

(Cost)effectiveness of pulse oximetry screening after homebirths and early discharge: a prospective study of 20.000 newborns

Narayan I.C.(1), Blom N.A.(1), Onland W.(2), Clur S.A.(2), Rammeloo L.A.(3), van den Dungen F.A.(3), van Kaam A.H.L.C.(2), te Pas A.B.(1), POLAR study group (4)

Leiden University Medical Center, Leiden, the Netherlands (1); Academic Medical Center of Amsterdam, Amsterdam, the Netherlands (2); VU Medical Center, Amsterdam, the Netherlands (3); different affiliations in the Netherlands (4)

Introduction: Pulse oximetry screening (POS) for critical congenital heart defects (CCHD) is increasingly implemented worldwide. However, it is unknown whether POS is (cost)effective in settings with homebirths and very early discharge. We assessed this in the Netherlands, where there is a high homebirth rate and early discharge after delivery in hospital.

Methods: POS was performed in hospitals and by community midwives at home or at the policlinic. Measurements were taken \geq one hour after birth and on day two or three, fitting the visit scheme of community midwives. Primary outcome is the accuracy, the sensitivity and specificity. Secondary outcomes are false positive rate and costs per timely diagnosis.

Results: Inclusion ends January 1st 2017. Complete final results will be presented at the meeting. From July 2015 to November 2016 22.825 newborns were included; 19.737 had a measurement in the first hours after birth, 14.175 newborns had a measurement at day 2 or 3. Out of 7 antenatally undiagnosed CCHDs, 4 were detected with POS (sensitivity 57%). Accuracy for CCHD screening was 98.97% with a specificity of 98.98%. The false positive rate was 1.0% (232 cases) with serious non-CCHD illness diagnosed in 82 infants, including non-critical CHD, infections, pulmonary hypertension and wet lungs (figure 1). No pathology was found in 66 newborns and data are not complete for 84 false positive screenings. 47 cardiac ultrasounds were made.

Conclusions: POS screening detected critical illnesses in newborns.

