

Abstract

Algorithm for prioritisation of patients for clinical pharmacy medication check: proof of concept

Background and importance

Our Clinical Pharmacy Department provides its services for more than 35'000 inpatients annually, but the number of clinical pharmacists is insufficient to cover the whole hospital with routine clinical pharmacy services. To increase efficacy of our work, we see a potential in a digital solution. Here we evaluated an algorithm to identify patients with increased risk for severe medication error.

Aim and objectives

Based on the results from the previous trial conducted in our intensive care unit (ICU) by *Schlup et al. (2021)*, we were able to statistically identify the following surrogate markers for patients at risk of severe medication errors: reduced estimated glomerular filtration rate (eGFR), number of prescribed drugs and presence of the high-risk medication. Our aim was to test the selection algorithm in more heterogenous population compared to the ICU.

Materials and methods

On an internal medicine ward, we carried out regular medication check and categorised the severity of the medication errors. We evaluated whether patients with potentially severe medication errors could have been identified when fulfilling one of the following parameters: eGFR (according to CKD-EPI) ≤ 40 ml/min/1.73 m², number of drugs (without reserves) $n \geq 10$, presence of pre-defined high-risk medication. Based on these data we calculated the sensitivity and specificity of the algorithm.

Results

During the period October 2023 - April 2024 we evaluated prescriptions of 222 patients. In 158 patients we found at least one potentially severe medication error. The algorithm was able to correctly identify 114 of those patients. In 29 patients, the algorithm delivered false positive result. Its sensitivity was 72% and specificity 55%.

Conclusion and relevance

This feasible and simple algorithm, which will be adopted in our clinical software, can help to prioritise patients who would profit the most from the clinical pharmacy services in a cost-effective manner.