

Kentucky Newborn Screening Program



Pulse Oximetry Testing for Critical Congenital Heart Disease (CCHD) in Newborns

Congenital heart disease is the most common of all birth defects.

Pulse oximetry screening for Critical Congenital Heart Disease has been added to the uniform newborn screening panel by the US Health and Human Services Secretary's Advisory Committee on Heritable Disorders in Newborns and Children (SACHDNC). This decision has been enthusiastically approved by the American Heart Association, American Academy of Pediatrics, American College of Cardiology Foundation, the American College of Medical Genetics, and the March of Dimes.

While infants with CCHD can have a normal physical exam in the immediate newborn period with no heart murmur and no clinical cyanosis, most will have hypoxemia. Advances in pulse oximetry have improved the accuracy of this test in identifying hypoxemia in newborns and proven as a screening test for CCHD. In asymptomatic infants, pulse oximetry can complement the clinical exam in the detection of CCHD by identifying clinically undetectable hypoxemia. Early detection of CCHD can



Congenital heart disease (CHD) affect 1 in every 100 babies born in the United States each year and account for nearly 30% of infant deaths due to birth defects.

While many infants with CHD are identified by prenatal ultrasound, 50% of infants with Critical Congenital Heart Disease (CCHD) are discovered after birth.

Unfortunately, a seemingly normal infant can suddenly experience serious or lifethreatening complications within the first few days or weeks of life and require emergency care.

significantly reduce morbidity and mortality in the newborn period.

There is a simple, noninvasive way to rule out CCHD in the newborn: pulse oximetry. Advances in pulse oximetry have improved the accuracy of this test and now allow it to be used as a screening test for CCHD. In asymptomatic infants, pulse oximetry can complement the clinical exam in the detection of CCHD by identifying clinically undetectable hypoxemia. The use of pulse oximetry as a screening tool prior to discharge from the newborn nursery has been investigated and proven successful in detecting some forms of CCHD while producing a low false positive rate.

Screening for CCHD with pulse oximetry has been shown to be cost effective, accurate, and easy to incorporate into the workflow of the normal newborn nursery. The time required for each screen is about 1 to 5 minutes. Infants who have a positive screen will need further evaluation prior to hospital discharge.

Newborn screening using pulse oximetry can identify some infants with a CCHD before they show signs of a CCHD. Once identified, babies with a CCHD can be seen by cardiologists and can receive specialized care and treatment that could prevent death or disability early in life.



A recent survey showed that an estimated 80% of Kentucky hospitals already perform pulse oximetry on newborns as part of their standard of care. Implementation of the pulse oximetry protocol for CCHD and data entry in KY-CHILD will become mandatory statewide January 1, 2014

For more information, please contact:

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Department for Public Health
275 East Main Street, Mailstop HS2WC
Frankfort, KY 40621
Phone: (502) 564.3756 extension 4367

