

Feasibility of Critical Congenital Heart Disease Newborn Screening at Moderate Altitude

Wright J., Kohn M., Niermeyer S., Rausch C.M. *Pediatrics*. 2014 Feb 24.

Background and Objective

Consensus guidelines have recommended newborn pulse oximetry screening for critical congenital heart disease (CCHD). Given that newborn oxygen saturations are generally lower at higher altitudes, the American Academy of Pediatrics and others recommend additional evaluation of the screening algorithm at altitude. Our objective was to evaluate the feasibility of newborn pulse-oximetry CCHD screening at moderate altitude (Aurora, CO; 1694 m). We hypothesized the overall failure rate would be significantly higher compared with published controls.

Methods

We enrolled 1003 consecutive infants at ≥ 35 weeks' gestation in a prospective observational study. The nationally recommended protocol for CCHD screening was adhered to with the exceptions of no reflex echocardiograms being performed and providers being informed of results only if saturations were less than predefined critical values.

Results

There were 1003 infants enrolled, and 988 completed the screen. The overall failure rate for completed screenings was 1.1% (95% confidence interval: 0.6%-2.0%). The first 500 infants had 1.6% fail, and the last 503 infants had 0.6% fail. Among infants who failed screening, 73% failed secondary to saturations $< 90\%$, whereas saturations between 90% and 94%, persistently $> 3\%$ difference, and multiple criteria were each responsible for 9% of failures. Overall, 1.6% of all infants had incomplete screening and had not passed at the time the test was stopped.

Conclusions

Pulse oximetry screening failure rates at moderate altitude are significantly higher than at sea level. Larger studies with alternative algorithms are warranted at moderate altitudes.