

Routine pre-discharge pulse oximetry screening in the newborn

Key Document code:	WAHT-KD-015	
Key Documents Owner:	Dr Vivianna Weckemann/ A Gregory	Consultant Paediatrician
Approved by:	Paediatric Quality Improvement Meeting	
Date of Approval:	11 th November 2022	
Date of Review:	11 th November 2025	
This is the most current version and should be used until a revised document is in place		

Key Amendments		
Date	Amendments	Approved by
Jan 2023	No amendments made	A Gregory/ V Weckemann

Introduction

As a group, congenital heart defects are the commonest congenital malformations, and can be associated with significant morbidity and mortality. Critical Congenital Heart Defects (CCHD's) - those leading to death or requiring invasive intervention before 1 year of age, form a small but significant portion of these. Early detection can be life-saving. Current screening, involving antenatal ultrasound scans, and the postnatal baby examination, misses around 40% of CCHDs, which can result in babies collapsing at a few days of age, when their circulation changes. Pulse oximetry screening soon after birth is a well-established, accurate, non invasive test, which looks for clinically undetectable hypoxaemia, which may indicate an underlying CCHD. Recent large studies have shown it to meet the criteria for universal screening. In addition, routine pulseox screening has been shown to improve the pick-up rate of other, significant, non-cardiac conditions such as sepsis and respiratory disorders of the newborn, allowing earlier admission to the neonatal unit.

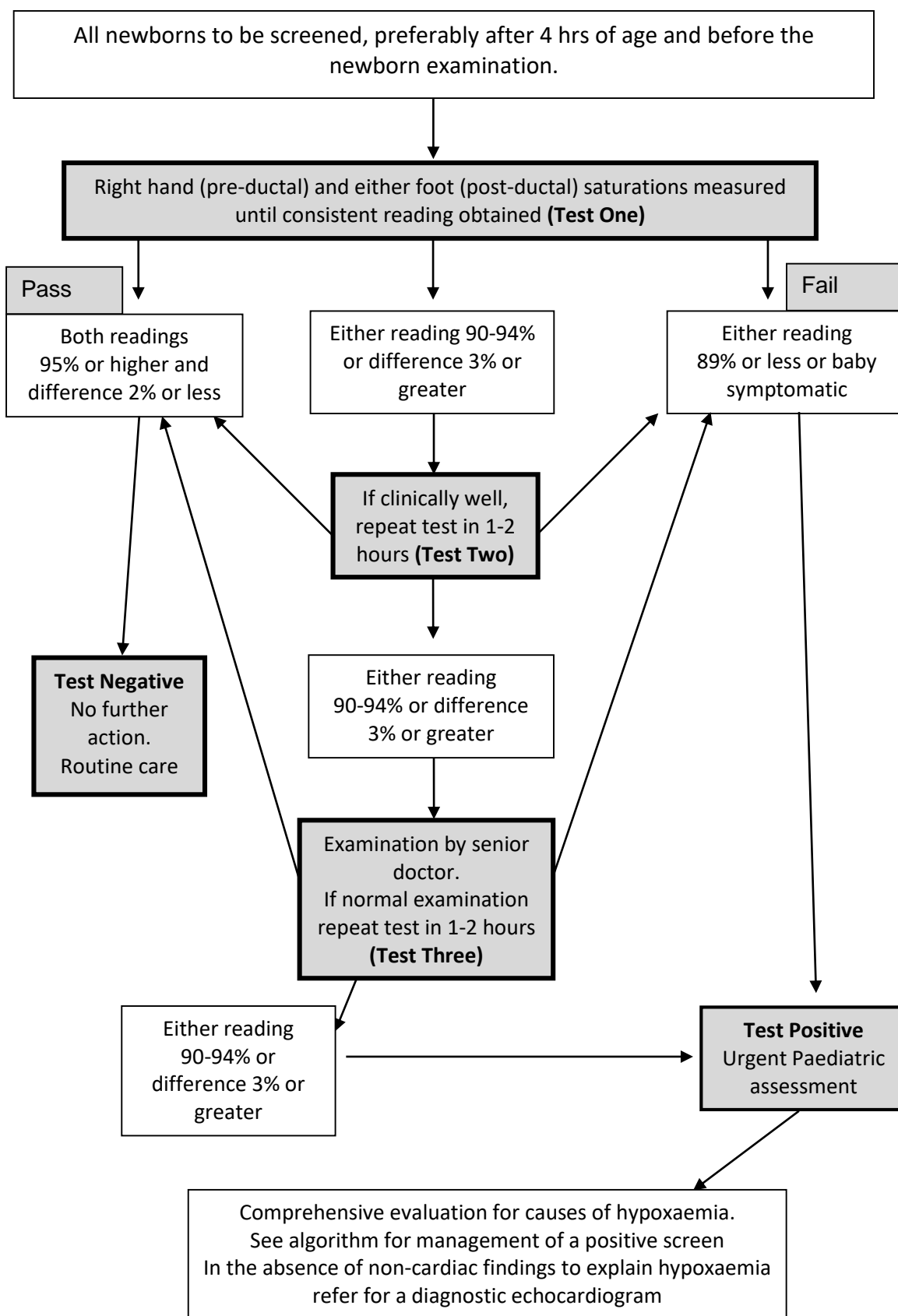
Babies who fail screening, will be assessed by senior medical staff, and admitted to the neonatal unit and investigated as appropriate.

Details of Guideline

- All babies will be screened, countywide, preferably within 4-24 hours of age, but always before discharge. Ideally the screening will be conducted prior to the newborn examination, and will be performed by midwives and HCA's who have received the appropriate training.
- Dedicated hand-held saturation monitors with reusable probes will be made available on the postnatal wards, delivery units, and midwife-led birth unit. Each community team will have a monitor available for home births (**see separate section for home births**)
- Two saturation readings will be taken, a **pre-ductal saturation** (right arm) and a **post-ductal saturation** (either foot) – **Test one**
- The best, consistent reading attainable in both will be recorded in the neonatal notes on maternity BadgerNet, and will be available for the newborn examination. There should be a **stable reading for 10- 15 seconds** before the reading is accepted. If this stable reading cannot be obtained it could be because the baby does have heart disease and baby should be referred to paediatrics for further assessment – do not accept “old probe” or “cold feet” or “unsettled baby” as reasons for failing to obtain a stable reading.

WAHT-KD-015
Neonatal Key Documents

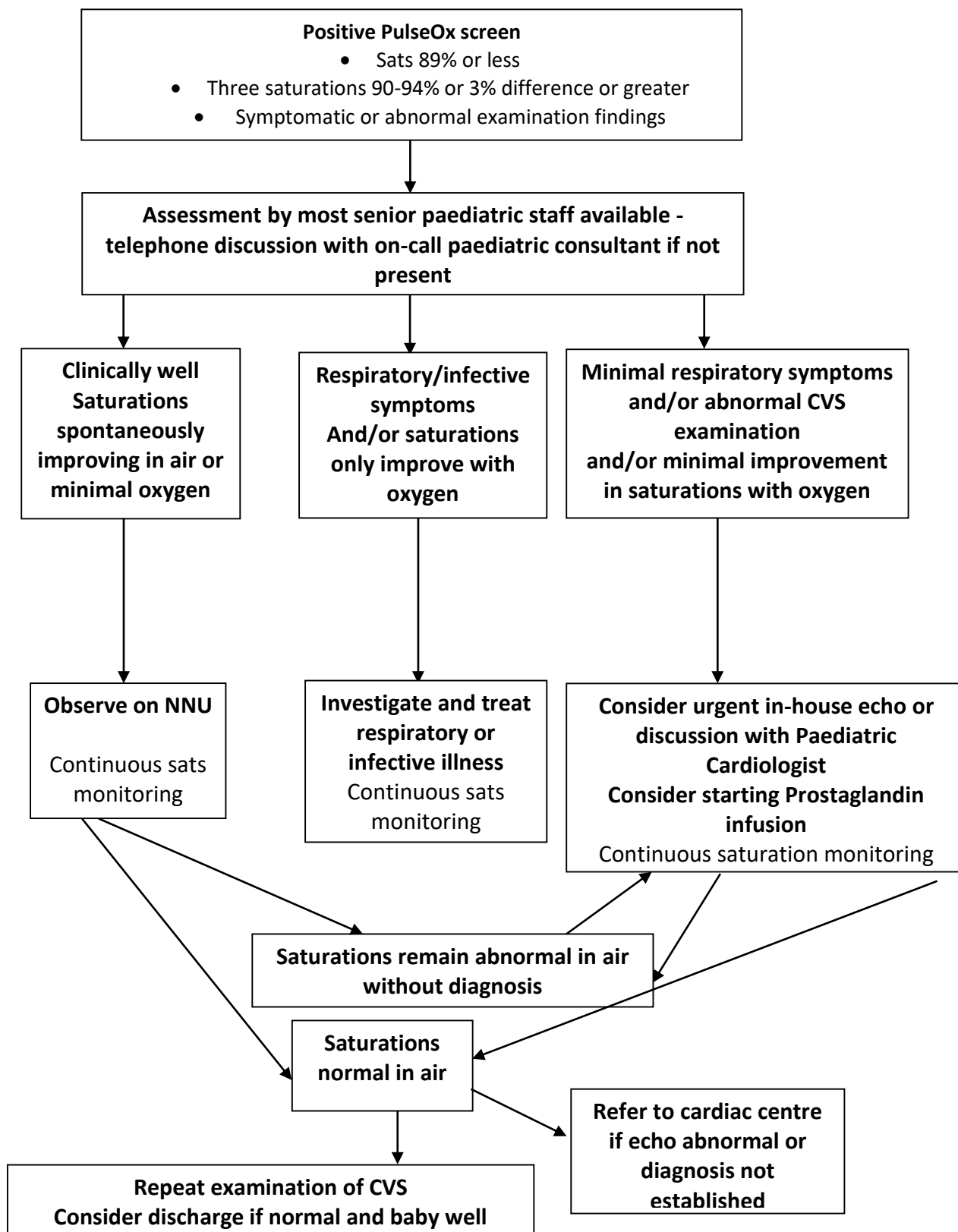
- The below flowchart deals with the outcome of these recordings :
 - **Pass** (test negative) – both readings 95% or higher and difference 2% or less
 - **Fail** (test positive) – either reading 89% or less, or **clinical concerns**
 - **Borderline** – either reading 90-94% or difference 3% or greater
- For a pass, no further action is required, other than recording the saturations on BadgerNet.
- Babies who fail screening will be referred to the neonatal team for urgent assessment.
- If the result is borderline, **and the baby is clinically well**, the test should be repeated in 1 to 2 hours by the midwife/HCA – **Test two**
- If the result is again borderline, a paediatric registrar or consultant should examine the baby
- If this examination is normal, the test should be repeated in 1-2 hours – **Test three**
- Anything but a clear pass in test three requires urgent paediatric assessment and investigation
- Passing the screening does not rule out a congenital heart defect, and an abnormal cardiac examination should always be investigated.
- Oxygen sats should be checked in any baby where there is a clinical concern regardless of whether or not they have previously passed the test.



Actions in the event of a positive pulseox screen (test failed)

- Babies who have failed the pulseox screening should be assessed by a senior member of the paediatric team (Reg or consultant)
- This should ideally take place on the neonatal unit, and should involve a hyperoxia test (to see if sats normalise with oxygen), and may involve a CXR, bloods, septic screen, echo if deemed clinically appropriate
- Failure of the test may be due to a non-cardiac cause such as a respiratory or septic illness
- If an underlying cardiac lesion is suspected, consideration should be given to commencing a Prostaglandin infusion
- If an echo is deemed appropriate, this may be performed locally, if available, or may require discussion with the paediatric cardiology team in Birmingham.

Investigation of babies who've failed pulseox screening



Pulseox screening for home births

- All babies born at home will undergo pulse oximetry screening, performed by the attending midwife
- Each team should have its own portable pulse-oximeter with reusable probes.
- Screening should ideally be performed at least 2 hours after birth, unless there is a cause for clinical concern
- Two saturation readings will be taken, a **pre-ductal saturation** (right arm) and a **post-ductal saturation** (either foot) – **Test one**
- The best, consistent reading attainable in both will be recorded in the neonatal notes, and will be available for the newborn examination.
- The following outcomes apply:
 - **Pass** (test negative) – both readings 95% or higher and difference 2% or less
 - **Fail** (test positive) – either reading 89% or less, or **baby symptomatic**
 - **Borderline** – either reading 90-94% or difference 3% or greater
- For a pass, no further action is required, other than recording the sats in the notes.
- Babies who fail screening will be referred to the neonatal team for urgent assessment.
- A borderline result should also be discussed with the oncall neonatal registrar, and if both midwife and registrar have no clinical concerns, the test can be repeated in 1 to 2 hours – **Test two**
- If the baby does not pass this test, or the examination is abnormal, or there are other clinical concerns, the baby should be referred to the neonatal registrar for immediate assessment in hospital.
- Passing the screening does not rule out a congenital heart defect, and an abnormal cardiac examination should always be investigated.

Oxygen sats should be checked in any baby where there is a clinical concern regardless of whether or not they have previously passed the test

References

1. Anju Singh, Shree Vishna Rasiah, Andrew K Ewer¹, *The impact of routine pre-discharge pulse oximetry screening in a regional neonatal unit*, Archives of Disease in Childhood, March 2014
2. Birmingham Womens' hospital – clinical guideline

Monitoring Tool

This should include realistic goals, timeframes and measurable outcomes.

How will monitoring be carried out?

Who will monitor compliance with the guideline?

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: <i>(Responsible for also ensuring actions are developed to address any areas of non-compliance)</i>	Frequency of reporting:
	WHAT?	HOW?	WHEN?	WHO?	WHERE?	WHEN?
	All newborns (hospital and home births) to undergo pulse-ox screening within the first 48 hrs of life, and predischARGE if born in hospital. Results to be recorded in newborn record	Audit of newborn records	Audit yearly	Who is responsible for the check? Is it listed in the 'duties' section of the policy? Is it in the job description?	Monitoring results to Dr Van der Velde.	Yearly
	All babies who fail screening to be assessed by a senior paediatric doctor	Audit of recors	Audit yearly		Monitoring results to Dr Van der Velde	Yearly

WAHT-KD-015
Neonatal Key Documents

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation

This key document has been circulated to the chair(s) of the following committee's / groups for comments;

Committee