Perfusion index in healthy newborns during critical congenital heart disease screening at 24 hours: retrospective observational study from the USA.

Jegatheesan P, Nudelman M, Goel K, Song D, Govindaswami B. BMJ Open. 2017 Dec 21;7(12):e017580.

OBJECTIVE: To describe the distribution of perfusion index (PI) in asymptomatic newborns at 24 hours of life when screening for critical congenital heart disease (CCHD) using an automated data selection method.

DESIGN: This is a retrospective observational study.

SETTING: Newborn nursery in a California public hospital with ~3500 deliveries annually.

METHODS: We developed an automated programme to select the PI values from CCHD screens. Included were term and late preterm infants who were screened for CCHD from November 2013 to January 2014 and from May 2015 to July 2015. PI measurements were downloaded every 2 s from the pulse oximeter and median PI were calculated for each oxygen saturation screen in our cohort.

RESULTS: We included data from 2768 oxygen saturation screens. Each screen had a median of 29 data points (IQR 17 to 49). The median PI in our study cohort was 1.8 (95% CI 1.8 to 1.9) with IQR 1.2 to 2.7. The median preductal PI was significantly higher than the median postductal (1.9 vs 1.8, p=0.03) although this difference may not be clinically significant.

CONCLUSION: Using an automated data selection method, the median PI in asymptomatic newborns at 24 hours of life is 1.8 with a narrow IQR of 1.2 to 2.7. This automated data selection method may improve accuracy and precision compared with manual data collection method. Further studies are needed to establish external validity of this automated data selection method and its clinical application for CCHD screening.