

The ‘Back Office’ of a Dispensing Cabinet: Technology and Work Contributing to Medication Safety

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Abstract. Automated dispensing cabinets in clinical wards may contribute to improving safety by reducing the likelihood of medications not being available when needed. However, achieving this safety benefit is dependent on a ‘back office’ sociotechnical infrastructure that combines semi-automated processes with mindful, resilient work practices.

Keywords. Patient Safety, Hospital Drug Distribution Systems.

1. Introduction

Missed medication doses (omissions) are a common medication administration error and negatively impact the safety of hospital inpatients (e.g. [1, 2]). One reason leading to omissions is unavailability of medication on the ward at the time of need [3].

Ward-based automated dispensing cabinets (ADCs) can assist with the management of ward medication stock (‘imprest’) and thus may reduce the number of doses omitted due to unavailability [4]. However, little is known about the ‘behind the scenes’ work that contributes to this effect. In this poster we describe and discuss the sociotechnical system that lies behind ward-based ADCs. This sociotechnical system usually remains invisible [5] to ADC users in clinical areas.

2. Methods

We draw on ethnographic research carried out in hospitals in the UK and in Australia. The UK study was conducted in an adult hospital in 2016-17, while the study in Australia is in progress. Both studies were wide-ranging, focused on clinicians’ medication work, with attention paid to medication activities carried out by pharmacy staff and technology such as ADCs. Activities were observed both in pharmacy areas

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and clinical wards. We interviewed pharmacists and technicians, as well as pharmacy managers and IT staff. In this analysis, we focus on pharmacy processes for management of imprest medications in ADCs. Our analysis was influenced by the *sensitivity to operations*, *preoccupation with failures* and *resourcefulness* that characterize resilient activities in high-reliability organizations [6], and by the literature on infrastructures in organizations [7].

3. Findings and discussion

ADCs are one of the many information technologies (IT) hospital pharmacies have in place to manage medication stock. Such IT include stock management applications, or systems to connect with manufacturers and wholesalers' catalogues. Some IT functionalities are automated: for example, the ADC alerts pharmacy staff of medications low in stock; a stock management system can be set up to automatically re-order routine stock from wholesalers.

Effective use of these systems, however, cannot rely exclusively on automation that works on data about past use and embedded rules. Instead, it requires pharmacy staff to pay attention to any emerging risks associated with the availability (or lack thereof) of different types of medication, foreseeing supply chain conditions, and resourcefulness in solving problems or constraints.

This is invisible, mindful [6] work of pharmacy staff behind the scenes of an ADC, that makes the replenishing of ADCs' imprest medication stock look seamless from the clinical areas, most of the time.

4. Conclusion

The 'backoffice' of hospital ADCs is a sociotechnical infrastructure that combines semi-automated processes with mindful, resilient work practices. It is this combination, rather than the technology on its own, that is likely to reduce the frequency of omitted doses for hospital inpatients.

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