



Critical Congenital Heart Disease Screening Program

EDUCATION FOR PROVIDERS



What is pulse oximetry?

Pulse oximetry, or “pulse ox,” is a simple, non-invasive and painless test that is used to measure the percent oxygen saturation of hemoglobin in the arterial blood and the pulse rate. Pulse ox was invented in the 1970s and is now widely used and accepted in clinical care. It is often thought to be a basic vital sign.

Traditionally, pulse ox has been used to monitor an individual's oxygen saturation during acute and chronic illness as well as during procedures requiring general anesthesia or sedation.

What is a normal pulse ox reading for infants?

A pulse ox reading of 95 to 100 percent is normal in healthy infants. Infants with heart or lung problems may have lower readings. A low pulse oximetry reading can also be present in newborns whose circulation is adjusting to life outside of the womb.

What is congenital heart disease?

Congenital heart disease (CHD) is the most common birth defect. Infants born with CHD have abnormal structure to their heart which creates abnormal blood flow patterns. Approximately eight of every 1,000 babies born have a form of CHD. Some forms of CHD cause no or very few problems in the health, growth, and development of the infant. Many times, these forms of CHD do not require surgical repair or cardiac catheterization.

Critical CHD includes more serious forms of CHD that usually require intervention in the first year of life. Critical CHD occurs in 3-4 of every 1,000 babies and can bring a significant risk of morbidity and mortality. This risk is greater if an infant is not diagnosed soon after birth.

Failing to detect critical CHD while in the newborn nursery may lead to critical events such as cardiogenic shock or death. Survivors who present late are at greater risk for neurologic injury and subsequent developmental delay.

Why is pulse ox used to screen for critical CHD?

Physical examination is performed during the first 24 hours of life in most institutions and currently the only method used to screen for critical CHD. Physical examination is only 50 percent effective in detecting CHD after the baby is born.



The US Department of Health and Human Services, the American Heart Association, the American Academy of Pediatrics, the March of Dimes, and the American College of Cardiology endorse screening for critical CHD. It has been shown to increase the chances that infants with critical CHD are identified before leaving the newborn nursery.

It is possible that a baby with critical CHD can have a normal pulse ox reading. CHD cannot be completely ruled out by a normal pulse oximetry reading.

Pulse oximetry increases the ability to identify CCHD in newborns with a 15-fold greater positive predictive value than physical examination alone.