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Prenatal Diagnosis of Congenital Heart Disease

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Plan

Problem/Impact Statement

- Fetal echocardiography is used to diagnose heart disease in the fetus prior to delivery.
- Rate of fetal diagnosis remains low with significant geographical variation (Quartermain et al, 2015)
- Accurate prenatal diagnosis can impact delivery planning and family counseling. Missed or inaccurate fetal diagnosis can cause parental distress, unnecessary transfer of care, or delivery at a facility unprepared to care for the patient.

Goal/Objective

- We aim to perform a longitudinal study comparing the prenatal and postnatal cardiac diagnosis for each patient that undergoes a fetal echocardiogram.
- We aim to decrease the number of incorrect diagnoses by reviewing selected cases to decide what can be done differently to improve diagnostic accuracy.

Baseline Metrics / Current State

- Baseline – no current database exists for monitoring fetal echocardiograms.
- Multicenter study using STS database across 91 congenital heart centers found that prenatal detection of critical congenital heart disease occurred 34% of time, with rate increasing each year (up to 42% in 2012) (Quartermain et al, 2015)
- Current state – REDCAP database created for tracking prenatal/postnatal diagnoses and beginning data entry with plan for quarterly analysis

Baseline National Benchmark Data for Prenatal Diagnosis of Critical Heart Disease

Figures from Quartermain et al, demonstrating prenatal diagnosis rate by year (figure 1) and by lesion (figure 2)

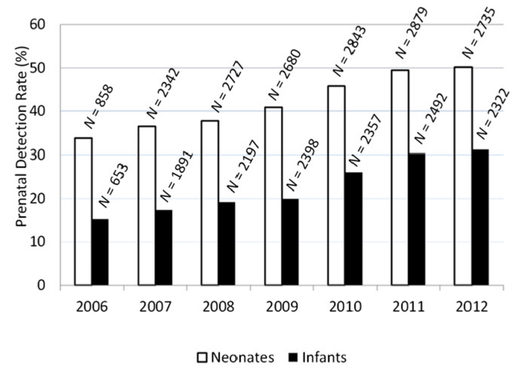

FIGURE 1
PDRs by year for neonatal (white bars) and infant (black bars) cohorts. *N* indicates the total number of subjects represented by each bar.

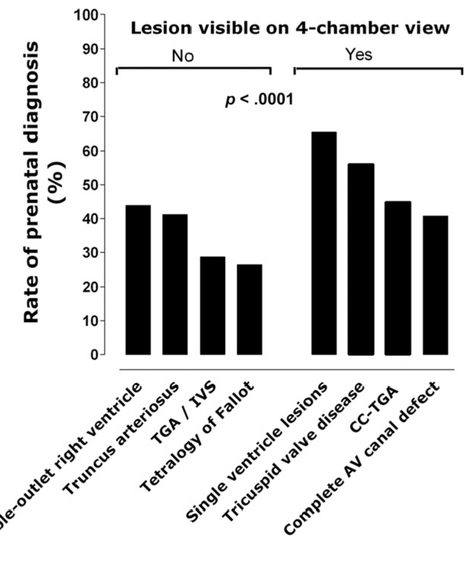

FIGURE 2
PDRs are demonstrated by defect visibility on 4CV (No/Yes). AV, atrioventricular; CC-TGA, congenitally corrected transposition of the great arteries; TGA/IVS, transposition of the great arteries with intact ventricular septum. Single-ventricle lesions include HLHS.

Do

Study

Act

Countermeasures

By When & Status*	Who	Deliverable
End Q1	Dr. Michael Hart	1. Define data to be collected 2. Build infrastructure to collect and maintain data
End Q2	Congenital Heart Team	Begin data collection
End Q3	Dr. Michael Hart	Quarterly review with sub-analysis of cases that received an inaccurate fetal diagnosis
End Q4	Dr. Michael Hart	1. Ongoing fetal review of diagnostic accuracy. Determine if there is certain cardiac disease that is more frequently misdiagnosed 2. PDSA document

Outcomes

- Creation of Redcap Database for data collection.
- Data Collection delayed due to Covid.
- Project is ongoing and is part of our FY21 project selection