

Description of a clinical decision support tool with integrated dose calculator for paediatrics

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Abstract

Medication errors, especially dosing errors are a leading cause of preventable harm in paediatric patients. The paediatric patient population is particularly vulnerable to dosing errors due to immaturity of metabolising organs and developmental changes. Moreover, the lack of clinical trial data or suitable drug forms, and the need for weight-based dosing, does not simplify drug dosing in paediatric or neonatal patients. Consequently, paediatric pharmacotherapy often requires unlicensed and off-label use including manipulation of adult dosage forms. In practice, this results in the need to calculate individual dosages which in turn increases the likelihood of dosing errors. In the age of digitalisation, clinical decision support (CDS) tools can support healthcare professionals in their daily work. CDS tools are currently amongst the gold standards in reducing preventable errors. In this publication, we describe the development and core functionalities of the CDS tool PEDeDose, a Class IIa medical device software certified according to the European Medical Device Regulation. The CDS tool provides a drug dosing formulary with an integrated calculator to determine individual dosages for paediatric, neonatal, and preterm patients. Even a technical interface is part of the CDS tool to facilitate integration into primary systems. This enables the support of the paediatrician directly during the prescribing process without changing the user interface.

Conclusion: PEDeDose is a state-of-the-art CDS tool for individualised paediatric drug dosing that includes a certified calculator.

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