

## Critical Congenital Heart Disease Screening Program:

# Screening Recommendations

### Section 1: Recommendations for Implementation Planning

1. Designate a program director and coordinator to facilitate planning and implementation of the screening program.
2. Establish an interdisciplinary team of organizational leadership and management, physicians, registered nurses, nursing assistants, and ancillary staff to participate in the planning process.
3. Schedule several planning sessions to facilitate education, communication, brainstorming, conflict resolution, and decision making.
4. Ensure that the organization's public relations and marketing department is involved in communication planning and efforts.
5. Discuss and establish a clear, complete, and concise evidence-based policy and procedure for screening methods and guidelines, including documentation and reporting of normal and abnormal results.
6. Discuss a plan for management and evaluation of infants requiring further evaluation if pediatric cardiology services are not available on site.
7. Establish guidelines for parents or guardians who wish to decline screening.
8. Research the accuracy and reliability of pulse oximetry equipment. Choose a vendor with equipment that is approved by the FDA for use with neonates.
9. Establish guidelines for informing, educating, and training providers and staff participating in and/or affected by implementation of the screening program.

10. Establish guidelines for education of and communication with parents and guardians before and after screening.
11. Establish plans for surveillance and reporting of program results and outcomes.
12. Birthing facilities at high altitudes may require revised protocols.

### Section 2: Recommendations for Parental Education

1. Establish a plan to inform parents of the screening program prior to delivery and screening of the infant through:
  - a. prenatal classes and tours provided by the hospital,
  - b. information on hospital's website, and
  - c. written materials available in the obstetrics and gynecology clinics, labor and delivery, and maternity suites.
2. Provide education in both written and verbal methods; written materials should be easy to read and understand, and should not contain excessive medical language that may be confusing to parents.
3. Provide written materials in English and Spanish; consider additional languages based on patient population that is served and use an interpreter when appropriate.
4. Include program contact information on all communication to provide mothers the opportunity to seek additional information and clarification prior to delivery.
5. Educate parents of signs and symptoms of CHD.
6. Inform parents of the right to decline screening.

### Section 3: Recommendations for Educating and Informing Providers

1. Inform and educate all hospital and community providers who work in the newborn nursery, neonatal intensive care unit, postpartum unit, and pediatrics that will be affected by the screening program prior to implementation.
  - Consider sending out a letter of program intent several weeks prior to implementation.
  - Provide program contact information to allow providers to seek additional information and clarification.
2. Provide a Grand Rounds session for the education of hospital and community providers.
3. Request time at department meetings to inform and educate hospital and community providers prior to implementation.
4. Following implementation, provide frequent updates to hospital and community providers on the screening program progress and outcomes at department meetings or through written communication.

### Section 4: Recommendations for Screener Training

1. Provide all training prior to implementation of the screening program by an individual who has participated in the planning process.
  - a. Examples include the unit's nurse manager or assistant nurse manager, the nurse educator, the program coordinator, or a registered nurse who played an active role in the planning process.

2. Recommended components of the in-service education program include:
  - a. PowerPoint Presentation — Includes information on background and significance for CCHD screening methods and recommendations and may be obtained by emailing [pulseox@childrensnational.org](mailto:pulseox@childrensnational.org)
  - b. Demonstration of correct and safe use of pulse oximetry equipment in obtaining an accurate infant reading by trainer or representative from pulse oximeter manufacturer.
  - c. Completion of knowledge assessment quiz.
  - d. Opportunity to practice CCHD screening.
3. Require that all individuals who will be performing the screening test complete the in-service education program.
4. Require that all individuals who will be performing the screening test complete the knowledge assessment quiz with a passing score of greater than or equal to 90 percent, and remediation of all questions answered incorrectly.
5. Require that all individuals who will be performing the screening test demonstrate proficiency in performing pulse oximetry and knowledge of screening guidelines through completion of defined competencies prior to participation. Require that they renew competencies on an annual basis.
6. Provide “booster” sessions quarterly to provide an opportunity to re-educate staff and answer any questions.
7. Ensure that all new employees receive training prior to participation in screening program methods.
8. Provide staff with regular updates on outcomes of screening to maintain engagement.

## Section 5: Recommendations for Screening

1. Pair critical CHD screening with another standard-of-care screening performed following 24 hours of age, such as metabolic or hearing screening. If early discharge is planned, screening should occur as late as possible.
2. Consider assigning one or two nursing assistants or registered nurses to critical CHD screening on a daily basis.
  - a. If possible, provide continuity by scheduling one screener to conduct screening on several continuous days.
3. Conduct screening in a quiet area with the parent present to soothe and comfort the infant.
4. If possible, conduct screening while the infant is awake, quiet, and calm.
5. Do not attempt to perform pulse oximetry on an infant while he or she is in a deep sleep, crying or cold as oxygen saturations may be affected.
6. If using disposable pulse ox sensors, use one clean sensor for each infant screened. If reusable sensors are being used, clean sensor as instructed by manufacturer prior to and following screening. Dirty sensors may decrease the accuracy of a reading or transmit infection.
7. Perform pulse oximetry on the right hand and one foot after 24 hours of age; measurements should be taken in parallel or one after another. If infant was born prematurely, perform screening when medically appropriate. If an early discharge is planned conduct screening as close to 24 hours as possible.
8. Ensure that all readings are accurate by using pulse oximetry equipment confidence indicators.
9. If the oxygen saturation is 100-95% in either extremity, with a 3% or less absolute difference between the two, the infant will “pass” the

screening test and no additional evaluation will be required unless signs or symptoms of CHD are present.

- a. The physician or nurse practitioner caring for the infant does not need to be notified.
- b. The infant does not require additional cardiac evaluation in the newborn nursery unless indicated.

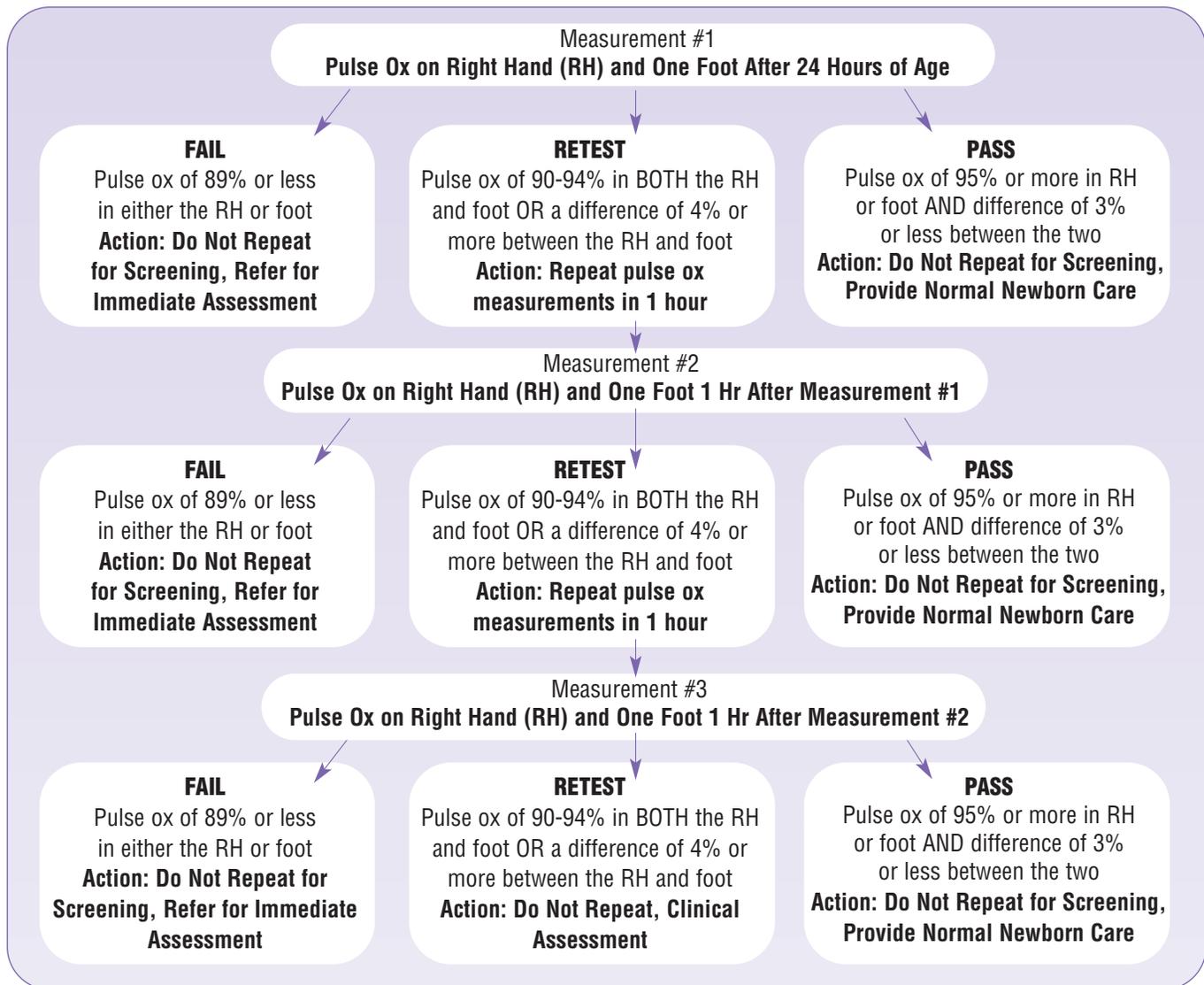
*10. If the pulse ox reading is 89% or less in either the hand or foot, the infant should be immediately referred to his or her physician for additional evaluation.*

11. If the oxygen saturations are 94-90% in both the hand and foot or there is a 4% or more absolute difference between the two on three measures each separated by one hour the newborn should be referred for additional evaluation.
  - a. The infant’s physician or nurse practitioner should be notified.
  - b. Infectious and pulmonary pathology should be excluded.
  - c. If cause of hypoxemia is not clear an echocardiogram and cardiology consultation should be obtained before discharge to rule out CHD.
  - d. Further evaluation should be ordered at the discretion of the physician or nurse practitioner caring for the infant.

## Section 6: Recommendations for Follow-Up

1. Establish guidelines for documentation and communication of results and plan of care (if necessary) with infant’s parents and pediatrician.
2. Establish guidelines for individuals performing screening if asked questions by parents.
2. Establish guidelines for addressing screening of missed infants.

## Critical Congenital Heart Disease Screening Program: Screening Protocol Diagram



RH Application Sites



Foot Application Sites

### REMINDER ALGORITHM FOR SCREENERS

- Confirm that the infant is at least 24 hours of age and eligible for screening.
- Help the parent to warm and calm the infant in a quiet and peaceful environment.
- Describe the pulse ox test to the parent.
- Select a site on the right hand and one foot that is clean and dry.
- Place the pulse ox sensor and perform the pulse ox test.

### ASSESSMENT OF BABIES WITH FAILING SATURATIONS

1. Babies with saturation of 89% or less in RH or foot should have immediate assessment.
2. Babies with Failing Saturations:
  - Clinical Assessment
  - Complete echocardiogram
  - Infectious and Pulmonary pathology should be excluded
  - If symptomatic, referral to Pediatric Cardiology immediately
  - If asymptomatic referral to Pediatric Cardiology in timely manner

## Critical Congenital Heart Disease Screening Program:

# Supplies for Screening

- ♥ Pulse Oximeters
  - At least one pulse oximeter that has been approved by the FDA for use in neonates
  - One pulse oximeter for back-up
- ♥ Infant Disposable or Reusable Pulse Ox Sensors
  - If using disposable sensors, one disposable sensor for every infant screened
  - If using reusable sensors, one reusable sensor for each pulse oximeter. Also consider additional reusable sensors for back-up
    - Disinfecting agent recommended by pulse oximetry equipment manufacturer
    - One wrap per infant screened to secure sensor to hand or foot
- ♥ Rolling Cart for Supplies
- ♥ Data Collection Forms
  - One for every infant screened
- ♥ Dedicated individual to perform screening
- ♥ Blankets for warming the infant and blocking extraneous light
- ♥ A parent for comforting infant during screening



Critical Congenital Heart Disease Screening Program

**PLACE LABEL OR WRITE-IN INFORMATION**

Medical Record # \_\_\_\_\_

Patient Name: Last \_\_\_\_\_ First \_\_\_\_\_

Date of Birth \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**Critical Congenital Heart Disease Screening Program:  
Screening Form**

Age at Initial Screening: \_\_\_\_\_ hours

**Initial Screening:**

Time \_\_\_\_\_

Pulse Ox Saturation of Right Hand \_\_\_\_\_ %

Pulse Ox Saturation of Foot \_\_\_\_\_ %

Absolute difference \_\_\_\_\_ %     Pass     Fail     Retest

**Second Screening (1 hour following initial screen if fail initial screen)**

Time \_\_\_\_\_

Pulse Ox Saturation of Right Hand \_\_\_\_\_ %

Pulse Ox Saturation of Foot \_\_\_\_\_ %

Absolute difference \_\_\_\_\_ %     Pass     Fail     Retest

**Third Screening (1 hour following second screening if fail second screen)**

Time \_\_\_\_\_

Pulse Ox Saturation of Right Hand \_\_\_\_\_ %

Pulse Ox Saturation of Foot \_\_\_\_\_ %

Absolute difference \_\_\_\_\_ %     Pass     Fail

- \* If pulse ox saturation is 89% or less in either the hand or foot the infant's MD or NP must be notified immediately. "Fail must be checked".
- \* If pulse ox saturations are 94-90% in both the hand and foot or there is a 4% or more absolute difference between the two on three measures each separated by one hour the MD or NP must be notified.
- \* If pulse ox saturations are 95-100% in either extremity, with a 3% or less absolute difference between the two the reading is expected for an infant. "Pass" should be checked".

Screener's Name: \_\_\_\_\_

Screener's Signature: \_\_\_\_\_ Date: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_