

Clinical decision support systems in community pharmacies: an evaluation of the effectiveness in Belgian practice

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Background Clinical decision support systems (CDSS) are health information technology systems designed to support healthcare providers. Two clinical decision rules have recently been implemented in a subset of Belgian community pharmacies: a clinical rule providing support in the dispensing of osteoporosis medication and a clinical rule aiding in the management of QT interactions.

Purpose The implementation and impact of these two CDSS in daily practice was investigated. We investigated whether the implementation of the CDSS 'osteoporosis' resulted in an increase in the use of Calcium/VitD. For the CDSS 'QT prolongation' we analyzed the impact on the delivery of QT-prolonging antibiotics in combination with other high-risk QT-prolonging medicines.

Method Retrospective descriptive research was conducted on dispensing data from pharmacies in the Officinal (KOVAG) network. Data were analyzed for 3 periods: before, immediately after and one year after the launch of the CDSS. For the CDSS 'osteoporosis', the primary endpoint was the proportion of all osteoporosis patients who were delivered calcium and vitamin D supplements in addition to their osteoporosis medication. For the CDSS 'QT interactions', the primary endpoint was the number of at-risk antibiotic dispenses compared to the total number of antibiotics dispenses. Only the three most frequently dispensed QT-prolonging antibiotics were included.

Findings Dispensing data from 60 pharmacies were included in the analysis of the CDSS 'osteoporosis'. Prior to the launch of the CDSS, a correct dispense of Calcium/VitD was registered for 40.70% of the patients with osteoporosis. After the launch, this increased to 42.01%; one year later, the proportion dropped to 41.60%. For the analysis of the CDSS 'QT-interactions', data from 14 pharmacies were analyzed. On average, 9.91% of dispenses were initially at risk. Immediately after the launch, the mean proportion increased to 10.40%. One year later, the proportion dropped to 8.71%. The CDSS 'osteoporosis' scored better than the CDSS 'QT interactions', which might be due to the complexity of handling QT interactions. In addition, the analysis of the CDSS 'QT interactions' only examined the effect of the CDSS on the delivery itself. The limited improvements measured may be due to alert fatigue; a lack of patient information may also have been a potential obstacle.

Conclusion The results for the CDSS 'osteoporosis' and 'QT interactions' show that these CDSS did not have a positive effect on the number of correct dispenses. These results initiated further research to understand the barriers of these systems; optimization is essential before new systems can be rolled out.