

## Is the Colour of an Infant's Tongue a Useful Clinical Sign To Determine the Need To Provide Supplemental Oxygen in the Delivery Room?

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### Background

It may take several minutes for infants to become pink after birth. A preductal oxygen saturation ( $SpO_2$ ) 70 - 75% 3 min after birth is regarded as an indication to commence supplemental oxygen (American Academy of Pediatrics 2010). However, pulse oximetry is not available in many parts of the world. Skin colour has been shown to be a poor indicator of oxygen saturation. Our aim was to determine if the colour of an infant's tongue might be a better sign that supplemental oxygen is required.

### Objective

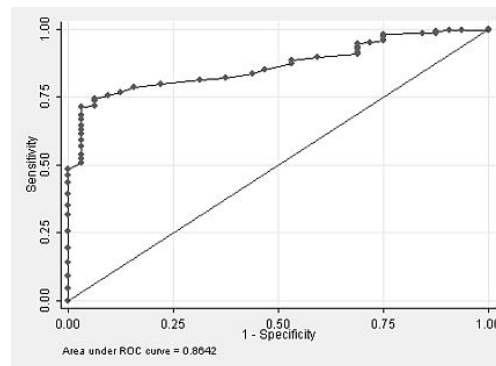
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### Design/Methods

Prospective observational study of infants delivered by caesarean section. Masimo (Rad 4 with LNOP sensor) sensor was applied to the infant's right wrist. Simultaneous recording of oxygen saturation level and visual assessment of the tongue were made at 1-7 minutes and at the 10th minute. Clinicians were asked whether the tongue was "pink" or "not pink". A ROC-curve was generated to describe the relationship between  $SpO_2$  and colour of the infant's tongue.

### Results

68 infants were studied, 271 paired assessments were obtained. 45 clinicians, 38 midwives and 7 paediatricians, were recruited for the assessments. Infants mean (SD) birth weight was 3214 (545) grams and the mean (SD) gestational age was 38 (2) weeks. The area under the curve was 0.86. Tongue colour has sensitivity of 26%, specificity 96%, positive predictive value 61%, and negative predictive value 84% for detecting  $SpO_2 < 70\%$ . (figure)



### Conclusions

Tongue colour is a specific but insensitive sign to indicate when  $SpO_2 < 70$ . When the tongue is pink it is likely that the infant does not require supplemental oxygen.