

Newborn Critical Care Center (NCCC) Clinical Guidelines

Congenital Heart Defect Screening

BACKGROUND

Critical congenital heart defects (CCHDs) account for ~25% of infant deaths due to birth defects and occur in approximately 20 out of every 100,000 babies born. As normal physiologic changes in the cardiopulmonary system occur during the first few days to weeks after birth, these babies are at increased risk of circulatory shock and sudden death if they are not identified early.

CCHD screening is recommended as part of the Routine Uniform Screening Panel that all infants receive prior to discharge. This panel is endorsed by the American Academy of Pediatrics (AAP) and the American Heart Association (AHA). In 2015, the North Carolina State Legislature put this screening into law. In September 2018, a federally funded expert panel met in Washington DC to revise the AAP-recommended algorithm.

The seven congenital heart defects classified as CCHDs are as follows:

1. Hypoplastic Left Heart Syndrome and Coarctation of the Aorta
2. Pulmonary Atresia
3. Tetralogy of Fallot
4. Total Anomalous Pulmonary Venous Return
5. Transposition of the Great Vessels
6. Tricuspid Atresia
7. Truncus Arteriosus

Pulse oximetry screening should be performed in ALL infants prior to being discharged from the NCCC (unless an echocardiography study has been performed). The presence of lung disease and other medical complications make the interpretation of oxygen saturation data complex and CCHD screening at 24 hours of life may be inaccurate. Screening should be performed in this population when the infant is no longer requiring respiratory support and is hemodynamically appropriate from the medical provider's judgement. Of note, the false positive rate in preterm infants < 28 weeks of gestation at birth is higher than in late preterm and term infant (~ 4%).

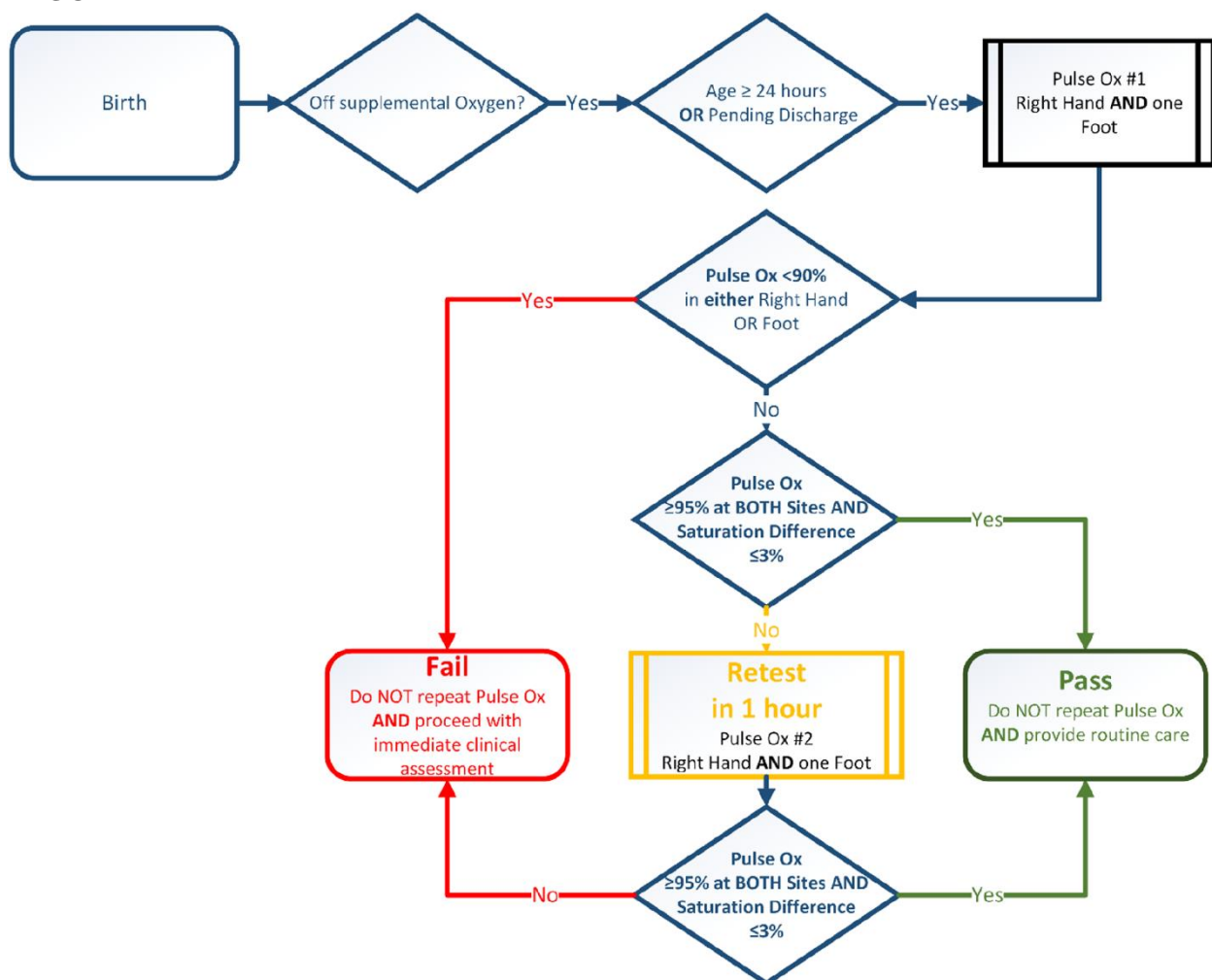
CCHD Screening:

- Applies to ALL infants being discharged from the NCCC, unless an echocardiogram has been performed.
- Should be completed prior to discharge, and:
 - Preferably after 24 hours of life, though may be performed sooner if being discharged home.
 - When infant is no longer receiving respiratory support, including supplemental oxygen, regardless of gestational age at the time.
 - If the infant is discharged on respiratory support, an echocardiogram should be obtained.

CCHD Procedure:

1. A pulse oximeter should be placed on right hand (pre-ductal) AND one lower extremity (post-ductal) for at least 45 seconds measuring the oxygen saturations.
2. If either the pre- or post-ductal saturation is $< 90\%$, the infant has failed the screen.
3. If the pre- or post-ductal saturation is $< 95\%$ OR there is a $>3\%$ difference between pre- and post-ductal saturations, the test should be repeated in 1 hour.
4. If on the second measurement, the pre- or post-ductal saturation is $<95\%$ OR there is a $>3\%$ difference between the pre- and post-ductal saturations, the infant has failed the screen.
5. All readings should be documented in EPIC and also filed under the CCHD screening.
6. The revised screening algorithm outlines interpretations / recommendations from the American Academy of Pediatrics. A **“Pass”** result requires no further routine testing. A **“Fail”** result should be followed up with an echocardiogram.

ALGORITHM



References:

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