

# Congenital Heart Defects (CHDs)

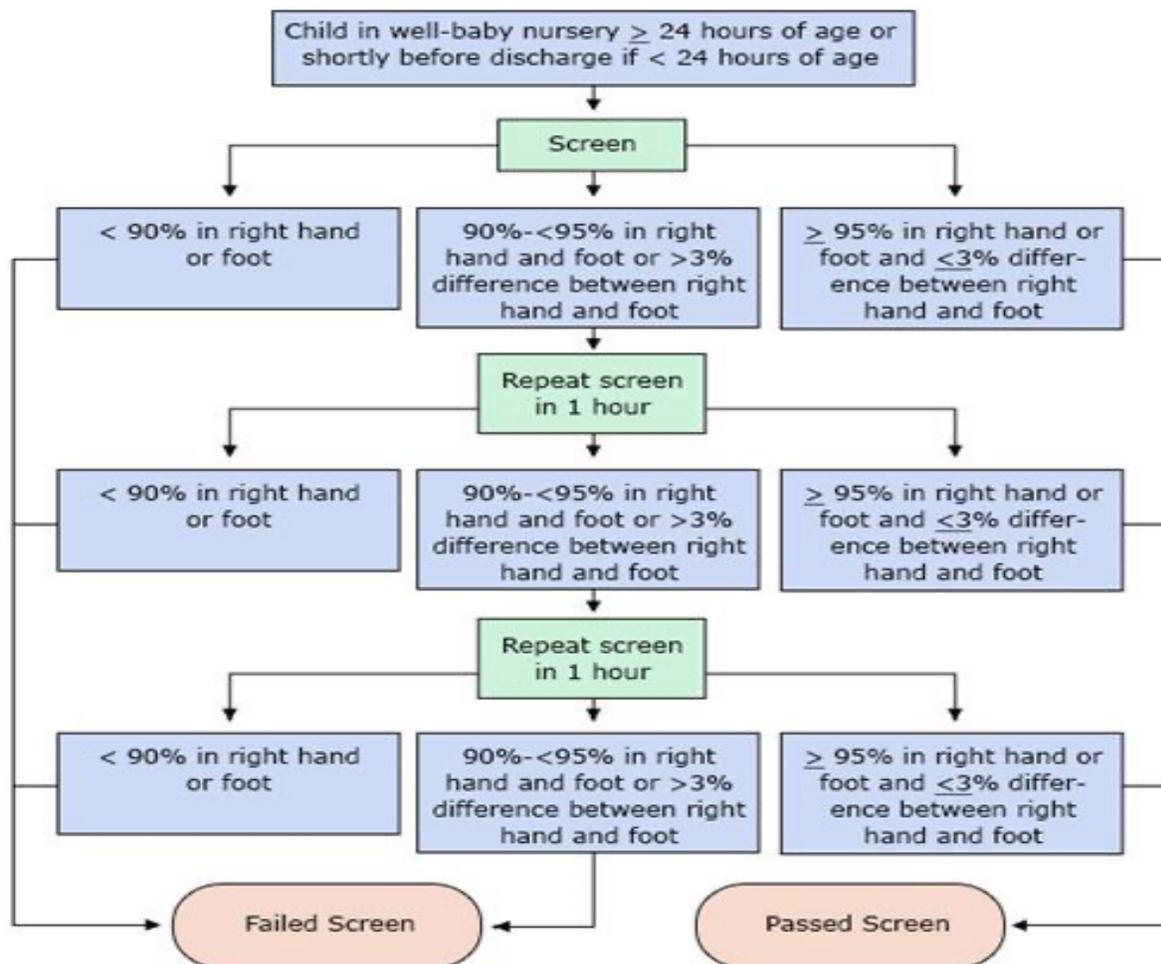
## Critical Congenital Heart Defects Screening Methods

Newborn screening for critical congenital heart defects (critical CHDs) can identify newborns with these conditions before signs or symptoms are evident and before the newborns are discharged from the birth hospital.



Current published recommendations focus on screening newborns in the well-baby nursery and intermediate care nurseries or other units in which discharge from the hospital is common during a newborn's first week. Timing the screening around the time of the newborn hearing screening can help improve efficiency. A pulse oximeter is used to measure the percentage of hemoglobin in the blood that is saturated with oxygen.

The following algorithm has been developed to show the steps in screening (Kemper et al., 2011)



## Critical CHDs

- Coarctation of the aorta
- Double outlet right ventricle
- Ebstein anomaly
- Hypoplastic left heart syndrome
- Interrupted aortic arch
- Pulmonary atresia
- Single ventricle
- Tetralogy of Fallot
- Total anomalous pulmonary venous return
- d-Transposition of the great arteries
- Tricuspid atresia
- Truncus arteriosus
- Other critical CHDs requiring treatment in the first year of life

## Other Conditions that are not critical CHDs

- Hemoglobinopathy
- Hypothermia
- Infection, including sepsis
- Lung disease (congenital or acquired)
- Non-critical congenital heart defect
- Persistent pulmonary hypertension
- Other hypoxic conditions not otherwise specified

## Failed Screens

A screen is considered failed if:

1. Any oxygen saturation measure is <90% (in the initial screen or in repeat screens),
2. Oxygen saturation is <95% in the right hand and foot on three measures, each separated by one hour, or
3. A >3% absolute difference exists in oxygen saturation between the right hand and foot on three measures, each separated by one hour.

Any infant who fails the screen should have an evaluation for causes of hypoxemia. In most cases this will include an echocardiogram, but if a reversible cause of hypoxemia is identified and appropriately treated, an echocardiogram may not be necessary. The infant's pediatrician should be notified immediately and the infant might need to be seen by a cardiologist.

## Passed Screens

Any screening with an oxygen saturation measure that is  $\geq 95\%$  in the right hand or foot with a  $\leq 3\%$  absolute difference between the right hand or foot is considered a passed screen and screening would end. Pulse oximetry screening does not detect all critical CHDs, so it is possible for a baby with a passing screening result to still have a critical CHD or other CHD.

## Ways to Reduce False Positive Screens

- Screen the newborn while he or she is alert.
- Screen the newborn when he or she is at least 24 hours old.