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Living the 'rights of medication administration' - A study of medication administration theory and practice

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Abstract

Medication errors attract significant media and research attention, and most of the nursing literature focuses on the nurse's role in such errors. Nurses are the clinicians who manage the last step of medication administration and, as such, are involved if an error in administration of the medication occurs. Although, there is some literature discussing the application of the theory of medication administration in practice, there is limited research highlighting the experience of nurses in the process. The literature suggests that factors affecting poor nursing practice in administering medication are mainly linked to deviating from established procedures. This paper aims to explore the current literature of nurses' experiences in applying the theoretical principles of medication administration to their practice. In particular, the application of the 'rights of medication administration' as the accepted standard operating procedure will be reviewed. The historical presentation of the 'five rights' as the golden standard for medication administration are that the nurse must ensure they have the right patient, the right drug, the right dose, the right time and the right route. Throughout time the 'rights of medication administration' have evolved and, in current literature, it is unclear how many rights there are and which of the 'rights' are considered standard. There is no national or international consensus. There is no consensus across the public and private sectors of health within Australia. There is risk of confusion and a compromise to patient safety as a result. With the advent of national nurses' registration in Australia, this issue is important to raise and address. A review of the literature and focused research can provide insight into the confusion and hence provide an opportunity for improvement. This may lead to practice changes and improved patient outcomes, increased job satisfaction for the nurse, reduced liability and risk to the organisation, and curriculum that more clearly reflects healthcare industry needs and guides professional practice and standards.

Researcher Introduction

Confusion, disappointment, frustration and intrigue are what I felt when I observed a nursing student deviate from the established procedural technique of medication administration. I had recently taught this student the safe method of medication administration using the 'five rights' theory. I'm passionate about this topic and I teach with thoroughness and enthusiasm and it shocked me to be confronted by a student who didn't follow the process whilst on clinical placement, so soon after having been taught the 'safe' way. This is when I really started to reflect formally on

my practice as a nurse and an academic. Emancipatory reflection is the term used by Taylor (2005, p. 132) to describe when the central character (me) reflects on their practice and how it relates to other people and determinants of the situation. Observing this bright, mature, intelligent, articulate and well-meaning student nurse deviate from a procedure that had been taught with passion and determination opened a chasm of insecurity and instability for me. Emancipatory reflection will help me to analyse critically the contextual features which are impacting on my teaching practice because it offers a process to construct, confront, deconstruct and reconstruct practice (Taylor, 2005). Reflection is a means that professionals can use to bridge the theory practice gap (Schon, 1987).

I was confused about what I may have missed in the teaching of medication administration that led my student not to adhere to the 'five rights' theory of right patient, right drug, right does, right time and right route that she had been taught. She had neglected to ensure that the patient swallowed the medication. Once dispensed, she had placed the medication on the meal tray and subsequently it had been removed before the patient had a chance to take the medication. It had been returned to the kitchen untouched by the patient. In essence, she had followed the 'five rights' procedure, but neglected to finalise the process by ensuring the patient had actually swallowed the medication. The critical thinking of consequences was absent. She left the room before having finalised the 'right' route. When asked why this had occurred, her response was 'I don't know'. Her words set me on this path of self exploration and professional investigation. At the outset, I had to step outside my comfort zone of clinical conformity and academic surface dwelling to realise a new level of learning and viewing the world.

The aim of this study is to gain an understanding, of the impacting factors, on nurses in how they apply what they were taught about medication administration to their practice of administering medications to patients in hospital settings. This will be achieved through observing the actions of nurses while administering medications and taking field notes of the clinical context and the nurse's behaviour and responses within that environment. Interviews with these nurses will investigate their knowledge of medication administration techniques and theory and ask them to articulate the link between this and their practice so as to uncover what they remember about what they were taught and how this guides their practice.

Background

The Queensland Nursing Council, as the registering body of nurses in Queensland until June 2010, promoted nurses as playing a key role in risk reduction at the end point of medication administration by ensuring that the 'five rights' are checked. They listed the 'five rights' as the right person, right drug, right dose, right route, and right time (Queensland Nursing Council, 2005a). The Australian Nursing and Midwifery Board, formed in 2009 to replace the role of the state-based councils and boards, as yet do not have any medication administration specific guides, standards, policies or codes (Nursing and Midwifery Board of Australia, 2010).

Thus, nurses have the unenviable task of administering medications within an environment that is high risk, constantly changing and sometimes dangerous (Brady et al., 2009) and at present without specific procedural guidelines endorsed by a registration board. Nurse's must rely on their training and local guidelines and are expected to "**Primum non nocere",** which means, "Above all, do no harm". However, sometimes despite the best of intentions, there can be harmful consequences (Institute for Safe Medication Practices, 2005, p.iii).

The procedure of medication administration is a stage of the delivery of a medicine where errors often occur (Idzinga, de Jong, & van den Bemt, 2009). Medication administration is a core component of the daily activities of nursing work, and for this reason, is a common area of interest, investigation and research by nurses and others. Medication administration is a nursing intervention that is consistently performed across all speciality areas, and yet the complex nature of the procedure and the healthcare context puts nurses at risk of making serious errors (Schelbred & Nord, 2007, p. 317). This is recognised by the nursing profession internationally and Chua, Tea and Rhaman (2009, p. 216), from Malaysia, go so far as to say that drug administration is an activity that is "prone to errors". While, McIntyre and Courey (2007) placed medication errors as the eighth leading cause of death in America in 2007.

"It is critical to identify effective strategies for detecting and preventing medication errors in both inpatient and outpatient settings" (World Health Organisation, 2009a, p.5). To this end the World Health Organisation (WHO) are supporting the Australian Commission on Safety and Quality in Health Care (ACSQHC) in launching the Improving Medication Safety program to improve the safety of patients receiving medications in 28 participating hospitals in Australia (Australian Commission on Safety and Quality in Health Care, 2010).

The Improving Medication Safety program utilises a systematic process of collecting, checking and reconciling the patient's medications at the time of admission and throughout the episode of care (World Health Organisation, 2010). At the core of the program is the establishment and implementation of standard operating procedures similar to those of the 'five rights' of medication administration (Australian Commission on Safety and Quality in Health Care, 2010). Standard operating procedures have been utilised in the aviation industry as a way to minimise human error (Commonwealth of Australia, 2004, p. 27). The impressive results in the aviation industry have reduced errors through various strategies, including human resource management, and have been touted as potential solutions in healthcare (Norman & Eva, 2010). Queensland Health has introduced the Human Error and Patient Safety (HEAPS) training in an effort to transfer this knowledge to health care and duplicate the results, in an attempt to minimise risks.

The Queensland Health service accepts that errors arise as a result of an alignment of a number of factors and that, in the event that they are not blocked or mitigated, they may result in error. "The fundamental principles of HEAPS is to change the culture of health care workers from one of 'blame and shame' to one of pro-active and constructive analysis of the broader 'systems' issues' (Queensland Government, 2010). Queensland Health has introduced this training as core education for clinical staff and in 2008 reportedly trained 9000 staff in this approach (Wakefield, 2008, p.13).

A key concept of the HEAPS program, taken from the aviation industry, is that errors often occur as a result of ineffective communication between those responsible for the safety of others (Lee, 2006). Another key concept is that person-centred factors, such as lack of confidence and ability in mathematical calculations and poor adherence to protocol are causes of medication administration errors and identification of these contributing human factors is vital to reducing risk and minimising medication administration errors (Jones, 2009). Therefore, the HEAPS program places importance on training humans to follow a given procedure to reduce the intrinsic risks while standardising the expected outcome. In the situation where humans do not follow the process and it is observed by another, that second person then has the authority and is required to raise the issue and halt the activity in the name of patient safety. Lee (2006) expresses it in this way "For the safety of the patient, you must listen."

The changing organisational culture of risk identification and management in Australia has encouraged the implementation and adoption of 'six rights' of medication administration as a measure of safe practice through the use of them as audit criteria (Queensland Health, 2010b). Queensland Health has included the right to refuse as a sixth right. However, the position and application of these 'six rights' as key performance indicators is not universally accepted throughout the healthcare industry within Queensland, nor across the states and territories of Australia, nor from public to private sector healthcare settings. More confusing is that the Institute for Safe Medication Practices (ISMP) recommend that the original 'five rights' be used as a checklist only, and not as a definitive method that will always ensure safe medication practice (Institute for Safe Medication Practices, 2010a). The 'five rights' they are referring to are the right patient receiving the medication, the right medication being administered, the right dose of the medication being administered, the right time that it is being administered and the right route of administration.

Currently, there are no Queensland-based initiatives targeted at investigating the 'six rights for safe medication administration' procedure and whether this procedure is best practice or conversely contributing to errors. Nor has the educational or clinical experience of nurses in the application of the 'six rights' been investigated. The 'six rights' as published by Queensland Health are that the administering nurse validates that they have:

> **The right patient** - by asking the patient to tell their name and confirming this against the identification band and the medication chart and by checking the allergy status of the patient,
>
> **The right drug** - by cross checking the drug name in the medication chart with the packaging, checking the expiry date of the drug, the indication to determine if it correlates to the patient's needs and in the correct formation and whether the drug has been stored correctly,
>
> **The right dose** - by ensuring the correct dosage calculation and questioning the frequency and whether multiple units are required,

> **The right route** - by ensuring the drug is administered by the route ordered and that that route is appropriate for the patient,
>
> **The right time** - By checking that the times prescribed for administration correlates with the frequency ordered, that the timing does not coincide with other substances that may interfere with the intended effects of the drug, and confirming when the last dose was administered to ensure the time since then is appropriate, and
>
> **The right to refuse** - by recognising the appropriateness of the circumstance where the patient or the clinician can refuse the administration of the medications and reporting that situation appropriately (Medication Services Queensland, 2009a).

Giangrasso & Shrimpton (2010, p.29) also state, in a very recent nursing text, that there are 'six rights' and they are:

- Right drug
- Right dose
- Right route
- Right time
- Right patient
- Right documentation

They go on to say that "failure to achieve any of these rights constitutes a medication error" (Giangrasso & Shrimpton, 2010, p. 29). This leaves the nurses working in Queensland in a conundrum where currently the sixth right is the right of the patient to refuse the medication (Medication Services Queensland, 2009). In this case, the theory does not accurately reflect industry protocol. It could be the case that teaching the Queensland Health 'six rights' is actually contributing to the risks of medication errors as opposed to working towards decreasing the risk. The taught principles of medication administration may need to be redesigned to be consistent and better reflect the changes in healthcare. Currently, there is no agreement in the literature or within the discipline on how many 'rights' there are or what they actually mean and how they should be applied or used by the nurses who are expected to adhere to them.

Unfortunately, nurses rely on the medication administration 'rights' to prevent errors and keep the patient and themselves safe (Elliott & Liu, 2010). After all, this is what they were taught. However, with the 'rights' in Queensland currently at six but different to those of contemporary texts and other literature suggesting 7 'rights' (Giangrasso & Shrimpton, 2010; Medication Services Queensland, 2009b; Reid-Searl, Dwyer, Moxham, & Reid-Speirs, 2007) while others claiming there are up to as many as 9 'rights' (Elliott & Liu, 2010) it appears that nurses are being set up to fail. If the principles taught are not consistent, then how are the nurses to trust them in maintaining patient safety. There is also the question of whether the 'rights' principles reflect contemporary industry requirements or expectations and whether they are evidence-based.

Along with the initial 'five rights' expressed as the right patient, right drug, right dose, right time and right route, Reid-Searl, Dwyer et al. (2007) have cited as additional rights; right documentation, right outcome, right person administering, right process followed, right effect, and right outcome. However, they do not dictate that these additional 'rights' form part of a core standard operating procedure. It is well documented in the literature that even with the implementation of the core procedure and the additional practices, medication administration errors still occur and result in patient mortality at times (Institute for Safe Medication Practices, 2010b). A medication error that leads to the death of a patient, as a result of incorrect administration, is deemed a sentinel event (Australian Commission on Safety and Quality in Health Care, 2005). Medication errors have been recognised as serious patient safety matters for many years. More recently, the WHO (2010) suggested that medication errors are one of the most urgent and emerging global issues on the patient safety agenda. The WHO defines a medication error as a "failure to carry out a planned action as intended or application of an incorrect plan" (World Health Organisation, 2009b, p.230). They have indicated that in the United States, Australia and France, adverse drug events occur in 4% of hospital admissions resulting in death 5-10% of the time (World Health Organisation, 2010a). They go on to say that 75% of medication errors are preventable and that ongoing investigation to gain insight into the underlying causes of such events is necessary, in order to explore the multiple weaknesses within systems (World Health Organisation, 2010a, p.4) that adversely affect patient safety.

The alterations, additions and changes in the procedure of medication administration have come about as a result of the drive to achieve a safer environment for patient care (Cook, 1999; Elliott & Liu, 2010; Pauly-O'Neill, 2009). However, the evolving number and title of the 'rights' and lack of consistency is not supportive of risk reduction or being able to identify where errors occur. If all health services do not have a singular process, then error rates cannot be compared. These inconsistencies across the literature, the industry, and within tertiary teaching environments may be contributing to errors in practice. This is an untenable position for nurses who strive for "...constant professional vigilance to ensure that patients received their appropriate medications" (Eisenhauer, Hurley, & Dolan, 2007, p.82).

Whilst it is evident that the health industry is taking action towards addressing the issues surrounding medication errors in the workplace, it is unclear that there is a similar perspective in undergraduate nursing education programs. Nurse academics, as the teachers of undergraduate nursing courses, are familiar with the inherent level of risk and have for decades taught the 'five rights' theory of medication administration. The health industry has also adopted these principles of medication administration from the time of their inception. The belief is that the standard operating procedure expressed as the 'five rights' of medication administration will reduce the risk of medication errors (Medication Services Queensland, 2009b, Eisenhauer, 2007). This theory appears to be well accepted by nurses and other healthcare professionals.

The 'five rights' have been the well-established gold standard of medication administration in nursing for many years. Their origin is unknown at this point of the study, and it is one of the intentions of this research to uncover their origin and basis. They form the nurses' safety checklist during administration of medication. It is generally believed and accepted throughout nursing that by following this process that errors will be avoided. However, it has also been known for some time that faith in the 'five rights' as protection against medication errors is unfounded and unrealistic. "The 'five rights' are not the 'be all that ends all' in medication safety" (Institute for Safe Medication Practices, 2010b) nor is there any indication in the literature that the development of the 'five rights' was based on any valid evidence of their efficacy. And yet, the bulk of the literature around medication administration is supportive of the notion that the 'five rights' of medication administration are the foundation from which nurses practice safely (Cook, 1999) and that the application of the 'five rights' is a measure of safe practice (Eisenhauer, et al., 2007) but that organisational factors such as workload, staffing, and interruptions may contribute to medication administration errors in the form of procedural violations (McKeon, Fogarty, & Hegney, 2006, p. 116). The WHO (2010), in their efforts to protect the rights of healthcare consumers, has included the ISMP on the international steering committee of the WHO Collaborating Centre for Patient Safety Solutions (WHO Collaborating Centre for Patient Safety Solutions, 2008). The ISMP was co-founded in 1975 by Dr Michael Cohen and today the organisation is a world leader in medication safety research (Institute for Safe Medication Practices, 2010). Cohen has, for over 30 years, investigated and published numerous research articles on the factors affecting the safe administration of medications (Institute for Safe Medication Practices, 2010). Cohen's work promotes the use of the 'five rights' of medication administration. Interestingly, despite the efforts of researchers and healthcare organisations around the world to improve medication administration practice to reduce medication risks to patients, the same issues have been of concern for 35 years and remain of concern today.

Australia has joined the international medication safety activities and has nominated the Australian Commission on Safety and Quality in Healthcare (ACSQH) as the nation's representative member of the WHO Collaborating Centre for Patient Safety Solutions (WHO Collaborating Centre for Patient Safety Solutions, 2008). In 2006, Australia signed the Salamanca Declaration to promote safe medication practices globally (International Medication Safety Network, n.d.) demonstrating Australia's increasing involvement in the activities reflective of global issues (World Health Organisation, 2009). Currently, Queensland Health is encouraging increased reporting of medication incidents as a strategy to increase awareness of the patient safety agenda (Farmer, 2010). Robertson (2008), the then Queensland Minister for Health, suggested that an increase in reporting of clinical incidents does not necessarily reflect an increase in adverse events and that the 30% increase in clinical incident reporting seen by Queensland Health in 2008 was as a result of staff being more willing to raise concerns (Robertson, 2008). Queensland Health reported a further 18.9 per cent increase in reporting of medication primary incidents in 2010 compared to the 2006/2007 figures

(Farmer, 2010, p.76). 'Medication administration errors were most commonly reported followed by prescribing errors' (Farmer, 2010, p. 77).

Clinical incidents such as this occur in every health system in the world and regularly patients are harmed (Wakefield, 2007, 2008). Queensland Health recognises these facts, and in attempting to minimise preventable harm, created the Patient Safety Centre. This Centre is overseeing significant work occurring throughout Queensland Health in the areas of medications, falls, pressure ulcers, infection, suicide prevention and procedural complications (Wakefield, 2008, p.6). The Queensland Health Patient Safety Centre initiatives to date, which have been targeted at medication safety, are:

- Standardised in-patient medication chart including alerts on high risk medications (Wakefield, 2008, p. 9).
- Electronic discharge medication summary system and medication action plan to facilitate communication between clinicians (Wakefield, 2008, p. 9).
- Numerous education and training programs and resources to raise awareness and standardise systems and processes across Queensland Health facilities (Farmer, 2010, p. 78).

However, as yet there are no investigations of the 'five rights' procedure. The procedure is not generic and yet the evidence from the literature shows, and the health care industry believes, that deviation from the set procedure, results in medication errors and adverse events that affect patient care and jeopardise patient safety (Coombes et al., 2005; Giangrasso & Shrimpton, 2010; McIntyre & Courey, 2007; Medication Services Queensland, 2009b; Pauly-O'Neill). The 'five rights' are thought to mitigate risk but evidence of significant medication errors suggests they do not. To better understand these phenomena it is necessary to investigate the nurses' experience in learning and applying the 'rights'. Issues yet to be understood are; if nurses are to adhere to a set procedure for patient safety, then what is it? What should it be? How do the nurses find out about it? And how do they apply this in practice? The literature surrounding this particular topic is limited.

There is a large body of knowledge around the contributing factors to medication errors. More specifically, there is a considerable body of knowledge surrounding the contributing factors, to errors, by nurses during the administration of medications. The factors include but are not restricted to workload, distractions, lack of staffing, organisational morale, psychological stress (Fogarty & McKeon, 2006; McKeon, et al., 2006), poor lighting, and lack of knowledge (Institute for Safe Medication Practices, 2010b).

It is clear from the literature that errors during medication administration are often system errors rather than individual performance issues. It is also clear that nurses are distressed if they are involved in a medication administration error (Rittenmeyer & Huffman, 2009). What is not clear is the experience of nurses in the application of the 'rights' of medication administration. The research to date has not explored the day-to-day experience of nurses in applying what they have been taught about medication

administration to their practice in the clinical setting. Research in this area is therefore vital, in order to understand more fully the range of factors that may contribute to medication administration errors.

Methodology

To better understand this aspect of nursing, it is necessary to engage in a dialogue with those intimately involved with the phenomena of interest. A conversation must occur with nurses who are performing medication administration in clinical practice together with observation of their practice so that a sense of contextual factors can be included in the research data. For this reason, the study will use a qualitative methodology that includes interviews and observation that allows a flexible approach, whilst providing rigour through the capacity to triangulate the data to ensure credibility, auditability, fittingness and confirmability (Schneider, Elliot, Beanland, LoBionda-Wood, & Haber, 2003, p. 149). Credibility will be ascertained through participant verification of interview transcripts. Auditability will be determined through maintenance of comprehensive and accurate records that are verified by the participant as true accounts of the clinical activities and interviews. Fittingness will be shown through the observation of nurses in clinical practice, and confirmabilty through the comparative analysis of all the data.

Registered nurses are the focus of this study. Although, it is acknowledged that enrolled nurses are educated and skilled in medication administration, it is the pre-registration curriculum theory which is of interest to the researcher. Registered nurses from a variety of clinical specialty areas such as medical, surgical, emergency and coronary care will be invited to participate in the research activities of observation and interview. They will firstly, be observed during a nursing shift where medications are administered and then they will interviewed about their recollections of what they were taught and how they apply that to their practice.

The Researcher will journal throughout the process and this will be included in the methodology as a means of triangulating the data. The researcher of the project is a nurse with 27 years experience who will reflect on her practice as part of the data set. This will assist in guiding the research questions and enable comparison and consolidation of the findings with evidence from the literature. Schneider, Elliot et al (2003) suggests that maintaining a reflective journal is essential for the researcher to achieve insights and clarity of their project experiences, thus providing valuable stimuli for the formation of ideas (Schneider, et al., 2003, p. 242).

Theoretical Framework

Benner's (1984) theory will be used as a theoretical grounding for this study. Benner (2001, p. 39) explains the framework as "an interpretive approach to identifying and describing clinical knowledge". Benner (2001) places importance on strategies which promote synthesis of information rather than analysis of it and presentation of the information so that the context is explicit and the knowledge can be studied holistically. The researcher believes this approach to be appropriate because the focus of this qualitative study is to gain an understanding of how nurses use their knowledge of the

'rights' of medication administration in their practice. In addition, Benner's (1984) theory is closely linked to the development of competence in nursing, both in Australia and overseas. Thus, within this study, Benner's (1984) theory of the stages of nursing knowledge, and the concept of intuitive practice at expert level will contribute to the theoretical framework. Benner (1984) described the five levels of knowledge acquisition within the 'novice to expert' theory. These levels begin with the novice stage, followed by advanced beginner, competent nurse, proficient nurse and expert. According to Benner (1984), novices have no prior knowledge of practice and rely on rules, procedure manuals, and formal frameworks to guide their performance and expert nurses are more intuitive in their practice. Benner (2001, p.132) recommends that descriptive and interpretive accounts of nursing practice and the variability in the skilled practices associated with administration and monitoring therapies in their contexts would be useful. Therefore, this study will attempt to reflect the variety of ways that nurses apply medication administration theory to their individual practice, within the contexts of their different clinical environments.

Outcomes

This study is in its infancy and therefore the outcomes are unknown, but, as with all projects, it is necessary to have an idea as to the end point if the project is to have direction and be able to be finalised. Therefore, at this stage the endpoint of this project is to be able to provide a report of the findings from participant interviews, participant observation, and researcher journaling in a way that facilitates a greater understanding of the experience of registered nurses in the application of the theory of medication administration principles to their clinical practice.

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