

## **Impact of pulse oximetry screening to detect congenital heart defects: 5 years' experience in a UK regional neonatal unit**

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Pulse oximetry screening (POS) has been shown to be an effective, non-invasive investigation that can detect up to 50–70% of previously undiagnosed congenital heart defects (CHDs). The aims of this study were to assess the accuracy of POS in detection of CHDs and its impact on clinical practice. All eligible newborn infants born between 1 Jan 2015 and 31 Dec 2019 in a busy regional neonatal unit were included in this prospective observational study. A positive POS was classified as two separate measurements of oxygen saturation < 95%, or a difference of > 2% between pre- and post-ductal circulations. Overall, 23,614 infants had documented POS results. One hundred eighty nine (0.8%) infants had a true positive result: 6 had critical CHDs, 9 serious or significant CHDs, and a further 156/189 (83%) infants had significant non-cardiac conditions. Forty-three infants who had a normal POS were later diagnosed with the following categories of CHDs post-hospital discharge: 1 critical, 15 serious, 20 significant and 7 non-significant CHDs. POS sensitivity for detection of critical CHD was 85.7%, whereas sensitivity was only 33% for detection of major CHDs (critical and serious) needing surgery during infancy; specificity was 99.3%.

Conclusion: Pulse oximetry screening showed moderate to high sensitivity in detection of undiagnosed critical CHDs; however, it failed to detect two-third of major CHDs. Our study further emphasises the significance of adopting routine POS to detect critical CHDs in the clinical practice. However, it also highlights the need to develop new, innovative meth