

## Abstract

### Title: Medication errors in a Swiss state hospital

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#### Introduction:

Medication errors belong to the most common types of healthcare errors. They increase morbidity and mortality, prolong hospital stay and cause additional medical costs. By understanding the causes of the medication errors, it is possible to introduce effective measures to reduce or avoid their occurrence.

#### Objectives:

The goal of this study was to analyse and characterize the medication errors in a Swiss state hospital and discuss the possibilities how to minimize them.

#### Methods:

The reports of the internal CIRS from a period of approximately 5 years (2011 – 2015) were used for our analysis. We determined the occupation of the causers of the medication errors and the hospital departments where the errors occurred. We further characterized the errors according to the following criteria: ATC classification level 1 and 2, phase of the medication process, psychological classification (KRAM), severity degree, error type and factors that contributed to the development of the errors.

#### Results:

In our study, the majority of the medication errors were caused by nurses, correlating with the observation that 75% of all errors occurred during transcription and application phase of the medication process. The medication errors involved most frequently antithrombotic agents (23%), represented especially by heparin and fragmin, and analgesics (12%). Approximately 12% of all errors caused harm. The KRAM classification revealed that the most of the errors occurred during the execution of an action. The most frequent medication error types were wrong drug (16%), wrong timing of administration (16%), transcription error (15.7%) and wrong dose (12.6%). Inattention was the most common factor (56.7%) that contributed to the development of the medication errors, arising mostly from fatigue, lack of calm at the working place, lack of concentration by work, routine and oversight. Stress (20%), communication problems (20%), and lack of knowledge (17.7%) and control (16.5%) occurred as factors frequently as well.

#### Conclusion:

This work presents an overview about the medication errors reported in the CIRS of the Swiss state hospital. This system is a good tool for detection of the medication errors. However, a combination with other methods is necessary to obtain a full image about the medication errors, as we suspect underreporting of the prescription errors and the errors causing no harm in the CIRS. For avoiding of the medication errors it is necessary to ensure a calm place for transcription and preparation of drugs. Good communication and organization of work as well as

appropriate staff competency and keeping the 5R rules in mind in every situation are essential for prevention of the medication errors.