Quality of drug prescription before and after implementation of an e-prescription system preliminary analysis of pre-implementation prescriptions



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Introduction

- Paediatric drug prescription is complex and error-prone.¹
- Widespread use of electronic prescription (e-prescription) is a

Results

Data

Total 354 handwritten drug prescriptions (word files) from 53 patients

national goal.²

Objective

 To assess the quality of drug prescriptions before and after implementation of e-prescription in our pediatric hospital (within KISIM (CISTEC AG), dose recommendations from PEDeDose (PEDeus AG) implemented as clinical decision support)

Outcomes

Methods

- Dose calculation errors
- Formally complete prescriptions (according to 8 criteria) corresponding to internal quality standard)
- Compatibility of prescriptions with PEDeDose recommendations (compatibility of the internal hospital standard; national drug manual compendium)

- body weight: median 13.4 kg (IQR: 8.3-27.9 kg),
- age: median 3.2 years (0.9-10.9)
- most frequent drugs (31% of prescriptions): analgesics, antibiotics

Calculation errors

3 calculation errors detected (<1%) for 3 different patients (5%)

Prescription Fluimucil 10% Inj. Lösung (300mg/3ml) 500mg per day = 2 x 100mg = 2 x 1ml ad Inhalation	Prescription Nalbuphin Orpha Inj. Lös 20mg/2ml) i.v. 0.1mg/kg = 0.6mg = 0.6ml (1:1 verdünnt) als Bolus bei Bedarf Body weight: 6kg correct: 0.6mg = 0.06ml
	PrescriptionFluimucil 10% Inj. Lösung (300mg/3ml)500mg per day = 2 x 100mg = 2 x 1ml ad Inhalationcorrect: 500mg = 5ml

2. Formally complete prescriptions

• 17 of 354 (4.8%) prescriptions were formally complete

Data acquisition: Initial plan and adjustment to KISIM project

Drug prescription in-/exclusion criteria:

formal drug prescriptions only (i.e. excluding parenteral nutrition and intravenous fluids)

Patient in-/exclusion criteria:

- *Initial plan*: any high-risk population according to WHO definition with ≥ 1 drug prescription (excluding oncology/ambulatory setting)
- *Adjustment*: only PICU patients with ≥ 1 drug prescription

nitial Plan	Adjustment to KISIM project	
GoLive KISIM excl. PICU, NICU, neonatology (Nov 2021)	Data aquisition (I) Jan 2022 – Sep 2022	GoLive PICU Data aquisition (II) (26.9.2022) from 26.09.2022
Assessmen Go	t of handwritten / word prescriptions al: <i>at least</i> 200 prescriptions	
Assessment of e-prescriptions (KISIM)		Assessment of e-prescriptions (KISIM) Goal: at least 200 prescriptions



3. Compatibility with PEDeDose recommendations

PEDeDose recommendation



Conclusion



Few calculation errors in handwritten prescriptions: ~5% error at the patient level in line with literature³



Only very few prescriptions were formally complete according to internal standard:

- For many missing items substantial improvement with e-prescription expected.
- Importance of very frequently missing items to be discussed. Limitations identified:
 - 1. quality standard incomplete with respect to parenteral prescriptions.
 - A formally complete prescription does not necessary represent a correct prescription (e.g. with respect to actual product available/administred)

compatible not compatible no recommendation



2/3 of drug-prescriptions appear in line with PEDeDose To be clarified: why not in line/not available for 1/3 of

- prescriptions?
- Can be used as a basis to improve PEDeDose and/or prescription process?

1. Gates PJ, Baysari MT, Gazarian M, Raban MZ, Meyerson S, Westbrook JI. Prevalence of Medication Errors Among Paediatric Inpatients: Systematic Review and Meta-Analysis. Drug Safety 2019; 42: 1329–1342 2. Gall, W., Aly, A.-F., Sojer, R., Spahni, S. & Ammenwerth, E. The national e-medication approaches in Germany, Switzerland and Austria: A structured comparison. Int. J. Med. Inf. 93, 14–25 (2016). 3. Kadmon G, Bron-Harlev E, Nahum E, Schiller O, Haski G, Shonfeld T. Computerized order entry with limited decision support to prevent prescription errors in a PICU. Pediatrics 2009; 124: 935–940.