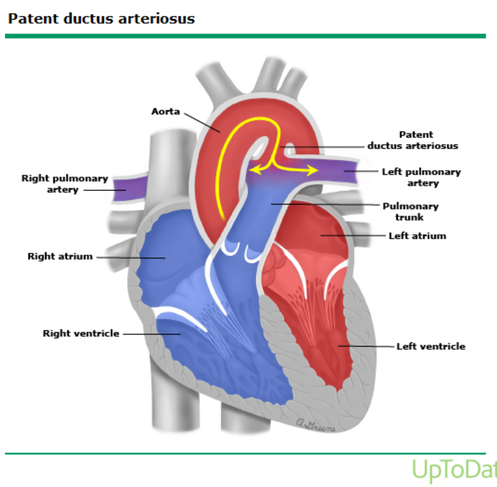
ABSTRACT

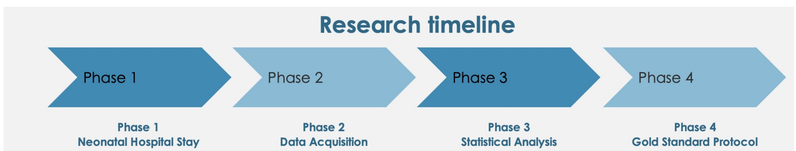
Background: A patent ductus arteriosus (PDA) is a common diagnosis among extremely preterm infants. Unfortunately, this left to right shunt may result in significant complications including pulmonary edema, pulmonary hemorrhage, bronchopulmonary dysplasia, as well as intraventricular hemorrhage, and necrotizing enterocolitis. Notably, there is no consensus on treatment for a PDA. As such, the diagnosis and treatment of a PDA have varied considerably between practitioners and institutions.

Problem: In the neonatal intensive care unit (NICU) at Peyton Manning Children's Hospital (PMCH), there are no standardized criteria for screening for a PDA, echocardiographic description of a PDA or treatment of a PDA. Ordering confirmatory echocardiography (ECHO) for a suspected PDA and treatment is dependent on the attending neonatologist.



Aim: To address this knowledge gap, a retrospective, observational cohort study was designed to evaluate the clinical circumstances leading to an echocardiographic evaluation for a PDA, to collect information on how a PDA is described echocardiographically, the management of the PDA, and the impact on morbidity and mortality of extremely preterm infants.

Methods: Data will compare morbidity and mortality for 1) infants, who were never evaluated for a PDA by ECHO, 2) infants, who were evaluated for a PDA by ECHO, but had no PDA, 3) infants, who were diagnosed with a PDA by ECHO and received treatment, and 4) infants, who were diagnosed with a PDA by ECHO but did not receive treatment.



Data collection

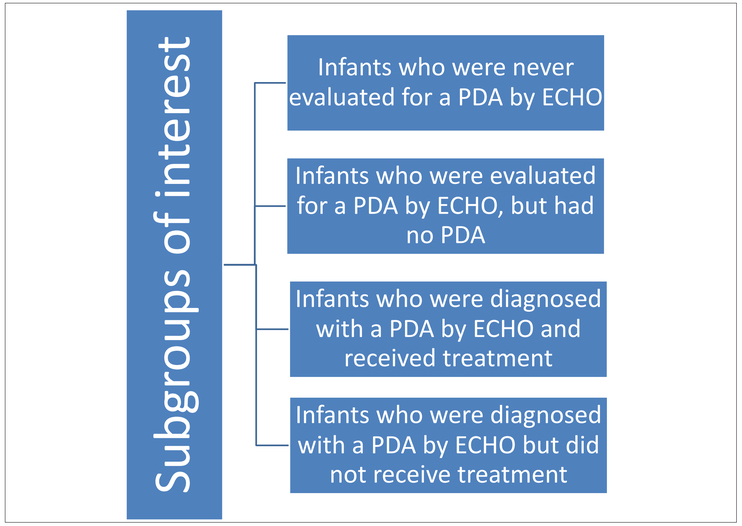
Neonatal Data
- Demographic data
- Neonatal morbidities
  - Severe Intraventricular hemorrhage (IVH grade III and IV
  - Periventricular leukomalacia
  - **Bronchopulmonary Dysplasia**
  - Retinopathy of Prematurity requiring treatment
  - Necrotizing Enterocolitis
  - Spontaneous intestinal perforation
  - Sepsis
  - Pneumonia

Cardiovascular data
- **Clinical circumstance leading to Echocardiographic evaluation**
- Description of Echo findings
- **Treatment for PDA**
  - **Indomethacin**
  - **Ibuprofen**
  - **Acetominophen**
  - **Ligation**
  - **Catheterization**

Maternal Data
- Demographic
- Maternal morbidity
- Medications
  - Antenatal Steroid therapy
  - Antenatal magnesium
- Duration of rupture of membranes
- Mode of delivery

RESEARCH DESIGN AND METHODS

The proposed investigation is a retrospective, observational cohort study. The investigators will extract data from the healthcare software Neodata (Isoprime Corporation, Lisle, IL) and the electronic medical record Allscripts Sunrise (Allscripts Healthcare, LLC, Chicago, IL).



Anticipated results

- Through this work, we aim to gain an understanding of treatment and management patterns of PDA's at Peyton Manning Children's Hospital. Such work may help develop a standardized protocol for consistent PDA treatment in the future.

References:

Phillips, J. B., III. (2021, May). Patent ductus arteriosus in preterm infants: Pathophysiology, clinical manifestations, and diagnosis. Retrieved June 09, 2021, from https://www.uptodate.com/contents/patent-ductus-arteriosus-in-preterm-infants-pathophysiology-clinical-manifestations-and-diagnosis?search=pda+neonate&topicRef=15814&source=see_link