



**CLINICAL GUIDELINE**

**Pulse Oximetry Screening to Detect Critical Congenital Heart Disease (CHD)**

<b>Scope (Staff):</b>	Nursing and Medical Staff
<b>Scope (Area):</b>	NICU KEMH, NICU PCH, NETS WA

This document should be read in conjunction with this [DISCLAIMER](#)

**Key Points**

- Pulse oximetry can detect some critical congenital heart disease that would otherwise be missed on routine examination / antenatal USS.
- The ideal time for oximetry is > 24 hours.
- Babies admitted to SCN should have this performed if >35 weeks GA
- The probe should be sited on the lower limb.
- 95% and less  $\leq 3$  difference between right hand and lower limb is considered normal and a baby can then be discharged as normal.
- Verbal consent should be obtained and the screen documented on the MR410 below discharge check

**Screening Process**

- The screening should ideally occur at 24 hours. The oximetry saturation needs to be done on right hand and either lower limb. Take the highest number the trace gets to as the screening number (the probe only needs to only on until a good steady trace is obtained which may take < 1 minute). The baby should not be feeding and should be settled.

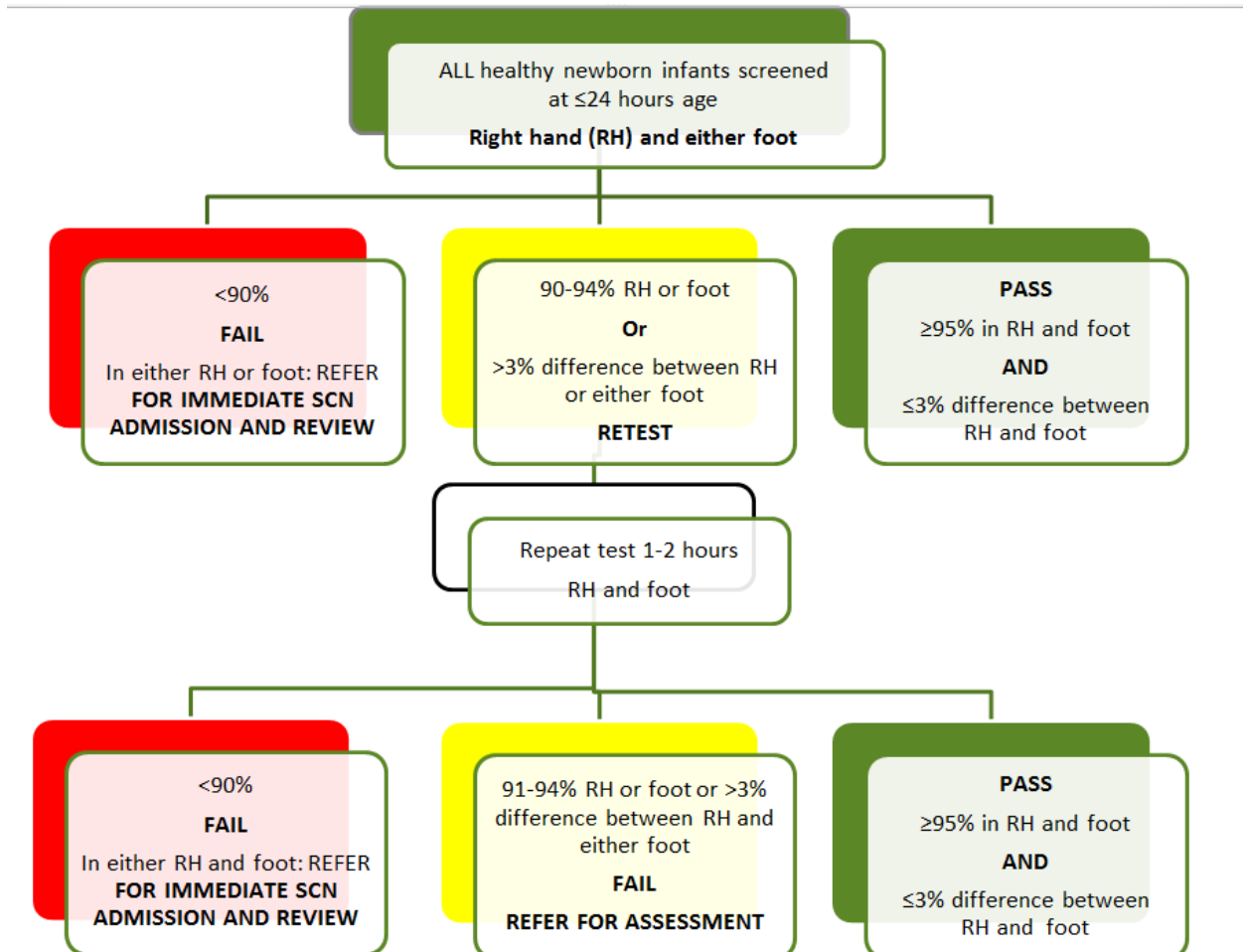
**Normal  $\geq 95\%$  oxygen saturation**

**And difference between right hand and lower limb  $\leq 3$**

- If O<sub>2</sub> saturations 91 – 94% → medical review to consider other causes (mainly sepsis). If well with a normal examination → repeat screening test in 1-2 hours when baby settled.
- If still abnormal after 2 tests → for a senior review (SR or Consultant Neonatologist) and refer to cardiology as necessary.
- If O<sub>2</sub> saturations <90% → for senior review and continuous oximetry monitoring. Other causes need to be excluded (with possible septic work up and IV antibiotics, CXR and assessment for other problems including – upper airway, neurological, polycythaemia, persistent pulmonary hypertension). Studies show up to 50% of babies screening positive have signs of sepsis on further evaluation.<sup>2</sup>
- If no other cause found echocardiogram to be performed at time dictated by Cardiologist (may be next day but prior to discharge).


## Documentation

- The outcome of screening should be documented on the neonatal examination form Neonatal History MR410.
- Any abnormal screening should also be documented in the inpatient history with the medical review.



References and related external legislation, policies, and guidelines	
1.	Brown KL, Ridout DA, Hoskote A. et al. Delayed diagnosis of congenital heart disease worsens preoperative condition and outcome of surgery in neonates. Heart 2006;92:1298-1302
2.	Mahle AT, Newburger JW, Paul Matherne G et al. Role of pulse oximetry in examining newborns for congenital heart disease: a scientific statement from the AHA and AAP. Pediatrics 2009;124: 823-836
3.	Tautz J, Merkel C, Loersch F et al. Implication of pulse oximetry screening for detection of congenital heart defects. Klin Padiatr 2010; 222(5):291-5
4.	Riede FT, Worner C, Dahnert I et al. Effectiveness of neonatal pulse oximetry screening for detection of critical congenital heart disease in daily clinical routine- results from a prospective multicenter study. Eur J Pediatr 2010; 169: 975-981
5.	De Whal Granelli A, Wennergren M et al. Impact of pulse oximetry screening on the detection of duct dependent congenital heart disease: a Swedish prospective screening study in 39 821 newborns. BMJ 2009;338:a3037
6.	Walsh W. Evaluation of pulse oximetry screening in Middle Tennessee: cases for consideration before universal screening. J Perinat 2011; 31, 125-129
7.	Ewer EK, Middleton LJ et al. Pulse oximetry screening for congenital heart defects in newborn infants (Pulseox): A test accuracy study. Lancet 2011; 378(785-794)
8.	Royal North Shore Sydney Hospital guidelines
9.	Swiss National guideline: Kuelling B, Arlettaz Mieth R, Bauersfeld U, Balmer C. Pulse oximetry screening for congenital heart defects in Switzerland: most but not all maternity units screen their neonates. Swiss Med Wkly 2009 Nov 28;139(47-48):699-704
10.	Ewer EK Screening for Critical Congenital Heart Defects with Pulse Oximetry: Medical Aspects. Amer J Perinatol 2016; 33(11): 1062-1066

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