

Oxygen Saturation Nomogram in Newborns Screened for Critical Congenital Heart Disease.

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Objective

To establish simultaneous pre- and postductal oxygen saturation nomograms in asymptomatic newborns when screening for critical congenital heart disease (CCHD) at ~24 hours after birth.

Methods

Asymptomatic term and late preterm newborns admitted to the newborn nursery were screened with simultaneous pre- and postductal oxygen saturation measurements at ~24 hours after birth. The screening program was implemented in a stepwise fashion in 3 different affiliated institutions. Data were collected prospectively from July 2009 to March 2012 in all 3 centers.

Results

We screened 13 714 healthy newborns at a median age of 25 hours. The mean preductal saturation was 98.29% (95% confidence interval [CI]: 98.27-98.31), median 98%, and mean postductal saturation was 98.57% (95% CI: 98.55-98.60), median 99%. The mean difference between the pre- and postductal saturation was -0.29% (95% CI: -0.31 to -0.27) with $P < .00005$. Its clinical relevance to CCHD screening remains to be determined. The postductal saturation was equal to preductal saturation in 38% and greater than preductal saturation in 40% of the screens.

Conclusions

We have established simultaneous pre- and postductal oxygen saturation nomograms at ~24 hours after birth based on >13 000 asymptomatic newborns. Such nomograms are important to optimize screening thresholds and methodology for detecting CCHD.