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Screening for Critical Congenital Heart Disease: A Matter of Sensitivity

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To the Editor

It is with great interest that we read the letter by Dummula and Pandey [2] regarding the recent article entitled “False-Negative Pulse Oximetry Screening for Critical Congenital Heart Disease: The Case for Parent Education” [1]. Although much attention has been focused on children with a positive result (i.e., those who fail screening), little is known regarding children with a negative result (i.e., those who pass screening), particularly those with a *false-negative* result.

However, we wish to comment on a potential misconception regarding screening. In their letter, Dummula and Pandey urge the American Academy of Pediatrics “to mandate that nurseries document the cardiac conditions specifically ruled out by virtue of a negative screen on every discharge summary.” They suggest that pulse oximetry screening for critical congenital heart disease (CCHD) should be used to rule out the possibility of a child having certain types of CCHD due to the high specificity of the test.

Indeed, the specificity of pulse oximetry screening for CCHD is high at 99.9 % [95 % confidence interval (CI) 99.7–99.9 %]. However, the sensitivity, which is the more relevant measure for ruling out disease, is only 76.5 % (95 % CI 67.7–83.5 %) [4]. With this level of sensitivity, some cases of CCHD in newborns will still be missed before they are discharged

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from the nursery. That is, there will be one child with CCHD with a false-negative result for approximately every three children with a true-positive result. This low sensitivity is most likely due to the fact that the onset and degree of hypoxemia may vary depending on the lesion and the individual [3].

What does this mean for clinical care? Until there is a screening test for CCHD that has close to 100 % sensitivity, we believe that pulse oximetry screening should be used as one additional tool to detect CCHD, but it should not preclude routine clinical examinations, nor should it be used to rule out heart disease, including any type of CCHD. For the newborn who presents to care with symptoms suggestive of CCHD, a full evaluation for the possibility of CCHD should be undertaken even if there is a history of a negative screening test because that result may represent a false-negative result.

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