KPNC’s redesigned prenatal screening guidelines result in benchmark detection rate for significant congenital heart disease of almost 80%

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| Challenge | Undiagnosed prenatal congenital heart disease (CHD) can lead to suboptimal care due to delayed intervention, increased mortality and missed opportunities for prenatal management decisions and supportive care. In 2014, the American Heart Association recommended fetal echocardiography based not only on abnormal obstetrical ultrasound, but additionally on maternal risk factors, resulting in potential overuse of limited pediatric cardiology resources  that could be redirected to more urgent and critical needs. |
| Existing Evidence | Published reports of prenatal detection rates for significant CHD (sCHD) since 2010 ranged from 30-88%. |
| Target Population | All pregnant women who delivered a live birth during the study period, 2016-2020. |
| Intervention or Exposure | Implementation of a referral guideline for sCHD that recommends fetal cardiology consultation based only on cardiac abnormalities seen on obstetrical ultrasound and not on patient risk factors in contrast to external benchmarks from  settings that use the American Heart Association 2014 recommendation. |
| **Outcomes/Key Findings** | * During 2016-2020, 214,486 pregnant people underwent deliveries resulting in live births. Prenatally detectable sCHD was confirmed in 292 infants for a prevalence of 1.4 per 1000 live births * Liveborn detection rate for congenital heart disease was 64%; 95% CI 58 to 69%). * For sCHD subgroups, detection was 77% (95% CI: 66-86%) for anomalies typically found in the four-chamber view, 76% (95% CI: 67-84%) for those found in the outflow tract views, and 87% (95%CI 60-98%) for those found in the three-vessel view anomalies. * The strength of our paradigm is in decreasing utilization of fetal echocardiography. Based on recent literature, we utilized NND (the number needed to detect) as measure of this utilization. Our number of 7 fetal echocardiograms needed to detect was comparable to published literature. We are the first to report this using a model recommending referral for cardiac abnormalities alone. * There were 14 cases of sCHD which were not detected but had fetal or maternal risk factors which would have resulted in referral using establish guidelines. * Reading of screening obstetrical ultrasound by maternal fetal medicine specialists versus radiologists was associated with a significantly higher detection rate (77% vs. 53%). |
| **Resulting Action/Change** | Redirect obstetrical screening ultrasounds to the Maternal Fetal Medicine department.  Ongoing quality improvement in collaboration with the radiology department physicians and sonographers.  Development of a semi-annual report using research products to enable efficient  ongoing monitoring of these parameters |
| Additional Recommendations | Continued support of quality control and improvement efforts directed towards obstetrical sonographers, radiologists and maternal fetal medicine physicians. |
| Implementation Tools | Regional action plan to collaborate with local PICS to develop frameworks for  transitioning screening obstetrical ultrasounds from radiology to perinatology. |
| Implementation Measurement | 1. Semi-annual report on Detection Rates for sCHD overall and among subgroups 2. Utilization rate of Fetal Echocardiography (annual volume) and Fetal cardiology consultation volumes. 3. Continued tracking of impact of redirecting OB ultrasound to MFM department. 4. Quantification of Pediatric Cardiology resource utilization required maintain   detection sCHD standards including education and quality improvement   1. Pediatric Cardiology resource allocation for #4 above. |
| Reference |  |