

IDjaundice@home

Early recognition of neonatal jaundice application of novel preventive strategies in different health systems

KEYWORDS

Jaundice, Neonatal hyperbilirubinemia, Transcutaneous bilirubin measurement, Primary care, Smartphone application

DURATION

24 months

ABSTRACT

Jaundice among newborns is usually benign but severe neonatal hyperbilirubinemia (SNH) can cause kernicterus spectrum disorder with brain damage and death. Early and accurate recognition of imminent SNH is therefore crucial. Although visual assessment is worldwide the most frequently applied method to detect SNH, it is not reliable. Transcutaneous (TcB) and smartphone-based optical bilirubin quantification may be helpful, but are not routinely available for neonates cared for at home. In the Netherlands, the vast majority of babies are cared for at home during the first postnatal week, with regular visits from midwives and maternity care assistants. Jaundice is assessed daily by visual inspection. Total bilirubin (TBil) measurement in blood is done selectively, and a pediatrician is consulted SNH treatment is needed. In Israel, 99% of births occur in the hospital. Neonates stay for 48-72 hours, and jaundice is assessed routinely with TcB. After discharge, first-born and preterm neonates receive a home visit by a pediatric nurse. If imminent SNH is suspected, the neonate is referred to primary or secondary health care. Unfortunately, both approaches lead to delay, misdiagnosis and late referrals of neonates with SNH. Accordingly, kernicterus spectrum disorder is still prevalent. Primary aim: to improve early recognition of SNH in neonates cared for at home. Secondary aims: to reduce the burden of blood tests and unnecessary referrals for neonatal hyperbilirubinemia. Contribution of different countries: Norway A Norwegian company (Picterus) has developed a novel CE-approved smartphone application (Picterus®) to detect jaundice. With the Picterus app and a calibration card a photo is taken of the newborns skin which is used to derive an 'optical' bilirubin value. Values correlate closely with TcB and TBil. Picterus aims to develop new features such as decision support solutions, and exchange of information with Electronic Health Records, linking relevant patient-specific risk factors. Netherlands Dutch researchers are finalising a prospective study among over 2000 (near)term newborns cared for at home: the BEtter AssessmentT of Jaundice at Home (BEATJaundice@Home) study. Midwives applied TcB and Picterus at every home visit. TcB and visual inspection were used to determine the need for TBil. Midwives were blinded for Picterus readings. The BEAT study will provide the very first assessment of the added value of TcB and Picterus for SNH screening at home. Whereas TcB may be introduced as a screening tool for use at home by health care professionals, Picterus may also be used by parents. In the current project we will assess added value of routine screening using TcB and/or Picterus at home by midwives and parents, respectively, in determining the need for TBil to detect potentially SNH. Israel The Israeli group has experience with video consultations during home visits to support pediatric nurses with problems related to drugs during lactation. In a new study, nurses will also use

TcB devices, consulting a pediatrician online. Rates of referrals before and after implementation of home TcB screening with online consultation will be compared. Clinical, social and financial effects will be assessed. Consortium added value. The Norwegian team will provide the Picterus app, and expertise on data analysis for its use in planned studies. The Dutch team has experience in large studies and use of TcB and Picterus app in the primary care setting. The Israeli team will perform cost-effectiveness analyses of preventive strategies in different health systems. To provide transferrable lessons to other healthcare settings, the consortium will undertake a European-wide survey to assess strengths and limitations of current local approaches to neonatal jaundice screening. This project will provide novel insights into the benefits and problems of each preventive strategy in each health system and provide recommendations on their implementation

PARTNERS

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Kohn	Shamir Health Corporation	Israel
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