Digital health solutions from conception to clinical practice implementation: pain assessment example

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Digital health solutions are improving patient care across various health disciplines and are quite broad in terms of their scope. They include a variety of categories such as telemedicine, mobile health, wearable devices, personalized medicine, web-based health services and electronic health records.[1,2] The development of digital health solutions which are assisted by Artificial Intelligence (AI) has changed the landscape of how technology is used in healthcare. There are multiple studies demonstrating how AI has mimicked the diagnostic capabilities of health professionals. However, many of these AI supported solutions are in its infancy when it comes to real-world clinical practice implementation.[3]

Pain assessment in people unable to communicate is challenging because of their difficulties in reliably self-reporting their pain. For people with advanced dementia this is a major problem considering that up to 80% of this population group experiences pain and this pain often goes undetected and undertreated.[4,5] Often as a result of their undertreated or undetected pain they experience behavioural and psychological problems. Here we briefly present how a hybrid solution called PainChek® which uses face recognition technology, AI and smart automation was conceptualized, developed and then successfully implemented in clinical practice. Over 600,000 pain assessments have been conducted to date with this digital health solution. Pain assessment is also challenging in infants in whom poor management of procedural pain can have short-term and long-term consequences.[8,9] Here we also discuss a recently developed rapid automated digital solution that assesses procedural pain in infants at point of care.[9] The results of a recent feasibility study evaluating this digital solution supported the use of AI in the assessment of pain in infants, whilst acknowledging that its clinical practice utility requires further research. [9]

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