Novel component for monitoring and diagnostic management in neonates

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Background	Progress in information technology provides new opportunities for individual monitoring and diagnostic support of patients – also known as e-health or personalised medicine. For one of the most vulnerable populations, newborn babies, new e-health opportunities have not been implemented yet albeit they may ultimately decrease morbidity while increasing simultaneously patient safety. Worldwide, neonatal jaundice is the most common pathology in babies and one of the major reasons for hospitalization in the first year of life. Accordingly, jaundice related health care costs are high. However, not treated properly jaundice can cause major disability and life-long neurological sequelae. Thus, we identified monitoring and diagnostic management of neonatal jaundice which can be strongly improved by the means of personalised medicine.
Invention	Combining the knowledge from Pharmacometrics and Neonatology we analysed a large database, characterized key predictors for bilirubin changes in newborn babies and developed a semi-mechanistic model to forecast the rise and fall of individual bilirubin levels in this vulnerable population. Moreover, this novel algorithm can be implemented in electronic patient information systems and can provide a recommendation for phototherapy, which can be adjusted to local clinical policies. Together, for a given neonate our e-health solution requires just few clinical covariates, which are usually available at birth, and one bilirubin measurement to predict individually the future course of bilirubin. Our invention has great potential to better monitor babies, support caregivers in decision making and advising parents. It can be used separately on digital devices, e.g. smart phones, can be added as a novel component to patient information systems or when integrated in bilirubin measurement instruments it can be used as an all-in-one solution.
Fields of Use	Worldwide, hospitals, outpatient care
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