Pulse Oximetry Screening for Critical Congenital Heart Disease (CCHD) in Newborns

PATIENT POPULATION AND/OR AREA AFFECTED
All infants born in the state of Wisconsin

PULSE OXIMETRY (POX) SCREENING PROTOCOL
All infants born in the state of Wisconsin should be offered pulse oximetry screening for CCHD. This should be done between 24 and 48 hours after birth and coordinated with the collection of the newborn screening blood card.

❤️ If early discharge from hospital (<24 hours) in planned, perform initial screen as close to 24 hours as possible.
❤️ For out of hospital births where early discharge from birth care is customary perform initial pulse oximetry screen on the infant at the 24-48 hour follow-up visit.
❤️ Infants requiring oxygen to treat pulmonary disease should have screening deferred until after their pulmonary disease and need for supplemental oxygen has resolved or they are being discharged home on oxygen.
❤️ Pulse oximetry screening should be performed and reported to the Wisconsin SHINE Project in babies with known CCHD even if they are on supplemental oxygen or IV prostaglandin E1.

Pulse Oximetry screening should be done using motion-tolerant pulse oximeters that report functional oxygen saturation and are cleared by the FDA for use in newborns.

❤️ Disposable or reusable probes may be used
❤️ Use manufacture-recommended pulse oximeter-probe combination
❤️ It is best to perform test when baby is quiet and alert to avoid false positives due to deep sleep
❤️ Measure saturation (SP0₂) on right hand and either right or left foot. These measurements may be done sequentially.
❤️ Ensure good pulse waveform. Do not hold probe with your own hand.
❤️ Observe good pulse waveform for at least 1 full minute
❤️ Measure and record baseline oxygen saturation.
Critical Congenital Heart Disease (CCHD) Screening

Screen all infants between 24-48 hours of life
Screen prior to discharge if < 24 hours of life

Screen:
Obtain Pulse Oximetry Reading on
Right hand (RH) and Either Foot (F)

> 94% in RH or F
AND
≤ 3% difference between RH and F

> 94% in RH or F
AND
≤ 3% difference between RH and F

< 90% - 94% in RH and F
or
> 3% difference between RH and F

< 90% in RH or F

< 90% in RH or F

< 90% in RH or F

Repeat Screen in
1 hour

Repeat Screen in
1 hour

< 90% in RH or F

Pass – No further testing needed

Fail
INTERPRETTING THE SCREENING RESULTS
A baby may PASS, FAIL or require REPEAT SCREENING. A baby has up to three chances to pass their pulse oximetry screening.

First Screening:
❤ PASS – SPO2 is ≥ 95% in right hand or either foot with
  ≤ 3% difference in SPO2 between right hand and foot
  o No further screening needed. Normal newborn care
❤ FAIL – SPO2 is < 90% in right hand or foot
  o No further screening needed. Contact appropriate medical provider for further evaluation.
❤ REPEAT SCREENING NEEDED – SPO2 is 90-94% on both extremities and/or there is > 3% difference in SPO2 between the right hand and foot
  o If signs of distress, contact appropriate medical provider for further evaluation
  o If there are no signs of distress, repeat POX screen in 1 hour

Second Screening:
❤ PASS – SPO2 is ≥ 95% in right hand or either foot with
  ≤ 3% difference in SPO2 between right hand and foot
  o No further screening needed. Normal newborn care
❤ FAIL – SPO2 is < 90% in right hand or foot
  o No further screening needed. Contact appropriate medical provider for further evaluation.
❤ REPEAT SCREENING NEEDED – SPO2 is 90-94% on both extremities and/or there is > 3% difference in SPO2 between the right hand and foot
  o If signs of distress, contact appropriate medical provider for further evaluation
  o If there are no signs of distress, repeat POX screen in 1 hour

Final Screening:
❤ PASS – SPO2 is ≥ 95% in right hand or either foot with
  ≤ 3% difference in SPO2 between right hand and foot
  o No further screening needed. Normal newborn care
❤ FAIL – SPO2 is < 90% in right hand or foot
  o No further screening needed. Contact appropriate medical provider for further evaluation.
❤ FAIL – SPO2 is 90-94% on both extremities and/or there is > 3% difference in SPO2 between the right hand and foot for the third time
  o If a baby does not pass the screening test by the third attempt, they have failed their pulse oximetry screening. Contact appropriate medical provider for further evaluation.
RESPONSE TO A FAILED PULSE OXIMETRY SCREENING
Infants who FAIL pulse oximetry screen require timely clinical evaluation. If a non-cardiac explanation for hypoxemia is not identified, CCHD must be excluded.

- Stabilize infant as needed.
- Contact appropriate medical care provider for clinical evaluation.

DOCUMENTATION

- Results of the pulse oximetry screening should be recorded as PASS, FAIL, or NOT SCREENED on the newborn screening blood card.

NOT TESTED OR DEFERRED SCREENING

- Mark the box for NOT SCREENED on newborn screening blood card and check the appropriate box for why screening was not done (refused, transferred, deceased, echo normal, confirmed heart disease or other)
- For screens that are deferred due to an oxygen requirement in newborns with pulmonary disease:
  - Photocopy newborn screening blood card before collecting newborn blood screen.
  - Mark CCHD Screen “Not Screened” on newborn screening blood card and check the box “
  - Perform pulse oximetry screening for CCHD when lung disease is resolved or before discharge if baby is going home on oxygen.
  - Record results on photocopy of newborn screening blood card.
  - Send photocopy of newborn screening blood card with pulse oximetry results to the Wisconsin State Lab of Hygiene.

HOW TO CONTACT THE WISCONSIN SHINE PROJECT

- For technical assistance Monday-Friday contact 1-608-265-1894 and ask for Wisconsin SHINE Personnel
- For all urgent or clinical questions consult your consulting pediatric cardiology team