

Effect of Clinical Decision Support Systems on Anticoagulant Duplications in Two Swiss Cantonal Hospitals

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Kantonsspital Aarau

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Background

- Erroneous anticoagulant duplications increase the risk of bleeding events.
- This risk can be reduced by using Clinical Decision Support Systems (CDSS). However, it is not yet established which CDSS design is most suitable to prevent medication errors.
- We investigated the effect of two different CDSS on the number of cases with erroneously duplicated anticoagulants in two hospitals with the same electronic health record system (KISIM by CISTEC).

Methods

Study design: Retrospective observational study in two Swiss cantonal hospitals (hospital A and hospital B).

Observation period: One year before and after implementation of the CDSS in KISIM.

Database: Clinical patient data from KISIM.

Patient population: All patients who were of legal age, did not refuse general consent and were treated with 2 or more anticoagulants at any given day.

Analysis: Two researchers independently reviewed all patient cases to determine whether the prescription of 2 or more anticoagulants per day was due to an intentional change of medication or an erroneous anticoagulant duplication.

Endpoints: Relative risk (RR) and relative risk reduction (RRR) for cases with anticoagulant duplication in the post-period compared to the pre-period for both hospitals.

The mean duration of anticoagulant duplications before and after implementation was assessed.

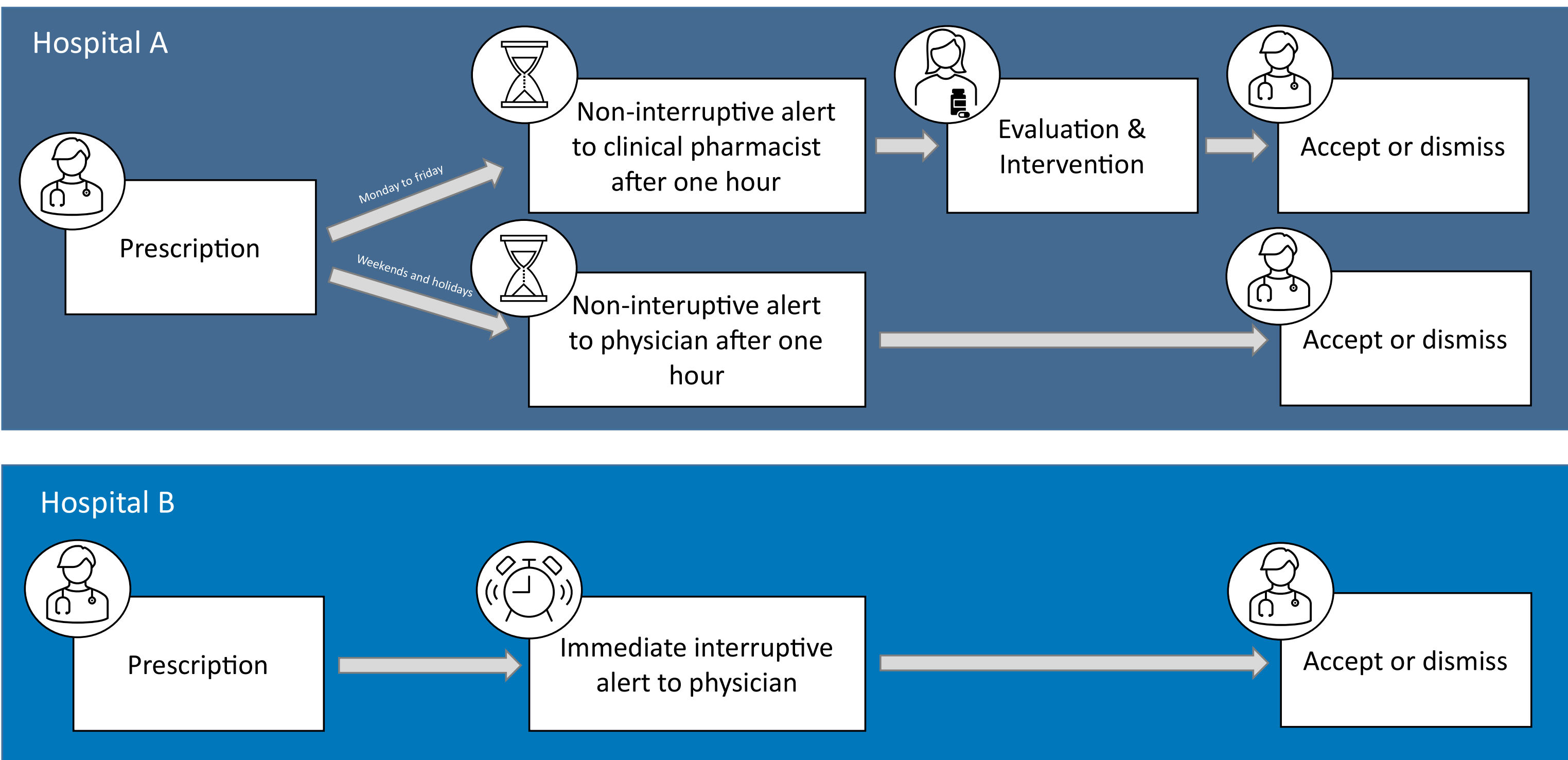
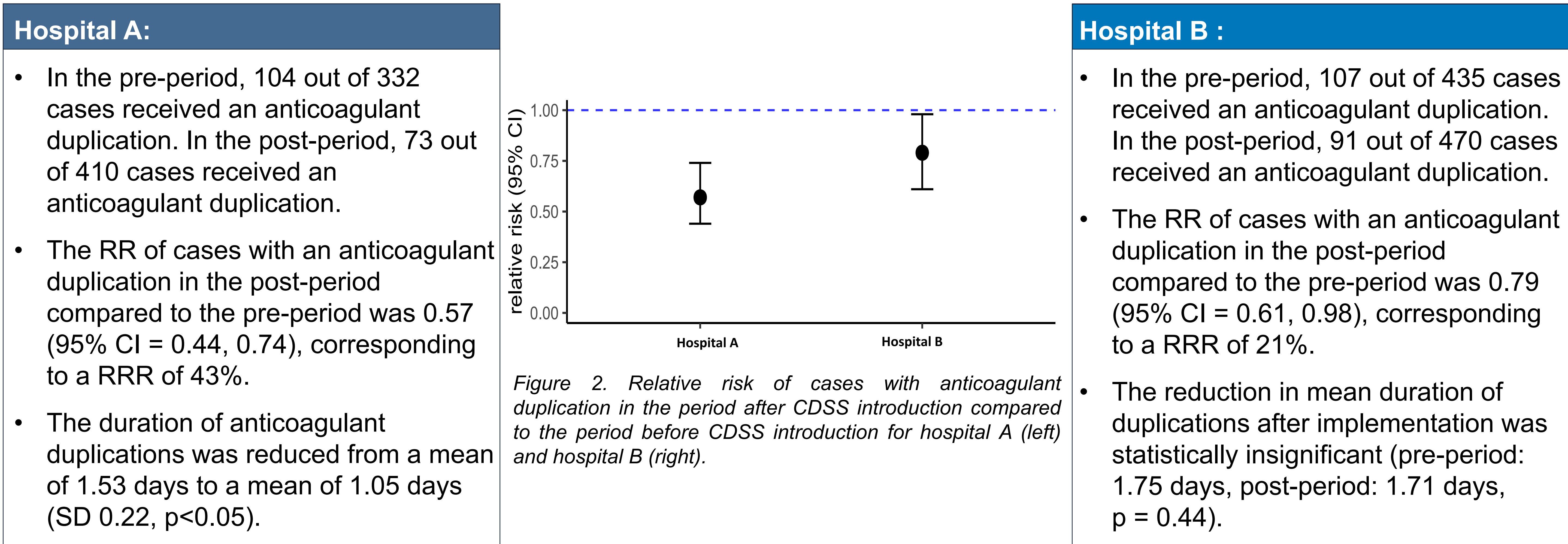


Figure 1. Visual isation of the CDSS at hospital A (above) and hospital B (below)

Hospital A: The CDSS alerted clinical pharmacists who then sent non-interruptive alerts with a specific recommendation to the physician. On weekend and holidays, the CDSS alerted physicians directly (KPharm integrated in KISIM).

Hospital B: The CDSS produced generic interruptive pop-up alerts at the time of prescribing (CDS.CE Check integrated in KISIM).

Results



Conclusion

- The implementation of a CDSS led to a significant decrease of the number of cases with erroneously duplicated anticoagulants in both hospitals. The effect was more profound at hospital A.
- A decrease in the mean duration of anticoagulant duplications could only be shown for hospital A.
- These findings highlight that the design of a CDSS is important for its efficacy.