



## Nurse interrupted: Development of a realistic medication administration simulation for undergraduate nurses



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### SUMMARY

*Background:* Medication errors are a global phenomenon. Each year Australia-wide there are up to 96,000 preventable medication errors and in the United States there are approximately 450,000 preventable medication errors. One of the leading causes of errors is interruption yet some interruptions are unavoidable. In the interest of patient safety, nurses need to not only understand the impact of interruptions, but also be empowered with the knowledge and skills required to develop effective interruption management strategies. Well-planned simulation experiences have the potential to expose students to authentic clinical cases, otherwise unavailable to them, building critical thinking and clinical reasoning skills and preparing them for practice.

*Aim:* This paper describes a simulated role-play experience that was developed to enable undergraduate nurses to experience, reflect on and analyse their responses to interruptions during medication administration.

*Methods:* The simulation design presented in this paper was underpinned by both nursing and educational theorists, in combination with established simulation frameworks.

*Setting and Participants:* Embedded within a clinical subject in 2013, the simulation experience was run over two campuses within a large Australian University. Participants included 528 second year undergraduate nursing students and 8 academic teaching staff.

*Outcome Mapping:* To stimulate reflective learning debriefing immediately followed the simulation experience. Written reflections were completed and submitted over the following 4 weeks to extend the reflective learning process and review the impact of the experience from the student perspective.

*Conclusions:* Undergraduate student nurses often have limited experiential background from which to draw knowledge and develop sound clinical judgements. Through exposure to clinical experiences in a safe environment, simulation technologies have been shown to create positive learning experiences and improve deductive reasoning and analysis. The heightened awareness of interruptions and their impacts on the medication administration process, along with techniques to manage interruptions more effectively serves to better prepare nurses for practice.

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### Introduction/Background

Medication errors are a major threat to patient safety and remain a significant global health care issue (Clinical Excellence Commission,

NSW Health, 2013; Cloete, 2015; Kohn et al., 2000). A leading cause of medication errors are interruptions and distractions during the medication administration (MA) process (Jennings et al., 2011; Reid-Searl et al., 2010). Nurses are primarily responsible for MA (Palese et al., 2009; Reid-Searl et al., 2010), therefore, understanding how nurses learn the essential skills required to safely administer medications in spite of interruptions is crucial in achieving patient safety goals.

The clinical environment in which nurses find themselves is frequently unpredictable and there are unavoidable interruptions, including during MA (Westbrook et al., 2010). Safe and effective MA is a cornerstone of nursing practice and it is incumbent on nurses to be cognisant of the associated risks as well as the causes of medication errors (Page and McKinney, 2007).

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Interruption reduction strategies have been the main focus of current research to prevent medication errors (Anthony et al., 2010; Flanders and Clark, 2010; Relihan et al., 2010). These strategies include the introduction of ‘do not disturb’ tabards or sashes, demarcated ‘no go and quiet zones’, ward signage, technology, and safety checklists (Anthony et al., 2010; Fore et al., 2013; Relihan et al., 2010). Although these initiatives are reported to have been successful in reducing interruptions, they are unable to eliminate them. Caution in utilising these strategies as standalone measures has been suggested, until sufficient pre- and post-testing has been undertaken (Raban and Westbrook, 2014).

The inevitability of interruptions and distractions in the clinical environment, and the recognition that not all interruptions have negative outcomes are documented (Clark and Flanders, 2012; Flynn et al., 2012). There is little doubt that there is a direct relationship between the delivery of safe and effective patient care and the way in which nurses manage interruptions (Cloete, 2015; Rochman et al., 2012). The traditional methods of teaching MA to undergraduate nurses include learning the relevant pharmacology and mathematics, and the six rights of MA (Woodrow et al., 2010). Once availed of theoretical elements, students are then supervised practising MA within a constructed, uninterrupted, clinical laboratory environment (Aggar and Dawson, 2014). Although these are all necessary steps in teaching novice nurses safe MA, translating skills learnt within the university setting, into the dynamic clinical environment can present students with significant challenges. Undergraduate nurses are often expected to learn interruption management strategies ‘on the job’, leaving both nurses and patients vulnerable. To contribute to more ‘real life’ experience of MA, innovative techniques such as role-play simulation that incorporate interruption management strategies are proposed.

**Methods/Protocol**

*Aim*

This paper describes a simulated role-play experience that enables undergraduate nurses to experience, reflect on and analyse their responses to interruptions during medication administration.

*Methodology*

The conceptual foundation for the design of this role-play drew on the work of both nursing and educational theorists including; Benner's

novice to expert, Tanner's model of clinical judgement, and Kolb's theory of experiential learning (Benner, 2001; Kolb, 1984; Tanner, 2006). It was further informed by Jeffries adaptation of Kolb's work as it applies to simulation in nursing (Jeffries, 2005). The integration of these ideas is presented in Diagram 1.

Benner described five stages of learning specific to nursing practice: novice, advanced beginner, competent, proficient and expert (Benner, 2001). During the planning of this simulation role-play experience it was deemed that student participants were functioning within the first two stages, the novice and the advanced beginner.

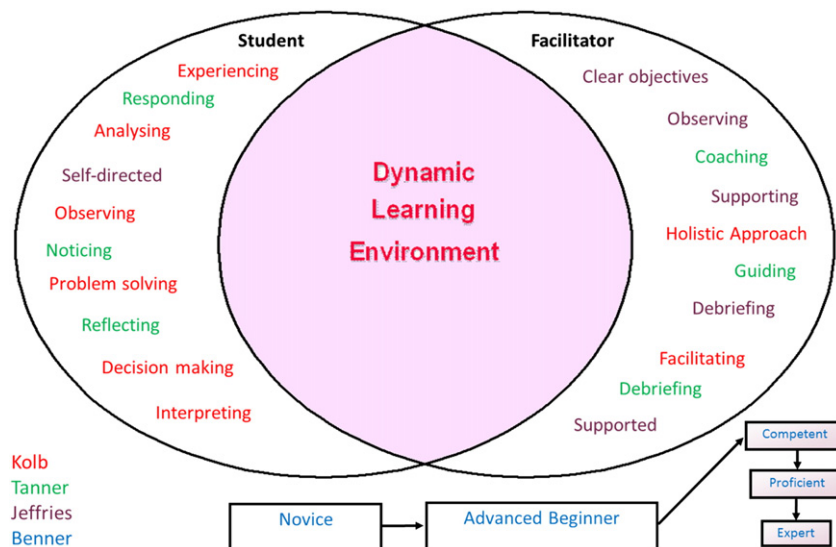
Tanners' model (Tanner, 2006) was utilised as a guide to ensure that student participants were given the opportunity to notice, interpret, respond to and reflect on their experience within a safe environment. Academic facilitators were encouraged to act as coaches guiding the learning experience, culminating in a planned debrief where students could make informed and reasoned judgements, incorporating appropriate prioritisation and optimal patient care choices.

The understanding that students vary in their preferred learning style and that concrete experiences lay the foundation for reflective observation was also considered (Kolb, 1984). Therefore, following the simulation and debriefing, students were encouraged to complete written reflections to enhance transfer of the experience into abstract concepts, fostering an awareness of actions or responses to create new experiences and insights.

Jeffries (2005) simulation framework was used to underpin the design, implementation and evaluation of the simulation, to facilitate and develop critical thinking and reasoning skills that lead to enhanced clinical judgement. Within the design of this experience all five elements of the Jeffries Simulation Framework were taken into consideration and are presented in Table 2. These approaches emphasise the impact of previous experiences on learning, and the ability to apply theory into practice through active involvement, problem solving, decision making, and reflection, leading to cognitive development and acquired knowledge (Howard et al., 2011).

*Setting and Participant Characteristics*

The simulation was instituted across two campuses of one large Australian University. Participants included a convenience sample of 528 second year undergraduate student nurses enrolled in a clinical subject in the Bachelor of Nursing programme; male (n = 85) and female (n = 443), with a mean age of 26.56 years. The cohort comprised a combination of direct entry, graduate entry, and enrolled nurse



**Diagram 1.** Theorist informed dynamic learning environment.

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