Policy+
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Interruptions to nurses during medication administration: are there implications for the quality of patient care?

Medication errors can occur at any stage of the medication process including: prescribing, dispensing, preparation, administration and monitoring [1]. Medication administration is acknowledged as a major aspect of patient safety [2] and it has been argued that any distraction or interruption during medication administration can result in errors. In this Policy+, we review the evidence on the contribution to medication administration errors of interruptions to nurses' work. We also consider how such interruptions might be reduced.

What do we mean by interruptions?

The literature broadly distinguishes between three types of interruption: interruptions mid task, interruptions between tasks [3], and system failures (e.g. poor access to equipment and supplies) [4]. A pilot study conducted by the National Nursing Research Unit, King's College London, showed that interruptions are contextually dependent on ward layout, patient care, trust/ward protocols and the seniority of the nurse undertaking the task. Interruptions affect staff cognitively, interfering with working memory, causing lack of focus [3] and invoking feelings of frustration and stress. However, it has to be noted that interruptions are not always harmful, and in healthcare settings may be essential to communication between staff, minimising or eradicating harm and/or error.

What evidence is available on whether interruptions to nurses' work contribute to medication errors?

The evidence we examined on the contribution to medication administration errors of interruptions to nurses' work included systematic reviews and primary research studies conducted internationally. The majority of the evidence has been published very recently (in the past four years) reflecting a recent interest in the topic. Most of the evidence has come from hospital settings and utilised quantitative methodology.

Attempts to examine contributors to medication administration errors have almost exclusively been based on secondary analysis of administrative databases; this constitutes an important limitation since unnoticed or unrecorded errors will not be included. It has been argued that to understand the situated context of interruptions, more direct structured observations of interruptions rather than unstructured observation and self-report data are needed [5] but such research is limited to date.

What is known about the contribution of interruptions to nurses' work to medication errors?

Based on 14 observation studies, Biron et al (2009) have recently reported that nurses cite interruptions as a significant contributor to medication administration errors [5]. This review reported an interruption rate of 6.7 interruptions per hour to medication administration tasks with information exchanges between nursing staff and system failures being identified as major sources of interruptions. One of the studies in the Biron et al review, showed evidence of a significant association between the frequency of interruptions and the rate of medication administration errors [6]. Evidence from another of the studies suggested that the most frequent location for interruptions is the medication room [3]. A more recent observation study reported the frequency of interruptions to 56 nurses' drug rounds in seven Italian surgical wards and revealed a rate of one interruption for every 3.2 drugs given, with the management of telephone calls reported to be a major source of interruptions [7].

Some studies on nurses' perceptions of the causes of medication errors have highlighted the contribution of interruptions. Lin et al (2007) surveyed the views of 294 nurses, from six district

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hospitals in Taiwan, of possible causes of medication errors and found that 80.3% of nurses believed that interruption to nurses during medication preparation was a cause of such errors [8]. In a US survey of 284 hospital nurses from hospitals in two states, interruptions were perceived to be the major reason for nurses' medication errors in paediatrics [9]. In a medical directorate of a London teaching hospital, most (94%) of the 138 nurses surveyed highlighted distractions as a major contributor to medication errors [10].

How can we reduce interruptions?

Evidence suggests much more attention should be given to how care systems and work processes complement or interfere with nurses' cognitive work [3]. Communication technology interventions could be introduced to improve the clinical communication environment. Similarly interventions to reduce interruptions during medication related tasks include: the use of "protocol checklists", "interruption vests" and "No-Talk" signage, which have proved useful in reducing interruptions [11]. However, these can have a limited impact if staff get used to their presence. The creation of a "patient quiet zone" during medication administration has also been shown to reduce interruptions by 89% resulting in a decrease of nursing medication errors of 60% [12]. Educational interventions designed to highlight possible strategies to manage these interruptions could further help minimise errors [5].

Conclusions and implications

- Although the evidence is limited, interruptions to nurses' work have been identified as contributing to medication administration errors
- Interruptions affect staff cognitively by interfering with working memory
- A range of interventions have been identified that may minimise interruptions to nurses' work particularly during medication related tasks

Key issues for policy

- Interruptions represent a risk that needs to be assessed and managed in healthcare settings
- Innovative interventions to minimise interruptions are needed and should be encouraged
- More direct observation research exploring possible associations and links between interruptions and medication errors is needed

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