

Screening Algorithm for Critical Congenital Heart Disease

Recommendations from the New Jersey Department of Health

All babies 24-48 hours of age or shortly before discharge if < 24 hours*

Perform and document pulse oximetry in both RIGHT HAND and either FOOT.

Is Pulse Oximetry reading < 90% in either the HAND or FOOT?

YES

FAIL

Do not rescreen.

NO

Are both HAND and FOOT 95-100% ?

NO

YES

Is the difference between the two measurements 3 or less?

NO

FAIL

Repeat the above pulse oximetry screening algorithm in one hour by obtaining new measurements from both right hand and either foot. If baby does not pass after a total of three screenings (initial screen and 2 repeat screens), notify responsible medical practitioner and follow recommendations in box below.

YES

PASS

- Notify responsible medical practitioner of the failed screen and of need for further evaluation.
- Evaluate for other causes of low oxygen saturation (e.g., persistent pulmonary hypertension, pneumonia, infection, etc.).
- In the absence of a clear cause of hypoxemia, obtain a diagnostic echocardiogram by an expert in the interpretation of infant echocardiograms and review the report prior to discharge home. This may require transfer to another institution or use of telemedicine.
- **If saturation is < 90% in either the hand or foot, the baby should have immediate clinical assessment and immediate referral to pediatric cardiology. In this case, do not wait and rescreen.**

- Optimal results are obtained by using a motion-tolerant pulse oximeter that reports functional oxygen saturation, has been validated in low perfusion conditions, has been cleared by the FDA for use in newborns, and has a 2% root-mean-square accuracy.
- Document results in medical record.
- Screen in the right hand and one foot, either in parallel or direct sequence.
- Apply probe to lateral aspect of right hand and foot in areas that are clean and dry. The two sensors (light emitter and detector) should be placed directly opposite of each other.

- A pass on the screen does not exclude the existence of a cardiac disorder.
- If cardiac evaluation is otherwise indicated (e.g., clinical signs, prenatal diagnosis of critical congenital heart disease, dysmorphic features, etc.), proceed with cardiac evaluation even if baby receives a pass on the pulse oximetry screen.

- Administration of supplemental oxygen may alter the interpretation of the screening result. For infants requiring supplemental oxygen, delay this screening algorithm until infant is stable in room air. For infants being discharged home on supplemental oxygen, perform screen prior to discharge and review results with responsible medical practitioner.
- Symptomatic babies require clinical evaluation.
- This screening algorithm should not take the place of clinical judgment or customary clinical practice.

* In the NICU, screening should be performed at 24-48 hours of age or as soon as medically appropriate after 24 hours of age. Screening must be performed prior to transfer out of the hospital at ≥ 24 hours of age. In all cases, screening should be performed prior to discharge to home.