Introducing Pulse Oximetry as a screen for Critical Congenital Heart Defects in the district general hospital setting.

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Introduction: Critical congenital heart defects (CCHD's) are associated with significant mortality and morbidity. Early diagnosis and treatment could reduce this significantly. Currently there is a diagnostic gap in identifying CCHDs even after prenatal screening and postnatal examination. Pulse Oximetry as part of newborn examination is increasingly being used to minimise this gap. There is a growing body of evidence to suggest that it is a valid screening tool for identifying CCHDs, which is reflected by its uptake in many neonatal units.

Our aim was to demonstrate the feasibility of implementing pulse oximetry screening in a busy DGH setting and outline the financial and practical considerations.

Methods: All newborn examinations performed by paediatricians in July/August 2014 included pulse oximetry screening. A portable pulse-oximeter with disposable wraps was used to measure pre-ductal and post-ductal saturations. Outcomes were divided into three groups. Those with both readings ≥95% were deemed negative. Those with either reading between 90-94%, or >2% difference of saturations were deemed as a borderline positive test. These required re-measuring after 2 hours if the child remained asymptomatic. Three borderline positive tests, or a positive test (either saturation <90% or a symptomatic child) required comprehensive assessment and echocardiography where clinically indicated. Exclusion criteria were: Midwife performed newborn examinations, pre-term infants (<37 weeks gestation), infants admitted to the neonatal intensive care ward.

Results: 170 infants had their pre and post ductal saturations measured over a 1-month period. Average time to testing was 38.6±27.5 hours. The average duration of the test was 3.98 (±3.41) minutes. All tests done over the trial period were negative. There was no increased burden on the echocardiography workload or SCBU beds. Feedback from doctors, nurses and parents was positive.

Conclusion: Implementing pulse oximetry screening for CCHD is a simple and cost affective strategy, without significantly increasing the time taken for newborn examination. It has a reassuring effect on doctors performing newborn examination. As reported in other studies, delaying the screening until after 24 hours maximizes the specificity, which may explain all tests being negative. There was no increase in demand for echocardiograms or admissions onto the neonatal unit.