UETMISSS Centre intégré universitaire de santé et de services sociaux de la Capitale-Nationale

Best Practices to Reduce Medication Administration Errors (MAEs) in Hospital Centre (HC) and Long Term Care Facilities Centre (LTCF)

EXECUTIVE SUMMARY

of the classic ETMI Report

Québec

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PROBLEM

A medication error is defined as « … any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer. Such events may be related to professional practice, healthcare products, procedures and systems, including prescribing, order communication, product labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use.» (NCC-MERP, 2017). The medication error can be potential or proven (when the patient is affected), without consequence or with temporary, permanent, or lethal consequences, and can occur upon prescription, transcription, preparation, and dispensation of medication, or when administered to the user.

Errors in administrating the medication account for a significant proportion of medication errors, in hospitals as well as in residences for the elderly (MSSS, 2016; Berdot et al., 2013). Since they occur at the end of the medication circuit, they are less likely to be intercepted before reaching the patient (Berdot et al., 2013).

CONTEXT

In the province of Quebec, medication administration errors (MAEs) are the second most common type of incidents/accidents that happen in healthcare services delivery. Among all reported medication errors, MAEs are the most frequent (MSSS, 2016). Although the consequences of this type of error are rarely serious, they are not negligible, especially when dealing with the fragile clientele of long-term care facilities (LTCF). Considering the frequency and risk of prejudice of MAEs, this type of error is a serious problem for the healthcare system.

OBJECTIVE

What interventions can reduce MAEs in hospital centre and long-term care facilities?

For more information, see the report at:
https://www.ciusss-capitalenationale.gouv.qc.ca/sites/default/files/docs/Publications/rapport_emoa_2018-10-18.pdf

METHODOLOGY

A systematic review of the literature was done using the *Embase, Medline, CINAHL, Web of Science, Scopus* and *PsycINFO* databases. A search of grey literature was also performed within several relevant websites.

RESULTS

Seventeen (17) studies documenting 18 interventions in which the effect on MAEs was measured were retained. The interventions were classified according to targeted risk factor using Reason's processing error model (2000) that illustrates the main factors that must be considered to better understand the nature of avoidable adverse events (**Figure 1**). This model is based on a systemic perspective involving the interdependence between individual errors and systemic errors. **Active errors** are those made by the individuals who are at the heart of the action with patients. **Latent conditions** are potential contributing factors that are in dormant state in the healthcare system.

The Reason's model presents these elements according to five levels:

1 › First level factors are **individual characteristics** that have a direct effect on the performance of individuals who work with the patients.

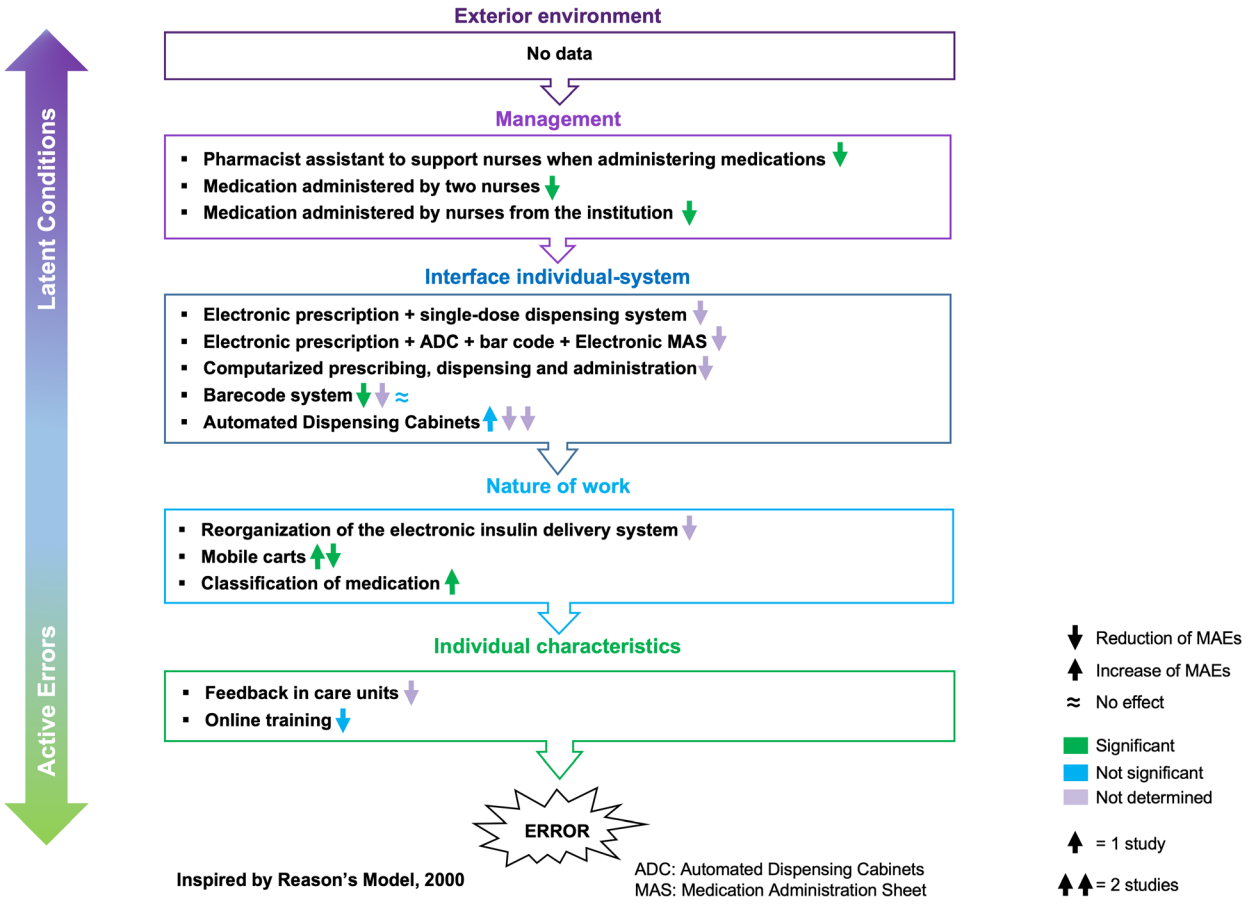
2 › The second level is the **nature of the work** and refers to the characteristics of the work itself.

3 › The third level is comprised of the physical and organisational environments, as well as the **individual-system interfaces**. These interfaces connect the human cognitive system, which is equipped with knowledge acquired through experience, training or practices, and the technological system which is equipped with software designed to optimize the task at hand.

4 › On the fourth level, there is **management**. The consequences of bad planning or bad decisions can gradually accumulate and interact with the elements of other levels.

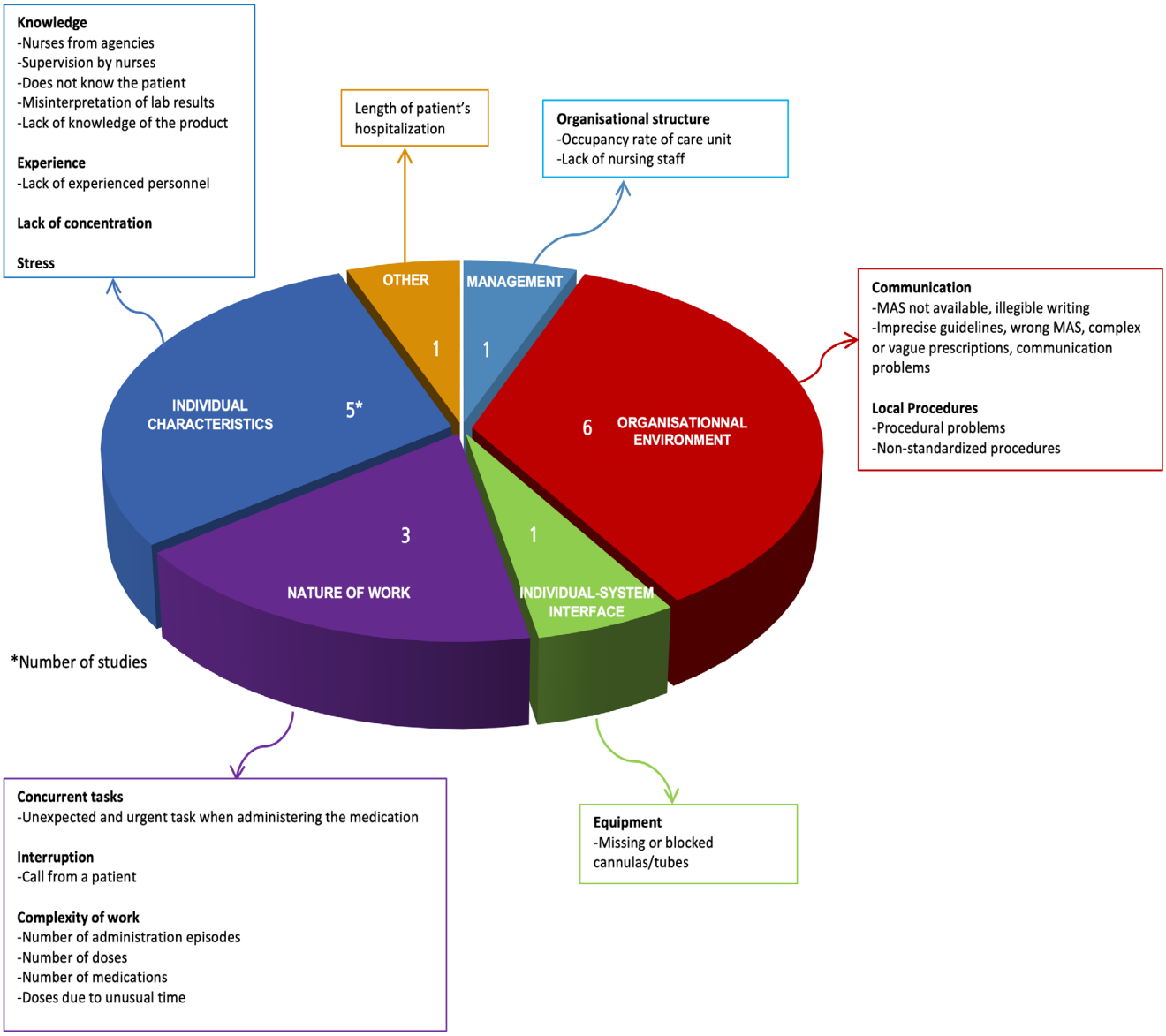
5 › Managers, for their part, are subjected to pressure from the **external environment**. By shaping the context in which care is provided, the external environment affects safety of users and quality of care.

Figure 1: Results synthesis according to Reason's Model (Reason, 2000)



Among the 18 interventions selected, nine focus on the individual-system interface, four focus on the nature of the work, three focus on management and two focus on individual characteristics. Considering the methodological quality of the studies and consistency of results, interventions focusing on the individual-system interface as well as the addition of experienced personnel when administrating medication could help reduce MAEs rates.

Figure 2: MAE risk factors identified in literature



On the other hand, ten documents presented data on MAE risk factors for MAE in HC (**Figure 2**). The individual characteristics of the professionals involved in medication administration and the organizational environment are the most documented levels, with respectively five and six studies, followed by the nature of the work.

CONCLUSION

The robustness of study designs and methodological quality of studies, as well as the lack of statistical analyses should be mentioned. Consequently, further studies on a same intervention with more robust designs are necessary to make strong recommendations.

Different **limits** should be considered when interpreting the results of this report. First, there is no consensus concerning the definition of MAEs. For example, some include delays in administration and others do not. Secondly, occurrence of MAEs is measured using different methods, i.e., observation, medication administration records, patient files or medication error forms. Finally, MAE rates are not all calculated using a common denominator. Some use the number of administration errors; others use opportunity for error (all administered doses + forgotten doses).

In the province of Quebec, as in many studies in literature, medication errors are measured using incident/accident reports. However, this method is associated with systematic under-reporting of medication incidents and accidents, a phenomenon that is particularly prevalent in cases of missed doses (Munzner & al., 2012; Gammie & Donn, 2013). To develop and evaluate efficient interventions, it is important to report and document medication errors. It is therefore essential that healthcare facilities foster a no-blame culture.

RECOMMENDATIONS

Analysis of results lead to the following recommendations regarding best practices to reduce MAEs:

- Computerize the steps of the medication circuit;
- Implement barcode systems;
- Use automated and decentralized cabinets in care units;
- Involve two people in drug administration.

On the other hand, to efficiently document medication errors and associated risk factors, with the aim of developing relevant interventions and assessing them, it is recommended to:

- Develop strategies aiming to improve on reporting and documentation of MAEs in HC and LTCFs.

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