Implications of Using Pulse Oximetry to Screen for Critical Congenital Heart Disease in Newborns

JOAN ANDREA

WHAT STARTED AS a routine home visit by a nurse/lactation consultant turned into an emergency transfer of a newborn to the hospital for critical congenital heart disease (CCHD). The mother in this case was concerned that her full-term newborn wasn't breastfeeding as well as her first baby did, and this alerted the nurse to possible complications. Without the visiting nurse's knowledge and recognition of what's to be expected in a newborn compared to a 5-day-old newborn, the prognosis could have been deadly. Two days earlier, the seemingly healthy newborn had been discharged. The astute nurse's observation of central cyanosis and heart murmur, together with feeding difficulties, alerted her to the missed diagnosis of CCHD. At birth, these signs and symptoms are often observed as the newborn transitions from intrauterine to extrauterine life. But soon after birth, these signs and symptoms are resolved.

Recognition of congenital heart defects after birth can be challenging. The Centers for Disease Control and Prevention (CDC) reports that congenital heart defects occurs in 1 of 100 births in the United States (CDC, 2014a). Twenty-five percent of these newborns have a CCHD, a subgroup of congenital heart defects, including 12 different conditions. Pulse oximetry screening can potentially identify seven of those conditions as identified in Box 1 (CDC, 2014b).

Abstract: In recent years, pulse oximetry screening for critical congenital heart disease (CCHD) in newborns has been added to the list of recommended uniform screening panels and recommended by several health care organizations. Most states use pulse oximetry to screen for CCHD. Studies have identified problems with compliance and higher failure rate at moderate altitudes than at sea level, suggesting the need for alternate algorithms. Altitude, time, health status of newborns and type of cardiac defect appear to affect results. Early detection of CCHD improves health outcomes and reduces morbidity and mortality. Barriers to screening include out-of-hospital births, cost and knowledge deficits among health care professionals. DOI: 10.1111/1751-486X.12217

Keywords: congenital heart defect | critical congenital heart disease | newborn screening | pulse oximetry