

ILLINOIS DEPARTMENT OF PUBLIC HEALTH

CRITICAL CONGENITAL HEART DISEASE SCREENING GUIDELINES

I. PURPOSE:

- A. To aid in the detection of infants with critical congenital heart disease before discharge from the newborn nursery

II. RECOMMENDATIONS:

- A. Infants will receive a pulse oximetry screening after 24 hours of age or before discharge from the hospital. This includes neonatal intensive care unit (NICU) infants who are stable and preparing for discharge. The only infants excluded should be those infants with a prenatal diagnosis of a cardiac defect or infants who have already had a complete postnatal echocardiogram performed.
- B. All infants should be on room-air and asymptomatic, including those in the NICU.
- C. If a positive (FAILED) screening is identified, the infant will be evaluated by a physician. If no cause for the hypoxia is found, the infant should get an echocardiogram prior to hospital discharge in accordance with the national guidelines put forth by the Secretary's Advisory Committee on Heritable Disorders in Newborns and Children.
- D. If an echocardiogram is not available at the hospital where the positive screen is identified, the infant may need to be transferred to the nearest facility with echocardiogram capabilities.
- E. The echocardiogram should be performed by a sonographer and read by a pediatric cardiologist. If a pediatric cardiologist is not available, the hospital should work through their perinatal network to utilize telemedicine or identify an appropriate cardiologist to have the echocardiogram read.

III. PROCEDURE:

- A. Identify infant readiness for pulse oximetry screening
 1. 24 hours of age or greater (can be done before 24 hours of age if the infant is being discharged).
 2. Vital signs within normal limits.
 3. On room-air.
- B. Preparation for screening
 1. Provide parent(s) with education related to the pulse oximeter screening and CCHD.
 2. A quiet environment is ideal. Testing may be done in the nursery or patient room. Parent(s) may be present.
 3. It is preferred that the infant is awake, alert but quiet during the test. Calm the infant if possible.
 4. Do not test on an actively crying infant or on a cold stressed infant.
 5. Bright lights and bilirubin lights should be turned off prior to screening.
- C. Application of pulse oximeter probe
 1. Pulse oximeter screenings should be both a pre-ductal and a post-ductal reading.

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- i. Do not apply pulse oximeter probe to the same extremity with a blood pressure cuff.
 - ii. Assure the limb is clean and dry.
 - iii. Apply the pulse oximeter probe to the infant's right hand (pre-ductal) and either foot (post-ductal).
 - iv. Assure there are no gaps between the sensor and the infant's skin. Sides of the probe should be directly opposite each other.
 - v. Screening may be done simultaneously on both extremities or in direct sequence.
 - vi. Apply the probe first to the baby and then connect to the oximeter to facilitate a more reliable and quick reading.
2. Initial screen-observe the pulse oximeter reading for 60 seconds on both the right hand and either foot. Record the oxygen saturation result.
- i. Reading $\geq 95\%$ in right hand or foot and $\leq 3\%$ difference between the right hand and foot = NEGATIVE (PASS) screen
 - a. No further cardiac evaluation in the newborn nursery unless indicated by symptoms or physical examination.
 - b. Screening is complete.
 - c. Notify parent(s) of results.
 - ii. Reading 90% - 94% in right hand and foot OR $>3\%$ difference between right hand and foot = INDETERMINATE screen, REPEAT screen in one hour.
 - a. Monitor infant for signs and symptoms of cardiac or respiratory distress.
 - b. Notify parent(s) of results and plan of care.
 - iii. Reading $<90\%$ in right hand or foot = POSITIVE (FAIL) screen
 - a. Notify attending physician of the infant and arrange for an urgent physician evaluation.
 - b. Monitor infant for signs and symptoms of cardiac or respiratory distress.
 - c. Notify parent(s) of results and plan of care.
3. Second screening (needed for INDETERMINATE first screens only)-repeat screen one hour after first screen.
- i. If second reading is $\geq 95\%$ in right hand or foot with $\leq 3\%$ difference between right hand and foot = NEGATIVE (PASS) screen.
 - a. No further cardiac evaluation in the newborn nursery unless indicated by symptoms or physical examination.
 - b. Screening is complete.
 - c. Notify parent(s) of results and plan of care.
 - ii. If second reading is 90% - 94% in right hand and foot OR $>3\%$ difference between right hand and foot = INDETERMINATE screen, REPEAT screen in one hour.
 - a. Monitor infant for signs and symptoms of cardiac or respiratory distress.
 - b. Notify parent(s) of results and plan of care.
 - iii. If second reading is $<90\%$ in right hand or foot = POSITIVE (FAIL) screen.

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- a. Notify attending physician of the infant and arrange for an urgent physician evaluation.
 - b. Monitor infant for signs and symptoms of cardiac or respiratory distress.
 - c. Notify parent(s) of results and plan of care.
4. Third screening (needed for INDETERMINATE second screens only)-repeat one hour after second screen.
- i. If third reading is $\geq 95\%$ in right hand or foot with $\leq 3\%$ difference between right hand and foot = NEGATIVE (PASS) screen.
 - a. No further cardiac evaluation in the newborn nursery unless indicated by symptoms or physical examination.
 - b. Screening is complete.
 - c. Notify parent(s) of results and plan of care.
 - ii. If third reading is 90% - 94% in right hand and foot OR $>3\%$ difference between right hand and foot = POSITIVE (FAIL) screen.
 - a. Notify attending physician of the infant and arrange for an urgent physician evaluation.
 - b. Monitor infant for signs and symptoms of cardiac or respiratory distress.
 - c. Notify parent(s) of results and plan of care.
 - iii. If third reading is $<90\%$ in right hand or foot = POSITIVE (FAIL) screen.
 - a. Notify attending physician of the infant and arrange for an urgent physician evaluation.
 - b. Monitor infant for signs and symptoms of cardiac or respiratory distress.
 - c. Notify parent(s) of results and plan of care.