Tackling Alert Fatigue with a Semi-automated Clinical Decision Support System: Quantitative evaluation and end-user survey

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Abstract

Study aims: Clinical decision support systems (CDSS) embedded in hospital electronic health records efficiently reduce medication errors, but there is a risk of low physician adherence due to alert fatigue. At the Cantonal Hospital Aarau, a CDSS is being developed that allows the highly accurate detection and correction of medication errors. The semi-automated CDSS sends its alerts either directly to the physician or to a clinical pharmacist for review first. Our aim was to evaluate the performance of the recently implemented CDSS in terms of acceptance rate and alert burden, as well as physicians' satisfaction with the CDSS.

Methods: All alerts generated by the CDSS between January and December 2021 were included in a retrospective quantitative evaluation. A team of clinical pharmacists performed a follow-up to determine whether the recommendation made by the CDSS was implemented by the physician. The acceptance rate was calculated including all alerts for which it was possible to determine an outcome. A web-based survey was conducted amongst physicians to assess their attitude towards the CDSS. The survey questions included overall satisfaction, helpfulness of individual algorithms and perceived alert burden.

Results: In 2021, a total of 10,556 alerts were generated, of which 619 triggered a direct notification to the physician and 2,231 notifications were send to the physician after evaluation by a clinical pharmacist. The acceptance rates were 89.8% and 68.4%, respectively, which translates as an overall acceptance rate of 72.4%. On average, clinical pharmacists received 17.2 alerts per day, while all the hospital physicians together received 7.8 notifications per day. In the survey, 94.5% of physicians reported being satisfied or very satisfied with the CDSS. Algorithms addressing potential medication errors concerning anticoagulants received the highest usefulness ratings.

Conclusion: The development of this semi-automated CDSS with context-based algorithms resulted in alerts with a high acceptance rate. Involving clinical pharmacists proved a promising approach to limiting the alert burden of physicians and thus tackling alert fatigue The CDSS is well accepted by our physicians.

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