Chapter 1: Introduction

1.1 Introduction

The World Health Organisation (WHO, 2011) notes that the delivery of safe and effective care is a challenge for all health professionals in today's complex and fast-moving health environments. The core role that nurses play in healthcare delivery is recognised globally (International Council of Nurses [ICN], 2012, 2013). The education that nurses require to meet the expectations of their demanding role is governed by accreditation standards in developed countries (Australian Nursing and Midwifery Accreditation Council [ANMAC], 2012; College of Registered Nurses of British Columbia, 2015; Nursing and Midwifery Council [NMC], 2010a) and informed by research studies (Adhikari, Tocher, Smith, Corcoran & MacArthur, 2014; Banning, 2006; Bourbonnais & Caswell, 2014; Martyn, Terwijn, Kek & Huijser, 2014; Rourke, Schmidt & Garga, 2010; Sears, Goldsworthy & Goodman, 2010; Weeks, Clochesy, Hutton & Moseley, 2013).

This study explores the role of registered nurses (RNs) in relation to medication administration in acute in-patient settings. This chapter presents the background of the study in section 1.2. The aim and objectives of the study are presented in section 1.3 followed by a discussion of the significance of the study in section 1.4. Section 1.5 provides a brief overview of the theoretical framework that underpins the research design and is followed by an introduction to the innovative research methodology in section 1.6. Also in this chapter, I take the opportunity to introduce myself and clarify my perspectives in order to situate my ideas and make my assumptions clear. Finally, key concepts and issues relevant to the topic from the extant literature are introduced.

1.2 Background

The task of administering medications to patients in acute care settings is a responsibility that primarily resides with nurses (Hughes, R. G., 2008a; Manias, Aitken & Dunning, 2004b; McKenna & Lim, 2014b; Reid-Searl & Happell, 2012). The knowledge and level of technical skill required of nurses to safely administer medications has expanded because of advances in pharmacological therapies and technology (Advinha, De Oliveira-Martins, Mateus, Pajote & Lopes, 2014; Hughes, R. G., 2008a; Hughes, R. G., & Blegen, 2008; Kelly, W. N., & Rucker, 2006). Consequently, the role and accountability of nurses must continue to evolve.

In healthcare settings, clinical knowledge advances and subsequent technological changes occur rapidly and frequently (Tremblay, 2010). For example, contemporary intravenous infusion pumps and medication dispensing devices are very different from their predecessors (Maddox, Williams, Oglesby, Butler & Colclasure, 2006). The complexity of these clinical devices has increased with improved safety mechanisms and enhanced user interfaces (Garling, 2008). Nurses are required to embrace the pace of technological change and embed practice transformations into their regular routines (Brooks, Moriarty & Welyczko, 2010; Farmer, 2010; WHO, 2010b). The present study shows how changes in the practice of medication administration are experienced by nurses.

Nurses worldwide are required to practice safely (ICN, 2013, Australian Nursing and Midwifery Council [ANMC], 2006; Nursing and Midwifery Board of Australia, 2008b). Their practice is governed by a nexus of international, national, state and local policies, laws, regulations, codes, standards and guidelines. The scope of nurses' practices outlined by various governance structures places nurses in a position of authority for the safe and effective administration of medications (ICN, 2012, 2013). Indeed, the role of the nurse during the administration phase of medication is acknowledged as key to detecting and mitigating mistakes made in other phases (College of Registered Nurses of British Columbia, 2013).

The framework that is widely accepted to guide medication administration practices is the five rights of medication administration (Kim & Bates, 2013). This framework is adopted by healthcare education providers as a trustworthy basis for safe practice. In its original form, it is structured as a sequenced list of aims for safe practice and this has been widely accepted as the way to eliminate medication errors (Giangrasso & Shrimpton, 2010, 2013; Olsen, Giangrasso & Shrimpton, 2012; Sullivan, 1991). The following quote from Westbrook, Woods, Rob, Dunsmuir and Day (2010) lists the five rights and other key concepts relating to nursing education and professional practice that are explored in this thesis:

> The medication administration process is governed by standards and legal mandate. At the core of these standards are the '5 rights' (right patient, right drug, right dose, right time and right route). Despite these being an essential part of nurse's education, medication administration errors are frequent. (p. 684)

The five rights framework has been used to direct and measure safe medication administration since the mid-1900s (Baker & McConnell, 1962), and its criteria continue to feature in healthcare literature as a measure of best practice and as a way to ensure patient safety (Baeke, 2015; Bonsall, 2014). Yet the appropriateness of this framework for contemporary nursing practice has continued to be questioned (Baeke, 2015; Bonsall, 2014; Grissinger, 2002; Institute for Safe Medication Practices [ISMP], 2004, 2007; Pennsylvania Patient Safety Authority, 2005).

The five rights framework is a standardised process intended to reduce practice variations and minimise adverse events (Australian Commission on Safety and Quality in Health Care [ACSQHC], 2010; WHO, 2009a, 2010b, 2015). The ACSQHC (2011) suggests standardisation and systematised processes as a way of preventing medication errors. The framework has a sequenced step-by-step process structure, and is generally accepted to be the gold standard for safe medication administration practice (Grissinger, 2002; McGovern, 1992; Pennsylvania Patient Safety Authority, 2005). Deviation from this framework is said to result in medication errors and adverse events that may affect patient care and jeopardise

patient safety (Giangrasso & Shrimpton, 2010; Henderson et al., 2005; McIntyre & Courey, 2007; Medication Services Queensland, 2009a; Pauly-O'Neill, 2009).

However, in practice, the complexity and unpredictability of the administration of medications are inherent in nursing work. The administration of medicines is embedded and entangled with many other nursing responsibilities, leading to competing demands for nursing attention and making the task more complex than just the accomplishment of medication administration according to the five rights framework (Elganzouri, Standish & Androwich, 2009; Folkmann & Rankin, 2010; W. Liu, Manias & Gerdtz, 2012; Sitterding, Ebright, Broome, Patterson & Wuchner, 2014). Organisational factors such as workload, staffing, supplies and interruptions can have a significant impact on nursing time and practice, adding to the challenges of medication administration and may contribute to errors in the form of procedural violations (Duxbury, Wright, Bradley et al., 2010; Keohane et al., 2008; McKeon, Fogarty & Hegney, 2006). This complexity makes medication administration a multi-layered task (Jennings, Sandelowski & Mark, 2011). For instance, an observation of 176 rural Australian nurses confirmed that medication administration is not as straightforward as suggested by the rights framework because it is rarely accomplished as a discrete task (Fogarty & McKeon, 2006; McKeon et al., 2006). It is argued that a step-by-step framework does not fit the demanding and chaotic environments of healthcare and ignores the interplay between the clinician, health system and patient. Thus, the rights framework is widely accepted globally for ensuring medication administration safety, but it ignores the unpredictable nature of nursing work (Jennings et al., 2011).

Errors can occur even if the nurse conscientiously applies the five rights framework, as seen in H. Cohen, Robinson and Mandrack's (2003) description of a case where a poorly written prescription that was misinterpreted and administered by a nurse in good faith, believing it to be a different, look-a-like medication. Although the nurse believed it to be the right medication, it was 'wrong according to the prescriber's intention' (Cohen, H. et al., 2003, p. 38). This demonstrates how the five rights framework does not acknowledge or allow for the impact of such human and organisational factors (Pennsylvania Patient Safety Authority, 2005).

Furthermore, the five rights framework is evolving (Pauly-O'Neill, 2009). Six rights are commonly listed but are not consistent among authors (Baeke, 2015; Cateora, 2013; Cook, M. C., 1999; Medication Services Queensland, 2009b). Seven (Australian Nursing Federation, 2007; Brotto & Rafferty, 2012; Pape, 2013; Rantucci, Stewart & Stewart, 2009), eight (Bonsall, 2014), nine (Elliott & Liu, 2010) and 10 rights (Berman & Snyder, 2012; Parker, 2012) have also been cited as necessary for safe medication administration. One author has even cited 12 rights (Broyles et al., 2013). Many authors have concluded that errors persist even after extension of the five rights framework (Elliott & Liu, 2010; FitzHenry et al., 2007; Hung, Lee, Tsai, Tseng & Chang, 2015; Wilson, D., & DiVito-Thomas, 2004).

These persistent errors noted at the time of medication administration are unacceptable because they potentially cause harm to patients; the problem is often addressed by developing guides for safe practice (Attree, Cooke & Wakefield, 2008; Manias & Bullock, 2002; Queensland Health, 2012c; WHO, 2014b). The rationale for the additions is usually to address perceived shortfalls (Baeke, 2015; Bonsall, 2014; Cook, M. C., 1999; Elliott & Liu, 2010; Pauly-O'Neill, 2009; Rushlow, 2003), such as the addition of the rights of the patient to refuse a medication as the sixth right for safe medication administration (Medication Services Queensland, 2009b), which is reflected in this study and attached as Appendix A.

There is little doubt that medication errors attract much attention in the literature. Errors in healthcare are harmful for patients and costly for health systems (WHO Collaborating Centre for Patient Safety Solutions, 2008). Being in a prime position to detect and report medication errors, nurses have an important role and responsibility (National Prescribing Service Limited, 2012). Consequently, nurses have reported feeling distress when involved with a medication error (Harding, L., & Petrick, 2008) and can experience physical symptoms of anxiety and psychological issues associated with shame and guilt (Dyal, 2005). Sometimes, this experience has led to nurses questioning their professional identity and competence (Collins, 2001).

Regardless of this personal impact, nurses generally accept responsibility for the consequences of errors and reflect on their experiences to provide researchers with ideas for management of practice problems (Schelbred & Nord, 2007). The resultant

recommendations to enhance medication administration practices have targeted practice problems, system deficits and procedural deviations. They come in the form of educational interventions (Banning, 2004; Bourbonnais & Caswell, 2014; Weeks, Hutton, Coben, Clochesy & Pontin, 2013; Young, Weeks & Hutton, 2013; Zahara-Such, 2013), introducing safety technology (Gerhart, O'Shea & Muller, 2013; Holden, Rivera-Rodriguez, Faye, Scanlon & Karsh, 2013; Huang & Gramopadhye, 2014; Iacovides et al., 2014) and adaptations of practice guides (Baeke, 2015; Bonsall, 2014; Cateora, 2013; Elliott & Liu, 2010; Kelly, T., Roper, Elsom & Gaskin, 2011; Kim & Bates, 2013).

While medication administration by RNs is commonly researched with risk mitigation being a central theme (Grissinger, 2002), few studies explore nursing practices of medication administration without an error focus and beyond the rights framework. Re-framing the practice of medication administration to identify learning opportunities not associated with errors has the potential to promote safety and a more positive learning culture (Gray & Williams, 2011). This study adopts a positively framed research approach in an attempt to offer fresh insights into medication administration. It is not a problem-based or error-focused study but rather draws on appreciative inquiry as both a theoretical framework and methodology to explore the real-life practice experiences of nurses who administer medications in an acute care setting.

1.3 Aim and objectives of the study

The broad aim of this study is to explore the practices developed by RNs to safely administer medications in complex and challenging acute care clinical settings. To achieve this aim, four objectives were developed as follows:

1. To explore the medication administration experiences of RN participants through observation of and discussion about their practice.
2. To describe and interpret the experiences of the participants.
3. To describe the strategies for safe medication administration used by the participants.

4. To understand the practice of medication administration from the perspective of the participants.

1.4 Significance of the study

There are a number of justifications for conducting this research of RNs' experiences of medication administration. First, this study examines existing gaps in the literature about medication administration by RNs. Second, it contributes to the research of nursing practice from a nursing discipline perspective. Third, it adopts a positive, strengths-based research approach to medication administration to highlight safe and effective practices. Finally, this study provides insight into the hidden contributions of nurses towards safe and effective person-centred care.

This research study examined the literature regarding medication administration, and found that most studies are problem-oriented and focus on identifying and reducing errors. Since the release of the Institute of Medicine report in America that cited medical errors as contributing to significant patient harm, risk aversion has governed many studies into health activities (Kohn, Corrigan & Donaldson, 2000). Medication errors, in particular, are recognised as a serious patient safety matter. For example, they are reported by the WHO (2010b), as one of the most urgent and emerging issues on the global patient safety agenda, as 75% of them are preventable and the multiple weaknesses within systems require ongoing investigation (p. 4). Yet, despite the sheer volume of studies focused on identifying and reducing medication errors, there have been limited improvements in the reported error rates (Elliott & Liu, 2010; FitzHenry et al., 2007; Hung et al., 2015). This study will provide an alternative perspective to add to the body of knowledge on this topic.

The majority of research about medication administration is conceptualised from within frameworks of biomedicine, law and management (Folkmann & Rankin, 2010; Gibson, 2001). The prevalence of this type of discourse represents an imbalance. In particular, the voice of nursing is often absent regarding nurses' practice and experiences of medication administration (Gibson, 2001). This study addresses this imbalance from the perspective of appreciating nursing practice.

Appreciative inquiry is a philosophy and methodology that seeks to understand the strengths and capacities of organisations (Cameron & McNaughtan, 2014; Cooperrider & Avital, 2004; Jones, R. S. P., 2010; Trajkovski, Schmied, Vickers & Jackson, 2013b; Whitney & Trosten-Bloom, 2003). Appreciative inquiry research does not deny that problems exist but prefers to illuminate positive practices for the advancement of knowledge and understanding. Acceptance of different research contexts and approaches is recommended for highlighting diversity and capacity in practice (Minichiello & Kottler, 2010). Appreciative inquiry is adopted in this study because it focuses on solutions that aim to maximise the practice of medication administration by nurses and promote safety and person-centred care.

This qualitative descriptive study makes a significant contribution to the existing research from biomedical and scientific perspectives because it gathers discipline-specific evidence from contemporary nursing practice (Thorne, 2008, 2014). This study meets an identified gap in the literature by adopting a less common approach to explore healthcare systems with a focus on the experience of nurses in medication administration, in line with the aim of the WHO (2010b). This study acknowledges that medication administration is a multidisciplinary process in which nurses typically occupy the final position before the patient receives the medication (Anthony, Wiencek, Bauer, Daly & Anthony, 2010). From this position, the participants of this study contribute valuable insights.

1.5 Overview of the theoretical framework

Appreciative inquiry was identified and developed by Cooperrider (1986) as an approach to exploring positive organisational behaviours. Borrowed from the discipline of positive psychology and using the principles of strengths-based inquiry, an appreciative inquiry seeks 'that which adds value' (Cooperrider, Whitney & Stavros, 2008, p. 40). Watkins and Moher (2001) describe it as a worldview and a practical process for guiding organisational development.

Appreciative inquiry is therefore considered an ideal means of liberating strengths in theory and practice when combined with inquiry for research purposes (Watkins & Mohr, 2001). It has been promoted as being useful at the philosophical (Lind & Smith, 2008), conceptual (Sidebotham, Fenwick, Rath & Gamble, 2015), theoretical (Kavanagh, P. M., 2010) and/or methodological (Carter, B., 2006) levels of inquiry. Since David L. Cooperrider (1986) developed the model of appreciative inquiry during action research with a group of health organisations to improve managerial practice, it has been applied in whole or part to broader contexts (see Chapter 3).

The flexibility and adaptability of appreciative inquiry lends itself to wide and varied research application. Recently, Ainley and Kline (2014) used it in their review of agricultural tourism studies to explore business impacts on family farms. In this example, appreciative inquiry generated further support for the use of reflexivity in this field (Ainley & Kline, 2014). Perlman, Ross and Lypson (2015) used it as a theoretical framework to identify strategies that might strengthen the relationships between physicians and their spouse, while Shuayb (2014) employed the appreciative inquiry cycle methodology in a mixed methods study to investigate the potential for promoting participatory change in three secondary schools undergoing educational reform in Lebanon. Shuayb (2014) concluded that appreciative inquiry is flexible, reflexive and adaptable, and its methods enabled participants to be proactive and research to be conducted without focusing on problems and challenges that may have prompted negative reactions from participants.

Appreciative inquiry is an emerging research framework in acute healthcare settings (Clarke et al., 2012; Havens, Wood & Leeman, 2006; Kavanagh, P. M., 2010; Kavanagh, T., Stevens, Seers, Sidani & Watt-Watson, 2008, 2010), public health programs (Hussein et al., 2014; Knibbs et al., 2012; Yoon, Lowe, Budgell & Steele, 2011), health organisational management (Schmidt & Dmytryk, 2014), reform (Sidebotham et al., 2015), community health (Lind & Smith, 2008) community engagement (F. M. Jackson et al., 2014) and aged care (Hirunwat, 2011; Reed, 2010). Appreciative inquiry also features in mental health research as it directly aligns with the strengths-based approach underpinning contemporary mental healthcare practices (Clossey, Mehnert & Silva, 2011; Gottlieb, 2013; Spence, Garrick & McKay, 2012).

Strengths-based approaches value participant stories shared as language and discourse to create a collaborative sense of reality (Gottlieb, 2013). Access to participant stories in appreciative inquiry is through positively structured qualitative interview questions (Carter, B., Cummings & Cooper, 2007). Subjective interactions like interviews are the primary data collection method because they are ideal for gaining access to the participant voice and developing a deeper understanding of the topic area (Minichiello, Aroni & Hays, 2008; Polit & Beck, 2010; Trajkovski, Schmied, Vickers & Jackson, 2013a). Such constructivist approaches have the power to add a new perspective that is different to the absolutist claims of most scientific and quantitative approaches (Cooperrider & Whitney, 1999).

Appreciative inquiry principles and core nursing values are philosophically congruent for making solution-focused, discipline-specific discoveries that are relevant to nursing practice (Knibbs et al., 2012; Thorne, 2008). Researching nursing practice in medication administration from this perspective provides a new, proactive view of practices and possibilities for person-centred care. The constructivist tenets underpinning appreciative inquiry are discussed further in Chapter 3.

1.6 Introduction to the methodology

Descriptive interpretive methods are used in this study, as their flexible nature fits nursing practices and are situated in the constructivist paradigm that includes appreciative inquiry (Thorne, 2008). They are also sensitive to the complex and changing environments where clinical practice exists and is created (Thorne, 2014). For these reasons, this study involves purposive recruitment of RNs who are working in adult acute care settings and are willing to have their practice observed and to participate in appreciative inquiry interviews. A reflective researcher journal is also kept, as this too aligns with the appreciative inquiry approaches to contribute to the collaborative interpretation of data for this study (Cooperrider, 1986).

Twenty RNs working in four clinical settings at a regional hospital in Queensland, Australia, volunteered to participate in this study. The data collection was multi-phased: first, observation of the RNs' practice of medication administration, which was recorded as field notes and researcher reflections; second, audio-taped interviews in which the participants described their experiences. A researcher journal was also kept throughout the study, enabling reflection and recall of the study activities and enhancing analytical proximity to the data (Smythe, Ironside, Sims, Swenson & Spence, 2008). This close and inclusive relationship strengthened the logical connection between the data analysis methods and the theoretical framework (Dowling, 2004). A detailed justification and description of the methodology, methods and underpinning philosophical framework is provided in Chapter 4.

1.7 Researcher profile and position

This study arose from my personal practice of recording my reflections on nursing practice. The inductive nature of the process, while not straightforward, is informative to this study. I have used a journal to record my personal experiences, thoughts, emotions and proposals for some years, as it helps to clarify my thoughts, discover new concepts, create better approaches, resolve problems and alleviate my anxieties or concerns. Therefore, it was a natural and valuable progression to continue to journal as I delved into my own and others' practice in this study. Researcher journaling on medication administration commenced in early 2010. It was at this time that a research question was conceived.

I commenced my nursing career in 1984 as an enrolled nurse (EN). Since then, I have gained experience in emergency, intensive care, coronary care, medical/surgical and rehabilitation nursing. I have been a nurse educator, clinical researcher, medical education officer and, for the past 10 years, a nurse academic.

In my academic role, I am a teacher and examiner of the *Medications: Theory and Practice* course that forms part of an undergraduate nursing degree program at a university in Queensland, Australia. The course includes theory and practice in simulated clinical settings. The theoretical content draws from current Australian

texts (McKenna & Lim, 2014b; Tiziani, 2010; Tollefson, 2012), nursing regulatory and advisory bodies (ANMC, 2006; Australian Nursing Federation, 2007; Commonwealth of Australia, 2002a; Queensland Health, 2011, 2012a; WHO, 2009b, 2015) and healthcare industry guides (Medication Services Queensland, 2009a; National Prescribing Service Limited, 2012; The Joanna Briggs Institute, 2009; WHO, 2010c, 2011).

The course begins by reinforcing the role, responsibilities and expectations of RNs in the safe handling and delivery of medications. Students are taught to decipher prescriptions and medication charts in a simulated ward environment, using equipment and documents that are identical to, or closely resemble, those used in Queensland's public health service. The course teaches the practical psychomotor skill of handling medications and the safe and efficient manipulation of equipment. The competency-based assessment of students during the last week of semester is by objective structured clinical examination (OSCE), using a purposefully designed competency tool that reflects the ANMC's (2006) national competencies for RNs similar to that designed by Tollefson (2012) and incorporating the six rights of safe medication administration (Medication Services Queensland, 2009a) used in Queensland's public health system.

The questions raised in this thesis developed after I witnessed a breakdown in the application of medication administration theory to practice by a student who had completed my course. I had gone to the local hospital, where, by chance, I became aware that a second-year nursing student had left medications on a patient's bedside trolley and walked away. This came to my attention when the medications were returned by the kitchen staff who had inadvertently removed them with the meal tray. I felt disappointed that the student had not followed the principles taught in the medications course, which specifically discussed the unsafe practice of leaving medications on a side table. I believed that my teaching focused on safe medication administration, using the latest information from texts and other resources, which stressed that failure to apply any of the rights framework is equal to a medication error and deemed unsafe (Giangrasso & Shrimpton, 2013; McKenna & Lim, 2014b; Reid-Searl, Dwyer, Moxham & Reid-Speirs, 2007).

Therefore, the fact that a student had left medications on a side table really bothered me. I felt somewhat responsible for the student's actions. I began to research nursing education practices to learn more about the linkages of theory to practice and improve my teaching. In the ensuing months, I reviewed numerous articles and manuals on medication administration. I soon noticed that the relevant discourse about nursing practice was distinctly negative and focused on blaming nurses and reporting poor practices. The five rights framework was commonly used as measurement criteria for safe practice, and deviations from it were quantified and identified as incidents and errors. I found myself wondering about the negative tone of the literature and the origins and efficacy of the five rights framework. I recalled how I had instantly labelled the student and the supervising RN as 'poor practitioners'. I had initially rejected alternative perspectives because of my overpowering concern that an error had occurred and my teaching had failed.

Understanding that research links theory, education and practice (Schneider, Z., 2013) I became inspired to improve my practice. However, I was concerned about the overwhelming error-focused research that framed the view of nursing practices, which I thought might impede the development of alternative theoretical, educational and practical perspectives. As my perspective changed, I wanted to learn more about the strengths of nursing practice rather than revisit the widely researched and reported deficits. What was striking was that for all the literature focusing on nurses' roles in errors, omissions and system failures, the rate of medication administration errors has not significantly improved.

As an experienced, reflective nurse who is mindful of her practice, passionate about teaching and striving to provide quality patient care, I am increasingly concerned that the dominant discourse may be limiting the evidence on which safe nursing practice is taught. A liberating moment presented itself when I realised that I do not always practice what I preach and yet I pride myself on being a good teacher and safe nurse. I questioned myself: How can I teach this framework for safe practice and expect others to adhere to it when I do not always adhere to it myself? How can it be that if I do not ask the patient to state their full name, that I have made an error, when I have already established a therapeutic relationship with that person and I know their identity? Moreover, how can it be my error when a patient does not receive their

medication on time because a prescription problem has resulted in a delay? Consequently, this study was conceived in the hope that exploration of new sources of evidence, as Kent and McCormack (2013) noted, will lead to a better understanding of the role of nurses in safe medication practice.

1.8 Key assumptions and scope of the study

Two key assumptions underpin this study. First, RNs are educated and authorised to administer medications as part of their daily nursing practice, and they engage in other activities that might affect medications administration. Therefore, this study focuses on medication administration practices and records field notes of other nursing practices to capture any factors affecting medication administration.

Second, the majority of the literature reviewed here links nursing practice of medication administration to the factors contributing to errors and ways to manage and reduce errors (Biron, Loiselle & Lavoie-Tremblay, 2009; Kim & Bates, 2013; Peterson, 2011; Runciman, Roughead, Semple & Adams, 2003; Tremblay, 2010). The dominant discourse is that good practice is error free and that this is achieved by adherence to the five rights framework (Giangrasso & Shrimpton, 2010, 2013; McGovern, 1988; Olsen et al., 2012). Based on Baker's (1997) finding that nurses quote the five rights when asked for the rules that govern medication administration, it was assumed that participants in the present study would merely describe these rights if asked directly about effective or positive medication administration practice. Therefore, the interview questions were deliberately indirect to draw out an individual's practices rather than the accepted truth advocated by the literature.

This study was also limited by the ability of the participants to be fully involved in action research. For example, the host hospital was undergoing ward-based process redevelopments concurrent to Phase 1 of this study (Chapter 4), which made implementation of the complete appreciative inquiry methodology cycle (Chapter 3) impossible. Therefore, congruent with the constructivist philosophy, the methodology was adapted to suit the context, and appreciative inquiry tenets remained intact throughout the study.

1.9 Definitions of terms

This section defines the key terms used throughout this thesis.

1.9.1 Registered nurse (RN)

In order to practice in Australia, RNs must have successfully completed an approved program of study and meet the necessary Nursing and Midwifery Board of Australia (2015b) registration standards. The RN education program in Australia is a minimum three-year Bachelor's degree from a higher education institution or, if registered prior to 1986, the equivalent from a recognised hospital-based program (Australian Institute of Health and Welfare, 2013). Australian RNs are regulated by the Australian Health Practitioner Regulation Authority (AHPRA, 2015) and licensed to practice within the scope of their registration.

1.9.2 Enrolled nurse (EN)

ENs usually work under the guidance of RNs to provide patients with basic nursing care (Australian Institute of Health and Welfare, 2013). Compared to RNs, their scope of practice is limited and they undertake less complex procedures because they are only educated to Diploma level (Australian Institute of Health and Welfare, 2013). ENs are authorised to administer medications once they have completed relevant education units in medicine administration; those who have not completed the necessary education have a notation on their registration that is published on the register of practitioners (Nursing and Midwifery Board of Australia, 2015a).

1.9.3 Medication administration

Giving a person a substance that changes their body chemistry (Deter, 2011) and/or modifies body function (McKenna & Lim, 2014b) is the simplest description of medication administration. However, the role of the RN extends to ensuring the specifics of the medication are recorded in a legally authorised prescription (McKenna & Lim, 2014b), having pharmacological knowledge of the medication

(McKenna & Lim, 2014a; Tiziani, 2010), being able to safely administer the medication and observing the patient for desirable and undesirable effects from it (Tiziani, 2010). In this study, medication administration is akin to medication management, as it is not simply a task but a process that requires critical thinking and clinical judgement. Therefore, it is understood to mean all aspects of the role and responsibility of the RN who issues medication to a patient (see Chapter 2).

1.9.4 National Inpatient Medication Chart (NIMC)

The National Inpatient Medication Chart (NIMC), which is frequently referenced throughout this thesis, is described in the NIMC user guide as an evidence-based 'standardised tool used in Australia for communicating patient medication information consistently between health professionals' (ACSQHC, 2009, p. 4). The tool's use is mandatory in Australian public and private health services and is proposed as assisting health professionals to be familiar with the standardised medication processes and safety principles on which it is based (ACSQHC, 2009). 'Because it is national standard, the NIMC is incorporated into health professional undergraduate curricula and into safe medication management competency frameworks and materials' (ACSQHC, 2009, p. 4).

1.9.5 Medication error

This study adopts the following definition for medication error from the American-based National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP, 2015, p. 1):

> A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing, order communication, product labelling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use.

The NCC MERP (2015) encourages researchers to use this comprehensive definition as a global standardisation. It has been adopted by the National Prescribing Service Limited (2009) in Australia.

1.9.6 The five rights

The five rights framework introduced earlier is a widely used phrase to describe a process for practice goals that ensures the right patient is receiving the right drug at the right time in the right dose and by the right route (ISMP, 2015).

1.9.7 The rights framework

Brotto and Rafferty (2012), Elliot and Liu (2010) and McGovern (1992) identify that the rights framework for safe medication administration no longer has exact boundaries. For the purposes of this study, the rights framework will refer to practice frameworks that list more than the five rights. As noted previously, the hospital hosting this study has adopted six rights for safe medication administration (Medication Services Queensland, 2009a).

1.10 Organisation of the thesis

This thesis is organised into seven chapters including this introductory chapter. Chapter 2 reviews the relevant literature, with a focus on nursing medication theory and practice literature in addition to related literature from a range of health-related disciplines such as medicine, pharmacy, law, health management, health education and health administration. The chapter discusses the role of the RN and expectations during medication administration, the educational foundations and professional practice of RNs, medication administration experiences reported by nurses worldwide and the published research on medication administration. It also highlights the limited studies that promote nursing practice strengths in this area.

Chapter 3 discusses the theoretical framework of appreciative inquiry that underpins this study, linking it to the research aim and objectives. It discusses the purpose of a theoretical framework and how appreciative inquiry enables affirmative practices to be discovered and promoted as proactive nursing practice strategies. The principles of appreciative inquiry are described and their application to the process is discussed. Nursing studies that have used appreciative inquiry are then discussed to demonstrate the flexibility of it as an approach to research. The choice of appreciative inquiry as a theoretical framework is then justified by demonstrating the alignment of the principles of it with the processes of qualitative descriptive interpretation discussed in Chapter 4.

Chapter 4 discusses the descriptive qualitative methodology used in this study. The epistemological and ontological assumptions are explained to demonstrate congruence of the qualitative methods with the theoretical framework of appreciative inquiry. This chapter describes the methods used to gather data through three phases of observation, interviews and researcher reflections. Finally the processes used to thematically analyse and present the findings are described.

The findings of this study are presented in Chapters 5 and 6. Chapter 5 analyses the observation data collected from the first phase of the study. The participants' practices were observed and noted using a structured observation tool that reflects the rights framework. Researcher field notes are included in this data set. Chapter 6 presents the findings from the semi-structured interview data as themes after analysis using an appreciative inquiry lens to examine the participants' positive practices. The findings from both chapters are linked in order to provide the fullest descriptions and clearest interpretations of the participants' experiences.

Chapter 7 discusses the fulfilment of the research aim. The relationship of the findings to the literature is reinforced with reference to the theoretical framework. Implications of the study are noted, recommendations are made to inform nursing policy and practice, and ideas for further research are proposed.

1.11 Chapter summary

This chapter provided the background and aims of this study, contextualising the study in relation to the current literature on medication administration. The significance of the study was highlighted by the unique approach of appreciative inquiry, which offers new insights to nursing practice. Appreciative inquiry was introduced as the theoretical framework. The qualitative methods used in this study were indicated as being congruent with the theoretical framework and appropriate to achieve the aim of this study. My profile and motivations in relation to the study were also discussed, followed by the study's limitations and assumptions. The key terms used and concepts discussed throughout this thesis were defined in this chapter. Finally, the organisation of the thesis was outlined.

2. Chapter 2: Literature review

2.1 Introduction

This chapter presents a critical review of literature on the nursing practice of medication administration. The review highlights the salient concepts arising from a broadly scoped exploration of health legislation, healthcare organisational guides and policies, nursing regulatory documents, nursing and pharmacology texts and research journal papers. The medication administration process is defined first to establish the boundaries of the phrase as it relates to this study. Next, the crucial role and significant responsibilities of RNs in safe medication administration are discussed, including the clinical decision making support resources required. The RN role in clinical communication is explored along with a discussion of the necessary teamwork required for checking that medication administration meets safety and legislative requirements. Then, the review includes the professional regulation of nursing internationally and the governance of medication administration activities. The discussion then focuses on the literature on the education of RNs to safely administer medications. Following that, a critical review of research findings from studies of medication administration theory as it is applied in practice uncovers issues, conflicts and tensions. Lastly, the medication administration experiences of nurses is discussed.

2.2 Literature review search strategy

To construct a broad overview of the medication administration experiences of nurses, numerous databases were searched using combinations and variations of the following search terms: medication, administration, nursing, regulation, education, safety, 5 rights, five rights, practice, drug, guidelines, effective, best. Full-text articles were retrieved from the following sources: Academic Search Complete, Australian Digital Thesis, CINAHL, Cochrane Library, DARE, Ebray, EBSCOhost MegaFILE Complete, EMBASE, ePrints, Informit Online, GALE Databases, JBI

COnNECT+, MEDLINE. Mosby's Nursing Consult, OVID medical journals, ProQuest, PsycInfo, PubMed, RCN Collection (Royal College of Nursing), SAGE journals, ScienceDirect, Scopus, SpringerLink, Trove, Web of Science and Wiley Online Library. Websites of healthcare authorities, nursing education providers and professional regulatory bodies in America, Australia, Canada, England and New Zealand were included in the literature search, as well as primary and relevant secondary sources.

A systematic approach to the review involved categorising the literature according to content foci. Synthesis and analysis of the groups of literature provided an overview of the breadth of the evidence (Davis, Drey & Gould, 2009). Citation details of each piece of literature were catalogued using EndNote X7^{TM} citation manager. Citations were managed in a data software program to assist thematic analysis of their content and inclusion in reflective writing (QSR International, 2010; Richards, 2009). As many relevant sources as possible were included despite age or locations of the research because a scoping review does not necessarily represent consistency in the type or the level of evidence but rather the range, depth and breadth of the concepts (Arksey & O'Malley, 2005). Systematic handling of all the literature enabled concept variations and gaps to be identified (Arksey & O'Malley, 2005).

2.3 Defining medication administration

A singular agreed definition of medication administration is not apparent from the literature. The phrase is sometimes used to mean an individual act and at other times a process involving multiple disciplines. To be clear about the scope of medication administration it is necessary to first define it. This section explores the phrase as it was encountered in the literature review.

Put simply, medication administration is described as one individual giving another individual a substance that will, in some way, alter the body chemistry of the recipient and lead to effects on the body (Deter, 2011, p. 109; McKenna & Mirkov, 2014, p. 1; Thomson et al., 2009). Managing the consequence of medication administration requires the giver to be competent in theoretical and practical aspects

of the transaction, and this competence is linked to professional attributes, patient characteristics and the context of practice (Sulosaari, Kajander, Hupli, Huupponen & Leino-Kilpi, 2012).

Terms found in the literature used to mean medication administration as it is described above are: medication administration process (Evans, 2009; Tian et al., 2014), medication management (Honey & Lim, 2008; Szczepura, Wild & Nelson, 2011), medication maintenance (Sulosaari et al., 2012) medication delivery (Sears, O'Brien-Pallas, Stevens & Murphy, 2013) and medication-use process (Cohen, H. et al., 2003; Schneider, P. J., et al., 2006). This list is indicative of the inconsistencies in the use of medication-related terms.

The terms used above are not isolated to describing a simple transaction between the giver and receiver of a medication. For example, Tian et al. (2014) use the phrase medication administration process to describe a sequence of steps that includes medication administration, and they name the action of the nurse as the last step of this process. Similarly, the ACSQHC (2011) includes medication administration as part of a medication management process, but does not specify what the phrase describes and the conditions under which it is carried out.

Clearly, the full gamut of medication administration is not isolated to the scope of one individual's practice. It is a process involving a chain or cyclical collaboration of healthcare professionals involved at different stages to decide on and deliver medication to a patient (Cook, M. C., 1999; Elliott & Liu, 2010; Fogarty & McKeon, 2006; Giangrasso & Shrimpton, 2013; Jones, S. W., 2009; McKeon et al., 2006; Olsen et al., 2012; Wilson, D., & DiVito-Thomas, 2004). Presented as an evolving multidisciplinary event (Schneider, P. J., et al., 2006), medication administration is a progression of interventions from when the doctor prescribes to when the pharmacist dispenses and finally the nurse administers the medication (Eisenhauer, Hurley & Dolan, 2007; Elliott & Liu, 2010). According to the WHO (2014b), the process should also include consumers because the patient has an integral role in contributing to their therapy by taking the medication.

Patients are increasingly involved in shared decision-making regarding their healthcare needs and are encouraged to become self-managers, such as providing healthcare professionals with updated histories and copies of records and informing them about the use of medications and alternative therapies (Sato & Senesac, 2007). However, this active role of the patient as the receiver of medication is not reflected in the literature that describes the process of medication administration. Medication administration is most commonly presented as a process involving only health professionals.

Consistent understanding and a universal standard operating procedure for safe practice is unlikely to be implemented when multiple interpretations of the same concept are possible. This lack of standardised terminology and the phenomenon of multiple interpretations for certain clinical concepts is recognised as a barrier to safe practice and is not isolated to medication administration (ACSQHC, 2013; Turner, 2005). For example, O'Shea (1999) found no consistent definition of medication in a review of the literature between 1982 and 1999, and suggested that useful definitions would facilitate interpretation and meaningful comparison of research results. Likewise, Turner (2005) reviewed the literature and found 43 different terms used to describe the concept of critical thinking. Confusion of concept definitions can lead to creative, innovative ways of practicing at best and chaos at worst. Dissatisfaction of professions with generic definitions and the subsequent search for more meaningful descriptions of clinical concepts is one explanation for the proliferation of terms and phrases for aspects of medication administration (Eisenhauer et al., 2007). Medication administration as constructed in the literature is an ill-defined chain of clinical events involving one or more health professionals and a patient for the purposes of initiating a medication-based therapy. Figure 2.1 depicts the roles and stages of the process identified from the literature review.
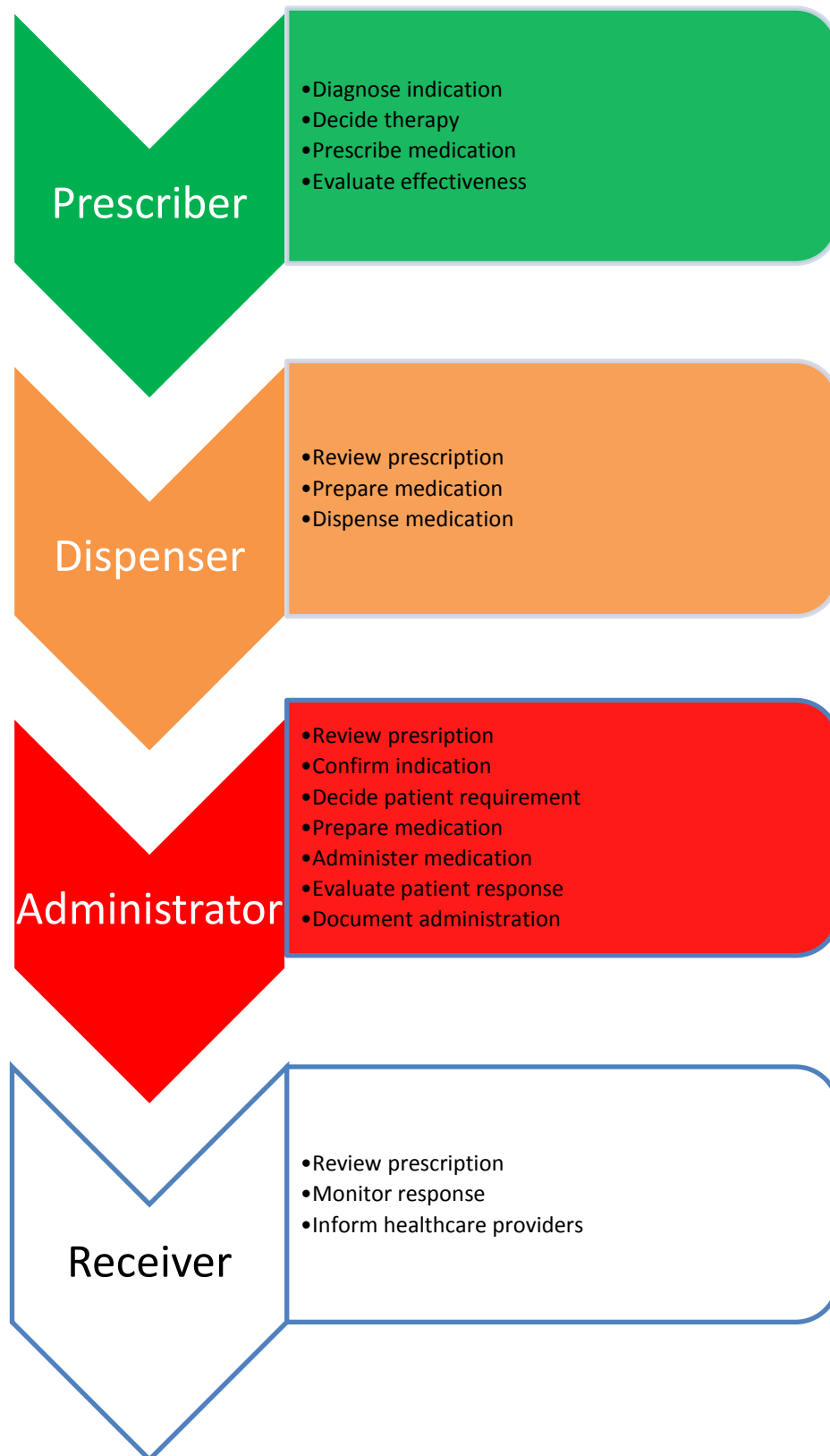
Prescriber
- Diagnose indication
- Decide therapy
- Prescribe medication
- Evaluate effectiveness

Dispenser
- Review prescription
- Prepare medication
- Dispense medication

Administrator
- Review presription
- Confirm indication
- Decide patient requirement
- Prepare medication
- Administer medication
- Evaluate patient response
- Document administration

Receiver
- Review prescription
- Monitor response
- Inform healthcare providers

Figure 2.1: The medication administration process

Source: Adapted from Elliott and Liu (2010), Giangrasso and Shrimpton (2013), National Prescribing Service Limited (2014), Sato & Senesac (2007), Tian et al. (2014), D. Wilson and DiVito-Thomas (2004) and WHO (2009b).

The term *medication administration* defined in Chapter 1 is limited to the role of the RN so that it aligns with the scope and aims of this study. The nurse's role is acknowledged in this study as extending beyond the act of simple administration to that of active monitoring and assessing the patient for the effect of and response to the medication (Elliott & Liu, 2010; Wilson, D., & DiVito-Thomas, 2004).

As the final healthcare professional in the aforementioned chain of events, the nurse holds the position of final checker and has the last opportunity, before the medication reaches the patient, to prevent potential errors or harm (Cook, M. C., 1999; Deans, 2005; Elliott & Liu, 2010; Evans, 2009; Jones, S. W., 2009; McKenna & Mirkov, 2014). The position of the nurse in the process is considered helpful, as one author describes medication administration as an activity that is 'prone to errors' (Chua, Tea & Rahman, 2009, p. 216). In this position, nurses are known to identify and intercept potential errors (Harding, L., & Petrick, 2008; Leape, 1999). In order to fulfil this expectation, nurses must understand the patients' medication history and apply clinical judgement in discerning the nature and seriousness of patients' response to a medication (McKenna & Lim, 2014a; Szczepura et al., 2011). Ultimately, the nurse is accountable for verifying the accuracy of each stage of the medication administration process (O'Shea, 1999; Schneider, P. J., et al., 2006).

Therefore, nurses go beyond accountability for their own actions to critically review the practices of other professionals who fulfil previous steps in the medication administration process. Nurses are in a position to prevent medication errors and must be fully aware of the risks in order to be effective in their role (Reid, 2006). In this 'gate-keeper' role, the nurse is pivotal to patient safety (Giangrasso & Shrimpton, 2010, 2013; Gibson, 2001; Olsen et al., 2012; Smeulers, Onderwater, van Zwieten & Vermeulen, 2014). In recognition of this role, the National Prescribing Service Limited (2012) describes the nurse as the 'eyes and ears of the healthcare team in monitoring for adverse effects and efficacy' (p. 18). However, this assumption leaves nurses vulnerable to criticism if they are seen as accountable for all medication errors (Roughead & Semple, 2008).

The National Patient Safety Agency (2009) of the British National Health Service identifies that the administration of medication increases the opportunities for errors more so than the prescribing and dispensing stages of the process. As the last link in the safe medication administration chain, the nurse is at risk of being the person identified as making the medication error (Dyal, 2005; ICN, 2009a; Schelbred & Nord, 2007). In addition, nurses are vulnerable to disciplinary action if an error is made, and they may fear retribution (Cohen, M.R., 2001). However, blaming an individual does not address the underlying risk factors (ICN, 2009a), or acknowledge that medication administration is a process made up of a number of stages that are susceptible to interruptions that may contribute to errors (Evans, 2009; Wang, Y.-S., Wu & Wang, 2009).

In their role, nurses are expected to detect errors occurring in previous steps of the process. For example, nearly 600 nurses were used in a longitudinal study conducted in an Australian metropolitan hospital to investigate nurses' abilities to identify medication risks in relation to their level of experience (Henderson et al., 2005). During the compulsory hospital orientation program, the participants were presented with six simulated error scenarios from a problem-based medication risk awareness program – after a four-minute roleplay by a facilitator, participants were given a further four minutes to review the NIMC to detect errors embedded in the scenario (Henderson et al., 2005). They were then questioned about their knowledge of the errors and any response strategy they would implement. Henderson et al. (2005) concluded that nurses frequently failed to detect errors.

However, Henderson et al.'s (2005) study had significant limitations. Ethical approval was not gained and despite the involvement of other healthcare professionals in the same orientation activity, the findings were limited to nurses. The study also lacked a theoretical framework that might have explained the focus on nurses' practice. Further, it implies that nurses are unreliable in detecting safety issues in the medication administration process, while simultaneously reinforcing the general expectation that nurses should identify and rectify the errors of others. The focus on patient safety in Henderson et al.'s (2005) study reflects the mostly negative tone in relation to medication errors detected in most of the literature reviewed here.

Patient safety is largely perceived as the nurse's responsibility (Biron, Lavoie-Tremblay & Loiselle, 2009; Cook, A., Hoas, Guttmannova & Joyner, 2004; Elliott & Liu, 2010; Hughes, R. G., 2008b; Jennings et al., 2011; Kelly, W. N., & Rucker, 2006; Kunac & Reith, 2005; Wetterneck et al., 2006). However, extraneous variables in the workplace and nursing workflow factors may increase the risks associated with medication administration, which is already recognised as a risky and complex activity (Biron, Lavoie-Tremblay et al., 2009; Wulff, Cummings, Marck & Yurtseven, 2011). In relation to their role, nurses have the unenviable task of managing medication administration processes within environments that are high risk, sometimes dangerous, unstable, non-standard and constantly changing (Brady et al., 2009).

In brief, the ISMP (2005) has identified medication administration as a high-risk process that features complexity, non-standard performance, rigid sequencing, time sensitivity, variable recipients, variable workers and cascading failures that are likely to jeopardise patients and staff safety. Each step in the process of medication administration is dependent on the achievement of the preceding step and the individuals involved often have differing levels of experience and knowledge (ISMP, 2005). The process is intolerant of delays and one small mistake can have a cascading effect on the rest of the process (ISMP, 2005). The nurses' role in relation to this complex process is the focus of the remainder of this chapter.

2.4 The RN's role in the quality use of medicines

This section explores the expectations on and experience of nurses in their quality use of medicines (QUM). QUM is the process of appropriate selection and management of medicines that are used safely and effectively (Commonwealth of Australia, 2015a). QUM is a central objective of the Australian national medicines policy that aims for positive health outcomes for all Australians (Commonwealth of Australia, 2015b). Evidence of errors in healthcare has placed patient safety at the forefront of public debate and the healthcare policy agenda (VanGeest & Cummins, 2003). The expectation for safe administration of medications is currently driving a worldwide trend in pharmacovigilance. This is noted and promoted by the WHO

(2014b) and the ACSQHC (2011), which endorse the activities of the National Prescribing Service Limited (2012) for leading medication quality programs. A report by Peter Garling (2008) responded to increased media concerns about errors in healthcare and recommended enhancing teamwork and technology to improve safety and quality public health services in New South Wales, Australia. The report findings also informed the Australian healthcare quality standards including Standard 4 on medication safety (ACSQHC, 2011).

As indicated by the national standards, the QUM involves all health professionals in monitoring medication safety and effectiveness through reconciliation and regular review of medication use (National Prescribing Service Limited, 2012). However, the QUM framework entrusts nurses to ensure safe management of medicines by following the organisational policies and guidelines, including storage, supply and administration of medications (McKenna & Mirkov, 2014). In particular, RNs are accountable for evaluating the effect of medicines, reviewing practice, monitoring medication errors and patient non-compliance, and reporting issues (National Prescribing Service Limited, 2012; NMC, 2010a; Queensland Government, 2009a).

Despite the understanding that the QUM is the responsibility of the organisation and its constituents, it is usually nurses who are seen as ultimately responsible and accountable for the safe delivery of medicine to patients (Commonwealth of Australia, 1999; Medication Services Queensland, 2009b; Queensland Government Environmental Health Unit, 2008). In their role, Australian RNs are identified as key partners for achieving the national QUM objective of using medicines safely and effectively (Commonwealth of Australia, 2002b). In order to fulfil the QUM role, the nurse needs to be able to understand the legal requirements, have adequate pharmacological knowledge, check dosages, safely administer the medications and fully assess the patient response (Berman & Snyder, 2012; Bonsall, 2014; Brotto & Rafferty, 2012; Broyles et al., 2013; Elliott & Liu, 2010; McKenna & Lim, 2014a; Parker, 2012; Tiziani, 2010). To effectively perform this role, nurses must have the skills and resources to communicate risks and escalate risk management when necessary, to mitigate the consequences of medication errors (NMC, 2010b; Sato & Senesac, 2007). Comprehensive clinical decision-making is reliant upon the nurse having the capacity and support to determine best action (O'Shea, 1999).

2.5 Clinical decision-making support for RNs

Practice support resources that can assist nurses to mitigate errors when administering medications can come in the form of hard-copy and electronic pharmacology guides, communication tools, policies and practice guides and medication delivery devices. For example, the NIMC (Appendix B) was endorsed for implementation throughout Australia in 2004 as a national safety initiative focused on addressing prescribing issues by standardising the primary clinical communication tool for ordering medication therapy (Commonwealth of Australia, 2009; Coombes et al., 2011). The NIMC had been previously piloted in Queensland. Following an intervention study conducted by Coombes et al. (2011), the tool was implemented nationally in 22 public hospitals. Specific prescribing errors were identified and quantified from baseline data and reviewed after six months of implementation. A significant (1/3) reduction in prescribing errors resulted in the NIMC being adopted Australia-wide (Coombes et al., 2011).

Since the national rollout of the NIMC, further studies have measured practice changes post implementation, such as D. S. Liu et al. (2012), who conducted a retrospective analysis to explore improvements in prescriptions for prophylactic venous thromboembolism (VTE) treatment. The NIMC was noted to result in a sustained increase – more than 12 months post-intervention – in VTE prophylaxis prescriptions, even though the incidence of VTE in this cohort of patients did not significantly change (D. S. Liu et al., 2012). Although this suggest that the NIMC implementation has made sustained improvements to prescribing practices, no research was found by this study on the experience of nurses working with the NIMC.

A full range of supportive resources is essential for nurses to make informed and evidence-based clinical decisions to meet their associated accountabilities for medication administration (O'Shea, 1999). So important is access to information that it is embedded as a national quality standard and safety requirement in Australia (ACSQHC, 2011). Nevertheless, the Standards from the ACSQHC (2011) do not specify a minimum requirement for the type or number of support services, or resources from which nurses can discern the evidence for practice.

The Monthly Index of Medical Specialties (MIMS) is an example of a primary source of current drug information that is used by a range of health professions, including nurses involved in prescribing, supplying and administering medication (MIMS Australia, 2015). However, in rural and remote settings access to this publication or other clinical resources is often limited, leaving nurses at a disadvantage for meeting the objective to safely administer medications (Fiore et al. 2005). Lack of access to clinical decision-making resources is problematic in other settings and a barrier to nursing students who are developing their pharmacology knowledge during their clinical placements (Honey & Lim, 2008; Lim & Honey, 2014; Lin, Wu, Lin & Lee, 2014). Aside from physical resources to support QUM, nurses are reliant upon effective relationships with healthcare professionals in order to facilitate safe and effective medication administration.

2.6 Clinician communication and teamwork

Effective communication between healthcare professionals is recognised as vital to establishing and fulfilling the QUM principles (National Prescribing Service Limited, 2012; Nursing Council of New Zealand, 2007). According to the ISMP (2005), poor communication increases the risk of medication error particularly when dysfunctional team dynamics affect the exchange of information about medication orders and other essential drug information. In addition, RNs in Australia supervise the practice of ENs (Australian Nursing Federation [Victorian Branch], 2010; Dempsey & Bowen-Withington, 2014, p. 66; Nursing and Midwifery Board of Australia, 2015a). The scope of EN practice is to assist the RN by performing delegated interventions that do not require complex decision-making, which can include medication administration (Dempsey & Bowen-Withington, 2014). The RN is, however, responsible for the delegation of medication administration tasks to the EN and ensuring that the EN is competent to administer medications and that relevant health service protocols are followed (Medication Services Queensland, 2009b). Further discussion of the EN's role is outside the scope of this review.

RNs also act as a communication conduit between the patient and other health professionals, and in this position they are required to have critical conversations about medication issues (Kelly, W. N., & Rucker, 2006). The tone of these conversations reflects the relationships between healthcare professionals. Establishment of professional relationships is influenced by the discipline, seniority, expertise or experiences that can sometimes result in dialogue tension known as an 'authority gradient', which impedes effective problem-solving and contributes to communication break-down and medication errors (Cosby & Croskerry, 2004). Nurses who feel disempowered in this environment by adversarial team dynamics or punitive systems are unlikely to raise prescribing errors (Chua, Tea et al., 2009; Henderson et al., 2005; Hughes, C. M., & Lapane, 2006; Petrova, Baldacchino & Camilleri, 2010). Therefore, a safety culture that acknowledges everyone's responsibility, promotes shared knowledge and emphasises teamwork is necessary to minimise risk (Chua, Tea et al., 2009; Cosby & Croskerry, 2004).

To this end, some organisations have implemented education programs to upskill clinicians in healthy communication and workplace relations to manage medication errors and other clinical risks (Erromed Pty Ltd, 2001; Lee, 2006; Queensland Government, 2010). Communication techniques to escalate patient safety threats feature in these types of programs (Commonwealth of Australia, 2004; Cosby & Croskerry, 2004). Interdisciplinary research and education are suggested as a means of improving health professionals' communication in medication administration practices. For example, a quasi-experimental study involving 28 nursing students enrolled in a diploma level nursing program in Pittsburgh, USA, found increased communication confidence and quality after engaging in simulations where students were exposed to medication problems where the resolution required contact with the medical officer (Campbell, 2013). Likewise in a qualitative study conducted in Liverpool, UK, 'real people' were introduced to healthcare students 'studying physiotherapy, medicine, occupational therapy, nursing and social work' in 'safe simulation environments', where students learned to apply the principles of patient-centred teamwork (H. Cooper & Spencer-Dawe, 2006, pp. 604–612). The study found that interprofessional education that uses simulated patients breaks down communication barriers between professionals and patients (H. Cooper & Spencer-Dawe, 2006). It used past service users to share real-life experiences with healthcare

teams for the students to learn to link theory and practice. The findings of both Cambpell (2013) and H. Cooper and Spencer-Dawe (2006) suggest that communication barriers are a concern for health professionals and for patient safety. Safety checks are an example of times during medication administration where clear and accurate communication is crucial.

2.7 Double checking medications

Additional checking or double checking of medication by two relevant healthcare professionals is recommended especially when high-risk medication such as intravenous or controlled drugs are used and when medications are administered to vulnerable populations, such as infants (Alsulami, Choonara & Conroy, 2014; Cohen, M.R., 1999; Dickinson, McCall, Twomey & James, 2010; Gatford & Phillips, 2011; Keers, Williams, Cooke & Ashcroft, 2013; McKenna & Lim, 2014a; McKenna & Mirkov, 2014; Queensland Government Environmental Health Unit, 2008; Ramasamy, Baysari, Lehnbom & Westbrook, 2013; Tiziani, 2010). In Australia, two nurses are required to reconcile the medication stock level and enter the count into a register. The Health (Drugs and Poisons) Regulation 1996 (Queensland Government, 2012) governs the processes surrounding the storage and supply of controlled substances with strict instructions regarding who can access and possess them. This results in organisational policies that require double checking of all controlled substances as the minimum standard of practice (Alsulami et al., 2014; deLange, 2013; Department of Health, 2012; Dickinson et al., 2010; NSW Government, 2013; Queensland Government, 2012).

2.8 Administering medications in rural contexts

Despite the governance regulations, double checking is sometimes difficult in rural contexts where skill mix and staff shortages are endemic (McKeon et al., 2006; Ramasamy et al., 2013; The Joanna Briggs Institute, 2000). Moreover, for RNs in rural and remote areas in Australia who often have the added responsibility of storing and supplying medications in the absence of pharmacists, QUM is complicated by the mismatch of legislation and guidelines to the realities of practice (Arkinstall,

2008; Fiore et al., 2005; McKeon et al., 2006; The Joanna Briggs Institute, 2000). For example, a survey that aimed to identify the needs of Australian rural nurses who supply medication found that the 42 respondents saw legal limitations for repackaging medications and a lack of access to supportive consumer information as barriers to safe practice (Fiore et al., 2005). Another rural Australian study that surveyed 39 RNs and ENs from 32 acute inpatient and outpatient services found that workforce shortages, increased workload, lack of education and training and lack of pharmacist support were confounding factors that had an impact on safe medication administration (Arkinstall, 2008).

To address limitations in rural settings, safety checklists are recommended to prevent adverse medication events when nurses supply medications in the absence of doctors and pharmacists (Fiore et al., 2005). Arkinstall's (2008) study recommended continuous, targeted competency-based education programs using multiple modes and flexible delivery as well as support through tele-pharmacy services and formalised preceptor relationships to support rural nurses to safely administer medications. One study that assessed medication safety infrastructure across nine critical-access hospitals in Florida, USA, implemented a health information technology system that was remotely supported by pharmacists and incorporated electronic medication prescribing and medication-related resources (Winterstein et al., 2006). Nevertheless, the lack of a second nurse to check the administration of controlled medications or to witness telephone orders remains a specific concern of rural nurses in their attempt to meet legal requirements (Fiore et al., 2005). Therefore, it is vital that the laws and guidelines intended to support and protect rural and remote RNs reflect the realities of their healthcare context (Fiore et al., 2005). As this study of the medication administration practices of RNs is conducted in a regional setting, it considers specific issues relevant to non-metropolitan practice.

2.9 Regulation of nursing practice for medication administration

Nursing practice is defined by the ICN (2013) as occurring within a legislative and regulatory framework that describes the knowledge, skills, judgement competencies, professional accountability and level of responsibility of nurses. The roles and scope of practice of RNs are also influenced by their education, experience and expertise and is bound within a context of care (ICN, 2013).

In Australia, nurses are licensed by the AHPRA (2015) for the provision, coordination and evaluation of nursing care in collaboration with others. The competency standards by which the practice of RNs is referenced detail professional, legal and ethical responsibilities (ANMC, 2006). The ANMC's (2006) national competency standards for RNs describe the individual attributes required to be demonstrated by people wanting to be authorised to practice nursing in Australia. In relation to medication administration, the competency domains include that RNs will practise in accordance with legislation and integrate organisational policies and guidelines to prevent harm (ANMC, 2006). The RN determines the priorities of care and is responsible and accountable for delegating duties to others (ANMC, 2006). To prioritise safety problems, the RN 'collaboratively identifies actual and potential health problems through accurate interpretation of data' and negotiates with other members of the healthcare team to 'apply relevant principles to ensure the safe administration of therapeutic substances' (ANMC, 2006, p. 12).

Formal regulation of nursing is seen in most developed countries and is a response to the risk of harm to people if nursing care is practiced by 'professionals who are unprepared or incompetent' (National Council of State Boards of Nursing [NCSBN], 2015). To remain licensed to practice, nurses are expected to be life-long learners who gain and maintain their standards of competence for safe and effective delivery of nursing care (ANMC, 2009; College and Association of Registered Nurses of Alberta [CARNA], 2013; NCSBN, 2007, 2015; NMC, 2010a; Nursing Council of New Zealand, 2007). Nurses are required to use contemporary best-practice evidence to guide their clinical decision-making (ANMC, 2006; CARNA, 2013; Levett-Jones,

2013). Nursing practice requires the nurse to be able to think critically and make decisions that meet patient needs for optimal health and well-being (NMC, 2010a).

In preparation to meet their practice requirements, nurses are specially prepared through education programs that are accredited by the licensing authorities. In Australia, ANMAC (2012), under the auspices of the Nursing and Midwifery Board of Australia, is the organisation authorised for accreditation of nursing education programs. The next section discusses the literature concerning nursing education, focusing on the preparation of nursing students to administer medications to patients in clinical practice.

2.10 Educational foundations of RN medication administration practice

Introduction to medication administration concepts and practices occurs within the pre-registration education program of nurses. Nursing education programs in developed countries are regulated to ensure the production of safe and competent practitioners (Sulosaari et al., 2012). The curricula of Australian nursing education programs are assessed against nine standards that address contemporary healthcare needs and research evidence to support student development towards work readiness (Ralph, Birks & Chapman, 2015). However, Ralph et al. (2015) suggested there is some way to go before evidence-based curriculum guidelines are available in Australia. Ralph et al. (2015, p.5) raised concerns that the appointment processes of ANMAC officers are 'consensual rather than authoritative' and suggested that officers are appointed for their willingness to fulfil the role rather than for meeting selection criteria to identify expertise in curriculum design or accreditation processes. The question of the basis of nursing curriculum development and discipline-specific evidence and expertise that guide it underpins the following critical evaluation of nursing education. As it is suggested that the foundation of nurses' knowledge contributes to forming their future practice, to meet the aims of this study, it is necessary to review nursing education from the perspective of what is taught about medication administration.

Since 1993, all nursing students in Australia have entered the profession through the university or higher education pathway (Commonwealth of Australia, 2015), but the curriculum content, academic systems and educational pedagogies used to educate nursing students for medication administration differ. While a systematic review of all nursing education programs is outside the scope of this study, a variation in approaches to teaching medication administration is noted. For example, while some programs have specific courses on nursing medication practice concepts (University of Southern Queensland, 2015), others deliver the concepts within pharmacology courses (CQUniversity, 2010; The University of Adelaide, 2015) or identify medication administration as part of practical courses (James Cook University, 2010; Queensland University of Technology, 2010, 2013; University of New England, 2013).

Obviously, no inferences can be made here about the different teaching approaches without a comprehensive review of all syllabuses. However, failure of curriculum content is noted in the literature as an impediment to safe practice (Santamaria, Norris, Clayton & Scott, 1997). For instance, soon after the complete transition to tertiary education for nurses in Australia, Santamaria et al. (1997) tested the drug calculation competence of 220 university graduate nurses and reported 58% of participants were unable to accurately calculate common drug doses. The participants were noted to struggle with metric conversion, use of formulae and estimations (Santamaria et al., 1997). However, no baseline data was available for comparison in relation to nurses who were educated using the hospital-based apprenticeship model of education.

Further to this study, gaps in nursing students' mathematical understanding have been the target of much research for many years (Coben & Weeks, 2014; Coyne, Needham & Rands, 2013; Koohestani & Baghcheghi, 2010; Macdonald, Weeks & Moseley, 2013; Pentin & Smith, 2006; Zahara-Such, 2013). One group of researchers discussed below has spent 20 years researching this topic and developed a computer-based education program for virtual authentic medication calculation to address conceptual gaps identified in nursing students' understanding of medication-related mathematics (Macdonald et al., 2013; Weeks, Clochesy et al., 2013; Weeks, Higginson, Clochesy & Coben, 2013; Weeks, Hutton, Coben et al., 2013; Weeks,

Hutton, Young et al., 2013). The program developed by Weeks, Hutton, Coben et al. (2013) is based on contextualised learning within a simulated environment. Consistent with other studies (Applin, Williams, Day & Buro, 2011; Astin, Newton, McKenna & Moore-Coulson, 2005; Creedy, Horsfall & Hand, 1992; Higginson, 2004), Weeks, Hutton, Coben et al. (2013) stress that traditional teacher-centred practices in the form of words and numbers such as those used in some texts perpetuate a theory practice gap by isolating the construction of medication dosage calculation knowledge from its application in clinical practice. Furthermore, a literature review by O'Shea (1999) found that conceptual errors contributed to mistakes in analysing mathematical problems leading to medication errors. In brief, abstract teaching of calculations could be associated with ineffective teaching of medication dosage calculations because some students may miss essential concepts that are made explicit in virtual authentic simulations (Weeks, Clochesy et al., 2013).

The benefits of authentic simulation teaching methods can extend beyond concept recognition and clinical skill development to enhancement of critical thinking. For example, a previously validated bioecological framework (Kek & Huijser, 2011) was adapted by Martyn et al. (2014) 'to explore to what extent individual and demographic characteristics, classroom environment, a PBL [problem-based learning] approach to teaching, and student approaches to learning are associated with critical thinking' (p. 3). Authentic clinical artefacts such as the NIMC were simulated and used as part of a PBL pedagogical approach to make relevant the student's learning experience and enhance their capacity for critical thinking (Martyn et al., 2014). Martyn et al. (2014) used a constructivist learning environment survey that was used in several earlier studies (Biggs, Kember & Leung, 2001; Kek & Huijser, 2011), with 218 first-year nursing student respondents. Using descriptive regression analysis, Martyn et al. (2014) showed a statistically significant link between the use of authentic learning resources in a PBL environment and the development of critical thinking.

Moreover, simulation is recommended as an effective pedagogy for exposing students to authentic experiences, enabling them to transfer medication theory to practice because it offers practice environments free of risks to actual patients (Harding, L., & Petrick, 2008; Pauly-O'Neill, 2009; Sears et al., 2010). As an

example, Sears et al. (2010) undertook an experimental study involving 54 novice nursing students to test the effective contribution of simulation-based education to the safe practice of new nurses. Thirty of the participants experienced a simulation activity prior to being placed in clinical practice. Sears et al. (2010) found that, when compared to the control group, the students in the experimental group were better able to identify risks and errors during clinical practice after being exposed to the simulated practice education environment. In essence, incorporating high-fidelity simulation and PBL as methods of teaching medication administration places the task into its complex context, which enables the connection between the theory and practice of medication safety (Harding, L., & Petrick, 2008).

While the benefits of simulation as an effective teaching method of medication skills are apparent in the literature (Sabin et al., 2013; Sears et al., 2010), questions are being raised about variation in undergraduate teaching techniques because varied learning outcomes are undesirable for the production of a competent nursing workforce (LaFond & Van Hulle Vincent, 2013; Wellard & Heggen, 2010). For example, Wellard and Heggen (2010a) conducted a cross-case analysis between two related studies in which faculty members from eight Australian-based and two Norwegian schools of nursing were interviewed about their simulation practices. The study found that the teachers were motivated and committed but the basis for their pedagogical approach was varied and influenced by personal curricula (Wellard & Heggen, 2010).

Additionally, theory-based research to inform the understanding of the outcomes of simulation in nursing education is limited, as noted by Rourke et al. (2010), who found that 45% of reports of empirical research from 1989–2009 made minimal use of theoretical frameworks. They concluded that results from studies reporting on the outcomes of simulation are 'piecemeal' and theory-based research in this domain would contribute to coherence and external validity (Rourke et al., 2010, p. 9). Furthermore, a critique of the National League of Nursing's simulation framework recommended adoption of empirically based definitions of the concepts related to simulation to strengthen the framework and help educators to construct and implement simulation experiences, which would affect more consistent student outcomes (LaFond & Van Hulle Vincent, 2013).

Despite the role of the accreditation authorities mentioned earlier with their governance of nursing education, medication curriculum content and assessments of nursing students' practice remain inconsistent. This lack of consensus within nursing education relating to medication administration could be detrimental to the future practice of nurses (Harding, L., & Petrick, 2008). For instance, in a survey completed by 239 nursing schools in America, Gonzales (2012, p. 48) found that there is 'no standardised method for assessing safe medication administration in nursing education'. Gonzales (2012) included the five rights framework to inform the design of the electronically distributed self-report survey and found that medication administration knowledge, skills and attitudes are assessed differently across courses and within programs and there are variations as to which professional discipline teaches pharmacology within nurse education programs. Some schools use scientists and others use nurses to teach the pharmacology theory, which left Gonzales (2012) to question the impact of non-nurses teaching nursing students.

The clinical settings, where application of theory to practice is meant to occur, also sometimes pose barriers to safe practice because of limited access to pharmacology resources (Honey & Lim, 2008). Honey and Lim (2008) distributed a short survey to 54 new graduate nurses in New Zealand and asked for their reflective descriptions of where pharmacology knowledge had been used in relation to the pharmacology course the students had completed in their nursing education program. The respondents were then asked about barriers to using their pharmacology knowledge while on clinical placement (Honey & Lim, 2008). Medication management including administration was indicated to be an everyday encounter (37%) and, along with patient education (22%), was mostly reported as the time when pharmacology knowledge was used (Honey & Lim, 2008). Barriers to the use of pharmacology knowledge included a lack of accessible resources (9%) and lack of time to practice (31%) (Honey & Lim, 2008, p. 15). Furthermore, limitations on preceptors' time for teaching and negative attitudes of clinicians towards pharmacology theory were reported as hindrances to student learning (Honey & Lim, 2008). Significantly, any limitation to adequate role modelling in hospitals is a problem because clinical placements are where clinical decision-making is applied and practiced, and positive

role models are crucial because mimicry is an important feature of learning (Croskerry et al., 2004).

A mixed method study conducted in Australia to explore nursing students' perceptions of the transfer of theory to practice found that while experienced informed preceptors instructed students to follow the theory they were taught, in reality other practices were modelled that did not reflect what the students were taught (Maginnis & Croxon, 2010). The study included surveys and interviews with nine first-year nursing students to determine the extent to which clinical theory learned in simulated practice classes was helpful in rural clinical patient settings (Maginnis & Croxon, 2010). Student participants in the study reported a strong association between the laboratory-taught clinical skills and the practices in the clinical settings, but they also highlighted the dissonance between the academic ideal and 'genuine' clinical practice (Maginnis & Croxon, 2010, p. 2).

In summary, this review of nursing regulation and education identifies a consistent message from the international licensing authorities that nurses are accountable for QUM and are required to have the knowledge, skills and professional attributes to ensure fulfilment of safe and effective healthcare to patients. Additionally, nursing education providers are required to design and deliver curricula to enable individuals to develop the competencies required of the profession, but there are variations and inconsistencies in the methods used to achieve these goals.

The next section of this literature review looks more closely at the practical aspects of theory applied to practice. In particular, the five rights framework for safe medication administration is discussed and critiqued.

2.11 The five rights for safe medication administration

The five rights framework features in most nursing education programs (deLange, 2013) and many of the prescribed texts and resources used to teach medication administration include it as the basis for safe practice (Brotto, 2013; Giangrasso & Shrimpton, 2010, 2013; McKenna & Lim 2014b; Medication Services Queensland,

2009a; Olsen et al., 2012; Reid-Searl et al., 2007; Tiziani, 2010; Wulff et al., 2011). The five rights are generally regarded as the standard for safe medication practices and it is likely that most healthcare professionals, especially nurses, have learned about them in their education program and practice settings (ISMP, 2015). The five rights framework forms part of the move to standardise medication management procedure to ensure patient safety (ACSQHC, 2010), but its lack of consistency of the framework and limitations in its implementation will become apparent throughout this chapter, and discrepancies in the number and names of the rights will be highlighted. For example, the five rights framework adopted by Queensland public hospitals, which is used in the present study, includes a sixth right known as the right to refuse (Medication Services Queensland, 2009b).

As a framework to check for accuracy during medication administration, the five rights are useful, but they are also problematic because they focus on the responsibility of the person who administers the medication, and are presented as a linear process (Cohen, M.R., 1999). Researchers generally attribute medication administration failures to a violation of the five rights framework (Giangrasso & Shrimpton, 2010; Grissinger, 2002; ISMP, 2015; McKenna & Lim, 2014b).

As mentioned, the five rights framework underpins nursing education and practice in relation to medication administration. Adherence to the framework as the standard operating procedure is believed to improve nursing practice and result in fewer errors (Schneider, P. J., et al., 2006; VanGeest & Cummins, 2003). According to P. J. Schneider et al. (2006), standard operating procedures, ongoing education and reinforcement are key elements to a highly reliable medication administration system. After conducting a two-phased randomised control trial education intervention study in three hospitals with 30 RNs and ENs, P. J. Schneider et al. (2006) found that, adherence to procedures was increased in the participant intervention group who engaged in a computer-based interactive education program, but the error rate also increased. P. J. Schneider et al. (2006) explained that this result arose from the diversion of participant attention to a specific aspect of practice after their knowledge had been reinforced by the education intervention. These results came from four hours of participant observation and logistic regression analysis to find a relationship between the opportunity for error and procedural practice. P. J. Schneider et al.

(2006) do not describe the hospital medication administration procedure or provide the observation tool. However, the five rights framework is reflected in the data tables showing the statistically derived findings. Therefore, it is assumed that the five rights were used in this study as a measurement for determining when errors occurred. Given these results and despite the fact that error rates in their study were increased, Schneider, P. J., et al. (2006) recommend adherence to standard operating procedures which raises questions of the fittingness of the five rights framework to nursing practice.

In addition to the five rights framework, the three checks are also often mentioned as the basic steps of procedural practice for medication administration by nurses (Dempsey & Bowen-Withington, 2014; Giangrasso & Shrimpton, 2013). The three checks is a process for ensuring that the correct medication is administered. In early nursing publications this is described as reading the medication label three times: (1) before taking the medication from the shelf, (2) before dispensing medication from the bottle and (3) after returning it to the shelf (Doherty, Sirl & Ring, 1950). More recent nursing texts describe the process as checking the label when the medication is sourced, then before dispensing the medication from its package, and again before giving it to the patient (Didona, 2010; Doherty et al., 1950; Gonzales, 2012; McKenna & Lim, 2014b; Parker, 2012; W. B. Smith & Lew, 1982). Still used today, the three checks in combination with the five rights framework are meant to ensure that the nurse safely administers medications (McKenna & Lim, 2014b).

Despite the view of the five rights framework as the gold standard for medication administration practice and recommendations to standardise processes to ensure safe practice, the framework has often been adapted to address perceived shortfalls in its application for the medication administration process. The following sections explore the five rights framework, as well as a sixth right that is specific to the location of this study – the '6 rights for safe medication administration' adopted in the Queensland public health sector (Medication Services Queensland, 2009a).

2.11.1 The right patient

The ACSQHC (2011) has national standards for correct patient identification, stating that it is necessary to confirm 'at least three of the approved patient identifiers when providing care, therapy or services' (p. 40). The nurse can question the patient, check the core identifiers on the patient wristband, check the details on the NIMC (Medication Services Queensland, 2009a; Queensland Health, 2012b), and in some clinical settings confirm the patients' identity by checking their photograph (Kelly, T., et al., 2011; Pountney, 2010). Identification of the right patient is considered to be completed once the patient details are confirmed by these means to be consistent with those on the medication chart. However, the wearing of identification bands in certain patient populations is internationally inconsistent, such as in mental health or aged care settings (Dawson, 2014; Duxbury, Wright, Bradley & Barnes, 2010; Haw, Stubbs & Dickens, 2015; Koppel, Wetterneck, Telles & Karsh, 2008; Pennsylvania Patient Safety Authority, 2005; Xia, Wang, Ding, Kang & Liu, 2012).

The failure rate of nurses to correctly identify the patient by the methods above is reportedly high. For example, Kim and Bates (2013) observed nurses in a large Korean hospital and found 94% of the participants did not check the patient identification band and 97% did not confirm the patients' identification by questioning. Kim and Bates (2013) deduced that this high percentage was due to the nurses thinking that they were already familiar with the patient. However, the design of this study did not detail participant interviews as a part of the research so the basis for this conclusion is unclear.

In another study of identification processes, T. Kelly et al. (2011) conducted focus groups with nurses and patients in mental health settings, and found that the recommended identification processes were impossible to fulfil because most of the patients in the facilities were not routinely provided with wristband identifications. Instead, the participants used interpersonal approaches and conversations with patients to check their identification. The patients agreed with the nurse participants that conversations were 'a good way to double check that they were administering medication to the right patient' (Kelly, T., et al., 2011, p. 376). Furthermore, the

patients advocated for improved consumer engagement to assist safer, more timely delivery of their medications by highlighting the therapeutic nurse-patient encounter as a method for verifying patient identity (Kelly, T., et al., 2011). These recommendations are supported by international studies that have suggested greater emphasis on the active role that the patient has in their own identification and information sharing for the purpose of medication administration and reducing errors (Campbell, 2013; Duxbury, Wright, Bradley et al., 2010; Duxbury, Wright, Hart et al., 2010; Sato & Senesac, 2007). Including the patient in the medication administration process is endorsed by the WHO (2009a) as best practice.

2.11.2 The right medication

Medicines are drugs containing chemicals and a sound knowledge of pharmacology is important to administering medications as a part of safe nursing practice (Ogston-Tuck, 2011, p. 106). RNs are not legally qualified to prescribe medications, as this is the domain of doctors or authorised nurse practitioners. However, nurses are expected to check that prescriptions are legally valid and, after reviewing patient assessment data, to ensure the right drug and dose have been ordered (Elliott & Liu, 2010). As already discussed, various checks are required to confirm the medication is correct: cross checking the medication name on the NIMC with the medication package, checking the expiry date, ensuring that the indication for the order meets the patient needs and that the medication has been stored correctly, and checking that the formulation of the medication is correct (Medication Services Queensland, 2009a). Illegible and incomplete prescriptions have been identified as a major impediment to practice (Petrova et al., 2010; Wetterneck et al., 2006). Inadequate prescribing, combined with the proliferation of new medications with confusing labels (Kelly, W. N., & Rucker, 2006; Schimmel, Becker, van den Bout, Taxis & van den Bemt, 2011) patient polypharmacy (Kelly, W. N., & Rucker, 2006; Szczepura et al., 2011) and technological advances in healthcare, makes ensuring the right medication even more challenging for nurses (Elganzouri et al., 2009; Schneider, P. J., et al., 2006; Tang, Sheu, Yu, Wei & Chen, 2007; Winterstein et al., 2006).

The problem of inadequate labelling as a major contributing factor to the wrong medications being administered is well recognised (NSW Therapeutic Advisory Group, 2013). Likewise, a phenomenon known as *confirmation bias* is a human factor that occurs when important information such as the medication label is misperceived at that time of administration (ISMP, 2015). These concerns and others related to medication labelling were reported in a survey of 244 RNs in 15 adult inpatient units in the United Kingdom, where more than half the respondents said that medication packaging and labelling contributed to errors (Fry & Dacey, 2007). Pharmacy-dispensed large print medication labels were suggested as an inexpensive and practical strengths-based solution to the problem (Fry & Dacey, 2007). However, there is no evidence from Australia of similar moves.

Medication labelling taskforces have been established in the USA to address the problems mentioned above. For example, the not-for-profit advisory body Med-ERRS (2015) was established in 1997 to help the pharmacy industry develop trademarks, packaging and labels that minimise the potential for medication errors related to misinterpretation. Since then, Med-ERRS (2015) has worked with over 200 pharmaceutical companies to support safety-focused decisions during medication manufacture. Failure Mode and Effects Analysis (FMEA) is used to prevent potential errors from look-alike and sound-alike medication confusion at the point of administration (Med-ERRS, 2015).

The proliferation of medications in contemporary healthcare requires nurses to extend their knowledge and skills in order to safely administer the right medications (Evans, 2009). Nursing workload is also being affected by patient polypharmacy and the complexity of ensuring the right medication (Schneider, P. J., et al., 2006). Compounding the complexity of medication administration is a work environment in which workflow fragmentation, rapid task changes and multitasking are common (Westbrook, Duffield, Ling & Creswick, 2011). In a prospective observational study of nearly 200 nursing hours, 21% of nurses' time was recorded as being taken up with medication tasks – interruptions during medication activities were observed in 27% of the cases and multitasking was noted during 25% of the medication task time (Westbrook et al., 2011). Such studies reinforce the challenges nurses face in focusing all their attention on medication administration tasks.

The introduction of technology in clinical environments also affects practice to ensure right medication. Technology is promoted as helping to reduce medication prescription mistakes and facilitating the administration of the right medication (Drach-Zahavy et al., 2014; Huang & Gramopadhye, 2014; Tian et al., 2014; Wetterneck et al., 2006). At a residential aged care facility, D. Cooper (2007) found that the implementation of computer-generated medication charts resulted in zero medication errors from illegible prescriptions. The software program featured in-built warnings for prescribers of drug/drug interactions, patient drug allergy and drug compliance issues (D. Cooper, 2007). However, some studies have found that the use of computers actually increases the difficulty and complexity of nurses' work due to the cognitive load involved (Holden et al., 2013), limited access (Koppel et al., 2008) and system down-time (Tian et al., 2014)

In brief, studies have identified that obtaining and verifying the right medications consume most of the medication task time for nurses because of issues of access and supply (Keohane et al., 2008). Finally, because ensuring the right medication and verifying the dose can take time, the nurse is likely to be interrupted, adding to the complexity of the task (Keohane et al., 2008).

2.11.3 The right dose

Once the right medication is confirmed, the next step is to correctly calculate and prepare the dose. The right dose is dependent on the potency of the medication, the route and frequency of administration and patient particulars such as weight and renal function (McKenna & Mirkov, 2014; Medication Services Queensland, 2009a). Additionally, according to the rights framework used in this study, the dose must be questioned if multiple units (more than five tablets) are required (Medication Services Queensland, 2009a).

Young et al. (2013) stress the obligations of all healthcare professionals to take utmost care when calculating drug doses. However, this is difficult considering the variety of mathematical methods in medication calculation texts. For example, some purport the use of ratio and proportion methods (deLange, 2013; Didona, 2010;

Giangrasso & Shrimpton, 2010) and others the multi-method dosage formula (Giangrasso & Shrimpton, 2013), and some recommend the dimensional analysis method (Olsen et al., 2012). Didona (2010) points out that the nurse must first know the equivalents in ratio and proportion to correctly solve the unknown variable. The dosage method is generally explained as three common standardised formulae to calculate solids, liquids and rates (Didona, 2010).

The complexity of these mathematical concepts is often associated with medication errors related to incorrect dose, and numeracy skills of nurses are a specific aspect of medication administration practice gaining attention in the literature (Coben & Weeks, 2014; Hillman, Stolic & West, 2012). There is no doubt that calculation competency is a requirement of safe practice, but the extent to which errors can be attributed to incorrect calculation is questionable. A review of nursing research literature from 1999 to 2009 revealed insufficient evidence for this because none of the 33 studies reviewed specifically examined medication calculation errors in practice (Wright, 2010). The studies found evidence of wrong doses, defined as a discrepancy between the dose prescribed and the dose administered, but could not always link the error to a miscalculation (Wright, 2010). For example, as IV bolus medication administration rates are not specified in the prescription but are a manufacturer's recommendation, the wrong administration rate for these medications is related to 'non-adherence to medication administration guidelines' rather than the result of miscalculation (Wright, 2010, p. 91). Variations in wrong dose or wrong administration rate definitions among the studies explored by Wright (2010) make it difficult to ascertain the actual cause of the medication error and impossible to determine the role of miscalculation in the error.

In addition, Wolf, Hicks and Serembus (2006) examined medication errors by nursing students and found deficits in their knowledge and performance; while incorrect doses were observed, the calculations used to arrive at the dosages were not explored. An earlier study found numeracy deficits to be an issue for beginning RNs and recommended that this skills deficit be addressed in undergraduate nursing curricula (Cartwright, 1996). While calculation competency is essential and dosage errors remain a problem, the combined exploration of both is limited. Meanwhile,

education providers are charged with rectifying what appears as a curriculum deficit but, as previously discussed, teaching methods are inconsistent.

2.11.4 The right route

Determining the right route of administration and recording it correctly is considered a critical part of safe medication administration (Commonwealth of Australia, 2009). The prescriber determines the route of administration, but nurses can request a change in the order following an assessment of patient needs to facilitate efficiency and comfort (McKenna & Lim, 2014b). However, the practice guides for public-sector hospitals in Queensland, Australia, states that the nurse must ensure the drug is administered by the route ordered, which constrains the nurse's clinical judgement in terms of the most suitable route to meet the patients' needs (Medication Services Queensland, 2009a).

Determining the most suitable route for a medication requires in-depth knowledge aspects such as the medication and patient specifics (McKenna & Lim, 2014b). In a univariate and multivariate logical regression analysis of 430 medication administration errors collected from 1501 disguised observations of 28 nurses, is was found that the route of administration is associated with errors in other aspects of the medication process (Berdot et al., 2012). In particular, Berdot et al. (2012) found that the intravenous administration route was positively correlated to incidence of error and supports findings from previous studies that the intravenous route is more complex and risky (Chua, Chua & Omar, 2009; Chua, Tea et al., 2009). In addition, Pauly-O'Neill (2009) found that, even when the intravenous route is correctly accessed and the five rights are confirmed, a medication error can still result if the rate of delivery or dilution of the medication is incorrect. The study included information about intravenous rate, drug recognition, dose calculation and intravenous equipment, reinforcing the use of the five rights framework to measure the practice of the participating students and recommending the inclusion in the framework of a greater focus on dilution and rate of intravenous medications (Pauly-O'Neill, 2009, p. e184).

2.11.5 The right time

The frequency and timing of medication administration is important in ensuring the intended therapeutic effect of the drug (Adams, 2010; Broyles et al., 2013; Elliott & Liu, 2010; McKenna & Lim, 2014b). The administration time must also coincide appropriately with the ingestion of other medications and foods (Medication Services Queensland, 2009a). The rights framework from Medication Services Queensland (2009a) instructs nurses to ensure that administration occurs at the correct time of day and that it correlates with the prescribed medication frequency. This framework requires the person administering to 'ensure that the time/s for administration are written by the prescriber and correlate with frequency ordered' (Medication Services Queensland, 2009a). Didona (2010) places the onus on the nurse who is administering the medication to determine whether it is being administered at the right time, but also says the nurse must first follow health service policy and the prescriber's instructions. Such contradictory instructions provide limited guidance for practice but highlight the importance of clinical judgement to nursing practice.

In another study, the findings from observations of medication administration were that practical and system factors can influence the actual time of administration (Elliott & Liu, 2010). Likewise, in a more recent study by Kim and Bates (2013), 293 nursing medication activities were observed for correct time adherence, and it was deduced that workload and workflow factors influenced timely delivery of medications in 59% of cases because synchronised medication administration times make it physically impossible to administer medications to multiple patients at a single time. In addition, the NIMC used in Australia is designed in such a way that multiple medications with varying complexities of preparation requirements are often all prescribed for concurrent administration (ACSQHC, 2014b). Furthermore, a qualitative study conducted in a UK mental health unit included interviews with 24 nurses and 57 patients and found that factors such as patient availability, prescription legibility, medication dosage accuracy and inconsistencies, and competing patient needs were all barriers to timely administration (Duxbury, Wright, Bradley et al., 2010). The participants in this study 'felt torn between attending the individual's needs and completing the medication round in a timely fashion' (Duxbury, Wright, Bradley et al., 2010, p. 56).

Undoubtedly, organisational and environmental factors play a significant role in the timing of medication administration. In a large American-based study, the medication administration process workflow of 151 medical/surgical nurses was observed at three sites and 980 unique medication administrations were recorded, noting time on task, distance travelled in steps and interruptions to the process (Elganzouri et al., 2009). The study identified that prolonged medication administration time relates to delays in the process due to 'bottlenecks' and queueing at storage areas, lack of stock supply, time to retrieve medications and limited access to secured medications (Elganzouri et al., 2009).

Clearly, what constitutes the correct time for medication administration is a debated issue. There is some consensus that half an hour from the time of the prescription is on-time administration for regular medications and provides reasonable leeway to accommodate other work demands (Broyles et al., 2013; Bullock, Manias & Galbraith, 2007; McKenna & Lim, 2014b; Parker, 2012). A disguised observation study by Baker and McConnell (1962) of medication administration conducted more than four decades ago reported a rate of 10% time deviations as medication errors. However, it is unclear what time parameter Baker and McConnell (1962) used because they describe both 30-minute and 60-minute deviations as 'early or late' for determining when an administration time error has been observed. Despite this difference in scale, the study concluded that disguised observation of nurses was the best method 'for estimating the total number of medication errors occurring in hospital' and extrapolated the results to approximate the frequency of errors per number of medications given, arriving at the figure of 18% or one error made in every six medications administered (Baker & McConnell, 1962, p. 364). It is interesting to note that little has changed since this study was conducted.

In a more recent study, Schimmel et al. (2011) used 'at least 60 minutes early/late' as the measurement for determining incorrect time administration in a prospective disguised observational study conducted in an orthopaedic ward in the Netherlands. Medication administration time errors were reduced after the introduction of changes to the medication cart filling process for 86 patients involved in this study (Schimmel et al., 2011). Like Baker and McConnell's (1962) study, it highlights the lack of consistency and accuracy in reporting medication error rates. It is apparent that such

inconsistencies have been evident for some time, making comparison of error rates difficult. The significance of these findings is explored later in section 2.15.

2.11.6 The right to refuse

Public hospitals in Queensland have adapted the five rights framework to include a sixth right, the 'right to refuse', which indicates that patients should be offered the right to refuse medication unless they have documented impaired capacity (Medication Services Queensland, 2009a, 2009b). In the case where a medication is refused by the patient, the NIMC guidelines instruct the nurse to notate the chart, advise the prescriber and document the reason for refusal in the patient file (ACSQHC, 2014b; Commonwealth of Australia, 2009).

Nurses can also exercise their right to refuse to administer a medication if there are concerns regarding the prescription or the medication, if the order is unclear or if the nurse has scope of practice limitations (Commonwealth of Australia, 2009; Medication Services Queensland, 2009a). For example, as discussed earlier, nurses are required to identify dosage issues and consult with prescribers to question unsafe dosages. Graded assertiveness is a communication process encouraged in Queensland hospitals to address issues of unsafe practice where conflict between clinicians is evident (Lee, 2006). In the case where the nurse refuses to administer a medication because the dose written on the NIMC is unsafe and the prescriber disagrees, it is suggested that the nurse include the phrase, 'for the safety of the patient', as the reason for the refusal to indicate the seriousness of the situation to the prescriber and the strong intention not to follow the medication order (Lee, 2006). In this case, the nurse is guided to refuse to administer the unsafe dose, notate the NIMC of this action and escalate the incident through to supervisors (Lee, 2006).

2.12 Critique of the five rights framework

Regardless of the fact that the five rights framework is touted as a failsafe mechanism to ensure safe practice (Brotto & Rafferty, 2012; Giangrasso & Shrimpton, 2010, 2013; Olsen et al., 2012), it is evident that it falls short of this goal, as error rates have not been substantially reduced over the past four decades. In light of this, these rights should be regarded as aims or aspirational goal of medication practice rather than the 'be-all and end-all' of behavioural indicators of medication safety (Cohen, H., et al., 2003; Grissinger, 2002; ISMP, 2004; Schoenecker, 2007; Smetzer, 2001; Pennsylvania Patient Safety Authority, 2005). This review has already established that while nurses are accountable for following organisational protocols, there are factors that influence adherence to the five rights frameworks that are beyond the individual's control (Grissinger, 2002; ISMP, 2007). In addition, the framework 'fails to acknowledge the complexities of the system…creating a false assumption that medication administration is a simple task' (Henderson et al., 2005, p. 193).

The five rights framework and it's various adaptations is impractical as the standalone gold standard and offers limited procedural advice, discounting the significance of human factors (Pennsylvania Patient Safety Authority, 2005). In a survey commissioned by the ISMP, H. Cohen et al. (2003) examined the attitudes and experiences of 775 American nurses regarding medication administration and error reporting, and found that 79% of the respondents believed that most medication errors occur when nurses 'carelessly neglect to follow the five rights' (p. 36). However, H. Cohen et al. (2003) suggest that despite the conscientious efforts of the nurse, an error may occur due to external forces and barriers in workplaces. For example, a nurse might unwittingly transcribe and administer the wrong medication after reading an illegible prescription, being under the belief that the right medication was confirmed according to the rights framework (Cohen, H., et al., 2003). Pre-printed medication order forms are recommended as a high-leverage strategy to prevent such errors (Cohen, H., et al., 2003).

Given that there are complicating human and environment risk factors such as distractions and interruptions (Craig, Clanton & Demeter, 2014; Donaldson, Aydin & Fridman, 2014), inadequate staffing (Breckenridge-Sproat, Johantgen & Patrician, 2012), inadequate lighting (Graves, Symes & Cesario, 2014), illegible and incorrect prescriptions (FitzHenry et al., 2007), incorrect dosage calculations (Tyreman & Farrar, 2008) and look-a-like drug names and packaging that impact medication administration (Cohen, H., et al., 2003), it is clear there is a misfit of the five rights framework to nursing practice. The process of medication administration encounters multiple risk factors and the complexity of it in practice is unequivocal as evidenced by the literature (Advinha et al., 2014; Federwisch, Ramos & Adams, 2014; Grou Volpe, Moura Pinho, Morato Stival & De Oliveira Karnikowski, 2014; Jennings et al., 2011; Sitterding et al., 2014; Smeulers et al., 2014). The complexity of medication administration is suggested in this thesis as contributing to nursing practice variations of applying the rights framework (Baeke, 2015; Bonsall, 2014; Cateora, 2013; Elliott & Liu, 2010; Pauly-O'Neill, 2009).

Critical incident analysis has shown that human factors are a common cause of errors that are often not captured by an analysis of adherence to the five rights without contextual details (ICN, 2009a). Valdez, de Guzman and Escolar-Chua (2013), for example, used the 'Eindhoven model' theoretical framework that suggests that errors arise from failures in technical, organisational or human sources. A structural equation factor analysis was performed on over 300 surveys administered to nursing students in the Philippines to determine the dimensional factors contributing to nursing student medication errors (Valdez et al., 2013). Findings from the study suggest that in order to prevent medication errors both human and system failures should be addressed (Valdez et al., 2013). Human failure was defined as being characterised by a degree of 'conscious control exercised by an individual', and system failures were found to have contributed to human failures regarding poor adherence of nursing students to the five rights framework that had a direct and positive correlation to medication errors (Valdez et al., 2013, p. 233).

The five rights framework discounts the significance of human impact factors and perpetuates a belief that one individual is responsible for medication administration safety (Grissinger, 2002). 'Human factors' refers to the complex interrelationship

between humans, their tools and the environment (Pennsylvania Patient Safety Authority, 2005). They are unavoidable in medication administration and identification of them is vital to reducing risk (Jones, S. W., 2009). Alignment of one or more of these factors can result in errors that are linked to blaming individuals but do not address the underlying risk factors (ICN, 2009a).

Serious errors are known to have occurred even when the administering nurse firmly and conscientiously believed that the five rights have been followed (Cohen, H., et al., 2003; Grissinger, 2002; ISMP, 2010; Pauly-O'Neill 2009; Smetzer, 2001). The example provided above by H. Cohen et al. (2003) of incorrect transcription of a poorly written is a reminder that all the five rights can be confirmed when the wrong drug has been written. The medication administration procedure cannot be reliant on one person when the end point [the nurse administering the medication] does not have ultimate control over the preceding events (Cohen, H., et al., 2003). In addition, focusing on individual factors diverts researchers' attentions away from other factors. The simplistic and linear five rights framework persists as the gold standard criteria for teaching and assessing nurses in the process of administering medications. Focusing on individual performance and denying the complexity of the medication administration environment perpetuates the myth that the rights framework prevents errors (Harding, L., & Petrick, 2008; Pennsylvania Patient Safety Authority, 2005). As a cautionary note though, D. Wilson and DiVito-Thomas (2004, p. 131) recommend continued use of methods to prevent errors until there is evidence to support or abandon practices such as 'the 5 rights (plus 1!)'.

Furthermore, there is disagreement in the literature about the construction of the rights framework. Nursing texts and practice guides argue for a varying number of additional rights such as the right to refuse, right documentation, outcome, person administering, process followed and right effect (Brotto, 2013; Broyles et al., 2013; McKenna & Lim, 2012; Medication Services Queensland, 2009a; Reid-Searl & Dwyer, 2009). For example, McKenna and Lim (2012) cite seven rights, omitting the right patient/client/person/individual without explanation. Conversely, Brotto and Rafferty (2012) include the right reason and documentation as part of their seven rights framework, which differs to that of Pauly-O'Neill (2009). Brotto and Rafferty (2012) argue that these extra rights address many of the sources of medication

administration errors, but they do not provide clear directions to achieve these rights nor do they cite the research on which these additional rights are recommended. Brotto and Rafferty (2012, p. 82) list a further 10 steps of medication administration recommending them as a 'failsafe' medication administration method if the nurse adheres to them.

Despite all these proposed additional rights, the literature is clear that medication administration is not a simple, linear step-by-step process as it is presented. In modern, complex healthcare environments, medication administration involves many 'hand-offs' between individuals (Stetina, Groves & Pafford, 2005). Recipe-like processes are generally impractical and counterintuitive to the realities of modern nursing practice (Pennsylvania Patient Safety Authority, 2005). As a checklist to prompt critical thinking the rights can inform practice, but they are not a definitive method for ensuring safe practice (ISMP, 2015). The framework does not give guidance regarding some key factors that affect safe medication administration, such as knowledge about the patients' allergy status (Broyles et al., 2013; McGovern, 1992) or previous adverse medication events (Henderson et al., 2005). It does not guide the nurse to provide patient medication education (Berman & Snyder, 2012; Kee, Hayes & McCuistion, 2012; Parker, 2012; Reid-Searl & Happell, 2012) or prompt the nurse to conduct medication evaluations and patient assessment data (Bonsall, 2014; Elliott & Liu, 2010; Wilson, D., & DiVito-Thomas, 2004). Such actions come from the nurses' ability to critically think about their practice and engage in clinical decision-making to ensure they deliver high quality, safe, patient-centred care (Levett-Jones, 2013). The framework is one attempt to standardise medication administration practices (Tiziani, 2010, p. xii), as recommended in an influential seminal report by Kohn et al. (2000), but it clearly falls short of offering decision-making support and procedural guidance (ISMP, 2015).

In summary, and in spite of the recognised shortfalls, the five rights framework continues to be adapted and promoted to guide nursing education and practice (Baeke, 2015; Bonsall, 2014; Elliott & Liu, 2010; Medication Services Queensland, 2009a). The word frequency diagram in Figure 2.2 depicts the five rights and additional rights suggested in the literature as required for safe medication administration. Remarkably, the only two consistently represented rights from the

original framework are the right route and the right time. All others have been varied one way or another. Adjustments to medication administration frames of reference are evident in the literature from the time the five rights appeared. For example, in a review of international and multidisciplinary literature from 1982 to 1999, O'Shea (1999) found several definitions of medication error based on the American Hospital Society of Pharmacists' (ASHPs') 1982 definition, identifying nine categories of error, which included wrong dose, route, rate, dosage form, preparation of a dose an incorrect administration technique. O'Shea's (1999) list is remarkably representative of aspects of the five rights framework. Without any evidence to the contrary, one wonders if the five rights are a conceptual product of the ASHP's medication error categories. The following section discusses factors that influence nurses' experiences medication administration beyond the five rights.
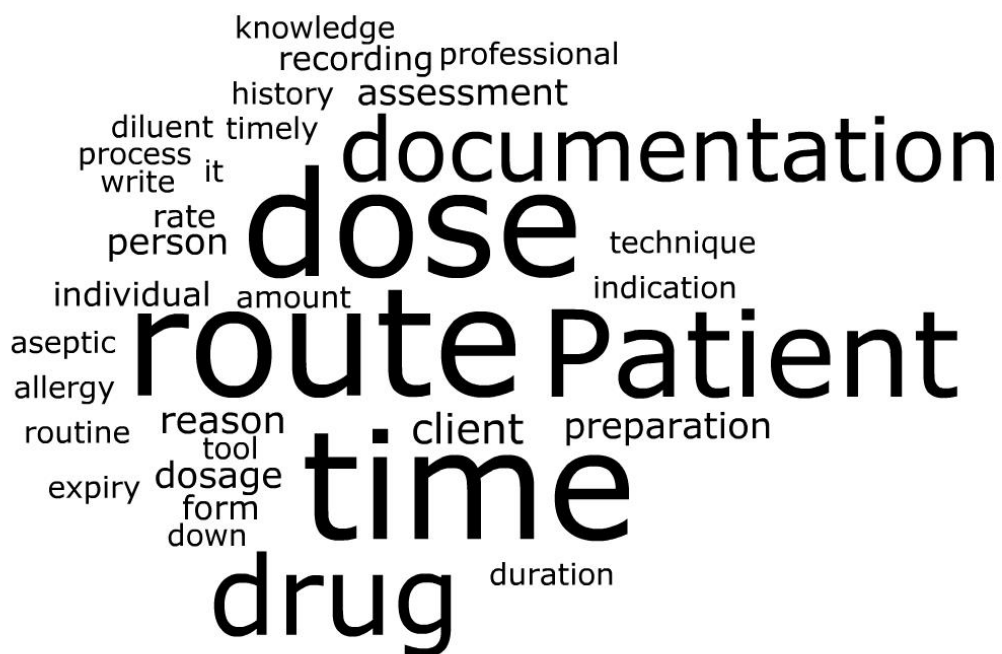

Figure 2.2: A word map of the five and more rights for safe medication administration

Source: Developed by J. Martyn, 2015.

2.13 Medication administration in practice settings

Promoting patient safety is undeniably high on the agenda for healthcare organisations and professionals. This was demonstrated in a mixed method study conducted in America, using a descriptive survey and focus groups of over 1000 physicians and nurses, as 'proven medication safety practices' were the most important topic for a patient safety curriculum (VanGeest & Cummins, 2003, p. 12). The study aimed to explore the professionals' experiences of error, to understand their attitudes and knowledge of patient safety, and to identify information and training needs (VanGeest & Cummins, 2003). Significantly, the focus group participants identified that the increasing complexity of healthcare environments is a barrier to improving safety because of growing demands on healthcare teams to fulfil expectations of error-free outcomes.

For the most part, healthcare environments are not calm and controlled, which means they are generally not conducive to stress free medication administration. Not only is medication administration a high-risk activity, it is frequently carried out in challenging, busy and time-pressured atmospheres (Duxbury, Wright, Hart et al., 2010). These 'dynamic, unpredictable and reactive' contexts demand responsive clinical reasoning skills from nurses to reduce risks (Levett-Jones et al., 2010, p. 515). This makes the risk management role of RNs even more crucial as they enact their duty of care in complex, turbulent, unpredictable and chaotic settings (Cook, M. C., 1999; Dyal, 2005; Jennings et al., 2011; Kelly, W. N., & Rucker, 2006; O'Shea, 1999).

Observation studies of nursing work have shown medication administration to be the fundamental and single most common nursing activity (Keohane et al., 2008; Schneider, P. J., et al., 2006; Westbrook et al., 2011). Nursing workflow studies undertaken in Australia as time-in-motion studies have found that one-quarter of nursing time is spent on medication-related activities in acute care hospitals (Westbrook et al., 2011). An American-based study reported a similar figure (Keohane et al., 2008). In long-term care facilities, one-third of nurses' time is consumed by medication administration (Thomson et al., 2009). Collectively, these

studies confirm that medication administration is a major component of nursing workload that contributes to nurses feeling rushed when administering medication, as they experience repeated interruptions and feel the need to multitask (Thomson et al., 2009; Westbrook et al., 2010, 2011).

In one study that involved 267 hours of observation of nurses, it was concluded that the actions nurses routinely take to ensure accurate ordering and dispensing of medications are inseparable from a range of other duties and made up of a mixture of variable, complex competing temporal demands that 'structure the nurses' entire workday' (Jennings et al., 2011, p. 1441). For example, the cognitive load of medication administration adds a further dimension that consumes much of nurses' available time. Consequently, observable nursing practice provides only part of the picture of the medication administration practice (Eisenhauer et al., 2007). A study that used real-time audio recordings of nurses thinking aloud as verbal accounts during practice found that constant vigilance to achieve patient care and safety was common. The participants were thinking about checking medication times, side effects, administration and evaluation along with patient assessment and teaching in addition to anticipating problems and communicating with others (Eisenhauer et al., 2007). Based on reflections of past experiences of medication administration from 40 participating RNs working in acute medical/surgical inpatient areas of a tertiary teaching facility in America, the study found that competing demands and challenges sometimes forced RNs to use work-arounds to ensure the patients received their medications (Eisenhauer et al., 2007).

Likewise, analysis of self-reported survey data from 481 rural and remote nurses in Queensland found a correlation between workloads and the expectations of doctors as predictors of procedural violations, with increased workloads being the strongest antecedent to these violations (McKeon et al., 2006). McKeon et al. (2006) used thematic analysis and descriptive statistics to build a path model showing reported organisational factors lack of knowledge, limited resources, workload and medical officer expectations that contribute to procedural violations during medication administration. A violation was not defined but adherence was described as 'compliance with legal and best-practice issues regarding medication administration' (McKeon et al., 2006, p. 118). These findings suggest the value of a systems

approach to investigating medication errors because it concentrates on the contexts of practice to identify defences that can prevent unsafe practices (McKeon et al., 2006). Another report on the same study claimed that the model demonstrated that the influence of the predictors of violations is more probable when the individual is distressed and workplace morale is low (Fogarty & McKeon, 2006).

Westbrook et al. (2010) also conducted an observational study of more than 4000 medications being prepared and administered to more than 700 patients in Australia over a two-year period. Their findings indicated that interruptions to nursing practice were significantly associated with procedural failures and clinical errors. The five rights framework was used as the basis for the medication administration procedure and identifying clinical errors, and through logistic regression analysis, Westbrook et al. (2010) concluded that interruptions are positively correlated to failures and errors. However, Westbrook et al. (2010) included aseptic technique as one of the criteria for adherence to the procedure, and failure to demonstrate this was interpreted as a procedural error, which adds to the variety of error definitions noted in this literature review.

Adding to the reported incident variances in the literature, more than one (1.21) interruptions per medication were observed in the workflow study by Elganzouri et al. (2009) described earlier. However, this rate of interruptions did not include bedside interruptions/distractions because the observers did not follow the administering nurse all the way to the bedside where the medication was actually delivered; thus, the study provides only a partial picture of the medication administration process and possible impacts on it.

Furthermore, interruptions are reported to have detrimental effects on the ability of nurses to focus on of the task at hand and can interfere with the medication practice of nurses in acute inpatient units (Biron, Lavoie-Tremblay et al., 2009; Jones, S. W. , 2009; Mayo & Duncan, 2004; Tang et al., 2007) and aged care settings (Dawson, 2014). In their time-in-motion study, Thomson et al. (2009) defined 'interruption' as any demand that caused a deviation from the medication administration process, which they noted occurred in 79% of the observed medication rounds in the long-term care facility. McGillis Hall et al. (2010, p. 1041) added that distractions and

interruptions can lead to unfinished tasks, which can themselves become the cause of further distractions.

Some studies have proposed pragmatic and creative strategies to eliminate interruptions to nurses' practice of medication administration. Pre- and post-data collected in a five-part intervention study found a reduction by 84% in interruptions as a result of applying a range of strategies, such as signposting and identifying designated quiet zones for medication preparation, a protocol checklist to remind nurses of the safe process, assistance of team members to field interruptions and the wearing of brightly coloured sashes to identify the nurse who is focused on medication administration (Pape, 2013). Additionally, a quasi-experimental study conducted by Anthony et al. (2010) in two intensive care units in America used interval-phased observations and descriptive metrics to conclude that a designated 'no interruption zone' can reduce interruptions during medication preparation.

Studies of other interruption reduction techniques include the White Vest Study, a two-week quasi-experimental study in an acute community hospital in America, where nurses were observed over periods of two hours as they administered medications (Craig et al., 2014). The participants from four different medical and surgical settings wore a vest labelled 'Please do not interrupt while passing medications' when medications were being administered, that when combined with staff education resulted in a significant reduction in interruptions (Craig et al., 2014, p. 257).

Intervention strategies in isolation may not account for the reductions in interruptions. Verweij, Smeulers, Maaskant and Vermeulen (2014), for example, suggest that evidence of the effectiveness of medication administration tabards and vests is scarce. Verweij et al. (2014) conducted a mixed-methods before-and-after observation study of 303 medication administrations in a Dutch university hospital to evaluate the effects of drug-round tabards on the frequency and types of interruptions. Descriptive statistics and univariable linear regression analysis of the observation data found that the use of drug-round tabards did improve medication safety by decreasing interruptions, but this alone cannot fully explain reductions in medication errors

because other individual and organisational factors need further consideration (Verweij et al., 2014).

In addition to the broader view necessary to determine the effectiveness of risk reduction strategies is the need for long-term evaluation of the strategies. For example, inattention blindness is a phenomenon described by Chabris and Simons (2010, p. 6), as an error of perception that results from a 'lack of attention to an unexpected object'. Inattention blindness renders the person blind to the visual stimuli before them because they are not expecting to see it (Chabris & Simons, 2010). The inattention results from people devoting '… attention to a particular area or aspect of their visual world…' and unexpected objects are not noticed (Chabris & Simons, 2010, p. 7). For example, as previously described, P. J. Schneider et al. (2006) explained an increased error rate after an educational intervention as a shift in the attention of the participants. Chabris and Simons (2010) might explain this inattention blindness as resulting from a lack of awareness of aspects that fall outside of the current focus of attention. Likewise, in the case of confirmation bias described above, the person administering the medication does not see the wrong name on the medication package because they are expecting the right medication. In relation to the environmental strategies discussed here, recurrent and longitudinal evaluation studies would be needed to measure any effects that familiarity with the interventions might have on diluting or enhancing their impact.

In addition, technological advances in healthcare are significant and dynamic. Nurses must know the correct use, limitations and hazards of treatment options and medical devices (NMC, 2010b). This risk management role can be compromised when advances in technology increase the complexity of healthcare (VanGeest & Cummins, 2003). Sato and Senesac (2007) suggest that the technological changes in healthcare are occurring more rapidly than nurses can process them, but as advocates for the patient 'nurses will be the sentinels determining the efficacy and safety of technological innovations through careful processing and interpretation of each situation'(p. 49).

It has also been identified that nursing workflow efficiencies can be gained by implementing technology (Sato & Senesac, 2007; Tian et al., 2014). One time-in-

motion study conducted over a six-month period established the baseline nursing workflow prior to the implementation of an electronic medication administration record and found that there were time savings for nurses (Keohane et al., 2008). Workflow inefficiencies such as travelling and transcription were observed to be reduced with the introduction of the electronic system (Keohane et al., 2008). Bennett, Harper-Femson, Tone and Rajmohamed (2006) explored the issues of patient safety, medication administration efficiency and quality of practice experience in a mixed method descriptive study of observations and focus groups with nurses, pharmacists and pharmacy technicians. Their study identified significant time savings and increases to nurse-patient interaction, access to medication information resources and work satisfaction when using a decentralised bedside medication storage system rather than a centralised medication cart (Bennett et al., 2006).

Despite evidence that technological innovations can be time saving, there is also evidence that nurses can be negatively affected by new technology. The working environment of the nurse is impacted by the alarms of the devices. For example, Sendelbach (2012) explored nurses' experiences of medication administration technologies fitted with alarms and found that the noise adds to the stress of the nurses' working day. As so many devices in clinical settings have alarms, healthcare workers can become overwhelmed and desensitised to their meaning (Sendelbach, 2012). Alarm fatigue is a phenomenon of contemporary healthcare environments where technology is implemented to promote safety, causing healthcare workers distress and adding to the number of interruptions and distractions they experience (Sendelbach, 2012). Nevertheless, technology consultants Smaling and Holt (2005) suggest that medication administration technologies such as mobile computers, intelligent intravenous pumps and electronic patient records can decrease medication-related errors in all phases of the process when used correctly.

Technology is also believed to augment nurses' pharmacology knowledge and mathematical medication calculations skills. A cross-sectional study evaluating paediatric nurses' knowledge of high-alert medications found that more education is needed to support paediatric nurses to avoid incorrect responses on the knowledge test that was administered as part of a self-report survey of 262 participants in

Taiwan (Lan et al., 2014). The study recommended the implementation of a Computer Physician Order Entry (CPOE) system to support clinical decision-making of nurses by responding to the knowledge deficits with digital intelligence. The disclaimer in this and other studies regarding the use of the technology to enhance safety is that such strategies must be supported by skilled clinicians, such as ward-based pharmacists and nurses (Lan et al., 2014; Winterstein et al., 2006).

At an operational level, nurses need to be discerning about the best use of technology to assist their practice (Lyon, Lewis & Peart, 2008). For example, nurse participants of a workflow intervention study at a Norwalk hospital in USA were provided access to four options: a simple in-room storage cabinet with space to house a computer; a computer on wheels with medication stored centrally; a cart containing medications and equipment; and a mobile cart consisting of medication drawers, a bar code scanner and computer (Lyon et al., 2008). Nearly 100% of the nursing staff effectively reduced travel time and increased nurse-to-patient time after selecting the mobile cart technology as the strategy that best suited their practice (Lyon et al., 2008).

A triangulated, multi-site, mixed methods study of a Barcoded Medication Administration (BCMA) system based in America revealed 15 different types of workarounds developed by participants, which were mainly related to managing technology failure, policy incompatibility, patient circumstances and inadequate infrastructure rather than deviant nursing practices (Koppel et al., 2008). Of the 31 probable causes, circumventing the system was related to the task of medication administration and explained as a time-saving measure or a response to emergencies (Koppel et al., 2008).

Subsequently, over-reliance on technology to detect errors is thought to be connected to beliefs of infallibility in the computerised systems, resulting in a decrease in human vigilance (Stetina et al., 2005). Problems include barcode reading errors on paediatric curved wristbands and infrastructure problems because of unreliable wireless networks (Smaling & Holt, 2005). While nurses need to be educated and skilled to engage with the technology, they are cautioned not to abdicate the

responsibility for the critical thinking. Only the nurse can decide whether it is right to administer a medication.

Therefore, it is vital that nursing input is sought during any trials and selection of technology proposed to enhance safety and efficiency because technology workarounds occur when technology compromises patient care (Debono et al., 2013). Human deviation from technology processes is particularly evident when there has been limited input into the selection of technologies from those clinicians who need to implement them. (Ferneley & Sobreperez, 2006; Halbesleben, Savage, Wakefield & Wakefield, 2010). While a thorough review of the literature on the use of health technologies is beyond the scope of this study, it is important to consider this information in relation to nurses' experiences of medication administration.

2.14 Medication administration as it is experienced by the nurse

Given the contexts in which the nursing work of medication administration occurs, it is important to consider the literature, albeit limited, addressing the personal experience of nurses, which tells a story of errors and the emotional distress associated with them (Gibson, 2001). Qualitative studies using various methods to explore nurses' experiences are discussed in this section (Dyal, 2005; Schelbred & Nord, 2007; Smeulers et al., 2014). Even though the complexities of the multidisciplinary, multiphase medication administration process described earlier are interconnected, some nurses experience fear of disciplinary action and are distressed by the potential harm to patients if errors occur (Harding, L., & Petrick, 2008; Schelbred & Nord, 2007).

Parse's principles of human becoming were used in one study to explore the medication error experiences of five nurses working in a Canadian hospital (Dyal, 2005). Qualitative semi-structured interviews were conducted with the participants who reported feeling liberated that the error had not caused harm and at the same time burdened by concern of organisational repercussions (Dyal, 2005). They

experienced isolation and hopelessness but were focused on wanting to share the learning with others (Dyal, 2005).

Furthermore, a number of studies have found that nurses are willing to share their experiences and accept the consequences, despite encountering personal distress and fear of retribution when medication errors occur (Dyal, 2005; Schelbred & Nord, 2007; Schoenecker, 2007). A study that explored nurses' experiences with and perceptions of preventing errors concluded that the 'pre-eminent' position of nursing's role and responsibility in safe medication management is embodied by nurses but that their effectiveness is dependent upon knowledge and circumstance (Smeulers et al., 2014, p. 276). Thematic analysis of transcripts from semi-structured interviews with 20 nurses at a tertiary teaching hospital in the Netherlands found strong indications that nurses have a pivotal role in medication management and safety (Smeulers et al., 2014). The participants discussed the close interaction they have with patients and how they coordinate the delivery of care to enable comprehensive assessments in relation to medication administration (Smeulers et al., 2014). The study adds to others that found nurses strive for 'constant professional vigilance to ensure that patients received their appropriate medications' (Eisenhauer et al., 2007, p. 82).

2.15 Medication error reporting

The WHO (2009b) states that it is critical to identify effective strategies for detecting and preventing medication errors in both inpatient and outpatient settings. Medication errors are common but not intended. The following section discusses the ways in which medication errors are measured and reported because there are disparities in the literature about what constitutes a medication error. Medication error rates are used as an indicator of problems (Kelly, W. N., & Rucker, 2006). However, there are issues in comparing error rates because of the variations in how errors are measured and reported (WHO, 2014a). Confounding this difficulty of determining actual error rates globally is the difference in how errors are defined, the way they are classified, and what is measured (Idzinga et al., 2009; NCC MERP,

2015). Therefore, it is recommended that medication error studies should be critically viewed in context of the definitions and data collection methods.

For example, the UK National Patient Safety Agency (2009) defines medication errors as 'an incident in which there has been an error in the process of prescribing, dispensing, preparing, administering, monitoring, or providing medicine advice, regardless of whether any harm occurred'(p. 6). Conversely, it has been defined as the failure to complete an action as intended, or the wrong use of or implementation of a plan constitutes an error by doing the wrong thing or failing to do the right thing (Queensland Government, 2009b). Rantucci et al. (2009) add that this may include inappropriate use of medication.

As previously discussed in sections 2.3 and 2.13, the five rights framework plays a major role in research studies that define error because it is used as the basis for determining when an error in medication administration has occurred. For example, in a multi-method systematic review of the literature discussing clinician roles and clinical systems to prevent medications errors, Wimpenny and Kirkpatrick (2010) combined the five rights with descriptions of medication error and defined a medication error as:

> any preventable event that may cause or lead to inappropriate
> medication use or patient harm while the medication is in control
> of health professional, patient or consumer which … may be due to
> giving the wrong drug, via the wrong route, to the wrong patient,
> as a wrong dose and at the wrong time or omitting to administer
> the medication. (p. 408)

Others have proposed that medication errors include hand hygiene and aseptic technique (Kim & Bates, 2013; Westbrook et al., 2010).

Cleary there is confusion regarding how medication errors are defined. For example, in a multimodal study using survey and incident report data, case studies and interview data, A. Cook et al. (2004) found that doctors, nurses, pharmacists and healthcare administrators had differing views of what constitutes a medication error.

A qualitative study aimed at understanding nurses' experiences of making an error found that late administration of medication is not always classified as an error because nurses make judgements to determine when and if medications should be given (Stetina et al., 2005). Stetina et al. (2005) used phenomenology methodology and interviewed six nurses employed in a range of clinical settings in Texas, and found an increased reliance on computerised and systematic checks in healthcare systems.

Inconsistencies across the literature, the industry and tertiary teaching environments contribute to the confusion about what constitutes a medication error. For example, in one study using a barcode medication administration system data from 13 British aged care homes, it was found that 45% of medications were being administered at the wrong time (Szczepura et al., 2011). However, this result was based on the fact that the system's user alert was set for 10 minutes either side of the prescribed medication time rather than a 30-minute window. As previously discussed, it is impossible to administer all medications required at a set time, so tolerances need to be greater than 10 minutes.

Despite years of research into medication errors, the rates of errors have not significantly declined and the same issues continue to be raised (Garling, 2008; Harding, L., & Petrick, 2008; Medical Technology Association of Australia, 2010; Westbrook et al., 2010). Patients regularly receive the wrong drugs at wrong times via wrong routes and in the wrong form regardless of the repeated emphasis on the five rights (ISMP, 2004, 2007; Pennsylvania Patient Safety Authority, 2005; Sullivan, 1991). For example, The Joint Commission (2015, p. 19) based in America recently cited an 18% incident rate of medication errors that resulted in 'death or permanent loss of function'. Practitioners are urged to report medication incidents as a strategy to increase compliance with safety measures and to raise awareness of patient safety (Farmer 2010), but medication error research has not achieved error-free medication administration in modern-day healthcare environments (Keers et al., 2013; Keers, Williams, Cooke, Walsh & Ashcroft, 2014; Queensland Health, 2012c; WHO, 2014b).

Furthermore, as previously mentioned, error-reporting systems that include punitive actions only encourage underreporting (Chua, Tea et al., 2009; Cohen, M. R., 2001; ICN, 2009a; Petrova et al., 2010; Stetina et al., 2005). The fear of backlash makes nurses reluctant to disclose details of errors through the usual voluntary self-reporting systems (Alsulami et al., 2014; Dyal, 2005; Harding, L., & Petrick, 2008; Henderson et al., 2005). Underreporting is confirmed as a problem and it is anticipated that what is reported is only the 'tip of the iceberg' (ICN, 2009a, p. 3).

It has been suggested that the emphasis on reducing errors should shift to improving procedures, systems or manufacturing elements attributable to errors, as a focus on what – not who – contributed to the errors might create a climate where nurses are more willing to communicate errors (Cohen, M. R. & Cohen, H., 1996; Meurier, Vincent & Parmar, 1998). The ICN (2009a) strongly supports the need for transparency in medication error reporting. Meyer-Massetti et al. (2011, p. 236) conducted a systematic review of the most commonly used medication safety assessment methods, of incident report, chart review, direct observation and trigger tools, and found substantial differences in their accuracy. The optimal methodologies for efficient identification of drug-related problems has not been identified to date, but Meyer-Massetti et al. (2011) found that qualitative patient reports of drug-related problems provided more detail than other methodologies. They suggested that the patient reports may represent another viable approach in identifying drug-related errors, but such reports are rarely represented in studies, and there is a lack of high-quality comparative medication assessment studies as well as insufficient standardisation of the assessment methods and language used (Meyer-Massetti et al. 2011, p. 237).

Clearly, there is an urgent need for ongoing research to identify and manage medication errors for the safety of the patient; however, based on the impact of decades of studies, continuing to focus on failure rates and patient harm is not the answer. Therefore, this study will seek to explore the experiences of nurses in administering medication with a focus on what works well in terms of mitigating potential risks. Drawing attention to the underlying but ubiquitous message in the literature of the desires of health professionals to avoid harm to patients, researchers

have the opportunity to consider medication administration differently to the universally profiled position.

2.16 Chapter summary

This chapter has provided a critical review of literature and contextualised this study in relation to what is known about the regulation, education, practice and experiences of RNs who administer medications. After defining medication administration processes, practices and guiding frameworks, the chapter reviewed literature from the domains of professional nursing regulations, education and practice regarding medication administration and highlighted the complexity of contemporary medication administration. The rights framework was noted as the standard approach to guiding and measuring nursing education and practice in relation to medication administration. Variances were uncovered as significant factors that confound medication administration research. Understanding the role of these rights in safe medication administration practice is fundamental to this study. Despite their centrality as a guidance structure to medication administration, the empirical basis of the five rights has eluded all searches undertaken in this review. This review demonstrates the medication error focus taken in most studies and provides background for the decision to take a strengths-based perspective in this study. It raises questions about the focus and scope of current medication administration research, and, most significantly, highlights the paucity of research concerning medication administration strengths in nursing practice. Contextualising this study to the literature in this way provides a position from which to view the findings and conclusions discussed in Chapters 5, 6 and 7.

Chapter 3: Theoretical framework

3.1 Introduction

This chapter presents the underpinning framework for this study, appreciative inquiry, which is somewhat different from other frameworks traditionally used in medication administration research. Chapter 3 will discuss appreciative inquiry as an appropriate theoretical framework for a study that seeks to shine a positive lens on a study of nursing practices of medication administration. The chapter commences with a brief discussion of the purpose of a theoretical framework in research studies, the tenets of appreciative inquiry and its association with other strengths-based theories that have been applied in nursing research and practice. The underlying principal assumptions of appreciative inquiry are outlined to show how it will guide the interpretations of the findings and conclusions presented in subsequent chapters of this thesis. A critical review of strengths-based health research provides insight into the flexibility of appreciative inquiry as both a theoretical framework and a methodology. Lastly, the use of appreciative inquiry as the theoretical framework for guiding this qualitative study of the medication administration experiences of RNs will be justified.

3.2 The purpose of a theoretical framework

Theoretical frameworks have a specific and valuable purpose when appropriately used as a point of reference in research studies (Polit & Beck, 2010). A theoretical framework guides research activities by influencing the methodology of the research, and it facilitates the evaluation of the results (Lunney, 2008, p. 28). Theoretical frameworks and conceptual models provide the patterns for reasoning that are reflected in the research methodology (Mock et al., 2007). Research methods that are congruent with the underpinning theoretical framework avoid mismatch and mistrust of the research findings (Dowling, 2004, p. 37).

Theories and models make findings meaningful by summarising the knowledge into a coherent system that helps to explain the relationships found in the data (Polit & Beck, 2010). A theoretical framework ensures that the researcher fulfils the study intent by guiding the conscious decision-making about the congruence of the research question, methodology, and data collection and analysis methods, while providing a theoretical underpinning that assists in understanding the findings (Wotton, 2000). Understanding the goals, assumptions and major tenets of a theory can be powerful in knowing how theories might inform studies of nursing practice (M. King & Averis, 2000, p. 182).

One example of a theory that is being increasingly used to inform nursing practice is the strengths-based framework (Gottlieb, 2013). The assumptions that underlie contemporary strengths-based nursing care reflect the core values and beliefs arising from the nursing metaparadigm of health, person, environment and nursing (Gottlieb, 2013). These concepts are interrelated and work together to form a comprehensive and coherent value system that is expressed as the strengths-based framework for nursing care (Gottlieb, 2013).

The core value of a strength-based framework is that the unique characteristics, capabilities and behavioural strengths of individuals will become apparent by seeking their strengths without judgement (Cederbaum & Klusaritz, 2009). Individuals who engage with a system that is based on the strengths approach are more likely to feel empowered and their environment is enhanced (Cederbaum & Klusaritz, 2009). Nursing practice that is constructed in a strength-based system is encouraged to identify specific individual capacities and resources for improvement (Cederbaum & Klusaritz, 2009). As a social construct, nursing values the person-centred approach where multiple, subjective meanings are created collaboratively through shared narratives of what is important and relative to each individual (Benner, 2000; Dempsey, 2009; Gottlieb, 2013; Kelly, M., & Dempsey, 2009; Polit & Beck, 2010). Appreciative inquiry is described as aspirational for nursing practice because the cooperative nature of this approach liberates people who experience it to emancipate and unify participants (Cowling, 2004).

Mental health nursing, in particular, has embraced the values and concepts of a strengths-based approach. The strengths-based recovery model of nursing care is common in mental health nursing environments (P. Barker, 2003; Clossey et al., 2011; Elder, Evans & Nizette, 2013). Nurses working within this theoretical framework seek the best of peoples' capacities and capabilities in order to enhance their recovery from a mental health disorder (Elder et al., 2013). Thus, strengths-based frameworks and models propose that all people have goals, talents and confidence, and that all environments contain resources, people and opportunities (Elder et al., 2013). Framing an optimistic worldview is one key to moving towards more strengths-based therapeutic practices in mental health and other nursing environments (Elder et al., 2013).

The nursing research environment of medication administration where a problem-orientated focus is common may benefit from a different and more optimistic approach. Guba and Lincoln (2005) suggest that researchers must make conscious informed decisions between positivist and interpretivist paradigms approaches because the belief systems of the two are contradictory and mutually exclusive suggesting that the values forming the foundations of these philosophical dimensions are oppositional (Guba & Lincoln, 2005). For example, positivists believe that action is a form of contamination of research results that undermines objectivity and research processes, whereas interpretivists see action in research results as meaningful and important outcomes of the inquiry process (Guba & Lincoln, 2005, p. 201).

The researcher paradigm sets the principles by which research questions are selected and defined and informs the theoretical nexus of knowledge and reality, specific to the paradigm (D. L. Smith & Hope, 1992). Different paradigms have significant implications for the design and application phases of any research project (Denzin & Lincoln, 2005b, p. 189). A paradigm, according to Denzin and Lincoln (2005a) is the net that contains the researcher's epistemological, ontological and methodological basis and framework. The major assumptions of research paradigms are contained in their epistemology (how one knows the world), ontology (determining what constitutes reality) and methodology (the best means for acquiring knowledge of the world) (Crotty, 1998; Denzin & Lincoln, 2005b; Polit & Beck, 2010). Put simply,

ontology provides the worldview that guides research, epistemology provides a focus for research, and methodology provides a framework for conducting research (D. Jackson, Daly & Chang, 2003).

A decision is necessary in conceptualising a nursing research project, based on 'What is the nature of the knowledge that is needed for the practice of nursing?' so that appropriate methods can be sought to meet the aims of the research (Alligood, 2006, p. 5). The basis on which researchers understand their world is backed by their personal biography of gender, race, class, culture and ethnicity (Denzin & Lincoln, 2005a, p. 21). Guided by the researcher's beliefs and feelings, the research reflects their worldview and determines how the research findings are understood (Denzin & Lincoln, 2005a, p. 23).

The epistemological perspective of the researcher ultimately determines the research foundation (Crotty, 1998; Polit & Beck, 2010; Robson, 2002), which can originate from one of four major paradigms that generally account for most perspectives: positivist and post-positivist, constructivist-interpretive, critical (Marxist, emancipatory), and feminist post-structure (Denzin & Lincoln, 2005a, p. 22). Rich descriptive data is not typically explored in positivist-type studies because of their etic and nomothetic commitments (Denzin & Lincoln, 2005a, p. 16).

Human sciences, such as nursing, value the constructed understanding of subjective experiences, whereas the positivist and post-positivist approaches seek out cause-and-effect relationships that are measured through observation and reduction (Pratt, 2012). For example, quantitative measurement of medication practices through direct observation has been identified as the most likely way to identify medication-related problems, but in the systematic review conducted by Meyer-Massetti et al. (2011, p. 235) direct observation and quantification methods were also identified to produce the most false-positive results.

Observation studies that seek to quantify nursing practice in isolation of contextual factors bring into question the usefulness of quantification. Nursing is a practice discipline that values subjective experiences constructed in relation to and not in isolation from its contextual factors. Qualitative researchers attempt to explore the

social world of participants through rich descriptions and narrative details of their experiences (Denzin & Lincoln, 2005a, p. 16). In the area of medication administration, qualitative nursing research has been limited when compared to quantitative studies of practice. In this study of medication administration practices, rich descriptions from the narratives of the participants may provide a counterbalance and add another perspective to the findings of the numerous quantitative studies found in the literature.

Chapter 2 provided a critical review of literature on medication administration, which mostly adopts an error-based perspective, focusing on organisational and practice problems, and attributing errors to multi-faceted and complex factors related to processes, roles, context, knowledge and environment (Dean & Barber, 2001; FitzHenry et al., 2007; Henderson et al., 2005; Kelly, W. N., & Rucker, 2006; Mansouri et al., 2013; Wang, H. F., et al., 2015). Studies seeking to find medication errors can tend to reduce nursing practice to quantifiable parts and disregard the multiple and subjective meanings created through engagement and reflection of the experiences in context (Polit & Beck, 2010).

Research studies that aim to specifically explore nursing practice of medication administration are not as common as problem-focused studies (Collins, 2001; Craig et al., 2014; Keers et al., 2013; Smeulers et al., 2014; Tang et al., 2007). Research that focuses on aspects of nursing practice that are working well and valued are scarce, even though it has been suggested that they may lead to the development of improved practice models (Bonham, 2011; Dewar & Cook, 2014; Kavanagh, P. M., 2010; Kavanagh, T., et al., 2008; Knibbs et al., 2012). Attention paid to effective practice will lead to understanding 'at a much deeper level what works well and why' (Dewar, 2010, p. 290).

Theories and conceptual models developed in other disciplines are often applied to nursing research as 'shared theories' if considered appropriate to explore healthcare topics and found to be relevant to health-related situations (Polit & Beck, 2010). Shared/borrowed theories have been used in nursing research for distinct phases or components of a study (Cowling, 2004; Polit & Beck, 2010). Nursing theory itself is generated with historical connections and contextual significance and has changed as

views on what counts as valid knowledge change (Greenwood, 2002). Construction of nursing theory is flexible and adaptive and is generated both 'bottom-up' (from practical experience) and 'top-down' (from conceptual thinking) (Greenwood, 2002). In healthcare, changes are continuous and theories that guide nursing require dynamic flexibility to ensure their congruence with contextual expectations and demands (Wotton, 2000). For example, converging theories that synthesise current nursing concepts to develop contemporary frameworks for practice are welcomed to address the complex needs of today's healthcare consumer (Fawcett, 2008).

Nursing has regularly drawn on theoretical and conceptual frameworks from other disciplines to understand human experiences. For example, a theory of organisational power (Kanter, 1977) has been applied in a nursing study to better understand the working world of nursing managers in relation to the construct of power (Paliadelis, 2008). Complexity theory was used in an interdisciplinary education program for health students to explore participant development of skills in teamwork (H. Cooper & Spencer-Dawe, 2006). Concepts of language development and abstract thinking were borrowed from linguistics to act as the fundamentals for guiding investigations of the practice of nursing diagnosis (Lunney, 2008). Lastly, Levine's conservation model of biobehavioural adaptation was employed by Mock et al. (2007) in a randomised clinical trial of exercise to mitigate cancer-fatigue. These examples demonstrate the usefulness of theoretical frameworks from outside nursing to explore and explain salient aspects of nursing practice (Greenwood, 2002).

Appreciative inquiry is another example of a non-nursing theory that is making its way into nursing research (Dewar & Cook, 2014; Helms et al., 2012; Hussein et al., 2014; Knibbs et al., 2012; Sidebotham et al., 2015; Yoon et al., 2011). Appreciative inquiry has its basis in the constructivist paradigm exploring the personal constructs of participants as they engage in everyday activities (Cooperrider, 1986). Research that uses this approach theorises that positive aspects of every experience will be found if sought, while negative aspects will surface if this is the focus of the investigation (Cooperrider et al., 2008). Problem-focused studies find problems, whereas a strengths focus will more likely uncover opportunities and inspirations. Appreciative inquiry focuses on common situations with a view to finding what works well, by exploring positive aspects and energising essences (Cooperrider et al.,

2008). Appreciative inquiry is a framework for transformative improvement (Carter, C. A., et al., 2007; Kavanagh, P. M., 2010; Trajkovski et al., 2013b).

Since appreciative inquiry is situated in the constructivist paradigm, personal subjective interactions are the prime way to access the voices of the participants in order to better understand their experiences of the topic and focus of the research (Polit & Beck, 2010). Nursing research is the practice of inquiry for the advancement of nursing as a profession (Kelly, M., & Dempsey, 2009) and the transfer of power to the participants to guide the inquiry reflects the intent of qualitative nursing research and professional nursing practice competencies and codes of conduct. The participant voice in any qualitative research is of critical importance as a central knowledge source, and the strengths-based approach provides a platform for sharing the unique and positive aspects of their stories (Cederbaum & Klusaritz, 2009).

Appreciative inquiry is an approach recommended to add value to nursing practice by introducing new forms of conversations and creative relationships between the researcher and the researched. A shift to increase nursing knowledge of medication administration practice requires different approaches to be tested in that area because 'we cannot enter the same old space and expect change' (Wasserman & McNamee, 2010, p. 315).

As already mentioned, health and human services are gradually moving towards an orientation that emphasises peoples' strengths and capacities (Heyne & Anderson, 2012). Appreciative inquiry embraces strengths and capacities through unveiling them and while not a nursing-generated theory, it is an appropriate framework for a deeper and different investigation of nursing practices of medication administration.

3.3 Principles of appreciative inquiry

'Appreciative inquiry' is a phrase coined by Cooperrider (1986) when it was used as an action research approach to uncover workplace development and management strengths that contribute to an organisational mission and aims in a positive way. Initially developed as a theory of organisational development (Cooperrider &

Srivastva, 1987), Cooperrider (1986) explains that appreciative inquiry is based on social constructivist views and invites positive, appreciative and affirmative dialogue. The transformational power of appreciative inquiry comes from the purposeful approaches to discover what works well, to dream about what could be, to design the way forward and to deliver on the ideas by determining the destiny of actions and outcomes (Cooperrider et al., 2008; Cooperrider & Whitney, 2005). Appreciative inquiry is generally understood as an approach to answer questions of what is effective in any given situation and to find that which adds value (Cooperrider et al., 2008; Watkins & Mohr, 2001; Whitney & Trosten-Bloom, 2003). Appreciative inquiry action research is based on the simple assumption that every organisation has things that work well, and those strengths can be the starting point for motivating and creating positive change (Cooperrider et al., 2008).

Appreciative inquiry's capacity to motivate positive change comes from the study of the factors that contribute to human systems functioning at their best (Whitney & Trosten-Bloom, 2003, p. 1). The focus is on individual and organisational strengths being articulated rather than investigating and sharing poor practice examples (Dewar, 2010). Appreciative inquiry is described as a holistic framework for liberating capacity in theory and practice (Watkins & Mohr, 2001). It is deliberately life-centric to facilitate the discovery and enhancement of factors that are meaningful and motivating to a group or organisation (Cooperrider et al., 2008).

Appreciative inquiry studies are able to motivate change through a worldview and as a research methodology (Watkins & Mohr, 2001). Positioned in the social constructivist paradigm, appreciative inquiry assumes that the world is shaped by many dialogues in which people selectively make sense of past and present experiences (Watkins & Mohr, 2001, p. 28). From this perspective, situations can be explored from a holistic standpoint (Watkins & Mohr, 2001). Holism as a social construct is influential in framing nursing practice and is described as an 'appreciation that each individual is composed of a number of dimensions that operate together to form a whole person who interacts uniquely with his or her environment' (Wilson, V., 2009, p. 11).

This holism is fundamental to appreciative inquiry. Therefore, it is predictable that approaches like appreciative inquiry would be attractive to healthcare professionals. For example, Heyne and Anderson (2012) examined how appreciative inquiry can help therapeutic recreation specialists to address client strengths, capacities and aspirations to effect change that embraces a more holistic approach. The premise of this strength-based approach was to holistically identify the individual's internal and external strengths, which are dynamic, continually interacting and changing (Heyne & Anderson, 2012, p.109). Likewise, mental health services worldwide are transitioning towards a 'recovery-informed paradigm' to assist clients to 'live a good life' (Elder et al., 2013, p. 15). The recovery-informed paradigm transition occurring for mental healthcare re-examines service provision and practice in order to move from a deficit-based approach to one of holistic strengths-based practice (Stanton & Tooth, 2013).

Exploring the strengths and capacities within organisations relies on a set of positioning principles. Foremost, for appreciative inquiry, it has been suggested that the act of inquiry is in itself an intervention that simultaneously impacts the future (Cooperrider et al., 2008). Cooperrider et al. (2008) termed this the principle of simultaneity, which co-exists with the other principles of poetics, suggesting that all stories are co-authored through past, present and future sources of learning, inspiration and interpretation. When humans imagine the future, they project that future image into the present through what Cooperrider et al. (2008) call anticipatory actions.

Lastly, the principle of positivity is that which is generated by positive affect, attitudes and social bonding during social encounters (Cooperrider et al., 2008, pp. 3–10). Cooperrider et al (2008, p. 10) state that positivity is central to its theoretical basis and that a positive image initiates positive action and comes from raising a positive topic of inquiry. They suggest that the interview process should involve 'storytelling to draw out the best of the past, to understand what one wants more of, and to set the stage for effective visualization of the future' (Cooperrider et al. 2008, p. 4). The practice of medication administration is embedded in social encounters between nurses and patients and is therefore an appropriate activity to be explored through an appreciative inquiry.

3.4 Process of appreciative inquiry

Appreciative inquiry uses a cooperative interaction between the researcher and participants in search for the best in people, their organisations and the world around them (Whitney & Trosten-Bloom, 2003). However, even though it is collaborative and adaptable, appreciative inquiry involves systematic discovery of what is most effective and capable in terms of economic, ecological and human systems (Cooperrider et al., 2008). Researchers that use appreciative inquiry must be clear about the aim of their study and how to go about achieving it. 'Appreciative inquiry involves the art and practice of asking unconditionally positive questions that strengthen a systems' capacity to understand, anticipate and heighten positive potential' (Cooperrider & Whitney, 2005, p. 8). It is a boundless, iterative, reflective and forward visioning process that 'gives way to inquiry, imagination, and innovation instead of negation, criticism and spiralling diagnosis' (Cooperrider & Whitney, 2005, p. 8). A futuristic rather than a retrospective approach in appreciative inquiry implies attention to ideal practices that enable visioning of what actions and behaviours constitute good practice (Limerick & Cunningham, 1993). As depicted in Figure 3.1, the phases of appreciative inquiry are labelled as discovery, dream, design and destiny and collectively called the 4D cycle of appreciative inquiry (Whitney & Trosten-Bloom, 2003).
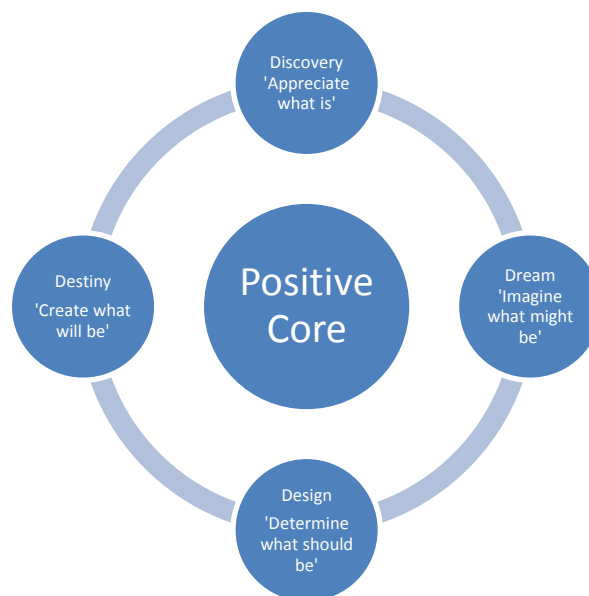

Figure 3.1: The appreciative inquiry 4-D cycle

The model presented in Figure 3.1 can be used to guide entire projects or applied to distinct parts of projects such as interviews or meetings (Whitney & Trosten-Bloom, 2003, p. 7). Generally, the appreciative inquiry process commences with a positively posed question intended to invoke participant reflections of personal and organisational strengths (Cooperrider et al., 2008; Cooperrider & Avital, 2004; Cooperrider & Whitney, 2005). Positive images are then harnessed and encouraged throughout the remainder of the process (Cooperrider et al., 2008; Cooperrider & Avital, 2004; Cooperrider & Whitney, 2005). Anticipated outcomes of this process can include knowledge creation (Chuangchun, 2008; Gray & Williams, 2011), knowledge translation (Kavanagh, T., et al., 2008; Lazic, Radenovic, Arnfield & Janic, 2011) and the discovery and design of evidence-based best practices (Bushe, 2011; Helms et al., 2012).

The varied use of appreciative inquiry in qualitative health research highlights its unique adaptive capacity to suit study settings and participants (Trajkovski et al., 2013a). Qualitative health research studies conducted between 1987 and 2011 that described the implementation of the 4D cycle as a research methodology were evaluated, and it was concluded that appreciative inquiry is not applied as a single method but rather specifically adapted the meet the needs of the participants and the organization (Trajkovski et al., 2013a). Appreciative inquiry as suggested by these authors provides a positive way forward for health research and a shift in research focus from problems to solutions (Knibbs et al., 2012; Trajkovski et al., 2013a), which is currently high on the global nursing agenda.

3.5 Appreciative inquiry as a research approach for nursing

A shift away from a deficit and problems perspective towards investigating and promoting positive practices is recognised as the way forward to enhance global healthcare (WHO, 2010a). The WHO (2014a) advocates for the use of research evidence as the basis for healthcare practices and suggest a move towards seeking out best practice. Determining the best practice for future nursing as a theory-based

discipline requires the involvement of clinical nurses in selecting, implementing and evaluating the goodness of fit between a theory and their practice (Wotton, 2000).

Nursing is a knowledge and practice-based discipline where theory is used to guide the design, development and implementation of healthcare to individuals, groups and communities (Jones, T. L., 2010; Kelly, M., & Wilson, 2009; Schneider, Z., 2013; Turner, Doyle & Hunt, 2003; D. Whitehead, 2013; Wotton, 2000). Theory and practice are integrally linked in this way through research and application of evidence-based knowledge to practice contexts (Baumann, 2012; Bunkers, 2012; Greenwood, 2002). The need for evidence-based knowledge suggests that research based in and on current practice provides an ideal platform for nursing knowledge foundation and creation. A 'good fit' for guiding safe, comprehensive and individualised patient care will result from research that is theoretically aligned with disciplinary paradigms and articulates knowledge into practice (Wotton, 2000).

Discipline theories are created by the discipline members to offer descriptions and explanations of the phenomena of concern (Bunkers, 2012). Professional nursing values reflected in the Australian codes and standards include collaboration, caring, respect, kindness, diversity, equity and inclusion (Nursing and Midwifery Board of Australia, 2008a). A strengths-based approach such as appreciative inquiry is valuable to nursing practice because, as explained earlier, it aligns with core values of nursing through holistic socially constructing knowledge (Cederbaum & Klusaritz, 2009; Knibbs et al., 2012).

The discursive frameworks positioned within the disciplines of medicine, pharmacy and law have historically been regarded as the source of truth for nursing practices of medication administration rather than the voice of nursing (Gibson, 2001, p. 108). According to Benner (2013), the power to define and diagnose deficits established by medicine has steadfastly dominated healthcare discourse. For example, problem-oriented randomised control trials are traditionally used as the basis of knowledge creation in determining best practice in clinical care (Wasserman & McNamee, 2010). Nursing practice constructed from this traditional perspective centres thinking and actions around a scientific truth that focusses on problems. Research in medication administration has unmistakably focused on identifying, quantifying and

documenting the problems encountered within medication management and the error rates associated with the process. Studies suggesting strategies to correct problems, reduce adverse events and error rates to improve patient outcomes are common (Arndt 1994; Camire et al. 2009; Wright 2010; Kiekkas et al., 2011). The literature in Chapter 2 is evidence of this positivist perspective.

With the dominant discourse about medication errors in mind, it was the discovery of a strengths-based practice movement in mental health contexts (State of Victoria, 2011) that prompted the search for a strengths-based theoretical foundation for this study. For research to be credible, the implementation of theory-based ideals, principles, approaches and processes to the inquiry in practice must be explicit (Dewar, 2010). Strengths-based approaches in world health practice and research, while opting for a probing search into the essentials and potentials of human and social existence, do not deny the existence of problems. Constructivist approaches to knowledge generation, such as those of the strengths-based approaches, can be boundless (Carter, C. A., et al., 2007). However, in practice, focussing on strengths does not mean that problems are ignored (Elder et al., 2013).

Appreciative inquiry is becoming recognised as a cross-disciplinary framework for improving practice in healthcare and nursing research:

> The fields of organizational development and human systems change are going through a theoretical metamorphosis in which change has become much less about detection of error, analysis of chronic problem, or exclusive treatment of the deficient, the broken, and the problematic. Like the exciting shift in medicine from anti-biotic to pro-biotics or the movement in psychology from analysis of dysfunctions to examinations of human strengths, the field of organizational and management theory finds itself in the midst of a positive revolution in change – something that now and for many years into the future promises to elevate and extend our images of what it means to organize, what it means to transform organizations, what it means to be an organizational citizen, and what it means to be-in-the-world. Kim Cameron, Jane Dutton, and Bob Quinn (2003) have recently announced it as an 'exciting new

field of study in the organizational sciences' – the field of 'positive organizational scholarship'. (Cooperrider & Avital, 2004, p. xi)

In recent years, the use of appreciative inquiry as a research framework has been growing in various healthcare situations and settings (Adhikari et al., 2014; Carter, C. A., et al., 2007; Clossey et al., 2011; Cowling, 2001; Farren, Flanagan, Reis, Smith & Wright, 2010; Kavanagh, T., et al., 2010; Knibbs et al., 2012; The Staff of Mountbatten Ward, Wright & Baker, 2005; Trajkovski et al., 2013b; Wasserman & McNamee, 2010; Yoon et al., 2011). It has been promoted as a philosophy (Clarke et al., 2012), theoretical framework (Cowling, 2004; Havens et al., 2006), research approach (Adhikari et al., 2014; Helms et al., 2012; Wasserman & McNamee, 2010) and methodology (Lazic et al., 2011). The flexibility of appreciative inquiry has allowed researchers to jointly adopt the philosophy and methods (Clarke et al., 2012; Lind & Smith, 2008) or to use them separately by applying its methodological processes to discreet aspects of a research project (The Staff of Mountbatten Ward et al., 2005).

P. M. Kavanagh (2010) [also cited as T. Kavanagh] has demonstrated success in using an appreciative inquiry process for knowledge transfer in a mixed method case study with 12 nurses in in-patient paediatric wards, who were interested in improving the documentation of pain management (Kavanagh, T., et al., 2010). Participants attended four three-hour appreciative inquiry workshops and were guided through the purpose of the 4D appreciative process (Figure 3.1) by the chief investigator to discover what practices were working well for pain management in children. The chief investigator proposed that a realistic and practical approach to practice improvement would be to expand existing positive practices rather than create and implement something new (Kavanagh, T., et al., 2010). The participants in P. M. Kavanagh's (2010) study reported the approach to be valuable in changing practices because it focused on established effective practices and provided a process for expanding those practices.

The views of nursing home residents were explored by Wasserman and McNamee (2010, p. 312) as firstly reflecting a problem-oriented discourse when questioned about 'what matters to them'. In their pursuit for what was generative, Wasserman

and McNamee (2010, p. 312) needed the participants to 'let go' of taken-for-granted assumptions and so an appreciative inquiry was undertaken. The experience was described as 'at first, feeling disruptive' but critical reflection on this approach highlighted the opportunity that it offered for new ways of attending to that which would otherwise remain invisible (Wasserman & McNamee, 2010, p. 312). The relational model used in the interviews promoted dialogue between the aged care residents and the decision makers to enable co-constructed meanings of what was generative in their experiences, empowering the residents and enabling their voices to be reflected in future innovations (Wasserman & McNamee, 2010).

Bonham (2011) used appreciative inquiry methods to organise and analyse interview transcripts from conversations with incarcerated youth offenders about their life experiences. The interview questions aligned with the components of the 4D cycle in Figure 3.1, and the emerging themes from participant narratives reflected each phase of an appreciative inquiry methodology and were used to extract life patterns that resembled resilient attributes (Bonham, 2011). Bonham (2011) commenced the interviews with a broad open question: 'Tell me what happened that you are in detention' (p. 127). During the dreaming phase, the youth discussed what their life might be like when asked to respond to Bonham's (2011) affirmative question, 'What things would need to happen for your wishes to come true?' In the design phase, the youth made a plan for the future through prompts such as: 'What do you need to do?' and 'How will you do it?' (Bonham, 2011, p. 127). Finally, in the delivery phase, which Bonham (2011, p. 127) says assists in putting the narrative and plan together, the youth responded to 'What kinds of support do you need to accomplish your dream [goal]?'

Bonham (2011) demonstrates the use of appreciative inquiry as a means of extracting the generative essences that have helped the participants to live within difficult contexts. The youth offenders in this study were able to articulate their stories and life experiences, making meaningful the poetic principle of appreciative inquiry in responding to challenges and highlighting the capacity for visioning opportunities for the future (Bonham, 2011).

The benefit of exploring story-telling opportunities using appreciative inquiry has been realised for other vulnerable communities, such as children with special needs (Carter, B., et al., 2007; Carter, C. A., et al., 2007) and the staff who work with them (Brookes, 2011). In a study conducted by B. Carter et al. (2007), an appreciative inquiry methodology enabled service users and nurse participants to engage as co-researchers to explore ideas for best practice across multiple agencies providing community-based care to children with complex needs. Participants were asked to identify 'creative visions for best practice' and care for the children through interviews, nominal group workshops and consensus workshops that produced narrative data for thematic analysis (Carter, B., et al., 2007, p. 530). The findings from this study resulted in the development of practice guidelines that reflected the client values and focused on aspects of human relationships, dialogue, trust, respect, sharing, involvement, information exchange, flexibility and choice (Carter, B., et al., 2007, p. 532).

Collaboration among clinicians, support staff and patients resulted in a patient transfer checklist that reflected aspects of a 'perfect handoff/transfer' as a tangible research outcome from an appreciative inquiry conducted on multiple health service campuses in Canada (Clarke et al., 2012). Additional benefits were reported as a cultural change that respected the needs of nursing staff to have quiet time and space to effectively and safely communicate handoff details (Clarke et al., 2012). Threats to patient safety during unit-to-unit handovers was the impetus for adopting appreciative inquiry in the study because lost or miscommunicated clinical information can lead to potential incidents and adverse events (Clarke et al., 2012). Clinical practice tools and processes that are collaboratively produced and include patient perspectives, as demonstrated by Clarke et al. (2012), are evidence of the practical and useful process of appreciative inquiry that highlights a strengths-based approach to clinical practice strategies.

Patient transfer was also the focus of a study by Helms et al. (2012), who used appreciative inquiry in the third phase of a mixed methods study that sought to improve resident medical officers' patient transfer 'handoff/signout'. However, this study applied the methodology quite differently. The participants were surveyed to rate their attitude to 'signout' and to nominate a colleague that they perceived as

performing the 'best signouts' (Helms et al., 2012, p. 288). Then the nominated doctors formed a working party with other interested doctors to design a 'signout' template that reflected the attributes of the top five nominated individuals (Helms et al., 2012). Helms et al. (2012) concluded that appreciative inquiry was a successful approach to improving practice but did not provide the details of the practice improvements. Rather, the participants in this study produced a list of problems associated with the signout and made suggestions on how to avoid them, much like the processes used in the problem-focused studies described in Chapter 2.

One study of medication management systems and practices nominated appreciative inquiry as the research approach that aligned with an ethnographic methodology (Adhikari et al., 2014). However, it was unclear how the appreciative inquiry principles or methods were used because the article does not describe the use of appreciative inquiry after mentioning it in the abstract. The interview and focus group participants in this study were asked to identify deficits in the organisation's medication systems and processes. The findings included aspects of what was needed to support practice and learning, mentioning some safety measures already in place in the host hospital and highlighting 'that there are some areas that can be strengthened' (Adhikari et al., 2014, p. 189). However, a strengths-based approach was not evident throughout the study.

The participants in Adhikari et al.'s (2014) study included nurses, pharmacists and pharmacy technicians who were directly observed for one hour at which time contextual details of medication administration practices were gathered. The findings of workflow interruptions and lack of resources reflect those of studies cited in Chapter 2. Identification of systems or practice strengths was conspicuously absent in the paper, but Adhikari et al. (2014, p. 186) 'argue that there is a need for nurses to go beyond the 'five rights' to ensure holistic medication safety'.

There is a need to be explicit about the use of appreciative inquiry and to disclose the way it is applied so that others understand the findings. Some studies have reported challenges during its implementation, as the realities of the healthcare context can be a source of tension for researchers and participants (Kavanagh, T., et al., 2010). Appreciative inquiry by its nature demands participant engagement, but at times the

demands of organisational change, clinical load and organisational culture can make a focus on strengths challenging (Kavanagh, T., et al., 2010). Barriers, including change overload, logistics, busyness and lack of organisational follow-up, can adversely affect the capacity of participants to be actively involved (Kavanagh, T., et al., 2010).

The distinctly different focus of appreciative inquiry has been described as a drawback by some researchers (Bonham, 2011; Havens et al., 2006; Kavanagh, T., et al., 2010; Wasserman & McNamee, 2010). This could be because identifying problems rather than strengths is the default position in most health studies. However, with gentle persuasion, encouragement and organisational acceptance of the process, Havens et al. (2006) have noticed 'AI creep' as a possible shift in perspective towards more positive approaches. Richer et al. (2009) suggest that appreciative inquiry may well be a significant step towards greater innovation in healthcare.

3.6 Justifying the use of appreciative inquiry for this study

Most research studies into medication administration practices are quantitative (Fogarty & McKeon, 2006; Fry & Dacey, 2007; McGillis Hall et al., 2010; McKeon et al., 2006), which requires that the practice be compartmentalised into its distinguishable components for numerical measurement (Guerrero, Beccaria & Trevizan, 2008). Their aim is predominantly to identify error rates and suggest solutions to improve practice flaws and failures (Hayajneh, AbuAlRub & Almakhzoomy, 2010), or to expose the factors that contribute to errors (Biron, Lavoie-Tremblay et al., 2009).

However, despite the plethora of studies that seek to identify the causes and solutions to medication errors, the prevalence of medication errors in modern day healthcare environments continues to be high. This study certainly does not aim to discount past approaches, but rather to apply a new perspective to a study of medication administration that may contribute to improved nursing knowledge and practice. As Cooperrider and Avital (2004) state:

the results of any given AI [appreciative inquiry] repeatedly challenge and disrupt, asking us to let go of our highest ideals and to create, in the company of others, even better ones when judged in relation to the calls and opportunities of our times … dislodging treasured certainties. (p. xiii)

With this in mind, this study aims to deliver new knowledge in the field of nursing practice from a standpoint that asserts 'social phenomena and their meanings are continually being accomplished by social actors' (Bryman, 2004, p. 538) and where knowledge is generated as 'social conventions rather than as immutable universal laws' (Holmes, 2000, p. 28). Appreciative inquiry was selected because as a practical philosophy, it invites a conscious choice to seek out and inquire into that which is generative and life-enriching by allowing the development of closeness between the phenomena of interest and the researcher (Watkins & Mohr, 2001, p. 58). It allows 'the interpreter to make a choice to see what is present as opposed to what is absent' (Quinn & Cameron, 1988, p. 85).

In this study, appreciative inquiry has been chosen as it may add another perspective to nursing knowledge by focusing on what works well to explore the 'other side of the coin'. The main reason for using this framework is to present an alternative perspective to the bulk of the research on medication administration.

The studies discussed above have identified appreciative inquiry as a framework and methodology that can offer the opportunity to realise advances in patient care, patient safety, service delivery, staff engagement and organisational culture. Although appreciative inquiry originates in disciplines other than nursing, the discussion of epistemology and ontology in this chapter demonstrates how discipline theories are mobile and transferable as well as catalysts for transformative practices within the disciplines where they are newly applied. This study borrows a theoretical framework and methodology that originated in organisational development to re-focus attention away from errors and problems and uncover valuable practices in medication administration.

3.7 Chapter summary

Overall, this chapter introduced appreciative inquiry as a suitable theoretical framework for this qualitative study of nursing experiences of medication administration. This chapter recommends that using constructivist frameworks for researching nursing practice are valuable as a way of knowing through searching for positive, valuable and creative capacities and processes. As discussed, appreciative inquiry has been used in a number of other studies of clinical learning and practice. Nursing practice models of care have been based on it to enhance collaborative, patient-centred care that is generated from identifying individual and organisational strengths.

This chapter has justified the use of an appreciative inquiry strengths-based approach as a purposeful means of gaining new insights that may enhance and advance practice through an appreciation of what is already working well. The premise of exploring positive practices has been shown to lead to the discovery of effective nursing practices. The next chapter will demonstrate how the appreciative inquiry methodology is used in this study of medication administration practices and explain the methods used in this study.

Chapter 4: Methodology

4.1 Introduction

Appreciative inquiry was introduced in Chapter 3 as the theoretical framework best suited to this study. The underpinning philosophical frameworks of qualitative research methodologies now need to be discussed in order to understand the epistemological congruence of the theoretical framework and methodology (Borbasi, Jackson & Wilkes, 2005). Detailed descriptions of the research methods are provided for transparency of the processes, demonstrating ethical research rigour and trustworthiness. As already discussed, appreciative inquiry is a strengths-based theory used to find situated possibilities of people at particular points in time (Gottlieb, 2013). The alignment of this philosophy to the methodology will be outlined first in this chapter to clarify the paradigm that guides it. Next the methods used in this study will be described, starting with where it was located and the technique used to recruit participants. Qualitative techniques of observation, interview and researcher reflections were used to collect data consistent with the appreciative inquiry approach that values the contribution of researcher involvement to the findings. The techniques, tools and processes used to gather, organise and analyse the data will be described and justified. The decision pathway and the audit trail are described to explain the processes that led to the findings.

Detailed descriptions of the actions taken to meet the Australian Government's (2007a) code for ethical research conduct will then provide assurances that this study was undertaken ethically and that the researcher obligations were met. This is followed by a self-evaluation of the study, using criteria for determining rigour and trustworthiness. The actions taken to respond to these will be explained, demonstrating transparency and auditability of the study, and discussing any perceived limitations. The chapter explicates the research design decisions, showing a strong connection to the philosophical basis of this study.

4.2 The research paradigm

Determining the best research design to use requires commensurability between the research aims, strategies and the foundational philosophical dimensions of the chosen paradigm (Guba & Lincoln, 2005). Identifying a theoretical framework as distinct from the methodology is an accepted process in nursing and social sciences research (Bryman, 2004; D. Jackson et al., 2003; Walsh, 2001; D. Whitehead, 2013). The theoretical position of the researcher has implications for how the world is represented or how a methodology is adapted (Borbasi et al., 2005, p. 494). The philosophical perspectives of the researcher affect every phase of the research process from the initial construction of the question, to the design, conducting the research and finally the style and language of reports and publications (Borbasi et al., 2005, p. 494). Choosing appreciative inquiry to guide this study of medication administration experiences provided a logical connection between the research question, theoretical framework, the study design and the data collection methods (Osborne & Schneider, 2013).

The constructivist perspective informing this study rejects the notion of a single, objective truth and instead recognises the existence of multiple realities acknowledging peoples' different experiences (D. Jackson et al., 2003; Polit & Beck, 2010). This epistemology, described in Chapter 3, is specific to individuals and linked to different assumptions of what constitutes knowledge, truth and reality (D. L. Smith & Hope, 1992). As a research concept pertaining to individual theoretical and philosophical positions, epistemology gives rise to the potential for contentious and different approaches to investigating issues (D. Whitehead, 2013). Richardson-Tench, Taylor, Kermode and Roberts (2014) assert that uncertainty of what counts as truth accounts for the various interpretations of new knowledge. The interpretive or constructivist inquirer tends to emphasise dynamic, holistic and individual aspects of reality, which are contextually constructed, highlighting variable interpretations of knowledge (Polit & Beck, 2010). Taking the position of relativism, the constructivist believes that there are multiple interpretations of reality (Polit & Beck, 2010). Qualitative research methods are interpretive activities that privilege no single

methodological practice over another and align with a constructionist perspective (Denzin & Lincoln, 2005a, p. 6).

Recognising and understanding the differences between paradigms is necessary to inform decision-making in relation to research designs and methods for the generation of findings (Hansen, 2006). The positivist paradigm underpins traditional quantitative scientific research that values objective reductionism and testing of causal relationships to enable deductive reasoning and test predictions (D. Whitehead, 2013). This type of research demands methods that are free of the subjective influences of people's ideas, intentions and emotions (Richardson-Tench et al., 2014). Scientific methods address research questions that are designed to observe and analyse situations and measure events by quantifying the occurrence with numbers, percentages and statistics (Richardson-Tench et al., 2014).

Medication administration studies have commonly been guided by positivist perspectives and include designs such as quasi-experimental interventions to measure compliance to policies and procedures (Xu, Li, Ye & Lu, 2014), surveys to measure nurses application of pharmacology knowledge (Honey & Lim, 2008; Lim & Honey, 2014) and secondary analysis surveys of medication error audits (Armitage, Newell & Wright, 2010; Breckenridge-Sproat et al., 2012). Quantitative factor analysis studies were prominent in the literature review in Chapter 2. These studies included measurement of preparedness of nursing students to carry out medication administration (Bourbonnais & Caswell, 2014; Sulosaari et al., 2012; Valdez et al., 2013) and identification of antecedents to medication errors (Advinha et al., 2014; Aggar & Dawson, 2014; Boztepe, Özdemir, Karababa & Yıldız, 2014; McKeon et al., 2006). Quantitative studies have also used statistical multivariate analysis to predict medication errors (Cottney & Innes, 2015; Donaldson et al., 2014).

However, it is contested in this study and supported by others that the assumptions of positivist studies are inadequate to address the theory and value-laden issues of voice, empowerment and praxis that are important to nursing (Denzin & Lincoln, 2005b, p. 184). The constructivist paradigm assumes that subjective interactions are the primary way to gain access to the voices and interpretations of the participants as the way to understanding the phenomena of interest (Polit & Beck, 2010, p. 16). One of the limitations of the positivist approach is the lack of reflection on the participant

experiences that make sense of what was observed and quantified (Smith and Hope, 1992). Standard scientific explanations are not always appropriate when exploring what it is to be human (Lyneham, 2004, p. 66). Therefore, a positivist approach was rejected as inappropriate and unlikely to achieve the aims of this study.

Constructivism, with its appreciation of language and discourse, has the power to replace the absolutist claims of scientific and quantitative approaches (Cooperrider & Whitney, 1999). Thus, it is suited for this study, which seeks to understand human actions, thoughts and feelings. Knowledge is maximised by constructivist means when the distance between the inquirer and the participants of a study is minimised (Polit & Beck, 2010). Qualitative approaches that situate the researcher close to the study participants have long been used in nursing research (Hansen, 2006).

Interpretive research aims to 'generate meaning…in order to…make sense of things of interest' (Richardson-Tench et al., 2014, p. 176). The researcher acts as data gatherer through listening to narratives and co-constructing realities when using interpretive methods (Guba & Lincoln, 2005). Thorne (2008) advocates this approach as a credible process for accessing and generating discipline-specific knowledge, encouraging collaborative positioning of the researcher with the participants. The narrative story-telling method is a 'time-honoured tradition' of gathering and sharing information for nurses (Carroll, 2010, p. 235). Nurses use narrative to transfer important information from past to present in theory and practice (Carroll, 2010; Dempsey, 2014; Rose & Glass, 2008). Thorne (2008) adds that the telling of stories and observing practice forms the basis of many descriptive research methods.

An appreciative inquiry framework encourages new understandings of the participant's role in medication administration by interpreting data affirmatively to discover the points of practice that contribute positive actions. The unique affirmative stance that distinguishes appreciative inquiry from traditional qualitative methodologies and other interpretive research designs is what attracted me to this as both a methodological and theoretical framework. The qualitative appreciative design of this research diverges significantly from most other studies of medication

administration practices. Therefore, other qualitative research designs were deemed to be unsuited to achieving the study aims.

In qualitative research designs, a variety of inquiry methods can be employed for collecting data that situate and connect the researcher to the empirical world of the participants, such as structured, semi-structured and open ended interviewing, direct and indirect observation, participant and non-participant observation, document analysis, artefact and cultural records analysis (Denzin & Lincoln, 2005a, p. 25). Qualitative research designs have flexible sets of guidelines connecting the researchers' theoretical paradigm to the strategies of inquiry and methods of data collection and then to the processes of analysis to provide answers to the research questions (Denzin & Lincoln, 2005a). The iterative process of thematic analysis is the conscious movement between analysis and collecting and analysis and reflecting (Hansen, 2006).

The practice world of nursing has been described as a messy environment consisting of complexities and contradictions (Thorne, 2008). Researcher proximity to the participants throughout the observation, interview and reflection was a consistent approach that was undertaken in a variety of ways. Taylor (2005, p. 177) describes nursing and midwifery as a complex practice involving knowledge, skills and human connection and having many opportunities for reflection. Reflection provides insight to the complete research study experience (Van Manen, 2002).

Focusing on human experiences makes it possible to develop a rich description and deep understanding of the topic of interest (D. Jackson et al., 2003, p. 141). Individual strengths embedded in personal experiences can be communicated through narratives (Moloney, 1995), and generation of data from narratives joins the participant stories with their experience, enabling all aspects to be considered holistically with all nuances viewed in context (Brockopp & Hastings-Tolsma, 1995).

4.3 Location of the study

The hospital chosen for this study is located in a south-east Queensland coastal regional city. The 100–200 bed public hospital (Australian Institute of Health and Welfare, 2012) is 264 kilometres north of its main metropolitan referral hospital and 34 kilometres from another public hospital that forms part of the regional health service district (Queensland Health, 2015). This location was selected because it was accessible to the researcher.

The in-patient services available in this hospital include: 'Internal Medicine, Emergency Medicine, Level 4 ICU/CCU, General Surgery, Obstetrics & Gynaecology, Paediatrics, Orthopaedic Surgery, Palliative Care' (Queensland Health, 2015). RNs who regularly administer a range of medications in their everyday practice are employed in each of these settings (Queensland Health, 2015). Specialty areas such as aged care residential facilities, mental health and paediatrics were excluded from this study because of the significant differences in medication administration practices, discussed in Chapter 2.

4.3.1 Clinical contexts of nursing practice

This section provides an overview of the clinical settings where the study participants were practicing. The settings were selected because their policies, procedures, guidelines and forms used for medication administration are consistent. The clinical settings, highlighting different models of care are summarised in Table 4.1 and then described in detail for the remainder of this section.

Table 4.1: Clinical contexts

Clinical setting	Patient care areas	Model of care
Emergency Department 20 beds/stretchers	1 triage trolley bay 2 resuscitation bed bays 6 patient bays each with cardiac monitors 1 paediatric care bay 4 short-stay beds 6 consultation rooms 1 plaster room	Nurses are allocated to individual bed/trolley bays. Each nurse is allotted an 8-hour workload for the purpose of the staffing requirements, regardless of the number of patients who are processed through the bed/trolley area during the shift.
Intensive Care/ Coronary Care Unit (ICU/CCU) 9 beds	1 single isolation room 3 high dependency beds with ventillators 5 cardiac beds All beds have cardiac monitors	Nurses in this setting are allocated a caseload independent of their colleagues. Teamwork is necessary at times of patient handling.
Surgical Ward 36 beds	8 single-bed rooms 6 rooms containing 4 beds 1 procedure room 4 beds used for occasional surgical overflow	Patient care in this ward is allocated to teams that include RNs, ENs and unlicensed healthcare workers.
Medical Ward 34 beds	14 single-bed rooms 5 rooms containing 4 beds 1 procedure room	Patient care in this ward is allocated to teams that include RNs, ENs and unlicensed healthcare workers.

4.3.1.1 Emergency department

The patient care areas of the emergency department include one triage area for receiving patients, two resuscitation bays, seven patient care cubicles (with one cubicle dedicated to caring for paediatric patients, a four-bed short-stay area for overnight care, a plaster room, a procedure room and six consultation rooms. The department received 37,452 patient presentations during 2013 when data was collected for this study (Commonwealth of Australia, 2014c).

The nursing staff profile in this department allocates nurses to roles for team leader, triage, resuscitation bay, short stay beds and consult rooms, and three nurses to manage the remaining seven cubicles. Allocation depends on the skill set and scope of practice of the available nurses. For example, to be allocated to triage, the nurse must have completed the hospital triage education package. The shifts offered in this department are eight or 12 hours long.

4.3.1.2 Surgical ward

The surgical ward has a central nurses' station with bedrooms arranged in a hub and spoke configuration. Single-bed rooms are located in close proximity to the nurse's station with viewing windows adjacent to the nurse's station. There are four-bed rooms further along the three outward heading corridors. Utility rooms are positioned halfway along each corridor. The treatment room, procedure room and beverage bay are behind the nurse's station.

The bed numbers in this ward vary according to the number of surgical procedures. There are times when beds are closed to reflect a reduction in patient numbers. This ward has 32 beds available when it is functioning at capacity.

The surgical cases encountered in this unit during 2010 were 639 general surgical procedures (focusing on organs of the abdomen and gastrointestinal system, gall bladder, liver and spleen), 309 orthopaedic cases (focusing on bones and muscles) and 65 urological operations (focusing on organs of the urinary system)

(Commonwealth of Australia, 2014b). The average length of stay for patients in this ward was 5.3 days in 2010 (Commonwealth of Australia, 2014a).

The nurse staffing levels in this ward are determined by a patient dependency rating scale called TrendCare[TM], a software package containing algorithms that calculate patient acuity depending on nursing care categories that predict the number of nursing hours required to deliver an appropriate level of care (TrendCare Systems, 2013). RNs working in this ward might be allocated the care of one to six patients depending on the patient's level of acuity according to TrendCare[TM]. In the surgical and medical wards, the staff profile is a mixture of RNs, ENs and assistants in nursing whose workloads are all assigned using the TrendCare[TM] program.

4.3.1.3 Medical ward

The medical ward layout is configured in the same way as that of the surgical ward. The patient cases that might be encountered in this ward include any medical condition, such as infections, chronic obstructive pulmonary disease, heart failure or diabetes (Commonwealth of Australia, 2014d). The average length of stay for patients in this ward was 5.3 days during the year of the study (Commonwealth of Australia, 2014a).

4.3.1.4 Intensive care/coronary care unit (ICU/CCU)

This unit contains separate bed areas, including five coronary care beds, three intensive care beds and one single-bed room designed for patient isolation. The nurses' station is a bench that runs the length of the ward and faces all of the beds. The utilities and medication preparation areas are located behind the nurse's station. TrendCare[TM] is again used in ICU/CCU for allocating RNs only, not ENs or assistants in nursing. Higher staff-to-patient ratios are calculated by TrendCare for this unit in relation to the high dependency of the patient.

The patients admitted to this unit are acutely unwell surgical and medical cases, sometimes requiring ventilation and/or complex cardiac monitoring and interventions.

The average length of stay for patients in this unit is 5.3 days (Commonwealth of Australia, 2014a).

The participants recruited for this study are all RNs working in these adult acute care areas. Despite the variety of settings, participant skills and scopes of practice, the NIMC, mentioned in Chapters 1 and 2, is the standard medication chart used in these areas.

4.3.2 Participant characteristics and sampling

Sampling principles and processes are directly associated with the topic and the theoretical framework and are governed by the methodology (Higginbottom, 2004). Quantitative studies generally rely on large samples to statistically generalise findings through the logic and power of probability (Hansen, 2006). Conversely, large samples are generally not recruited for qualitative studies, as they are concerned with in-depth information about people and require careful selection of participants (Hansen, 2006). Findings from qualitative studies relate to individual experiences and are not generalisable, which is reflected in the method of recruiting the research participants (Higginbottom, 2004). The findings are however, then more likely to resonate with others in similar contexts because of a level of homogeneity that is helpful in making the findings of this nursing research recognisable to other nurses through a shared knowledge of the scope of practice.

A purposive sampling method was used in order to select participants. This method assumes the need to identify the boundaries of recruitment based on the shared characteristics of participants to the study, and employs conscious selection of participants who are representative of the population of interest (Hansen, 2006, p. 53). Purposive sampling is the most strategic sampling technique used in qualitative research because of the need for the participants to have specific relevancy to the research question (Bryman, 2004).

In this study, the sample of interest was RNs working in the settings described earlier. ENs and assistants in nursing were excluded from this study because assistants in

nursing are not authorised to administer medications in this setting and the EN has restricted authority to administer certain medications and only under the supervision of the RN (Nursing and Midwifery Board of Australia, 2015a).

4.4 Participant recruitment and consent

Following ethical approval to conduct this study, the study was initially introduced to potential participants through the display of a general invitation flyer (Appendix C) on the noticeboards of the chosen clinical areas. The Director of Nursing (DON) and Nurse Unit Managers (NUMs) were asked to notify nursing staff of the research project through the established communication channels (noticeboards, email, staff meetings). The details of the study were outlined on the invitation flyer and comprehensively explained in the written information sheets (Appendix D). The contact details of the researcher and doctoral research supervisors were provided on information flyers and written information sheets. The necessary elements for informed consent were considered prior to any of the study activities being undertaken. Potential participants were made aware of the purpose of the study and most importantly the voluntary nature of participation and their right to withdraw (Woods & Schneider, 2013). Study procedures, potential risks and benefits and the basis of participant selection were explained at the meetings along with the timing and types of activities (Woods & Schneider, 2013). All of these were also detailed on the written information and fliers provided to interested staff.

Question and answer sessions were delivered by the researcher at shift changeover times in each setting selected for this study. The attendees were offered the opportunity to ask questions, seek clarification and raise concerns. Anxiety arising from any assumption that this was an investigation of practice problems or an evaluation of individual practice was alleviated through information sharing. Moreover, once the issues were discussed and resolved to the satisfaction of the staff, this opportunity resulted in a number of willing volunteers.

Any interested participants were asked to make direct contact with me to express their willingness to participate. All questions were addressed to the satisfaction of the

participants before arrangements were made for the dates of the observation shift and the interview. Prior to each interview, participant consent for it to be audio recorded for transcription was gained. The steps taken throughout this consent process met Woods and Schneider's (2013) elements for informed consent of ethically conducted research and were consistent with the ethical approvals granted for this project that are discussed in more detail below.

4.5 Rationale for the data collection process and methods

Nursing knowledge development is an iterative process between research and practice where nurses work collaboratively to apply their knowledge to practice to generate new understanding and further inform practice (McCready, 2010). This 'belt and braces' approach has been described as a way to counter any perceived weaknesses that might exist in any single method of data collection and analysis (Walsh, 2001, p. 69). In this study, the three-phase data collection design of observation, interview and researcher reflections ensures a well-rounded approach to exploring the participants' experiences of nursing practice in relation to medication administration.

The practicality of nursing and the contexts in which nursing occurs is observable. Observation is valuable in explorative studies to seek out what is going on as a precursor to the subsequent interviews (Robson, 2002). Direct observation of nursing work is one of the most commonly used methods for collecting descriptive data (Taylor et al., 2007, p. 174). Observing the participants in this study enabled access to behaviours and circumstances for description and interpretation. Observation is advocated as a research method that can yield valuable data, reflecting knowledge, behaviours and attributes (Nagy, Mills, Waters & Birks, 2010; Osborne & Schneider, 2013; Richardson-Tench et al., 2014).

In this study, the observation data preceded the collection of interview data, and the researcher's reflective journal was kept throughout both the observational and interview phases of data collection. Interviews are used in qualitative research to

explore specific inductive reasoning (Thorne, 2008). Face-to-face interviews are considered the most appropriate way to allow access into another person's world (Minichiello et al., 2008). Depending on the research design, an interview might consist of structured or set questions requiring responses on a list of topics or a less structured approach that is more of an open conversation (Richardson-Tench et al., 2014). A semi-structured format allows flexibility by loosely structured questioning and permits the researcher to focus the participant on issues that are central to the broad research topic (Minichiello et al., 2008). The interviews provided an opportunity for the researcher to clarify and explore in more depth observed behaviours and situations encountered. In-depth interviewing and diary entries are reliable sources of data that help unpack the meanings people give to their experiences (Hansen, 2006; Minichiello et al., 2008).

Actions can become hidden from the actor through habitation and unable to be recalled unless the individual is reminded through reflective questioning (Van Manen, 2002). Van Manen (2002) asserts that recollection of behaviours that are part of everyday practice is sometimes difficult and tends not to attract personal reflection because of the habitualisation of the behaviour and taken-for-granted nature of the experience. The combination of observations and then interviews in this study helped to focus the participants on their everyday practices of medication administration and to disentangle it from other nursing activities.

The interviews in this study were designed to provide insight into the practice of medication administration from the perspective of the RN. Questioning about nursing practices where the five rights framework is well established requires some sensitivity to glean the desired information from the participants (Bonham, 2011). The expectation of nurses to embed and adhere to the procedural rules from pre- and post-registration education might have hindered exploration of their practice beyond the procedural framework if observation of the practice were not included. It was anticipated that this prior conditioning might lead to the participant feeling compelled to offer 'rehearsed talk' (Lewis, 2014) and cite adherence to the 'rights' as the most positive aspects of their practice. However, the opportunity to use the observation data to inform prompting questions during the interviews reduced the

participants' tendency to discuss their practice in relation to the five rights framework.

Cooperrider et al. (2008) state that the form and function of the knowledge constructed is shaped by the questions that are initially asked. The first interview question is described as fateful because it determines the focus of the remainder of the project as the participant will turn their energy in that direction (Watkins & Mohr, 2001, p. 61). Appreciative inquiry questions are stated in the affirmative, to invite stories that value the 'life-giving essences' of behaviour (Watkins & Mohr, 2001, p. 92). Two broad opening questions were used in this study to initiate conversation. First, the participants were asked about their experience of being observed and then 'Can you tell me about your experience when administering medications and how it reflects what you were taught?' Throughout the conversation, the participants were asked about standout education and practice as well as what worked well for them.

Reflective interviews allowed the participants to provide insights into their observed practice. Therefore, the interview phase enabled an appreciative conversation where the discovery phase of the appreciative inquiry cycle discussed in Chapter 3 was highlighted. The complementary and corroborative possibilities of observing people who are subsequently interviewed about their experiences was the basis for designing this study in this way.

Reflective practice through journaling is encouraged as appropriate for capturing the researchers' meaningful thoughts and ideas (Van Manen, 1990) and to assist in gaining insightful descriptions without classifying or abstracting the experience (Van Manen, 2002). Maintaining a reflective journal is said to be essential for the qualitative researcher to achieve insights and clarity of project experiences, which provide valuable stimuli for the formation of ideas (Schneider, Z., Elliot, Beanland, LoBionda-Wood & Haber, 2003, p. 242). The topic of interest is said to be brought into consciousness for observation and analysis by reflecting on one's own understanding and philosophical approach (Zakrzewski & Hector, 2004).

Researcher journaling was included as the third and final phase of data collection for this study. The influence of researcher-self in qualitative nursing studies has been

integral to describing, interpreting and communicating meaning from studies using ethnography (Borbasi et al., 2005; Wind, 2008), phenomenology (Benner, 2001; Converse, 2012) and action research (Trajkovski et al., 2013b; Turnock & Gibson, 2001). It has been suggested that appraisal of qualitative research is reconceived through writing to highlight the important and direct relationship between reflective practice and research rigor (Van Manen, 1990). The descriptions from my journal were integrated as a third source of data, enabling illumination of emerging themes and consolidation of the findings, and contributing to a clear audit trail of the researcher's role in this study (Richardson-Tench et al., 2014; Schneider, Z., et al., 2003).

The iterative and transformative process pictured in Figure 4.1 identifies the phases of this study and notes the methodological procedures used in a model adapted from the 4D cycle of appreciative inquiry by Whitney and Trosten-Bloom (2003). Details of how the methods from each phase were implemented are discussed below.
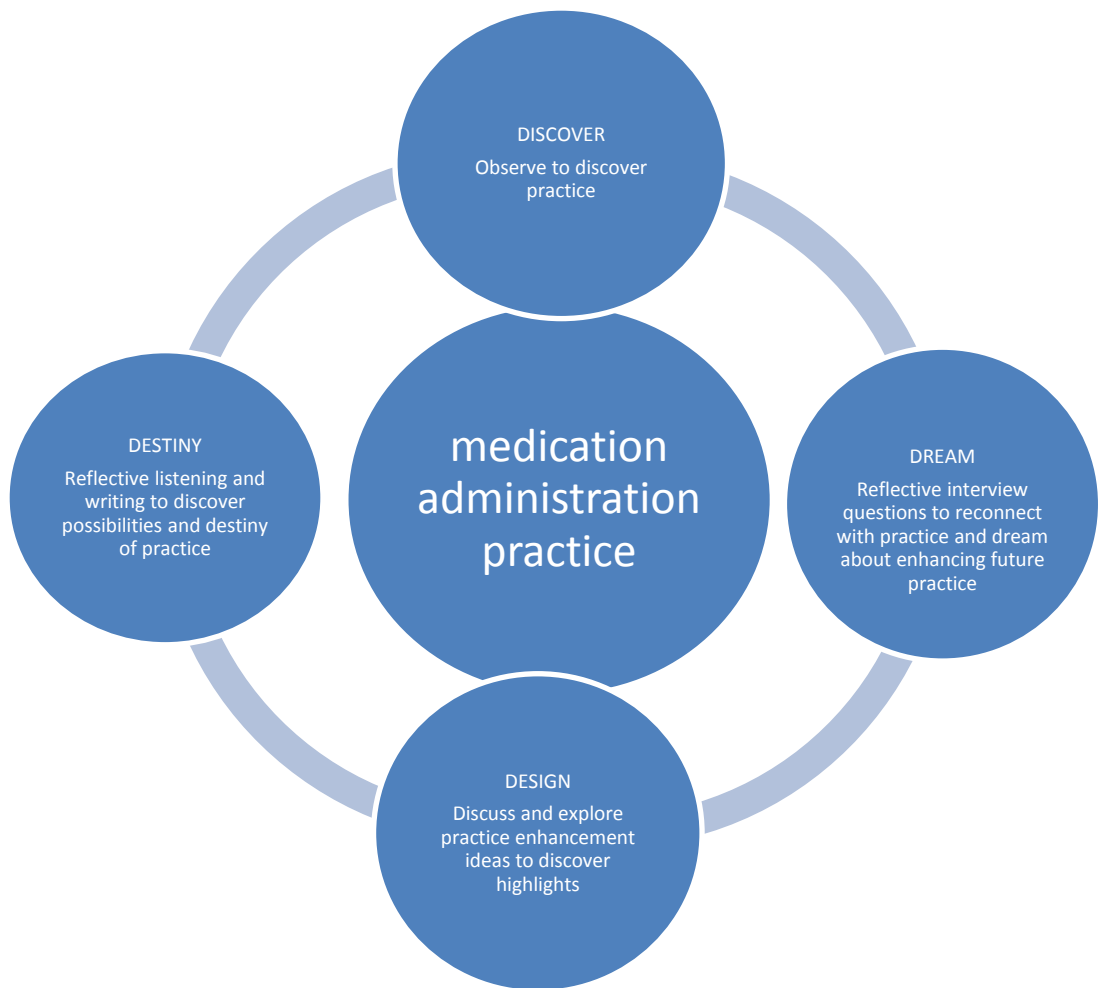
Figure 4.1: Appreciative inquiry study model of medication administration practices

Source: Adapted from Whitney and Trosten-Bloom (2003)

4.6 Phase 1 data collection: Observation

The observation shift day and time were negotiated to be convenient to the participant and to align with my availability. Disguised observation has been used in a number of previous studies of medication errors to avoid influencing preparation and administration behaviours of nurses and attempt to collect 'clean' data (Taxis & Barber, 2003). Participant behaviour changes in response to their knowledge of being observed, known as the Hawthorne effect, are undesirable in many studies and researchers are encouraged to take appropriate precautions to avoid it (Woods & Schneider, 2013).

However, covert fieldwork and deliberate deception are generally considered unethical because of conflicts with contemporary expectations of informed consent (Hansen, 2006, p. 35). Covert observation conflicts with the collaborative principles of constructivism, which relies on supportive, honest and open relationships between the researcher and participant who together help to construct the social reality (Robson, 2002). Robson (2002) advises that total detachment will cause reactions from those being observed. Therefore, an open, honest and unobtrusive style was adopted for the explorative observation phase. Direct observation is one of the preferred methods used in many nursing research studies that target patient safety (Merwin & Thornlow, 2006). L. Whitehead (2004) proposes that this distinct difference from quantitative research approaches is the strength of observations as a data collection strategy for qualitative research because this close relationship between the researcher and participants provides insights that can answer the research questions.

The observations were an important aspect of this study because 'peoples experiences may not seem significant to them because they may be regarded as simply part of living their lives, but qualitative research has an interest in commonplace experiences' (Richardson-Tench et al., 2014, p. 190). As discussed already, observation for the purpose of gaining a better understanding has potential to inform acquisition of knowledge when what is viewed is translated to text (Nåden, 2010). To appreciatively and holistically approach this research topic, it was considered necessary to collect information from the participants using a variety of modes. Therefore, gaining proximity to the everyday experience of the participant during the practice of medication administration was vital.

The observation phase provided an avenue for documenting participant behaviours whether intentional or habitual. The observations informed the subsequent interviews. Medication administration was specifically observed as a part of the participants' responsibilities as RNs.

The observation tool (hereafter, the episode tool; Appendix E) was divided into distinct sections that reflect themes from earlier studies reviewed in Chapter 2 and acknowledge the rights framework. The episode tool was designed to provide some

means of recording the observation of the participant's medication administration practices, as video or audio recording was not practical or possible, given the need to protect patient confidentiality. The tool also included a selection of organisational and individual factors identified in the literature as potentially affecting medication administration. Lastly, the tool included a free text area where descriptive contextual field notes could be made by the researcher during each episode.

The observation data included date, time, shift hours, clinical setting and nursing workload allocation according to Trendcare^{TM}. These details assisted in organisation of the data for analysis (Richardson-Tench et al., 2014). The start and end time of each specific episode of medication administration was also noted, from the time the participant read the NIMC to the time the NIMC was signed. The duration of each episode was timed similarly to other studies interested in nursing practice (Ampt & Westbrook, 2007; Elganzouri et al., 2009; Keohane et al., 2008; Westbrook et al., 2011).

The episode tool was reviewed by the research supervisors who are both experienced in clinical practice and research methods. Prior to commencing the observation phase, a pilot of the episode tool was undertaken to test its functionality. The findings of the pilot study explained below contributed to minor refinements before the episode tool was used for the main data collection.

4.6.1 Pilot observation phase

As a novice researcher, it was important to me to trial both the episode tool and my ability to record what I observed in a structured way. The episode tool was trialled so that the feasibility of this phase of the study design and any unanticipated issues were identified and addressed prior to commencing the actual data collection (Richardson-Tench et al., 2014). Testing of tools and the researcher's application of them is useful to uncover any methodological issues 'in the real research situation' (Kermode & Roberts, 2007). The feedback gained through implementation and practice with the

tool assessed the precision and responsiveness of the data collection methods to identify and deal with their strengths and weaknesses (Gillespie & Chaboyer, 2013). One participant, who was known to me, volunteered to be the first to be observed and interviewed so that pilot testing of the tools and strategies could be undertaken. This participant worked in the surgical ward and was observed during an eight-hour evening shift commencing at 14:30 hours. The draft episode tool was adapted after the pilot to simplify the layout of the free text area and to include additional areas to record routes of medication administration and sources of interruptions.

Initially, a hand-held stopwatch was used to measure the duration of each episode. This was found to be too complicated and cumbersome during the pilot phase. My nursing fob watch proved to be much more reliable, possibly because of my familiarity with it as a time-keeping tool. The duration of each episode was rounded to the nearest minute to provide an estimation of the time taken to administer medications. Once completed, each episode tool was placed at the back of the clipboard and a new one started when another episode of medication administration was observed. If the participant made any subsequent evaluation of the effect of the medication, this was recorded as field notes and later contextualised with the correct episode.

The observational data collected in Phase 1 was discussed during the interviews in Phase 2 to assist participants to recall and reflect on their observed practice.

4.7 Phase 2 data collection: Semi-structured interviews

An interview schedule (Appendix F) was used to guide the conversations. The duration of each interview was between one to one-and-a-half hours. The interviews were audio-recorded and transcribed by the researcher. They offered insight into the experiences of the participants in relation to the observations of their practice and researcher reflections recorded in a journal (Bernard & Ryan, 2010, p. 248).

'Talk is the concrete stuff of human discourse' and in human research studies we tape it, transcribe it, codify it and analyse it for interpretation and understanding of the human experience (Van Manen, 1990, p. 23). Interviews are included as a means of connecting participants to their practice through reflexivity. Drawing on the insights offered by Benner (2001), this study included an observation phase first to allow aspects of participant practice to be described for the potential wealth of information that might otherwise be lost. Benner (2001) noted that nurses may not recall the distinct steps of their practice and that this inability to recall the clinical decision-making embedded in the practice renders the knowledge as untapped and deprives nursing theory of this unique and rich knowledge. In addition, narrative accounts of nursing practice from descriptive texts such as interviews reveal aspects of the role that cannot be captured by objective descriptions from observations of procedures or work sampling (Ampt, Westbrook, Creswick & Mallock, 2007; Benner, 2001, p. ix). Therefore, the combination of these two methods of data collection was considered the best way to capture the participants' experiences.

Through recording practice behaviours, then reminding the participants of the situations that were observed, recollection and explanation was possible. Nurses are known to be storytellers (Benner, 2001; Eisenhauer et al., 2007; Rose & Glass, 2008; Treiber & Jones, 2010), and they use their stories to define and reflect on their practice, to debrief when necessary, to share experiences and to remember (Lyneham, 2004). Consciousness is the only access human beings have to the world and something can only be acknowledged if it presents itself to the consciousness (Van Manen, 1990, p. 9). Explicit questioning of 'taken-for-granted' ways of doing things or assumptions is a common premise in qualitative research (Hansen 2006, p. 5). In line with appreciative inquiry principles, the participants were encouraged to discuss what they valued as the core factors that informed their observed practices (Watkins & Mohr, 2001). The interview phase was where insights became known and the 4D cycle presented in Chapter 3 was showcased through an in-depth process of questioning, reflecting, feeding back and design.

A broad opening question was posed to start the conversation: 'Can you tell me about your experience when administering medications and how it reflects what you were taught?' The interview followed the schedule in Appendix F. In particular, the

questions raised were to explore the 'stand out' aspects of participant education and practice. After this and in order to guide the participants to reflect on their observed actions questions, such as 'Can you tell me about how you do it?', 'What works for you?', 'How did you get that done?' and 'What are the special things you do', were asked to try to discover the purpose of their actions. As previously mentioned, this particular technique in appreciative inquiry is in contrast to much of the healthcare research because the questions are designed to explore the positive aspects of the topic of interest rather than focus on problems and deficits (Knibbs et al., 2012). These questions were similar to other appreciative inquiry interviews that focus on uncovering what works well in any given situation (Cooperrider et al., 2008). Reminiscing, reflecting and reminding during the interviews helped the participants to identify and discuss the observed moments of practice that might otherwise have gone unnoticed.

4.8 Phase 3 data collection: Researcher reflection journal

As already discussed, my reflective journal provided data that linked all phases of the study to inform the analysis. As suggested by other qualitative researchers, the process of iterative reflection was valuable for gaining deep and meaningful interpretations of the research processes and the participant experiences (Greatrex-White, 2008; McCloughen, O'Brien & Jackson, 2011). This involved constantly returning to the data to explore all aspects of it (Greatrex-White, 2008) until the key aspects or essence of it are uncovered (McCloughen et al., 2011). I entered a reflection at the completion of each observation shift and interview. I wrote throughout the research project at intermittent times when research ideas presented themselves, at times when design queries emerged or when I was trying to resolve a philosophical or methodological problem.

I used a variety of tools to write about my ideas, feelings, reflections and research processes. My favourite journaling tool was a digital pen, which allowed audio recordings and written text to be captured as electronic files.

Researchers must be able to perceive and contextualise their own experience as well as be sensitive and curious about the experiences of others (Vidich & Lyman, 2003). Regardless of the process used, effective reflection requires researcher readiness to record thoughts and to embrace changes in awareness by being open to answers that emerge through emerging insights (Taylor, 2005). New frontiers of knowledge are constructed during this creative handling of ideas and concepts (Taylor, 2005). Reflection that uses a systematic process to construct, confront, deconstruct and reconstruct practice, while critiquing the *status quo*, supports practice enhancement (Taylor, 2005).

Schon (1987) identified reflection as a means of bridging the theory practice gap by thinking about the reasoning behind practice. Observation combined with interviews as data collection methods bring the researcher closer to the experience of the participants and allows for deeper explorative insight and reflection, contributing to meaningful analysis of the data (D. Whitehead, 2013, p. 104). As this study was focused on exploring practice-based experiences, the use of journals to record and reflect on the journey was necessary and valuable.

4.9 Rationale for the data analysis process

The meaning-making aspect of an appreciative inquiry emerges when stories, quotes and highlights are shared because it is at this time that active ongoing retrospective and social engagement between the researcher and the participants enhances shared wisdom (Whitney & Trosten-Bloom, 2003). Drawing from the principles of appreciative inquiry, Duxbury, Wright, Bradley et al., (2010) systematically reflected on the strengths of medication administration processes to recognise emerging patterns leading to the identification of practice themes. Appreciative inquiry of persons and places is an iterative process, with human stories at the heart of exploring individual and organisational identity (Whitney & Trosten-Bloom, 2003). Appreciative inquiry focuses on participant experiences and interviewer reflections, revolving around qualitative narrative analysis to draw out rich stories and identify patterns and themes of factors that contribute to success (Whitney & Trosten-Bloom, 2003).

The demographic information and other data specific to the location, duration and type of episode was recorded on the episode tool and was included as part of the data analysis of the observations. This data was useful in providing the context of practice and was analysed in separately and in conjunction with other data. QSR International's (2015) qualitative data analysis software package NVivo™ 10 was used to organise the textual data.

4.10 Analysis of the observation data

In keeping with the relational nature of meaning making that is a key assumption of constructivism, it was appropriate to analyse the observation data in the context of all data sources in this appreciative inquiry (Whitney & Trosten-Bloom, 2003). The data from the episode tools told the story of medication administration as it was unobtrusively observed from start to finish. Each episode was assigned a number that reflected the participant and the order in which the episode occurred. For example, N1.1 was the first episode of medication administration observed of participant 1. Coding the episodes in this way protected the participants' identities while ensuring a complete chronological contextualisation of their medication administration experiences throughout the course of the observation shift. Analysing the observation data collectively as Phase 1 and purposefully seeking affirmative actions from the data reaffirms the application of appreciative inquiry principles throughout this study (Cooperrider et al., 2008; Helms et al., 2012; Knibbs et al., 2012; Whitney & Trosten-Bloom, 2003). Purposeful reading of each episode began the analysis of the observation data (Richards, 2009).

The medication administration procedural behaviours recorded during each episode were first analysed in relation to their workplace context. Then other episodes from the same participant were analysed in relation to each other. The field notes and researcher reflections were introduced at this point for relevant contextual details. Researcher memos were added to the data set to reflect conceptual analysis from the original records (Richards, 2009). Richards (2009) terms this process as 'taking off from the data' to write analytically rather than descriptively (p. 76). The obvious

connections between the episodes led to the combining of some episode data and collapsing of that data set as described in Chapter 5. Interpretation of the episode data resulted in descriptive categories being identified during the process (Marchesoni, Axelsson & Lindberg, 2014).

The next step was to consider the observation data from the perspective of the different clinical settings. Comparisons between the participants from each setting were made and patterns identified (Richardson-Tench et al., 2014). This analysis revealed similarities and differences from within the same clinical context. Richards (2009) calls this focused approach to exploring the specifics of the data 'opening up the data' (p. 78). Annotations were made at this stage as researcher reflections about details like the different models of nursing practice; for example, 'RNs in ED and ICU do not work with ENs'. This researcher reflection becomes significant in the analysis of the Phase 2 data as shown in Chapter 6.

Incorporating interpretation of data about the various routes of medication administration and the times of the day provided a broad view of nursing practice. A circling approach of reading and re-reading the observation texts while maintaining a holistic view was intentional and iterative. This approach enabled me to thoroughly know the data (Richardson-Tench et al., 2014). The data gathered on the episode tools not only indicated the duration, type or location of medication administration but more importantly provided contextual data that informed the interviews.

4.11 Analysis of textual data

All interview data were stored and organised using the NVivo software. Researcher field notes and journal entries were converted to PDF files and added to the NVivo project file for thematic analysis.

All audio files were transcribed verbatim into text by listening to the audio files and correcting the text until the words and punctuation accurately portrayed the narrative. Full transcription of actual interviews is considered the 'gold standard' (Hansen,

2006, p. 112). This was a very lengthy process and most audio files were played four or more times before I was confident that the transcripts were complete and accurate.

NVivo was advantageous during the labour-intensive transcription stage because it enabled researcher ideas to be attached to the data source and likewise coded as they arose (Richards, 2009). The researcher journal entries were included and analysed alongside other texts in this way. The method of iterative/thematic analysis applied in this study was managed through marking and sorting interesting sections of textual data, which is particularly conducive to a flexible research approach to transcription of interview data (Hansen, 2006).

Activity times were noted in the field notes, which helped to connect them to the corresponding observation episode data. Contextual details included in the field notes enabled full descriptions of the participant actions gathered via the episode tool to be considered together with the interview data and researcher reflections.

4.12 Ethical considerations

Ethical approval for the study was given by the University of New England Human Research Ethics Committee (Appendix G), and the hospital's Human Research Ethics Committee (HREC) (Appendix H). Research carried out under the authority of the University of New England and in Queensland's public health facilities must adhere to the standards set by the National Health and Medical Research Council (NH&MRC) (Australian Government, 2007b). The NH&MRC statement of ethical principles stipulates the values of respect, research merit, integrity, justice, and beneficence as the guiding principles of ethical conduct for Australian researchers (Australian Government, 2007b, p. 11), which were upheld in this study as follows.

Respect for patient safety was of primary concern during Phase 1. Even though the patients were not participants in this study, they were informed of the research study activities and their permission was gained before the observation of each participant commenced. Every effort was made to gain written consent; however, the nature of some clinical circumstances did not permit completion of a written consent form in

all cases (Appendix D). In several instances, verbal consent was more appropriate as the patient health needs were prioritised over gaining their signature on a consent form (ANMC, 2006). For example, some of the observations performed in the emergency department occurred during the triage phase of participant/patient interaction. Due to the urgency of the patient circumstances, seeking written consent was not appropriate and a field note of the verbal consent was made, witnessed by the participant. In any case, where a patient refused observation of the participant activities, the researcher withdrew. Likewise, if a medical emergency arose, patient care was prioritised over the research activities.

The observation phase of this study placed ethical obligations on me (an RN and the researcher) to respond to risks and prevent harm to patients (Australian Government, 2007b). RNs administering medications are usually the owner of the risk associated with their practice (Queensland Government, 2013). The Queensland Health risk assessment and treatment matrix (Appendix I) was used to assess the likelihood of risks during the observation phase of this study and to determine my actions. In this study, I was ethically obligated to intervene in instances where there was a risk of harm to the patient. Examples of where this occurred form part of the findings and are discussed in Chapters 5 and 6.

This study was restricted to clinical settings that were familiar to me, so I was familiar with the nursing care and medications used in these settings. This ensured that if a potential risk of harm to any patients was observed I was able to intervene, as required by the Competency Standards for the Registered Nurse and by the ethical approval granted for this study (Nursing and Midwifery Board of Australia, 2008a). Furthermore, I am an experienced RN who is educated and skilled in making judgements about safe nursing practice. After a decade of experience in teaching tertiary-level medication administration theory and practice, I am informed by current literature associated with medication safety. I completed a Human Error and Patient Safety (HEAPS) instructor course prior to this study and was aware of the systemic and contextual nature of errors occurring in healthcare settings (Queensland Government, 2010). My prior learning in the hospital root cause analysis processes (Erromed Pty Ltd, 2001) informed any decisions regarding researcher intervention.

Respect for the organisation was demonstrated by gaining the approval and support of the key stakeholders (Robson, 2002). As researchers enter study fields as guests and representatives of their research institution (Richardson-Tench et al. 2014), I met with the DON to garner support for the study, which also led to the health service providing a letter of support for the HREC. In order to demonstrate research integrity and respect for this organisation, approval was gained from each NUM before observing the participant on shift. I wore clinical attire during the observation shifts to meet workplace health and safety obligations and blend in with the staff. I carried a clipboard to enable completion of the observation tool and to write field notes.

Qualitative research is particularly susceptible to exploiting participants because of the personal contact and potential intimate nature of researcher/participant relationships and the knowledge being accessed (Hansen, 2006). Protection of participants to ensure minimisation of harm, trauma, pain, anxiety and discomfort and coercion is an issue of ethical and legal regulations and addressed in the codes applying to the conduct of research in Australia (Woods & Schneider, 2013). Therefore, a voluntary recruitment process was used with offers for the participant to withdraw at any time. The participant information sheet contained contact details of relevant support and counselling services, if relevant.

Participant details and data were kept confidential and the anonymity of each participant is assured by assigning them a numerical alias. For example, in Chapters 5 and 6 the participants will be referred to by numbers N1 through to N20. In addition, integrity of the research process for maintaining privacy was upheld by securely storing all participant data. The interviews were held at times and in places of the participants' choosing and all participants were offered access to their interview transcripts to review and amend if they wanted.

The data was secured by keeping all files in a locked filing cabinet and password-protected computer in my home or university-based office. The data will be destroyed five years after completion of this doctoral program, in accordance with the conditions of the ethical approvals.

4.13 Rigour and trustworthiness

The variability of qualitative research designs does not allow for one common test of rigour (Richardson-Tench et al., 2014). Nevertheless, I have done my best to ensure that this study is able to be viewed credibly as a serious and trustworthy piece of research relative to other nursing research of medication administration practices. At the outset of this study, I clarified the congruence of the research design and methods with the study aims in Chapters 1 and 3. The following discussion considers the common criteria for judging the rigour and trustworthiness of qualitative research (Guba & Lincoln, 2005; Harding, T., & Whitehead, 2013) in relation to the conduct and outcomes of this study.

Human science operates on its own criteria for precision, exactness and rigour, striving for precision by aiming for full and complete interpretive descriptions (Guba & Lincoln, 2005; Schneider, Z., et al., 2003). Rigour through validity and reliability is a concept used in the evaluation of quantitative research (Harding, T., & Whitehead, 2013). Conversely, the concept of rigour as it is applied to qualitative research is quite different (Taylor et al., 2007). The rigour of qualitative research is generally accepted as the open and honest exploration of new and old ideas in the pursuit and formation of new knowledge that is trustworthy (Taylor et al., 2007). The strong links established in this study between the research question and the conclusions arising from the study findings will enable it to be appraised as a trustworthy piece of work.

Trustworthiness as a concept is more appropriate to evaluate qualitative research than the traditional positivist-based notions of validity and reliability (Guba & Lincoln, 2005). The trustworthiness of qualitative research is determined by the accuracy of the findings to reflect the degree to which they are trusted by those with whom the results resonate (Richardson-Tench et al., 2014). Trustworthiness of qualitative research is established by using the criteria of credibility, auditability, fittingness and confirmability (Harding, T., & Whitehead, 2013; Schneider, Z., et al., 2003).

Credibility is established through the presentation of the study findings and their relevance to a broader audience (Davies, 2012; Guba & Lincoln, 2005; Schou, Hostrup, Lyngso, Larsen & Poulsen, 2012). Evaluation of qualitative research is judged by questioning the appropriateness of the methodology and research design used, the sampling selection process, reflexivity on the researcher partnership relationship, and the value of the research (Davies, 2012). Detailed descriptions offering transparency of methods from recruitment techniques to the analysis and their philosophical foundation are essential elements to maintain methodological rigour because it demonstrates synthesis between the qualitative methodologies selected and the fundamental philosophical approach (Higginbottom, 2004; Welch, 2011). Inappropriate synthesis of theory and methods will compromise the research rigour because different theoretical frameworks that guide qualitative methodologies will have different perspectives of the same phenomena (Higginbottom, 2004).

Credibility was established in this study by ensuring strong integration between the research question, the theoretical framework, methodology and methods (Nagy et al., 2010). The auditable research process was captured in the researcher's reflective journal. Transparency of the research activities has been documented through honest and open disclosure of the decisions and processes to demonstrate congruence between the philosophical and methodology (Welch & Jirojwong, 2011). Integrity of data collection, management and analysis is described in as much detail as possible so that clear insight is provided into what shaped this study. Inclusion of my personal profile and motivation to undertake this study in Chapter 1 are consistent with the methodological approach, which calls for all participants to be valued as active contributors in gathering and making sense of ideas and views (Bushe, 2011).

The researcher's competence and transferability of the research process are key to achieving trustworthiness (Welch & Jirojwong, 2011). Chapter 3 presents my understanding of the philosophical underpinning of appreciative inquiry and Chapter 4 demonstrates congruence of the data collection strategies to the framework to reinforce my competence and the study's trustworthiness (Welch & Jirojwong, 2011). Further demonstration of the trustworthiness of this study was established by my open disclosure of the adjustments made to the appreciative inquiry interview

questions to account for the anticipated rehearsed discourse of medication errors and the five rights framework explained in Chapters 2 and 5.

Despite the adjustment to the interview questions, credible transferability of the findings requires the results of qualitative studies to be understandable and recognisable to others (Hansen, 2006). For this reason, I used the '6 rights for safe medication administration' (Medication Services Queensland, 2009a) as the basis for the episode tool and the structure for the discussion in Chapter 4. As explained in Chapter 2, all RNs internationally will recognise the rights framework so the experiences of the participants in this study would be recognisable to the discipline of nursing.

Personally handling all aspects of the data collection and management also makes me well placed to provide a consistent view that is reflective of the constructivist principles informing this study. Researcher closeness is suggested to increase the validity of the interpretation (Robson, 2002, p. 197). I transcribed all the audio-recorded interviews myself because transcription assists with the data analysis process, allowing details to be noticed (Richards, 2009). I was able to review all the data sets instantly and regularly to verify concept developments as the patterns of their recurrence became apparent. Consistent engagement with the data further strengthened the recollections of the data collection phases and deepened my understanding during analysis.

Verbatim transcriptions accurately reflected the language used by the participants. To confirm this all participants were offered access to their transcripts to verify the information. 'Member checking' is a strategy that contributes to the auditability of the data and confirms credibility (Hansen, 2006; Minichiello & Kottler, 2010). Concepts extracted directly from participants and provided as examples are the most credible source for qualitative research results (Hansen, 2006). All participants in this study were represented in Chapters 5 and 6. Chapter 6 presents extracts from the interviews as verbatim transcripts, so the voices of the participants can be clearly heard. The analysis process is verifiable through clearly describing the pathway to the conclusions in Chapter 7.

For this study, credibility has been established through participant verification of interview transcripts, auditability through maintenance of comprehensive and accurate records, fittingness through the decision to observe nurses in context during medication administration practice and confirmability through the comparative analysis of all the data through a lens of reflexivity.

4.14 Methodological limitations

The choice of appreciative inquiry to guide this study is a point of difference that could be interpreted as a limitation because of the affirmative biases intrinsic to the philosophy. Overlooking problems or issues to focus on the positives in preference to highlighting the negative aspects of practice might be concerning for some (Knibbs et al., 2012). However, this was deliberate to the research design and was counterbalanced by the broad literature review in Chapter 2.

Dissertations as scholarly works with specific ideologies and intentions need to be clear to the reader. The reader should be confident that the methods have accurately produced the findings through dependable application and from within a set of principles that have been explained. The timing, resourcing, size and location of this study give rise to logistical limitations that are apparent and warrant consideration.

One limitation to the implementation of the appreciative inquiry methodology is that the study was unfunded and independent of the organisational management processes of the host health service. As a result, the findings of this study could not be implemented in practice. The health service where this study was undertaken was at the same time undergoing an organisational review known as *productive ward*. Full implementation of the appreciative inquiry process was not possible at the time, but this study reflected the principles of appreciative inquiry in all other aspects.

The purposive sampling of the participants to ensure that they had experience that related to the research topic supports the tenets of the theoretical framework and the principles of the methodology. The participant data is rich, providing excellent examples for the theme development that are relevant to the broader nursing

community. Describing the sampling decisions was crucial to assisting the evaluation of the trustworthiness of this research (Hansen, 2006). Nevertheless, voluntary self-selection by participants may be interpreted as leading to a bias in knowledge and skill of appreciative inquiry or medication administration practices.

The opening question of most appreciative inquiry studies is about examples of positive practice. However, the decision to digress from such a question in this study was a deliberate move to offset the expectation that the participants would provide a 'rehearsed talk' about the five rights framework cited in Chapter 2, as the 'gold standard' of medication administration (McGovern, 1988; Pennsylvania Patient Safety Authority, 2005). If the first question had been 'Could you please explain to me the practice of the best medication administration that you have experienced?', 'How is good medication administration experienced?' or 'What is your experience of effective medication administration?' then the participant would have most likely quoted the five rights as best practice. The decision to open the interview with a question that asked more broadly about the general experiences of the participant in medication administration might be considered a methodological limitation as it did not adhere strictly to recommended appreciative interview guidelines. However, this was a deliberate decision to allow the participants to discuss their observed practice and not just to cite the rights.

The lead question was followed by prompting questions such as 'What does it look like?', 'What are the special things that you do when administering medications?', 'How does that work for you?', and 'How would you make it better in the future?' These questions offered participants the opportunity to discuss positive aspects of their practice in line with appreciative inquiry principles and gave me the opportunity to delve into their observed practice to prompt a deeper, more focused discussion. These semi-structured aspects of the interview encouraged visioning and propositions.

Despite the need for caution when interpreting the findings of qualitative studies such as this one, insights into the experiences of RNs who administer medications expose some of the more positive contributions that they make to the process and may resonate with others who work in similar contexts.

4.15 Chapter summary

This chapter has presented and justified the qualitative methodology and strategies used to explore medication administration practice. Alignment of the interpretive descriptive techniques with the underpinning theoretical framework was demonstrated. The chapter explained the methods used to recruit participants, and to collect and analyse data. The inclusion of researcher reflections to support rigour and trustworthiness was addressed. The discussion of ethical considerations has shown that this study adhered to the principles and processes set out to protect participants. Any limitations have been disclosed and the strategies used to address these explained. The analysis of the data collected by these methods is presented in Chapters 5 and 6 that discuss Phase 1 and 2 respectively and incorporate Phase 3.

Chapter 5: Data analysis of observations

5.1 Introduction

This is the first of two data analysis chapters that report the findings of this study about the medication administration experiences of RNs. This chapter analyses the observations of participants' practices that identified a range of everyday behaviours associated with medication administration. The participant demographics are profiles in Section 5.2. Throughout this chapter and described previously in Chapter 4, the environmental and contextual factors are included because they are vital to understanding the workflow of the participants. The analysis highlights that the medication administration practice of the participants was often at odds with the linear processes presented as the five (or more) rights framework that is taught to nursing students in Australia and internationally. The participants demonstrated a range of behaviours that, while not always aligned with the framework, clearly contributed to safe medication administration practices.

The data presented in Section 5.3 provides an overview of the types of medication administration *episodes* of practice that were observed, allowing initial interpretations to be established. Thorne (2008) endorses qualitative description of observed behaviour as an extremely important element in health for raising awareness of practice phenomena and creating an empirical basis from which to generate questions 'of the complex and messy world of human health and illness' (p. 47). Thorne (2008) suggests that description of healthcare practices can inform future practice. Therefore, as well as reporting on the observational data, the researcher's field notes are included in Sections 5.4 and 5.5 to offer a situational and contextual perspective to the participants' actions. Where appropriate, the observer's reflections and descriptive interpretations are included to offer further insights into the actions observed. Together, this descriptive interpretative appreciative inquiry provides a multifaceted view of the practice of medication administration by these participants, organised into three main themes.

Section 5.4 is devoted to the first theme, the *non-routine episodes* of medication administration, which are episodes where the participants did not administer the medication despite sometimes initiating it and/or partially managing it. It became apparent during the collection of the observational data that not all episodes that were commenced by the participant were concluded by the participant. Some episodes were interrupted and never completed. Some episodes were handed off to other clinicians, while others were suspended after being commenced and then recommenced at a later time. These circumstances are collectively titled *non-routine episodes*, and this theme is made up of a number of subthemes that describe in detail the specific patterns of practice related to safely managing medications that were eventually administered by others.

Section 5.5 discusses the second theme, the *routine episodes* of medication administration, which were observed to include less complex processes than the *non-routine episodes*. However, there were also times during the episodes when medications were pre-prepared or prepared and dispensed for multiple patients at the same time, requiring close observer attention and making it impossible to distinguish the actions associated with each individual medication. This major theme is called *routine episodes* because the data is organised according to the routine process of the rights framework, making the descriptive interpretations of these episodes specific to the context of this study but also familiar to healthcare professionals internationally.

The six rights (Medication Services Queensland, 2009a) are used to label the subthemes of Theme 1. Contextual characteristics of these episodes are included in Theme 3, which are derived from the field notes. Section 5.6 discusses the third theme, *organisational and contextual factors*, which includes observations of the environment and associated behaviours that inform the previous two themes. The descriptions in this section help the reader to imagine the clinical scene of the participants.

5.2 Participant profiles

To further understand the participants' place of practice, the clinical settings and the models of nursing care used in those settings are described in this section. Collectively, the participants in this study represent 196 years of registered nursing experience in Australia. The most recently qualified participant was registered with the AHPRA only two months prior to participating in the study. The longest qualified participant had 30 years of registered nursing experience. Table 5.1 below outlines the registered nursing experience of the participants in this study.

Table 5.1: Participants' years of experience as a registered nurse

Years of experience as a registered nurse	No. of participants	Participants
Less than 1 year	2	N8, N15
2–4 years	3	N16, N17, N20
5–10 years	9	N2, N3, N4, N5, N7, N11, N13, N14, N19
Greater than 10 years	6	N1, N6, N9, N10, N12, N18

Two of the participants had previous nursing experience totalling 17 years in other countries: one as an RN and the other as an EN. Three other participants had previous experience in Australia as ENs totalling 35 years between them. Another two participants completed the EN education program but did not work in that role before commencing their undergraduate nursing degree. Two of the participants in this study were male nurses, which reflect the national Australian average of 10.4% of all nurses being male (Australian Institute of Health and Welfare, 2015).

5.3 Types of medication administration episodes

Variations in medication administration practices behaviours were noted to be associated with the variations in the clinical contexts. In total, there were 192 episode tools completed during the observational phase of the study that was undertaken between November 2010 and July 2011 (see Chapter 4 and Appendix E). Participants

were observed during both morning and evening shifts. They reported feeling comfortable with the observations of their practice. Participants were informed about the observer role before being asked to participate. The information provided to them stressed that the subject of interest was the practice of the participant in relation to medication administration and that I could not be involved in nursing practice.

Participants were informed that I would intervene only when unsafe practice was considered to pose a risk to patient safety. This action was a requirement of standard 1.3 of the ANMC (2006) competency standards, and was stipulated as part of the ethical approval for this study. As explained in Chapter 4, to ensure that I met my obligation, I used the rights framework reflected on the episode tool as my guide to safe practice. All observations (routine or non-routine) contained evidence of the rights framework and in any case where I could not confirm that the participant had met the obligations for patient safety, I would intervene.

There were three times when I halted the participant action to clarify medications. On two occasions, my intervention was prompted by my uncertainty about the medication that was being administered rather than any observation of unsafe practice. On one occasion, the participant attempted to administer the wrong form of medication. The circumstances surrounding these times are described later in the sections that relate to the administration of those particular medications. Episode data was collected in each of the clinical settings described above. The frequency of episodes was not evenly distributed between these settings as described below.

For example, the participants in the medical and surgical settings handled medications more frequently than their colleagues in the emergency and ICU/CCU settings. Seventy-two (72) episodes were recorded with medical ward participants and in the surgical ward 67 episode tools were completed. Together these two settings account for 72% of the data collected and discussed in this chapter. The participants in the medical and surgical wards were more frequently allocated to team nursing alongside ENs and unlicensed healthcare workers. It was difficult to differentiate between the various roles because the nursing uniforms were the same for all nursing staff, which was particularly confusing given that ENs administer medications. On one occasion I assumed that the participant N14 was teamed with an

RN until N14 questioned the colleague about scope of practice in relation to delegation of a medication, at which moment I realised that the colleague was an EN. This detail does not affect this study but it is significant in regard to the role that the RN participants have in supervising and delegating to others (see Chapter 6).

The initiation of an episode data tool was detailed in Chapter 4, but briefly, an episode tool was commenced whenever the participant was observed to handle the NIMC and review the contents. An episode tool was also commenced if the participant offered a patient medication or if the patient or doctor requested that a medication be administered. At the time when any of these circumstances were observed, the time and bed location were documented on a fresh episode tool. If the participant continued to administer medication then the tool was completed through to the conclusion of the process. Participant actions that indicated the end of the episode included signing the NIMC, returning the chart to its holding place, disposal of sharps and performance of hand hygiene. Once these behaviours were observed, the episode was considered completed and the tool was finalised by noting the end time.

However, as will be discussed in Section 5.4, the start and finish of each episode was not always clearly defined or straightforward. Participants were frequently interrupted and redirected to other activities. Sometimes they returned to the original medication administration after the interruption and other times they did not. When interruptions occurred, the episode tool was halted and field notes collected from then on. It was impossible to know at that time whether the participant was going to recommence the interrupted episode until it actually happened. When recommencement occurred, it was too difficult to locate the previously incomplete episode tool to finish the data collection of that medication episode on the same tool. In these cases, a new episode tool was commenced, resulting in more episode tools being started than were concluded.

Incomplete episode tools from these types of observations were handled by marrying them to their partner episode tools during data analysis to permit a complete account of the administration of that particular medication. These combined episodes form one of the subthemes of the first major theme called *non-routine episodes* and are

grouped and labelled *extended episodes* for the remainder of this discussion. Consolidating the extended episodes as one episode and separating the non-routine episodes reduced the original episode data set by 41 episodes, as depicted in Figure 5.1. The remainder of this discussion explains the circumstances leading to the development of the first major theme and the details of the data analysis process that uncovered these non-routine episodes.
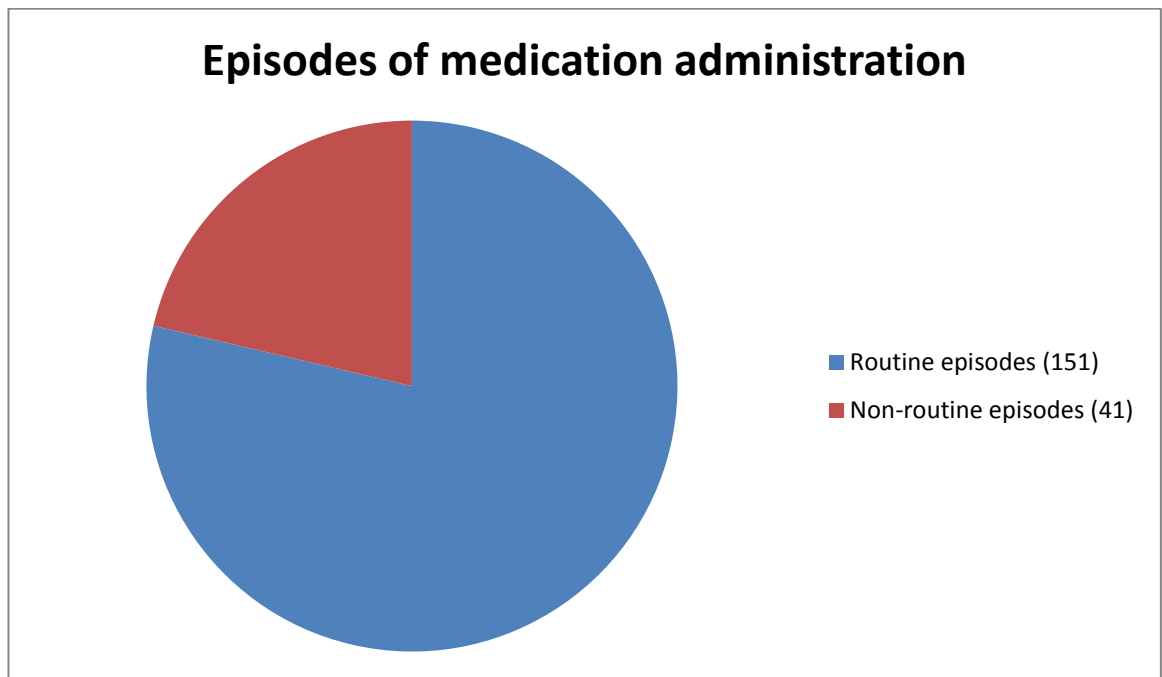

Figure 5.1: Distribution of medication administration episodes making up the major non-routine and routine themes

Routine episodes make up the second major theme discussed in this chapter and consist of those episodes of observations of medication administration that were commenced and completed as a continuous set of actions, though they were not without interruptions at times. Their characteristics are discussed and organised using the framework defined in Chapter 1 and attached as Appendix A.

The last major theme, *organisational and contextual factors*, illuminates Themes 1 and 2 by providing contextual and situational data gathered using the observer field notes and researcher's reflections. It is organised into subthemes that reflect the workflow, equipment and environment factors that influenced the observed medication administration practices of the participants in this study.

5.4 Theme 1: Non-routine episodes

The first major theme is about those episodes where the participant was involved in the medication administration but did not conclude it in a continuous action. This theme comprises a considerable subset of the overall episode data set and contains six subthemes that describe episodes that were abandoned, checked, handed off, combined, pre-set and extended. Further analysis of the data in this chapter will show that the practices discussed in Theme 1 respond to the impacts from organisational processes and environmental factors. Consistently throughout these episodes, collaboration and teamwork between the participants, patients and clinical colleagues were observed as necessary to conclude the episode. Participant behaviours in relation to these non-routine episodes were often influenced by a lack of supply of the prescribed medication. The participants discussed medication issues with their colleagues and the team leader. They provided medication-related information to the prescriber and the patient. Although not all medications encountered in this major theme were actually administered, it is apparent that considerable participant time was taken up with non-routine medication administration related activities.

Figure 5.2 relates to Figure 5.1 and depicts time estimations calculated as the duration of all episodes from start to finish in minutes. The duration of all non-routine subthemes are represented here compared to the routine episodes, and as will be demonstrated, both relate to the time theme in Chapter 6.
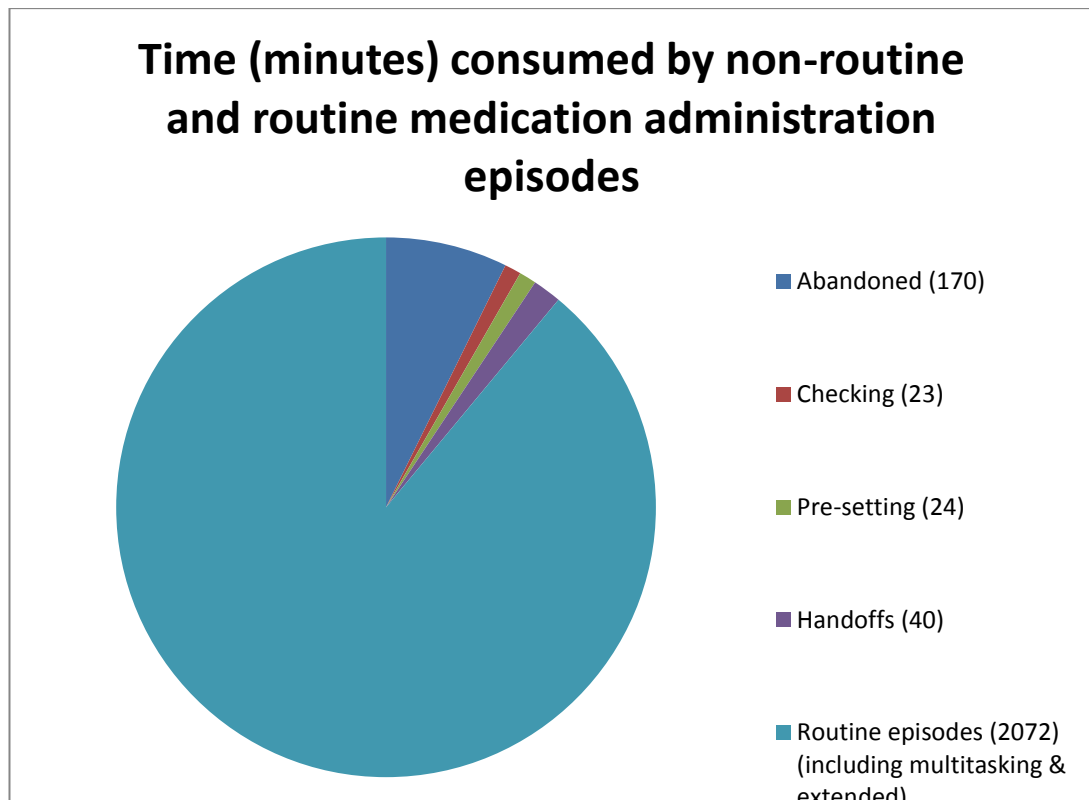
Time (minutes) consumed by non-routine and routine medication administration episodes

- Abandoned (170)
- Checking (23)
- Pre-setting (24)
- Handoffs (40)
- Routine episodes (2072) (including multitasking & extended)

Figure 5.2: Participant time to manage medication

Discussing the non-routine episodes first allowed the distinction to be made between these episodes and the more straightforward episodes described in Theme 2. The observations of non-routine episodes highlights that medication administration is a complex and multi-faceted activity that is embedded and integrated into the full range of nursing behaviours and often does not reflect the rights framework. However, the distinction between the two themes is not as clear-cut as might be expected because some interrupted non-routine episodes were later concluded by the participant making them extended episodes. This will be further explained during the discussion of the multitasking, pre-set and extended episodes subthemes. This major theme is organised into subthemes that coincide with the concepts that emerged from the appreciative analysis of the observations.

5.4.1 Subtheme A: Abandoned episodes

There were 24 incomplete episodes in which the intended medication was not observed to reach the patient, collectively grouped and labelled *abandoned episodes*. Abandoned episodes were coded as such because the participant was either forced to,

or decided to cease the process of administering medication before it was completed. The most frequent (11/24) reason for abandoning an episode was that the participant identified that the medication had already been given.

Medications in the episodes N7:2 and N9:1 had been administered as initial doses in the emergency department when the patient first arrived at the hospital. The medication had then been prescribed in the regular medication section of the NIMC, which prompted the participants to initiate action to administer it during the regular medication time. The previous administration of the medication had not been noted in the regular medication section of the NIMC but was recorded in its once-only section. Therefore, on initial glance the participants were not aware that the medication had already been given and they were observed to commence an episode to administer the same medications. In all these episodes, the participants reviewed the chart and discovered that the medication had already been given and promptly abandoned the episode. For example, N9 prepared to administer medications prescribed in the regular medication section of the NIMC. While educating the patient about the medications, N9 reviewed the other sections of the NIMC. The medications that N9 was about to prepare had been signed off in the once-only section of the NIMC. At this point N9 terminated the process and notated the regular medication section of the NIMC with a dash, similar to '/' across the signature square, to signal that the medication has been given and that this was recorded elsewhere on the chart. N17 abandoned episode N17:14 after encountering the same situation. However, sometimes the NIMC did not include details of all recently administered medications.

N7 abandoned the first medication episode of the shift when it is discovered that a patient had already received medications in a previous clinical setting after a discussion with the new patient and a review of the records accompanying the NIMC. During this patient interaction, N7 inquired about other medications that may have been given in the emergency department before this patient arrived in the unit. On this occasion (N7:2), the administration was abandoned but the nursing activities related to this NIMC lasted over one hour and 29 minutes. N7 reviewed the emergency department clinical record and other documentation to confirm the full history of the medications already received by the patient. This participant provided

education using clear and simple language to the patient and relatives about the medications in relation to the patient's condition. N7 reviewed the status of several intravenous cannulas to ensure they were patent in preparation for future medication delivery and consulted with the team leader about the actions taken. N7 assessed the patient for pain and noted that analgesia had already been given. Then the patient's pathology results were reviewed in relation to the current medications. N7 then provided the patient with detailed information about the pathology results related to the medications and provided a rationale for the need for regular physical assessments. Thus, while the initial episode of administering medication was abandoned, the participant was observed providing numerous and lengthy nursing interventions related to the safe administration of medications. N7 spent considerable time on patient education and assessment interventions, explaining their relativity and appropriateness to the prescribed medications. This episode highlights the sometimes hidden aspects of nursing practice that do not directly link to the six rights of medication administration, but nevertheless are part of the process and contribute positively to patient safety.

Abandonment of episodes was not confined to particular participants or settings. In the ward settings the abandonment of an episode was more commonly associated with another nurse from the same department having already administered the medication (8/11). In some cases the team leader did this (N13:2 and N14:8), while an EN had already administered the medications in episodes N15:3, N15:6 and N15:7. Other episodes were abandoned because the medication was not due to be administered even though the patient has requested it (N18:2), and in one instance (N18:3) where a new medication had been ordered the participant halted the action and chose to seek a review of the order before administering it.

Lack of available supply of the medication was another common reason that halted episodes. Even though attempts were made to rectify the situation, N14, N15 and N19 spent considerable time hunting and gathering medications. It was clear from the observations of these episodes that searching for medications to fulfil prescriptions was a source of considerable workplace frustration. For example, while observing N14 during the first medication round of the day, a lot of time was wasted because of missing medications. More than an hour was taken to complete the

medication round in this case, as it was interrupted on four separate occasions to find five different medications for three different patients.

Three episodes were abandoned after the participants considered the patient's condition or clinical circumstances. The participants in these cases withheld the medication for the safety of the patient. In the case of N11:4, the participant was asked to check insulin that had already been prepared by an EN ready for administration. The participant reviewed the regular medications of this patient and the physical data available. The participant identified that the oral hypoglycaemic medication for this patient had been administered and therefore the insulin which was about to be administered may have an adverse effect. N11 then undertook further assessments to determine the need for the additional insulin dose.

N17 withheld oral medications because the patient was experiencing dysphagia (difficulty swallowing). A discussion with the doctor and a swallowing assessment was arranged to provide evidence to support this decision. In episode N13:4 the medication was withheld without consultation with the prescribing doctor, as the participant prioritised patient eating over administration of some oral medications. The patient was eating at the time and N13 later revisited this patient and administered the medication.

Some episodes were abandoned once the NIMC was reviewed and the participant realised that no medication was due at that time (3/11). Discussed in Theme three is the observation of participants systematically, regularly and frequently reviewing NIMCs. Sometimes this resulted in medication being administered and sometimes not. In one of the observed episodes, an exceptional circumstance (N20:1) occurred where the NIMC had been misplaced. N20 immediately abandoned the episode after realising the wrong NIMC had been collected.

The last type of episode considered as abandoned and included in the non-routine theme is that which results from patient refusal to take the medication. In three episodes, the patients exercised their right to refuse the medication. These episodes are mentioned here and considered later in the 'routine' theme because they reflect the sixth right of safe medication administration that applies in the public health

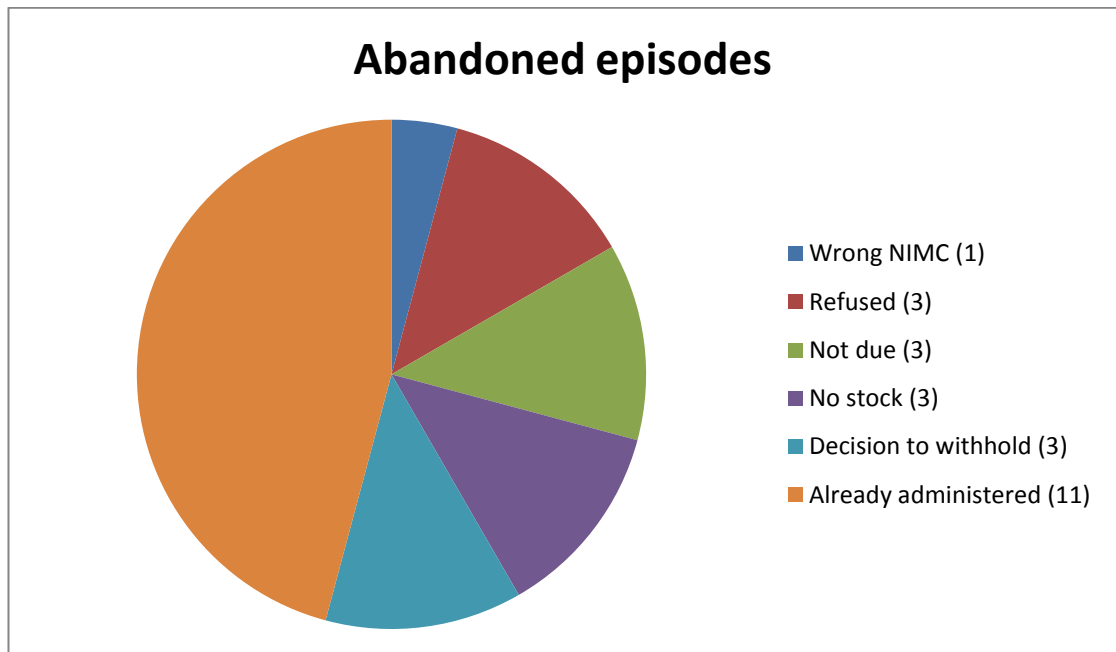facility where this study was set. The distribution of the abandoned episodes is summarised in Figure 5.3.

Figure 5.3: Distribution of abandoned episodes

The following section discusses the next subtheme of episodes that were included in the non-routine theme after they were identified as not leading to the actual administration of a medication: where the participant was engaged by another nurse to check a medication, or when the participant engaged another nurse to check the medication and subsequently handed off to the checker for administration. These episodes are discussed in the next subtheme and separated from other 'hand-offs' to describe the purposeful actions taken to meet regulations.

5.4.2 Subtheme B: Checking episodes

The participants' range and scope of practice required them at times to assist other nurses by checking medication before administration. Likewise, the participants sought other nurses to check medications with them. The checking process is one of the safety checks explained in Chapters one and two where participants were observed to share medication management with their colleagues, based on policy and procedural requirements. Checking practices observed in this study mostly related to

scheduled and controlled drugs, parenteral medications and oral anticoagulants. Controlled medications, as defined in Chapter 2, were easily identified because of the extra steps required to administer them. Figure 5.4 is a breakdown of the route of the controlled substances administered during this study.
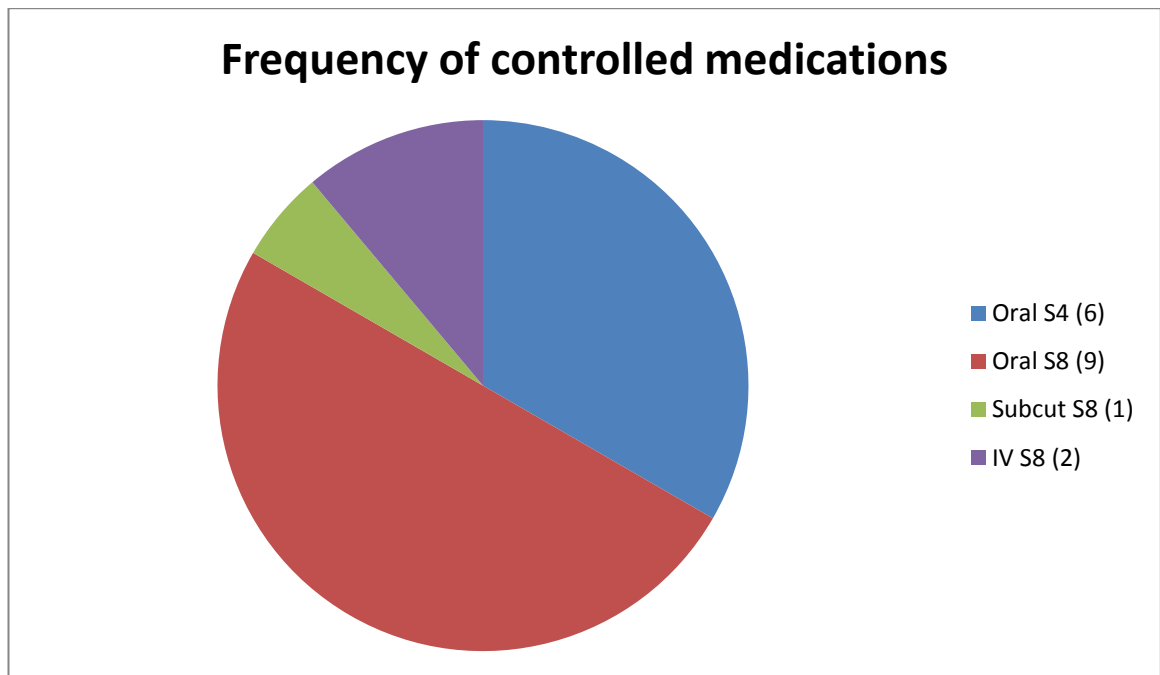

Figure 5.4: Frequency of controlled medications

The role the participants played in checking and confirming medications that they did not eventually administer was observed and coded as *checking* medication as part of the non-routine theme. The checking medication episodes where the participants subsequently administered the medication are included in the next major theme of routine episodes. Participants were observed sometimes initiating the checking episode, which triggered data collection using the episode tool, but during the process, the medication was then handed off to a colleague and only checked by the participant. At other times the participant would be asked to check the medication by the initiator. This prompted the commencement of the data collection tool because in some cases the medication was then handed off to the participant to administer.

The nine checking episodes discussed in this category were N6:1, N7:7, N9:2, N11:3, N11:5, N14:10, N14:11, N15:14, N16:17. The time consumed by these episodes ranged from one to six minutes. During this time, the participants confirmed the

medication dose and type against the NIMC and checked the medications with each other. They reviewed patients' vital signs and pathology results (N9, N20), previous medication administered (N7, N11, N20) and identified errors on the NIMC (N9, N14, N20). Participants used their knowledge of the regulations and policies (N6, N9) along with medication information resources such as department protocols (N5) and MIMs (N5) as part of the checking process, and they were observed considering patients' safety in relation to the medication they were checking (N5, N12). For example, on one occasion a doctor in the emergency department requested N5 to check and commence sedation in a ward area where patient cardiac monitoring equipment was not available. This participant then asked for a written prescription and advised the doctor that the patient must be moved to a more appropriate clinical area before administration of the intravenous Midazolam and Tramadol could be commenced. This example again highlights how this participant's actions contributed to safe practice, without necessarily aligning with the rights framework.

In another episode (N12), the participant was checking blood for a transfusion and made the clinical decision to insert another intravenous cannula to provide IV access in case other medications were needed. In another two other episodes, N12 and N14, participants were observed checking blood products where they identified that the wrong bag of blood had been supplied for the patient. While confirming the blood product codes, participants discovered that the code on the order was different to the code on the product. At this point they ceased the episode and consulted with the team leader, who took over the procedure so that the participants could continue with the rest of their routine medication round to deliver patients' medications at the right time. Again this observed behaviour contributed to the safe administration of medications and reduces the risk of any potential harm to the patient.

Teamwork was observed to be common practice and was most obvious when checking medications. Participants' checking of medications was part of assisting inexperienced clinicians (N14), preceptorship of students (N5) and mentoring colleagues (N10). N10 helped a colleague by checking medications, while the colleague took a break, N10 organised the correct equipment, labelled four IV lines and two fluid containers and sorted a number of power cables around the bedspace of

the patient, during this time. Thus, participant behaviour was contributing to environmental safety for medication administration.

Time constraints were observed to be an organisational factor affecting the checking behaviours of the participants (N9, N11, N13, N14, N15) for some medications. Participants were seen to be checking medications while passing colleagues in corridors and while undertaking other nursing activities (N11, N13, N14, N15). For example, in episode N9, where a subcutaneous injection was due, the participant was in the nurses' station area when confirming the patient details by stating, 'That's for Mr X in Bed 4?' before countersigning the NIMC and checking that the medication was correct. Likewise, in another observed episode, the participant (N15) checked a warfarin dose against the NIMC in the corridor but did not witness the medication being administered. It became clear that checking medications in the corridor saved time.

Episodes where the participant intended to give the medication after checking it with another nurse but then delegated the administration of the medication to a colleague are coded separately as *hand-off episodes*.

Where regulations stipulate that the checking nurse must attend the bedside, identify the patient and observe that controlled medication is administered, participants would sometimes commence with arranging to meet their checking colleague in the medication supply area. In one episode, N9was observed saying to a colleague, 'I'll meet you in the DD cupboard.' One or other of them would need to find the dangerous drug cupboard keys. In another episode, the participant (N16) was holding the keys and collected a checker on the way to the dangerous drug cupboard. These behaviours were interpreted as time-saving measures.

Patients sometimes requested a medication from a participant. This request sometimes resulted in the participant having to seek out other staff to complete the intended medication administration at the right time. For example, the participants were observed collecting the keys for the locked medication cupboards after a patient made a request for medication. Participants were supported by their colleagues at these times. Even though it is against policy, it was an accepted practice in many of

the observed episodes that an EN would deliver the controlled medication cupboard keys to the participant to save time in administering a controlled medication. In another episode, N11 retained possession of the keys after checking one medication with a colleague, knowing that there were more controlled drugs soon to be administered.

5.4.3 Subtheme C: Hand-off episodes

Some participants were observed to initiate medication administration and then deliberately hand the process to other authorised members of the healthcare team. This was done for a number of reasons (patient care priority, education of staff, convenience to participants) and these episodes will be collectively discussed in this subtheme. A number of these incomplete episodes were observed to be taken over by another nurse, who was not necessarily a study participant. The episodes in this subtheme are called hand-offs and were either purposefully planned (patient care and education) or opportunistic (delegation).

The handing off of episodes occurred eight times in this study and was at times initiated by an independent checker rather than the participant. The hand-offs were observed more in the medical and surgical wards where the nursing model of care was team-based. In the emergency department and ICU/CCU, the nurses' workloads are allocated individually and there are fewer staff, so the opportunity to hand off a task was more limited. The episodes making up this set of hand-offs are N7:8, N11:1, N11:9, N11:13, N12:8, N13:1, N13:9 and N18:11. The duration of these types of episodes ranged from one minute when N18:11 simply checked the medication with the EN and then gave it to the EN to administer, in order to focus on administering medication in a more complex and problematic situation, to 18 minutes when during the safety checking process, N12.8 discovered the wrong blood had been supplied.

Teamwork was observed to be fundamental to participants in offering and accepting the delegation of medication administration in full or part. There were times when the participants partly progressed through the administration process after the check.

During the checking dialogue, the decision was sometimes made to hand the task over to the colleague for completion.

Patient flow priorities were observed to directly impact on the decisions of the participants to hand off the medication administration. In episode N7:8, for example, the participant commenced the preparation of an intravenous infusion for a patient who was being transferred via air ambulance to a metropolitan hospital. The participant intended to complete this action but after the medication had been prepared and prior to the infusion commencing, the retrieval team arrived and assumed the management of the patient and finalised the episode.

The time of day was also observed to be influential in the decision to hand off the administration of a medication. Noted in the discussions of other subthemes, high activity times, such as the times of the NIMC-nominated medication rounds, placed increased demands on the participants. It is at these times that more medication administration hand-offs were observed. Meal breaks were another significant time of the day where nursing responsibilities were sometimes delegated to colleagues.

In episode N11:1, the participant negotiated the handover of a Schedule 4 restricted medication to the EN after checking it with the EN so that the participant could take a meal break. In another episode (N11:9) the team leader offered assistance during the preparation and checking of a medication to allow the participant to receive a new patient from another department.

Some episodes were intentionally handed off to students (N5:1) and other clinicians (N13:1) to provide an opportunity for skill development. In one episode, the participant was teamed with a new graduate nurse and delegated the conclusion of a subcutaneous injection to that new graduate, while providing direct support and guidance during the administration of this medication. Similarly a participant in another episode (N5) was working with a nursing student and gave direct instructions and support throughout the process of administering medications. All participants in this study were observed to share responsibilities of medication administration in this and other ways. However, it was clear that participants were acutely aware of their accountability during these hand-offs. For example N11:13 retrieved a Schedule 4

controlled medications after the EN who was administering the medication left the medication on the bedside locker.

Hand-offs were observed to be directly related to competing demands, particularly at busy times of the day, when participants could be seen working together with colleagues on multiple NIMCs and multitasking (N11, N13, N15, N19). They gathered the charts for the patients and engaged other nurses to assist them with checking, delivering and administering the medications to more than one patient.

5.4.4 Subtheme D: Multitasking episodes

Participants were commonly observed working with more than one NIMC at a time. In order to record these observations some of the episodes contain data that is a mixture of actions relating to more than one NIMC. Participants who were observed multitasking were usually seen to do this at or around the NIMC times of the day when numerous medications were scheduled. Descriptions of these episodes allow the variety of practices observed to safely manage the medications among competing cognitive and practical demands to be discussed.

However, the nature of these episodes made it impossible for the observer to unequivocally discern which action related to which medication. All observations made during multitasking episodes were recorded on one episode tool and later cross-referenced with the observer field notes in an attempt to separate the actions and associate them with the administration of specific medications. Therefore, while the actions are described here, they cannot all be accurately linked to a specific NIMC. The data in Figure 5.5 is an indication of the complexity of some of the observed episodes.
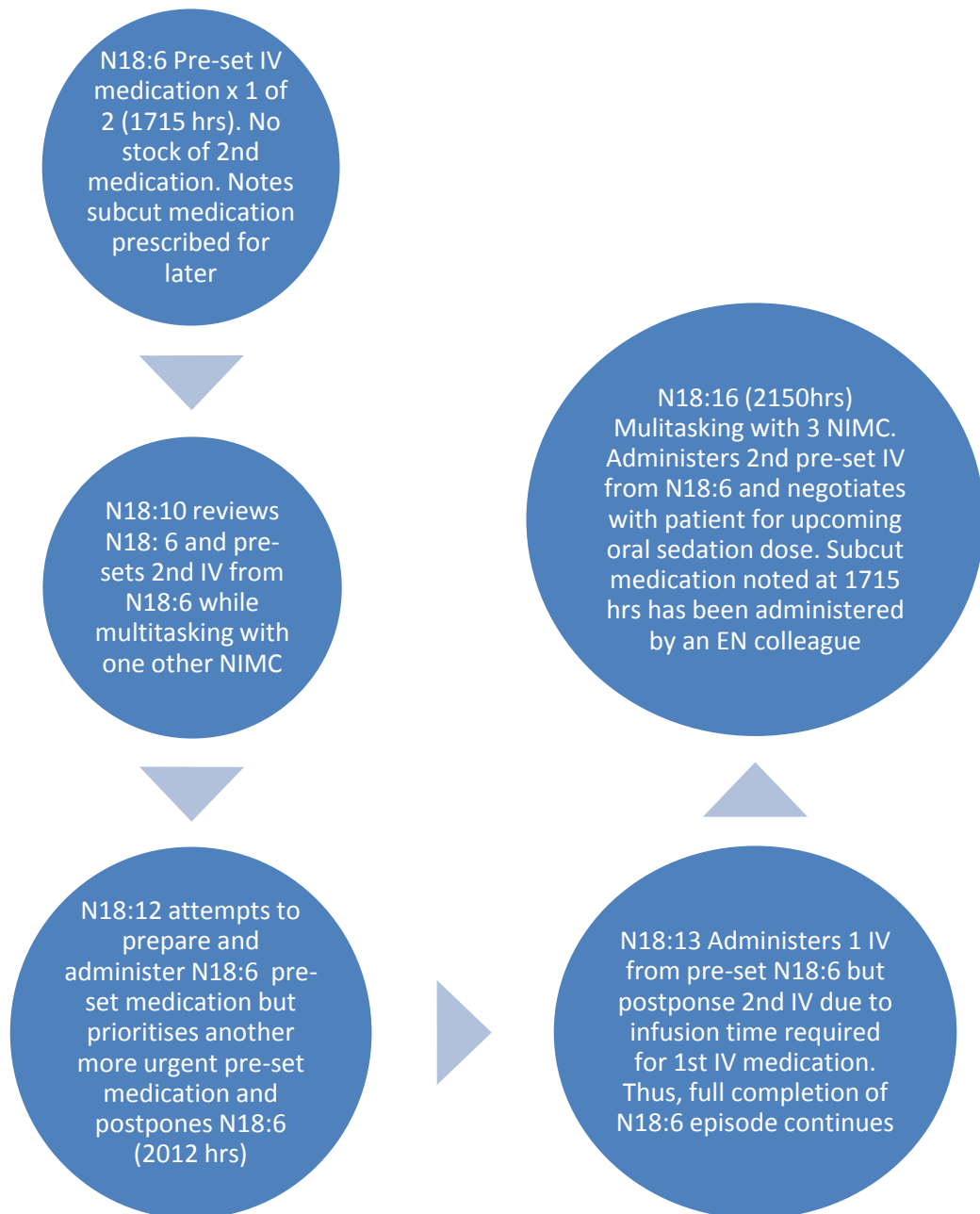
N18:6 Pre-set IV medication x 1 of 2 (1715 hrs). No stock of 2nd medication. Notes subcut medication prescribed for later

N18:10 reviews N18: 6 and pre-sets 2nd IV from N18:6 while multitasking with one other NIMC

N18:12 attempts to prepare and administer N18:6 pre-set medication but prioritises another more urgent pre-set medication and postpones N18:6 (2012 hrs)

N18:13 Administers 1 IV from pre-set N18:6 but postponse 2nd IV due to infusion time required for 1st IV medication. Thus, full completion of N18:6 episode continues

N18:16 (2150hrs) Mulitasking with 3 NIMC. Administers 2nd pre-set IV from N18:6 and negotiates with patient for upcoming oral sedation dose. Subcut medication noted at 1715 hrs has been administered by an EN colleague

Figure 5.5: Non-routine administration of a single medication observed as multiple episodes

In relation to the observation above, I found that as the observer I had to be hyper-vigilant when observing the participants multitasking because the risk of error was clearly higher and I took my role in identifying any risks to patient safety very seriously in accordance with the NMBA Competency Standard 1.3 (2006) and ethical approval for this study. Therefore, when I observed participants managing multiple NIMCs I covertly checked that the medications being dispensed reflected

the prescriptions by stepping forward and reading the NIMC and the medication label. As the researcher and observer and as an RN, this checking was undertaken as unobtrusively as possible. I would simply and quietly move to view the NIMC and the medication while the participants were occupied.

For example, as previously mentioned, in one episode (N18:16), I was not able to confirm that the right dose of one of the medications that had been reconstituted. So prior to the participant administering these medications, I quietly asked the question 'Could you just remind me what you have there?' The participant answered and confirmed the drug and dose that I had observed earlier on the NIMC. Once confirmed as correct, I returned to the observer role and did not interfere further. This course of action was preferred to interrupting the practice of the participant in the medication preparation area so that the practice could be observed to the fullest extent. The interruption of practice was necessary in this instance to ensure patient safety and to meet the ethical obligations of this study. Similarly, I interjected in the course of action when a participant was preparing to crush a controlled release medication for nasogastric (NG) administration by quietly asked 'Is that one OK for crushing?' In this instance, the participant reviewed the medication specifics by using a pharmaceutical text and confirmed that the medication was not supposed to be crushed. The participant raised this issue with the doctor. The patient in this episode could take medication orally. Consequently, a change to the NIMC was made to reflect a different form of the medication and a new route of administration was ordered.

In another episode that involved multi-tasking (N11:10), the participant pre-set medications for one patient at the same time as dispensing medications for another. Simultaneously, an EN assisted N11 by pre-setting another intravenous medication for a different patient and the team leader checked that medication. The EN informed N11 that the medications had been placed ready for preparation and administration but that one of the intravenous medications was not available. This became an extended episode at this point because N11 contacted the nurse manager to source the medication from the locked after-hours pharmacy dispensary. The medication had to be delivered to the ward before N11 could return to this NIMC to finalise the administration of this medication scheduled for the earlier time. This episode was

completed 65 minutes later when the nurse manager arrived with the medication, at which time N11 handed off the administration of the medication to the team leader because N11 was otherwise occupied.

In another episode, the participant was observed preparing medications relating to five NIMCs. This participant was systematically working with an EN to prepare IV, subcutaneous and controlled medications from NIMCs that were laid on the bench, and one by one the participant and the EN placed the medications on the appropriate NIMC. They verbalised to each other the medications and then pointed to the times on the charts and expiry dates on the medication packaging. Once at the bedside they shared the checking of the administration. The return trip to the treatment room for the next medication included discussions of the next patient. This multitasking episode took 45 minutes and covered the administration of medications for five patients. The EN played a key role in helping the participant to pre-set, prepare, check, prioritise and administer the medication in this episode. So while EN practice in administering medications was beyond the scope of this study, in this instance the behaviours of the EN and RN were so intertwined it was impossible to separate them when recording this observation. Other participants (N11, N15, N17) were also observed to seek similar assistance from ENs.

5.4.5 Subtheme E: Pre-setting episodes

The practice of preparing medications in preparation for later administration was themed as *pre-setting* for the purpose of this study. Pre-setting differs from multitasking in that the participant was focused on only one NIMC at a time. Pre-setting differs from the 'extended' episodes described next because pre-setting behaviours were distinct actions of setting up rather than interrupted 'routine' administration, resulting in the episodes being partially completed, postponed and 'extended' until later.

Common among the participants (N1, N11, N14, N16, N18, N19, N20) working in the medical and surgical wards, pre-setting behaviours was observed when a number of parenteral medications were prescribed to be given to a number of patients at the

same time (0800, 1200, 1800, 2200 hrs). The pre-setting practice saved the participants' time later in the shift when many of the parenteral medications were all due. N14 is a typical example of an observed pre-setting practice.

N14 took the NIMC to the treatment room and gathered the materials as if intending to administer the medication. This prompted commencement of the episode tool, which was then ceased because the episode ceased on completion of the pre-set. N14:10 and N14:11 were both pre-sets involving collection of IV medications, diluent and injection equipment into a tray, which was placed on the bench in the treatment room. The tray was then labelled with the patient bed number ready for later administration. In this episode, the participant then advised a colleague that the medications were ready for independent checking. The participant (N14) was observed asking a colleague, 'Can you check my IVs?' Once the check was complete, the participant was advised, which signalled that the medication was ready for preparation and administration. The participant returned to prepare the medications at the scheduled administration time. A new episode tool was commenced at each of these stages, as the pre-setting behaviour was distinct from the administration of the medication.

In episodes like this (N15, N20), the participant had pre-set medications in the treatment room for the checker to confirm before the time of the scheduled administration. This pre-setting behaviour was interpreted as another time-saving measure.

5.4.6 Subtheme F: Extended episodes

The episodes discussed in this subtheme were extended across more than one episode tool. On first analysis of the data, these episodes appeared to have been abandoned. However, they were actually recommenced and completed at a later time. These episodes were initially recorded when the participants started the administration of a medication and the tool was terminated when the participant abandoned the process due to an interruption and/or subsequent redirection. A new tool was commenced when the participant resumed administration at another time but it was too

cumbersome and confusing to retrieve and recommence the original episode tool in the field, although this was attempted a few times.

These extended episodes were connected during the analysis of the data by reviewing incomplete episodes and comparing these with field notes to identify the factors that led to the medication not being administered. Tracking the process to its conclusion identified that some of these episodes were abandoned as described earlier in Subtheme A, while others were interrupted and then extended.

Interruptions to the participant's intentions to administer a medication were the main reasons that forced a change in their course of action in order to manage the emergent issues. Most frequently was the lack of available stock of the medication to be able to fulfil the prescription, leading participants to take action to source the required medication. The time taken to source stock of the medication was not only time consuming and frustrating but also visibly affected the participants' capacities to administer the prescribed medication at the right time.

The lengthy timeframes of extended episodes meant that participants were not able to administer the medications at the right time because they were not available. Unlike the *abandoned episodes* described earlier where the medication was never delivered, the *extended episodes* were all carried through to a successful conclusion. For example, in the observed episode N16:5, the participant was advised at the afternoon handover that a patient had been admitted for a blood transfusion. At 1530 hours, the participant collected and cleaned an IV pump. At this time it was noted that the patient had no IV access available, and a doctor was notified of this situation. N16 then collected and prepared the IV trolley and took it to the patient bedside. Later in the shift N16 reminded the doctor that the transfusion had not been commenced because IV access had not yet been established. On the fourth encounter with this episode N16 assisted the doctor to insert the IV cannula and the blood transfusion was finally commenced.

N18 experienced an extended administration of a medication when the second vial of a medication required to make up the whole dose was not available at the onset of the episode. Later on the medication was delivered to the nurses' station, at which time

the participant had the medication checked and completed the administration. The checker was the same person who had previously checked the first vial of the same medication from the prescription. In this subsequent encounter, the participant did not have the NIMC in hand at the time of receiving or checking the medication. Therefore, the six rights were not able to be confirmed at the conclusion of this episode, which extended over 49 minutes.

5.4.7 Summary

The medication administration episodes described here as non-routine were common. What was not routine about these episodes was that they do not reflect the simplicity of the rights framework described in Chapters 1 and 2. However, the episodes described do highlight the extraordinary lengths that the participants went to for the sake of administering the right medications to the right patients. Figure 5.5 depicts the workflow of one participant that, in part, summarises Theme 1 of the observational data and indicates variations to practice based on application of clinical judgement and influenced by contextual factors.

5.5 Theme 2: Routine episodes

The second major theme captures the observations of medication administration that were considered to be routine episodes. As defined in Chapter 1, Queensland's public health system uses the six rights framework for safe medication administration for practice (Medication Services Queensland, 2009a). The observed episodes of medication administration in Theme 2 were more straight-forward and easily aligned with the framework for this theme because the observed behaviours culminated in administration of the medications and the episodes were not complicated by interferences and interruptions as was encountered in those described in Theme 1. It was interesting that many of the observed behaviours in the non-routine episodes identified instances where the participants focused on safely administering medications using positive and proactive strategies that did not necessarily align with the rights framework.

The observations of medication administration practices that relate to each stage of the framework will be discussed here as separate subthemes. An important consideration when viewing these findings is that not all episodes of medication administration were observed separately. Figure 5.6 shows the frequency with which each form of medication that was administered including categories showing a combination of forms administered. During this study, it was impossible to differentiate each action related to all medications, but in all episodes the observed practice led to the safe administration of the prescribed medications. Therefore, the data discussed in this theme is indicative rather than conclusive of how the rights framework was applied to each episode.
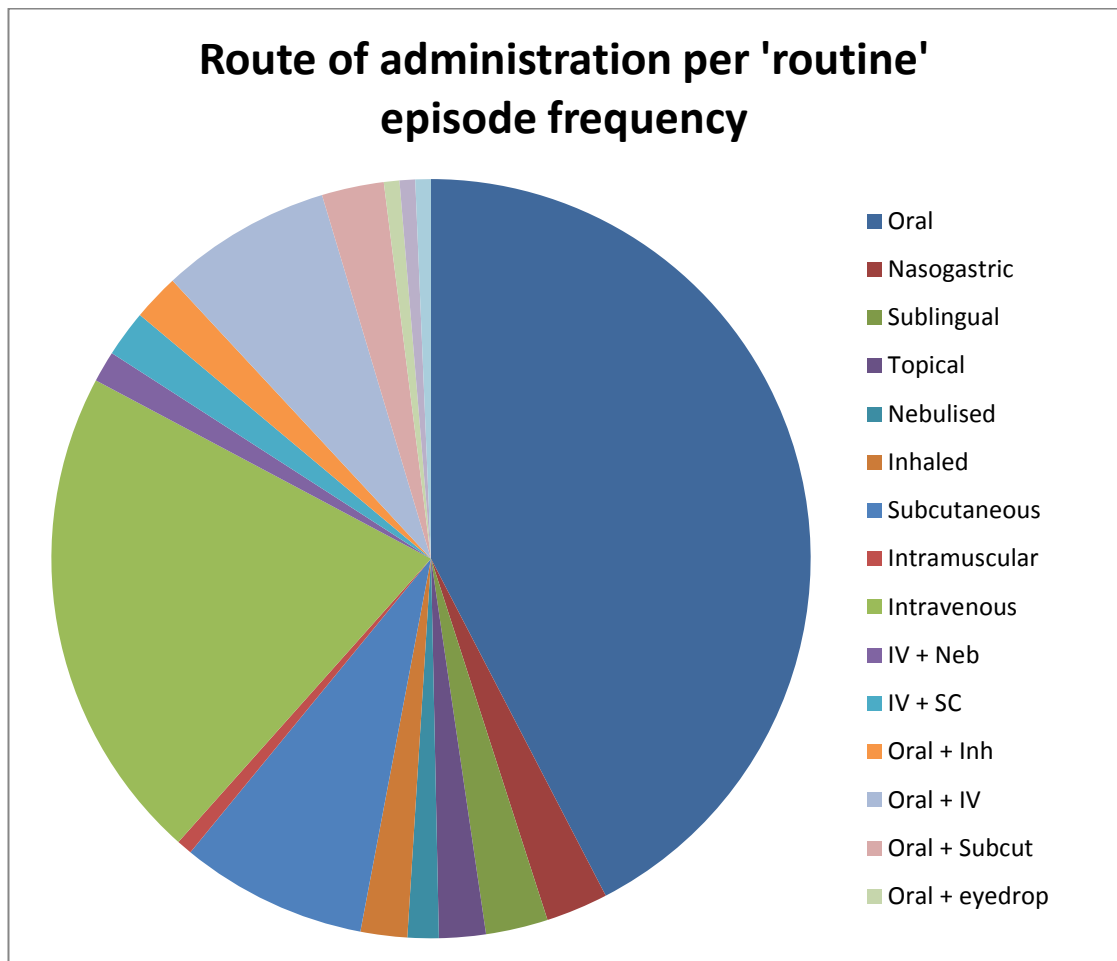

Figure 5.6: Route of administration per 'routine' episode frequency

Figure 5.6 distinctly shows that the most commonly administered forms of medications during this observation period with these participants were oral (42%), IV (21%), subcutaneous (8%) and concurrent oral and IV (7%). While it may not

have been possible to discern and record which checks were completed for each discrete medication when combinations were present, the safety checks were observed to be satisfactorily completed for me to feel confident that there was no risk of harm to the patients. The medication that was prescribed was administered via the route specified and in the dose required to the patient for whom it was ordered.

Controlled medications, as defined by the Queensland Government (2012), are separately secured in locked cupboards and require extra checking and documentation by two staff members before they can be administered. All episodes of medications in this category were observed to comply with this requirement.

5.5.1 Subtheme A: The right patient

The actions of the participants that were observed in relation to confirming the 'right' patient were when the participants asked the patients questions about their name, date of birth and allergy status. Participants were observed checking the patients' identity bracelets and reading the patient details on the NIMC. These observations are consistent with the first of the six rights discussed in Chapter 2. The right patient rule implies that the nurse must ascertain the identity of the patient for whom the medication is prescribed before administering the drug to that person. The participants were not always observed to strictly adhere to the rule for checking patient identity, but in cases where they bypassed this step, they clearly demonstrated that they knew the patient's identity and often called them by name.

There were times when the participants would complete some of the accepted identification checking requirements but not all of them. On approaching the bed participants usually asked the patient a series of questions and sometimes looked at their armband and/or the NIMC. The participants were observed asking identification questions (46/151), checking allergy status (43/151), reading identity bracelets (43/151) and looking at the NIMC patient label (42/151). However, it was impossible to determine what the participants were reviewing when he/she was looking at the medication chart without interrupting the natural progression of their practice. It was assumed that the participant was reviewing the patient label if they looked at that

area of the chart. If the participant touched the patient identification band while holding the chart, it was assumed that the participant was reconciling the patient's name on their identification band with the label on the medication chart.

Identification of the patient was observed to be not as straightforward as the rights framework suggests. The questioning of the patient to confirm their identity was easily observed. Participants used various phrases to glean this information from the patient. They would say, 'Can you tell me your name?' or 'What's your full name?', then, 'What's your date of birth?' or 'When's your birthday?', and finally, 'Do you have any allergies?' or 'Are you allergic to anything?' Participants sometimes read aloud the details on the NIMC identification label (N16:18) and then asked, 'Is that you?' (N5:2).

Patients were not always forthcoming in responding to the participants' questions about identity because of cognitive impairment (N13:12, N14:2, N17:2), hearing impairment (N14:3, N16:3, N16:6) and reduced levels of consciousness (N13:11, N15:1, N14:2). N17:2 tried many different ways to extract the name from the patient but it was to no avail with the patient refusing to answer the questions by saying things like 'What does it matter?' To verify the patient identification, N17 checked the identification bracelet details instead.

However, patients were not always tagged with identification bracelets (N13:3, N8:1, N11, N16:7). Patients in the emergency department were rarely tagged on arrival (N2:1, N2:3, N2:5, N4:1, N5:2). Once patient details were confirmed, the participants in these episodes affixed the missing identification band to the patient. N8 had an unidentified patient experience after returning from a mid-shift deployment to another ward. The new patient was positioned in a bed allocated to N8. N8 received handover and performed a full physical assessment on this patient. After explaining the purpose of the identification bracelet and confirming the patient details N8 affixed the bracelet before commencing the administration of any medications.

Participants confirmed the details on the bracelet by comparing them to the NIMC and sometimes questioning the patient. Although it could be assumed that

information on the NIMC should match the computer-generated bracelet label, this was not always the case (N9:1). In a unique observation, N9:1 noticed a discrepancy between the patient's stated age and the date of birth on the identity bracelet when confirming the right patient. The bracelets at this hospital contain computer-generated information extracted from the patient record. This bracelet showed a year of birth that was 10 years later than what the patient was quoting. The patient in this case was not sure of the exact year so N9 contacted relatives to confirm. Once the correct date was verified through documents brought in by relatives, medical records were notified and the details were changed. On review of this patient's case notes, N9 found that the wrong year of birth was evident in numerous admissions to the same health service. However, once assured that this was indeed the correct patient, N9 did go ahead and administer the medication at the right time despite being unable to confirm the correct date of birth at that time.

When an identification bracelet was in place, the participants used this to confirm patient identification in a number of episodes where the patient was unable to verbally respond. However, N16, N11 and N18 found some issues with patient armband data at the time of confirming the right patient. Patients with known allergies in this hospital are supposed to be tagged with a red armband instead of the clear alternative. In some cases the wrong armband was applied. Participants resolved this by changing the bracelet once they had confirmed that the patient had known allergies through questioning and reviewing the NIMC. Other participant actions to ensure correct patient details for medication administration include labelling and numbering the NIMCs. Some patients had more than one NIMC and participants (N7, N10, N12, N13, N16, N20) were seen to insert omitted details such as the current year and chart number on the NIMCs and other documents in accordance with the NIMC user guide (ACSQHC, 2009). Affixing the computer-generated patient labels to incomplete NIMCs was an activity carried out by N7, N8, N10, N11, N12, N14, N16, N17, N19 and N20.

For example, both N13 and N20 verbally confirmed the identity and allergy status of several patients and added this to the relevant sections of the NIMC where identification details were missing. Other pages of the NIMC had the correct patient label affixed but not the 'As required PRN medications' page where an analgesic

requested was prescribed. N13 took the opportunity to complete the details of the identification by hand writing them in the space allocated. N20:11 rectified a similar situation by affixing the computer-generated label to the NIMC.

Participants were observed taking the NIMC in hand and addressing the patient by their name when about to administer medications (N7:1, N7:4, N18:9, N20:5, N20:11). Some patients and participants were obviously familiar with each other and addressed each other by name (N1:2, N7:1). A number of the patients seemed familiar with the identification checking process and occasionally offered their details before being asked. When observing N1, a patient recited their name, date of birth and medical record number as N1 approached the bed holding the NIMC (N1:3 and N1:11). N6 asked each new patient about their allergy status on arrival to the emergency department. One patient had such an extensive list of allergies that when approached for the second time N6 jokingly asked, 'What are you not allergic to?'

N17 was observed to greet several of the patients by name, having cared for them the previous day, but one patient was a new admission overnight and N17 had not met him prior to this encounter. N17 was observed to conduct a formal introduction, and asked the patient's name, date of birth, allergies status and then confirmed this against the NIMC. First meeting introductions were a practice noticed with other participants (N1, N2, N7, N8, N10, N11, N12, N16, N17, N18 and N19) where the discussion usually included medical history data and some social interaction. Building relationships with patients was not always by way of a simple verbal introduction. N16 encountered a patient with a severe hearing impairment who had arrived in the ward without an identification bracelet. N16 was observed checking that this was the 'right' patient via handwritten notes to him that asked for his name, date of birth and allergy status, and then before progressing with medication administration confirming through non-verbal communication that the patient understood what was written.

The administration of controlled medications was observed as a team activity. Sometimes while the participant was checking the medications, their colleague would confirm the patient identification at the bedside (N1:2, N2:1, N8:4, N11:10, N11:11, N17:5, N19:5). For the purposes of this study, the right patient was recorded

as confirmed on the episode tool if either the participant or their colleague completed that check or called the patient by their name. N1 is an example where another nurse assists with the checking of controlled medications. The checker in episode N1:2 confirmed the patient identity at the bedside while N1 finalised the preparation of the medication.

It was observed that there was an increased tendency for the participants to re-check the patients' allergy status when IV medication was being administered. This suggests that the participants were being more cautious with IV medication. For example, N14:14 told the patient that penicillin is about to be given and questioned the patient explicitly to confirm there was no allergy to this medication. The administration of controlled drugs (N15:2) was another circumstance when the participants were observed to be more inclined to formally identify the patients.

This subtheme described observations of how participants confirmed the identity of patients receiving medications. As discussed in Chapters 1 and 2, the expectations of the rights framework in ensuring medications are given to the right patients are clear, but some deviations were noted here and some practice impediments were identified. Participants' observed behaviours suggested that they were proactive in seeking to confirm identity by becoming familiar with patients and their clinical history through questioning and conversation. Interpretation of these actions will be further explored in Chapter 6.

The next subtheme focuses on the ways the participants ensured they administered the right medication to the right patient. The participants' strategies to ensure the right medication was prescribed, supplied, prepared and administered was at times not as simple as the rights framework suggests.

5.5.2 Subtheme B: The right medication

In Chapter 2 the role of health professionals in prescribing, supplying and administering the right medications to meet the health needs of patients was discussed. The analysis of the observations in relation to administering the right drugs was complex because as RNs, the participants are expected to understand the indication and therapeutic effect of each medication. Furthermore, the rules of checking this require that the nurse understands the patients' condition and has an adequate working knowledge of pharmacotherapies and the available clinical resources to support clinical decision-making regarding the administration of medications. This cognitive work was obviously not able to be directly observed, but these factors were explored in the interviews discussed in Chapter 6.

The observational phase of the study allowed for scrutiny of observable participant actions in relation to the medication administration process, but to be sure the participants complied with ensuring the 'right' medication was given would have required me to have access to the patients' medical histories and be able to question the participant about each medication. This was not within the scope of this study and for this reason it can only be assumed that the medications observed to be prescribed on the NIMC were appropriate for treating the patient's condition. Assumptions were made that the participants were aware of the need to check that the right medication was administered. This was reinforced in the observed episodes where the participants identified prescription anomalies. The actions taken to address any discrepancies are described in this subtheme.

To guard against a medication being given that the patient may be allergic to, questioning about any allergies is a part of checking the patients' identities. Another key aspect of ensuring that the right medication is administered is checking expiry dates and confirming that the medication has been stored correctly. The observed actions of the participants checking the expiry date of medications included turning the ampoule/bottle/packet or blister sleeve to locate the imprinted expiry date. Actions reflecting this were observed in 69 of the 151 routine episodes.

Despite a number of environmental impact factors impeding the visualisation of expiry dates, participants were observed to check this detail. The obstacles to this check will be described in Theme 3. More specifically, there were medication packaging issues, such as very small font and use of non-contrasting print, which made it hard to read the expiry text. N19 had a practice of circling the expiry dates on foil blisters sleeves once found so that future views were made more easily.

In other checks that were completed with parenteral medications, participants checked diluent compatibility, rate and route of administration in episodes 'N1:2, N15:5 and N15:9). In another example, N10 used a pharmacology resource book to assist an inexperienced colleague to ensure the right drug was being administered. N10 showed the colleague how to use the guide to IV medications (Society of Hospital Pharmacists of Australia, 2011) to check the compatibility of the parenteral medications. N10 also helped to label the IV lines and fluids at the same time. N15 used a nursing drug text after identifying a problem with the prescribed route for a medication. N15 raised the problem with the doctor who subsequently ceased the order. Similarly, N7:5 used the electronic MIMS database to confirm the action of a newly prescribed medication. All these observed behaviours were linked to ensuring that the right medication was being administered.

Sometimes participants were observed reading relevant hospital protocols to guide right medication decision-making. For example, N8 referred to the hospital protocol for insulin infusions before agreeing to manage one. This participant was also observed seeking support from the team leader before accepting the management of this insulin infusion.

N7 reviewed the protocol for cardiac chest pain before initiating the medications and required nursing actions. After administering the protocol medication and assessing the patient response, this participant decided that there was the need to administer a different medication. N7:10 consulted with the treating doctor and collaboratively they decided to administer more medication. A verbal order was provided and the right medication was administered to meet the patient needs. In emergency circumstances such as this, the choice of the right medications sometimes requires nursing input and different prescribing practices.

In a similar episode, N5 made a clinical decision to increase the rate of IV therapy in an attempt to restore a patient's blood pressure. Like N8, N7 used the hospital protocol to support decision-making. In both of these examples, participants referred to patient assessment data that they communicated to the doctor in order to ensure the right medication for the patient. These examples demonstrate that the participants were observed to have underlying knowledge of the medications required in these circumstances.

Product information materials helped N12 to ensure the right drug was administered after reviewing the mineral constituents of a nutritional supplement a patient was receiving and comparing it to the prescribed dose of magnesium to prevent an overdose. N14 and N15 also reviewed nutritional supplements, reviewing the NIMC for medications that might interact with them before commencing administration of medications.

Discussions with the prescriber about appropriate drugs and doses to provide adequate nausea/vomiting control (N16, N19, N20) and pain relief (N11, N13) were apparent in all clinical settings but more commonly observed among participants in emergency and ICU/CCU settings (N8, N9, N10, N12). N20 requested a regular order for an antiemetic to alleviate a patient's nausea.

When participants questioned patients about their level of pain or nausea, this was interpreted as them evaluating the efficacy of the medication therapy to establish the right medications had been prescribed. A pain rating scale was used (N8, N10, N11, N13, N20) to assess the analgesia requirements of patients. Questions about frequency and duration of pain (N18) helped participants to decide the appropriateness of medications. N8 and N16 discussed analgesia side effects and N8 was observed offering an alternative method of pain relief available on the NIMC.

On several occasions, participants were observed influencing prescriber decision-making regarding the right medications (N7, N8, N9, N11, N15, N19). For example, N19 recommended an antiemetic in a specific form after consideration of the patient clinical status. N4, N5, N6 and N19 initiated medications to meet patient needs and later advised the prescriber who completed a retrospective prescription. N6

responded to the patient's pain by initiating a topical anaesthetic gel and then arranged for a retrospective prescription to be written.

A patient's NIMC was not always available at the time that a medication was required and participants were observed to take verbal orders from doctors. For example, in episode N4:5 the participants administered a medication from a verbal order. Forty minutes later, N4 advised the doctor that there was limited improvement for the patient. It was not until a further two hours later, at 2013 hrs, that N4 made a further request to the doctor for an antiemetic for this patient, but the doctor was busy completing some discharge paperwork. The doctor later wrote the prescription for this medication.

N2 was observed to question patients about any medications they had taken prior to presenting at the emergency department, establishing what particular medication, if any had been taken and then comparing this to the drug being considered for administration. N2 was observed asking patients, 'Have you taken Panadol, Panomax, Herron, paracetamol?' N2 explained this as assisting the prescriber to order the right medication and avoid risks of overdose.

Seeking a medication history from patients was observed as the participants' attempts to gain information about the right medications. For example, while N3 did not administer any medications during the observed shift, extensive medication management work was observed as this participant assessed patients and inquired about immunisation and allergy status. N3 questioned one patient who had a history of haemophilia and N3 established the patient's medication status at this time.

When a child presented in the emergency department, N3 weighed the child and asked the parents about immunisation. When the parent did not seem to understand the question, N3 altered the vocabulary and asked about 'school needles', which facilitated a response. N3 also offered analgesia to some patients after establishing any previously taken medications. N3 assessed another patient, asking about morphine, maxalon, alcohol and penthrane use. N3 then reported the urgency of this patient to the team leader who then took control of the situation.

On one occasion, I intervened to ensure no harm to a patient, as I noticed that two medications for the same indication had been prescribed. N11 sought out the doctor who had intended to cease the first prescription and the NIMC was amended accordingly. N10 was observed to clarify new orders with a prescriber to confirm the right medication has been prescribed. This participant also reminded a doctor to complete the NIMC after noting that antibiotics were documented in the patient record but had not yet been prescribed. N8 reminded a doctor to order a discharge medication. N13 was also noted to make suggestions to a prescriber about appropriate medications to manage the pain of a newly admitted patient. N13 was observed to provide education to a doctor and the patient's relatives about appropriate pain management in palliative care.

Participants were often observed to involve patients (N2, N9, N19) and relatives (N5, N19) in information exchanges to ensure the right medications for the patients. N13 sought clarification from the patient about a new medication that had been prescribed, before administering it. Several participants (N17 & N7) were observed encouraging patient involvement in medication management, thus averting omission errors. For example, N17 found that a nitro lingual spray had not been prescribed. While N7 identified an incorrect medication order in both cases, these errors were discovered after discussion of prescribed medications with the patient and then following up with the doctor.

In many of the observed episodes, the participants questioned patients about the presence of pain either on arrival (N4, N5, N6) or during the first medication round of the shift (N7, N11, N14, N17). In these instances, the participants were observed to use both objective and subjective data to evaluate the right drug use. They asked about the experience of the pain by asking the patient to rate their level of pain out of 10. They used standard statements such as 'On a scale of one to 10, with 10 being the worst pain you have ever experienced in your life, where would you rate your pain level now?' They regularly asked about the effectiveness of previously administered analgesia (N17). For example, 'Is Panadol managing the pain?' (N11) and 'Buzz me in 30 minutes if it's not better' (N8). Once the participants had assessed the patients' pain level they made clinical decisions about which analgesia to administer. In some observations the participants demonstrated extensive knowledge of the medications

being prescribed, by providing detailed education to the patients. For example, N1 questioned a patient about a newly prescribed anticoagulant before dispensing it. This participant explained that different brands of this medication have varying potencies and different absorption rates, which can affect the pathology results. N1 further added that there is the 'blood test that the doctor uses to figure out the dose.' N9 had a similar conversation with a patient while referring to the NIMC to be reassured that the right drug had been prescribed.

Participants spent significant time teaching patients the medication name, frequency and dose and alerting them to any issues related to the medication. N16 used paper notes, pictures, pointing to body parts and miming hand gestures to describe the details of the subcutaneous medication and procedure when teaching a patient with a hearing deficit. N16 spent extended time with the patient to ensure that the information provided was clearly understood.

N6 was observed challenging medical staff prescribing practices because there were inconsistencies with the allergy status for a patient. This participant was observed to use direct questioning and sometimes humour to challenge the prescriber to complete the NIMC accurately, by asking them 'is this person allergic to anything?' or tells them 'I thought this person had an allergy.' The observed actions of the participants to ensure that the patients' received the right medications were visibly complex, time consuming and at times frustrating, particularly in relation to influencing the behaviours of the prescribers. Their strategies to ensure safety in relation to this 'right' will be explored in more depth in the next chapter. The next subtheme focuses on the observed behaviours of the participants to ensure that the right dose of the right medication was administered.

5.5.3 Subtheme C: The right dose

Participants' actions to ensure the right dose of medication were observed to consist of calculating correct doses, checking for appropriate frequency and expediting correct completion of the NIMC. As will be discussed, participants raised and resolved a number of overdosing risks and issues with prescribers to ensure that their

patients received the right dose of medications. Theme 3 will provide further insight into the participants' actions by describing the situational, organisational, environmental and equipment issues that sometimes impeded participants' abilities to ensure the right dose of medication was administered.

To assist the prescriber and facilitate the decision-making about warfarin doses, participants N10, N11, and N16 located pathology results and brought them to the attention of doctors in time to enable the right dose of the medication to be ordered. The NIMC highlights the prescribing of VTE prophylaxis as a distinct section. However, even though the importance of VTE prophylaxis is impressed upon prescribers, the participants in this study were seen to regularly have to seek out prescribers to ensure that prescriptions met these needs.

To assist with administering the right dose of medications, N16 made a number of visits to the pharmacy storage area to obtain oral medications that were the same strength as the prescribed dose to enable the right dose of medication from the least number of tablets. This participant used the MIMs to confirm the available strengths of the medication at the same time as pre-setting for a blood transfusion. N16 explained that the strength of the medication available in the bedside drawer was too low, requiring many more tablets to be given to meet the dose prescribed. On one occasion, N16 administered from the lower strength available but then sourced the right dose from the afterhours pharmacy supply for the next administration time.

Some medication dosages are based on the weight of the patient. For example, Enoxaparin Sodium is a medication that requires the dose to be accurately calculated according to the weight of the patient and then divided if twice daily dosages are prescribed. N10 was aware of this formula and on reviewing the patient weight and the prescription identified a prescription problem during the first round of a shift. This participant was observed to discover that an Enoxaparin Sodium overdose had occurred because the dose prescribed should have been divided and not given in one dose. N10 informed the consultant and a conversation ensued in which the participant informed the prescribing doctor of the manufacturer's dosage guide for this medication. The order was ceased and N10 informed the patient of the issue and

organised for blood tests, a pressure dressing and antidote medications to be administered.

Assessment of patients' conditions by the participants was regularly observed (N8, N10, N12 and N18) as a means of determining the right dose of medication to meet the patient needs. Patient experiences of pain and nausea and patient data such as BP and blood glucose levels (BGL) (N1:1) were used by participants in relation to the medications they were administering. N8 reported the details from a respiratory assessment to the doctor and requested medication appropriate to manage the patient palliation, while N12 noted a discrepancy with a patient controlled analgesia (PCA) order and after review of patient pain scale referred to the anaesthetic team for further orders.

Participants were observed to spend considerable time (N1, N2, N8, N9, N10, N16, N17 and N19) educating patients about the doses of medications and questioning them about the efficacy of those medications. Patients were involved in handover conversations and participants referred to the patient for feedback on the right dose and other details in relation to their prescribed medications. If the patients could not respond, then the participants tended to consult with relatives (N13, N14, N17) for dosage details. Participants in the ward used this opportunity to advise patients of changes to the medications prescribed on the NIMC and provide rationales for when medications were introduced or withheld. Participants (N2, N3, N4, N5, N6) from the emergency department and N9 from ICU questioned patients about doses of medication taken prior to arrival in their area. They explained that this was to ensure patients were not overdosed because no NIMC record was available for previous doses.

When administering medications, the participants were undoubtedly aware that they were accountable that the correct dose was given. In order to ensure they administered the right dose, many participants were observed to consult the MIMS to check doses (N11, N13, N14, N15).

N7, N9 and N20 had a process of placing a dot in the signature square of the NIMC once the medication was dispensed to indicate the medication was in the cup ready to

be given and only signed the NIMC after the medication was taken. Regular review of the NIMC by the participants is discussed in Subtheme E and mentioned here as it relates to dose checking actions, such as recalculated and confirmed IV infusion rates regularly throughout the shift.

Participants were also observed to play an essential role in ensuring patients received the correct dose of medication on discharge. For example, N11 reconciled the medications prescribed for discharge with the medications ordered on the NIMC and clarified with the prescriber the dose and frequency before the patient was cleared to leave.

5.5.4 Subtheme D: The right route

The administration route intended for a medication is determined by the prescriber and documented on the NIMC. The person administering the medication must ensure that the prescribed medication is given by the prescribed route and is appropriate for the patient, and for the medication and dosage prescribed, as discussed in Chapter 2. Ensuring the right route of administration is generally a straightforward process because the medications are usually prescribed and supplied in forms easily identifiable as the delivery method for a specific route. For example, tablets are in bottles and blister packs for oral administration and injectable liquids are in vials or ampoules for medications to be given by parenteral routes.

The discussion in this subtheme describes actions taken by participants to ensure medications are administered by the right route. The clinical reference book from the Society of Hospital Pharmacists of Australia (2011) were used by some (N1, N5, N10, N14,) to check that the medication ordered was appropriate for the route intended. For example, N1:2 checked this pharmaceutical reference book before preparing a medication for delivery via a peripherally inserted central catheter (PICC) route. N5 used it to check that a medication was appropriate for rapid IV infusion. Once the participants had confirmed that the medication was approved for IV route delivery, N1 and N5 continued on to administration. N2:6 considered the

patient and warmed the refrigerated immunisation medication by rolling it in warm hands before the intramuscular injection (IMI) administration.

The patient handover was a time when participants discussed medications. N2, N12, N13, N14, N15 and N16 in particular communicated issues with the route of administration during the handover times. N13, N14 and N15 were observed on consecutive days and consequently were seen to administer medications to the same patient. Their handovers about this patient included details of the medications in relation to the NG route. Prior to the handover, N15 used a textbook to confirm the NG route suitability for this patient's oral medications. N13 used MIMS to ensure a medication could be crushed for the same patient on a different day.

At times, delivery of medications by the right route was impossible when IV access was not patent or yet established for IV medications. Intravenous catheter (IVC) devices occasionally occluded, requiring new devices to be inserted. N13 checked for this prior to attempting administration of medications. N18 advised the doctor of an issue with an IVC and assisted by applying topical anaesthetic cream to the dorsal aspect of the patient's hand in preparation for the doctor to perform the procedure. An emergency department participant (N2) was able to assist by offering to insert an IV cannula when an IV medication was prescribed. It was assumed that not all participants had the authorisation to perform IV cannulation as when N16 required IV access to commence a blood transfusion (N16:5). The commencement of the therapy was extended over many hours while the participant contacted the doctor to undertake the cannulation.

Patient-related issues can complicate the medication administration process. For example, in episode N8:3 an oral antiemetic was prescribed in preparation for air transport of the patient to another hospital. The following account of this episode is an example of some of the factors that may have an impact on participant's ability to comply with the rights rules.

Episode N8:3 occurred at dinner time in the CCU. N8 was preparing the patient for transfer and required a medication that is not readily available. The participant went

to the centrally located ward-based pharmacy supply area. N8 is a short statured person and could not reach the medication prescribed and no step ladder was available. So I retrieved the tablet container for N8. Then the participant's actions were interrupted by the team leader requesting N8 to respond to a call from the airflight transport coordinator. N8 dispensed the correct dose of the prescribed medication into a pill cup along with the other medications already dispensed from the locked bedside drawer. The telephone conversation lasted approximately three minutes and required N8 to review the patient medical record to be able to provide the details required by the flight coordinator. At the same time N8 was being questioned by the team leader about the compilation of the transfer documentation.

On the way back to the patient following this interruption, N8 assisted a visitor who was standing at the nurse's station. The visitor's need was met and N8 continued towards the patient. On arrival to the bedside of the correct patient and still with the already dispensed medications in hand, N8 reviewed the NIMC again and saw that another medication has just been added. N8 returned to the pharmacy supply area and repeated the previous process of finding the additional medication.

N8 again returned to the patient, who questioned N8 about the impending flight and the medications. The patient was provided with detailed information in response to the questions raised. N8 described the colour, shape, dose and purpose of each of the medications in the pill cup. In concluding this episode N8 said, 'I'll let you take your drugs so that the medications get in your tummy. I don't want you to be sick on the plane'. At this point, N8 placed the pill cup on the bed table in front of the patient and stayed close to prepare his luggage for the transfer flight.

The patient then requested to use the bathroom. On return to the bedside, N8 finalised the transfer documents by undertaking a set of physical observations and recording them in the medical record. Then N8 sourced warm clothing for the patient, explaining that 'it can be cold in the aeroplane'. The participant provided the patient with an emesis bag, a urinal and a blanket and offered to contact relatives. N8 then found a Post-it note in the patient file saying that the doctor needs to be contacted to complete the discharge form. N8 then moved to the nurses' station to make the call.

While N8 was attending to this final piece of documentation, the patient was observed to take the medication that had been dispensed for him. The participant did not notice or confirm that the patient has taken his/her medication via the right route because the participant was occupied by these other urgent activities. However, the clinical setting of this episode enables visualisation of all beds from the nurse's station. I made a point of observing the patient taking the medication orally before I returned to focusing on the continued observations of this participant.

Therefore, in general, while the participants were observed undertaking actions designed to ensure the patients received their medications via the right route, many impacting factors and the complexity of some situations influenced their capacity to focus solely on medication administration.

5.5.5 Subtheme E: The right time

To ensure medication is administered at the appropriate time, the participants must first have a legal prescription, knowledge about the medication and be informed about the patient's condition. Then the participants need to have access to a supply of the medication. Meanwhile, the patient must be ready, willing and able to take the medication. The NIMC recommended administration times reflected in Table 5.3 are a direct replica of the NIMC used in the study setting. Medications should be given at these times unless otherwise specified by the medication product information, the prescriber or related to the patient requirements (Commonwealth of Australia, 2009, p. 9).

Table 5.3: NIMC recommended administration times

Recommended administration times (guidelines only)		
Morning	Mane	0800
Night	Nocte	1800 or 2000
Twice a day	BD	0800 2000
Three times a day	TDS	0800 1400 2000
Regular 6 hourly	6 hourly	0600 1200 1800 2400
Regular 8 hourly	8 hourly	0600 1400 2200
Four times a day	QID	0600 1200 1800 2200

Source: ACSQHC (2014a)

The timing of medication administration is dependent on a number of inter-related variables. As the regular NIMC times of the day approached, the participants were observed to systematically move from one patient to the next reviewing their medication chart. Participants would run their finger or pen (N11, N12, N13, N14, N15, N16, N17, N19, N20) down the NIMC where the regular medications were listed, pointing to times and authorisations. Simultaneously, participants were heard assessing the patients' needs through questioning about pain and evaluating the effects of the previously administered medications. Despite participants' attempts to get patients to take the medication at the time dispensed, patients were not always willing or able to do so. Participants tried persuasive techniques like pouring water (N11:7) and placing pills closer (N13), but these strategies were not always 100% successful. The patient sometimes did not take the tablet before the participant moved to the next patient. N13:2, for example, wanted to secure the medication away in the locked drawer when the patient declined to swallow it but the patient requested to keep the tablets on the table until after eating. So in order to ensure that other patients' medications were not delayed, N13 moved on and asked the patient to advise once the medication had been taken. Episodes similar to this (N8:3, N11:7, N13:2, N13:5, N18:14, N19:2) were reviewed by me to ensure that the patients actually took their medications.

In many instances, the participant's assessment of patient conditions obviously guided their decision-making in relation to the timing of medication administration. Pain was most often assessed (N1, N2, N7, N8, N9, N10, N11, N12, N13, N15, N18, N19) in reference to the time of medication. N20 further assessed the patient's pulse and oxygen saturations before recommending further analgesia and N17, N7 and N8 performed an ECG after the patient assessments led them to administer medications for pain. Assessment of nausea was also commonly observed (N1, N2, N4, N15, N16, N19, N20).

Participants were involved in assisting patients to take medications at the right time even when the medications were controlled by the patient. The PCA is a patient-controlled IV analgesia therapy in a preloaded and locked IV pump. N12 performed an hourly check of the patients' vital signs and pain levels before encouraging the patient to activate the device through explaining the beneficial effects of pain management to surgical recovery. N4 supervised patient administrations of a slow-release narcotic for a patient arriving in the emergency department.

N18 and N10 had requests made of them for analgesia but on review of the NIMC these medications were not due and so these episodes were abandoned but not before patient assessment and education were carried out. N10 offered an icepack in place of the medication and went about seeking a review of this patient's medication needs.

Participants were observed using a variety of strategies to facilitate timely administration of medications. Pre-setting in the lead up to key medication administration times discussed in Theme 1 was observed on 24 occasions and undertaken by 50% of the participants (N1, N11, N13, N14, N15, N16, N17, N18, N19 and N20). The participants had different techniques for setting up parenteral medications that were to be administered later on in the shift. Generally, pre-setting of medications indicated that the participant was going to administer those medications later. All participants working in the medical and surgical settings were observed engaging in one or more pre-setting behaviours. No pre-setting was observed by the nurses working in the emergency department or ICU/CCU, due to their less predictable clinical context. Pre-setting in the medical and surgical ward

areas also reflected the level of busyness and multitasking required of the participants there to manage all medications in a timely fashion.

Sometimes delays were unavoidable. For example N16 was observed to take the NIMC to the prescriber on 3 occasions (N16:3, N16:5 and N16:6) during the shift to request that medications be ordered so that they could be administered at the right time. N16, further attempted to facilitate the prescription process by gathering pathology results and other patient data that the prescriber needed to make dosage decisions. The doctor in this episode was quite rude and obstructive saying 'Do I look like my RMO?' when N16 politely requested blood products to be ordered. In a number of the observed episodes, the participants attempted to facilitate the timely prescribing of medications for right-time administration when patients were first admitted to ensure that regular medications were written on the NIMC. For example, N1 contacted the doctor regarding a new admission, but the time between patient arrival and the completion of an NIMC was sometimes extensive. Doctors were not available when participants N14, N16 and N19 needed them to complete an NIMC, and so they gave medications from the patient's own supply. Even though they were aware that administering medications without a valid NIMC breached health service policy, they made the decisions to administer medications on time in the best interests of the patients. Episode N16:10 concluded at the end of the evening shift when a written prescription on the NIMC was finally provided. The prescription was completed two hours and 14 minutes after the participant made the initial request. By this time, medications were well overdue. The patient was sleeping and had to be woken to take them, whereas N19:1 was never able to secure a written NIMC for the participant-initiated medications because the patient was discharged before the doctor managed to fulfil this request. In these sorts of complex situations, the participants were observed to make considered and logical clinical decisions in the best interests of their patients to ensure they received their medications at the right times.

The participants were often observed multi-tasking to make more effective use of their time while administering medications. For example, N10 used the time during the administration of a bolus dose of intravenous medication to gather clinical assessment information from the patient.

Other episodes observed in relation to administering medications at the right time reflected the participants' understanding that some oral medications and in-particular certain anti-infective medications are required to be administered at times when the stomach is empty (erythromycin, rifampicin, flucloxacillin sodium) or full (metronidazole, trimethoprim, nitrofurantoin macrocrystals) or at equally spaced intervals to ensure stable systemic blood levels of the medication (sulfadiazine) (McKenna & Mirkov, 2014). However, despite the requirement, these medications were generally prescribed according to the usual administration times listed above rather than at a time that is right for the medication. The participants were observed to amend the timing of administration of these medications to adhere to the manufacturers' recommendations.

N11 encountered a situation that required a prescription time to be altered to suit the medication being administered and the patient needs. N11 brought the incorrect frusemide timing to the notice of a doctor, but it was sometime afterwards that the prescription times were adjusted.

During many of these observations, the participants questioned the patient to establish the effects of the medications and the patient's requirements for further medications. This questioning, as it relates to this subtheme, is interpreted as the participant deciding when is the best time to administer medications that are usually prescribed as PRN. Participants would ask their patients about nausea (N12), pain (N17), breathing difficulties (N1, N8) and bowel movements (N20). N20 asked about bowel actions and whether tablets might be required, while in the ED, N2, N4 and N5 asked about medications taken prior to presenting.

The participants working in the medical and surgical wards were observed to contact the medical officers by phone because they were unlikely to be in the ward unless ward rounds were underway at the same time. Under these circumstances and as explained above, there was often a significant time delay between the phone call and the prescriber attending to the medication needs of the patient. Similarly, in ICU/CCU the medical staff did not remain in the unit at all times, so if actions

related to medication were required, the participants were required to contact them by phone or pager.

In the emergency department, the doctors were observed to be present most of the time. This meant that participants had greater access to prescribers. A greater level of collaboration was observed between the doctors and nurses there than in the other areas. For example N6:2 initiated a topical analgesic gel to a patient for immediate pain relief. Afterwards, the participant completed the appropriate section on the NIMC and the doctor authorised the nurse-initiated order. In another example, N2 facilitated the prescription of the right medication by offering to collect and process the necessary blood specimens.

Nurse initiation of medications was also observed in other settings. N1 initiated oxygen after assessing the patient's oxygenation status to be low and N7:10 responded to a patient with chest pain by administering sublingual glyceryl trinitrate. In the ICU/CCU this was observed to be common practice to ensure the timely administration of medication. So while the administration of sublingual glyceryl trinitrate is considered a standing order in this hospital, this was not formalised as a protocol in all clinical settings.

The discussion of non-routine episodes earlier highlighted supply issues observed during this study that often resulted in abandoned or extended episodes and patients not receiving their medication in a timely fashion. Unavailable medications were the most common reason why the participants could not ensure the medications were given at the right time. Drugs might be unavailable because the admitting nurse had not stocked the patient medication drawer from the imprest supplies at the time of admission; the stocked supplies had been exhausted and not replaced; the patient was prescribed a non-stock item that required sourcing from the hospital or community pharmacy; or the drug was a new prescription and yet to be supplied by the pharmacy. These circumstances complicated the timing of mediation administration.

Practices implemented by participants to manage situations like those described above included taking supplies of the same drug from the medication drawer of other patients, carrying sleeves of various medications in their uniform pockets or waist

pouch, asking other nurses if they had supplies on their person and collecting the medication from the pharmacy imprest cupboard. Practices to remind themselves that the medication was yet to be administered included noting the missing drug on the task list (N16), lifting the NIMC in the folder (N20) and creating a reminder alarm on their phone (N15).

N8, N10, N13 and N16 were observed using the inpatient list to record details about the patient medications and administration times at the beginning of their shift. Observations throughout the shift clarified this action as a time management strategy. Many participants referred to their inpatient list during the shift and notated it with details of medication activities required and completed throughout the day. They referred to this list when receiving and giving handover to their colleagues.

Planning was very important in preparing for the numerous medications that were prescribed each shift. The task list strategy that was observed consisted of drawing up a list of tasks at the beginning of the shift and assigning the various activities to a scheduled timeframe throughout the day. Progressive achievement and further planning took the form of checking off the activities as they were completed and adding new tasks as circumstances changed. The task list included activities other than medication administration but medication times were prominent. N13, N14, N15, N16 and N20 had a task list composed around the regular medications times reflected on the NIMC.

5.5.6 Subtheme F: The right to refuse

The final subtheme here reflects the sixth right of the patient or participant to refuse the administration of the medication. This point of difference from other guides was discussed in Chapter 2. This moment is an opportunity for the patient to be involved in decisions about the medications. In Subtheme A of Theme 1, refusal of the medication was mentioned as it led to participants abandoning three episodes. Participant practices in regards to these episodes are discussed further below.

Forty-four episodes were observed where the participant explicitly sought consent to administer medications. In these instances, the participants made a direct or implied attempt to seek the patient's permission to give the medication, or alternatively the patient directly requested or made an attempt to take the medication. The practices observed varied from explicitly asking questions such as 'ready?' or 'are you happy to take this?' to encouraging the patient to take the medication through providing information and education. The participants were observed negotiating with patients to facilitate taking of medications or consulting with the patient about the medication, and gathering physical assessment data and advice from the patient to inform clinical decisions about the administration of certain medications.

In most cases the participants directed a question to the patient that required the patient to accept the medication, to negotiate with the nurse about the taking of the medication or to refuse the medication. For example, 'Can I get your oxycontin now?' (N19). N7 regularly used the phrase 'Are you happy to take that/those/this?' N16 sought permission of the patient for a subcutaneous injection by asking, 'Ready?' and then by questioning 'In your tummy?' N20 had a more direct approach and asked 'I've got your Lasix. OK?' N12:6 offered nebulised medication prescribed for the patient after completing a respiratory assessment. These practices were not always successful and refusal to take a medication concluded episodes N14:6, N17:6 and N20:9.

The participants were often observed reviewing the status of their patients before administering medications by consulting with the patient prior to administration. These consultations took the form of collecting information from the patient about the specifics of their medication, such as asking the patient when they usually take a drug or confirming with the patient their usual dose of medications, which led to N16 offering the patient a choice by asking the patient, 'Do you want the lotion?'

All participants were observed to provide some patient education about medications throughout their shift. N1, N8, N9 and N11in particular are examples of participants who prioritised the education of the patients and spent considerable time providing details of the drugs, the indications, the effects and the intended outcomes of the prescribed medications to the patient. N1 explained the difference between the

different brands of medications, discussing the impact that taking an alternative brand may have on patient blood levels.

It was observed that confirming information and consulting with patients was sometimes not as simple as asking a question and this activity generally added to the workload of participants. There were times when individualised strategies were devised and implemented to meet specific patient needs. For example, N14 spent a considerable amount of time in locating a patient's hearing aids, fitting them and testing the to be sure that the patient heard the information being delivered and was able to accept or decline the medication being offered.

Patients' behaviours indicating consent included reaching out to grasp the medication cup, offering their arm so an intravenous cannula could be inserted for the administration of intravenous medication or in a few cases directly requesting the nurse to administer a medication. These patient behaviours are discussed here as they complete the picture of how patient consent was confirmed during the nurse-patient interaction to address the right to refuse.

N16 was allocated a patient who was profoundly deaf and was prescribed a number of medications to be administered at differing times during the shift. Each attempt to gain consent was facilitated by the participant writing notes to the patient and the patient responding verbally or by writing notes in return. One participant, N17 encountered a patient who appeared to have a level of understanding about what the participant was about to do. In this case, N17 held a subcutaneous syringe in the air and without saying anything the patient exposed a chosen body part. The non-verbal communication between the participant and the patient facilitated the completion of this episode. The actions of the participant implied the intent of the interaction, which initiated a response in the patient that implied acceptance of the medication administration.

The participants in this study did not accept any refusal by patients to take medications as an outright conclusion. Instead they consulted with the patient, provided information and education and listened to the patient's concern about taking the medication. One example of this was an episode where a patient refused to take

the medication because the size of the pills made them troublesome to swallow. Rather than accept this, N12 offers to break the medication to make swallowing them more acceptable. N12 did not insist nor coerce but offered to facilitate this process for the patient and explained that regularly taking this medication would assist in managing pain. In this case the patient accepted.

In these instances where negotiation took place (N12:7), the participants were observed using therapeutic communication and clinical judgement skills to encourage the patient to take the prescribed medications. The N12:7 episode was significantly longer than other episodes of oral administration during this observation shift (8 mins and 3 mins) but coercion was never observed in this case or any others in this study.

5.5.7 Summary

The routine episodes theme has been presented using the rights framework as subthemes. Participants' observed actions to confirm the right patient, right drug, right dose, right route, right time and right to refuse were described along with factors influencing their capacity to achieve these practice goals. One hundred and fifty-one routine episodes made up the data set of the second major theme. In describing the findings there is some duplication, as most of the non-routine episodes also included behaviours that aligned with the six rights.

In relation to the sub-themes for the routine episodes there is noticeably duplication. For example, participants questioned patients about nausea and pain both to determine the right drug and right time. Presenting these findings does not confirm nor deny participant adherence to the rights rules because the observed practice included complexities and the integration of tasks beyond just medication administration. Completion of medication administration was seen to be a complex and sometime convoluted and time-consuming activity in which teamwork and shared strategies assisted these participants to deliver the correct medications to the patients at the time they were required.

Yet to be provided are the contextual observations that provide rich data about the organisational and contextual factors that impacted on the participants' medication administration activities. The final theme captures these observations to highlight the complex nature of the participants' working environment, workloads, equipment and supply needs.

5.6 Theme 3: Organisational and contextual factors

Similar to the previous two themes, this theme is organised into subthemes titled to reflect the main content. It offers contextual linkages to the previous themes and allows for interpretation of the findings from those themes. It also highlights some key features of the study setting that could be familiar to others. Exploring organisational and contextual impact factors in healthcare settings on medication administration is crucial to understanding the practices of the participants.

5.6.1 Subtheme A: Expectations (workload)

Participants were observed to organise their day around medication administration times. Second hourly reviews of the NIMC was commonly seen (N9, N10, N13, N14, N15, N17, N18, N19). Participants reviewed physical assessments such as BGL (N1, N13), patient needs for analgesia (N9), antiemetic and aperients (N9, N19) and identified any missed medications (N14). Theme 1 reported the non-routine and abandoned episodes that were observed. Participants were often required to hunt for and gather medications and equipment that extended medication timeframes, adding to their workload. They negotiated with their colleagues to check and prepare medications, sharing the accountability for checking medications and confirming patient details. They mitigated risks by clarifying NIMC entries with their prescribing colleagues to identify and resolve errors. Participants did this with a focus on delivering the medications in a safe and timely manner.

All the observed participant shifts were fast paced and complex, juggling multiple responsibilities and tasks, and they talked about being busy. The workload allocation

in this study was unevenly distributed between clinical settings. For example, participants rostered to the emergency department and ICU/CCU were allocated workloads that were never observed to exceed their rostered hours, whereas participants in the general ward areas had workloads that at times (N1, N13, N19) exceeded their rostered shift hours. Patients in the general wards were usually more ambulant that the ones admitted to ICU/CCU who were usually bed bound. This made the administration of medications more challenging because the patient location regularly changes. The distance between the rooms and beds in the general wards is also greater than in the ICU/CCU, where all the patients were able to be viewed from a central station.

All participants were observed multitasking during times of high workload with competing demands. Participants were observed to gather medication history information directly from the patients during clinical procedures (N2) and while eavesdropping on doctors' discussions with patients (N7, N11). N12 was seen listening out for a nebulised medication to finish, while preparing IV medications in a nearby treatment room. N12 interrupted the IV preparation when the nebulising was heard to finish.

Preparing for future administration of medications saw participants pre-setting medications while carrying out other activities (N2, N4, N8) and carrying medications in their pockets (N1, N5, N8, N18). Checking of medication occurred in corridors (N2, N11, N14 and N15) and in nurses' stations (N18). Repurposing of other equipment saw participants using the tops of linen trolleys (N16, N17), patient tables (N14), the sink (N14), opened drawers (N19) and any other flat surface as a place for reviewing an NIMC and other relevant documentation. Participants completed documentation while walking (N7), in meetings (N19), checking medications (N13) and consulting with patients (N12). At times other hospital staff appeared to be oblivious of the importance of the NIMC to the participant actions. For example, N12:9 had placed the NIMC on the patient bed trolley in order to gather medications from the locked bedside drawer, when the kitchen staff placed a full meal tray over the top of the NIMC.

The lack of flat surfaces to use when administering medications sometime made the task more difficult. Nursing colleagues were observed assisting participants at busy times to prepare for medication administration and likewise, many of the participants assisted the doctors to complete the prescriptions in a timely manner. N8 even apologised to the doctor, saying 'We know we are being a pain but the ward won't like this order' when requesting the doctor to correctly cease the prescription rather than just cross it out and not sign it. Collaboration between participants and doctors was also observed. For example, N7 acted as the conduit for the prescriber when asked to confirm the right dose of medications so that the NIMC could be changed to reflect the patient's usual dose. N2:4 prepared a medication from a doctor's verbal request that afterwards was signed and delivered by the doctor.

N9 supported a junior doctor by providing instruction on the correct completion of the NIMC after realising that the doctor was unfamiliar with the chart requirements. N9 had to make two requests before obtaining a completed medication order from the doctor. Another doctor was assisted by N13 who delivered the necessary documents for completion of an NIMC.

At times, more nursing workload hours were allocated to participants (N13, N16, N19) than they were rostered to work. Some participants were observed working together in teams with a mixture of staffing levels to manage workloads. For example, N14 worked with 1 x EN and 2 x AINs and supervised a new graduate who was supernummerary on this shift. In this shift the RN, EN and new graduate shared the administration of medication to their allocated patients. N14 led the team, delegated duties and supervised nursing practice for eight patients with a workload allocation of + 1.32. N14 was noted to multitask, pre-set and check medications in corridors.

Bedside handover was an opportunistic time for participants to find out more about medications and facilitate their management. As discussed in Theme 2, the participants used the handover time to ask questions about medication administration and to confirm doses (N12). The NIMC was reviewed during discussion and clarification of new (N11), ceased (N11) and missed medications (N11, N13) was sought. Participants discussed alterations to (N17) and effects of (N13) medications.

Patients were included in these discussions and used as a source of medication information (N7, N11) simultaneously receiving education. Participants notated their inpatient list to remind themselves about tasks such as arranging further medication orders (N10, N17).

5.6.2 Subtheme B: Physical environment

Most obvious was the participants' attempts to organise their environment to maximise safety and efficiency. Patient bed spaces were often cluttered with equipment including combinations of electrical cables and water jugs, electronic devices and oxygen outlets. N7 was heard to say 'Not sure what's going on with these leads' before removing the equipment and tracing the leads to be able to free the tangle, while N12 managed the cluttered environment for a patient attached to a cardiac monitor in between two IV pumps and a syringe driver. The IV lines were all observed to be labelled to represent their purpose. N12 spent time throughout the day arranging the space and organised unused equipment to be removed. Similarly, N9 arranged for unused controlled medications to be removed by the pharmacist from the secured cabinet so reconciling of it was no longer required. N13 had five ledgers of controlled medications that required counting and reconciling at the end of the shift.

The locked bedside drawer where medications were stored was a source of workload for some participants required to stock and organise the medications (N16N14, N19). N19 spent time placing the loose sleeves of medications back into their rightful packets, explaining that they were more readily located when in the packet. N14 and N19 used the phrase 'Chemist in the cupboard' to described the multitude of medications regularly required by patients these days. A new patient was observed to arrive with a shopping bag full of medications.

Space was always at a premium and particularly in areas where medications had to be prepared. This lack of space was glaringly obvious in the general ward medication preparation areas. N14:11 was heard to say 'it's a fight to get on the bench'. During the N14:11 episode there were five nurses in the treatment room reconstituting

antibiotics for IV injections and preparing various medications for subcutaneous injection. The bench that N14 was referring to is an L shaped area of approximately 40cm x 120cm and 40 cm x 90 cm. The back 20 cm of the bench space was taken up with storage bins filled with needles, syringes and other injection equipment, due to lack of space to house this equipment elsewhere. There were patient charts and drug reference books also taking up space. On one occasion N14 was observed using the flat drainage space of the sink to prepare the medications. This experience was not unique to N14, with seven other people in the 5mx5m room with N19:4, eight others with N18:16, six with N17:13 and five with N17:12. The noise level during these regular medication administration times was high. There were people moving in front and behind each other with sharps. Doctors and others sometimes removed the NIMC (N17:12) among this chaos. However, it was also observed that the participants were opportunistic, as during these busy times they used the people available to check medications (N19:4).

Pre-setting behaviours as explained in Theme 1 also played a role in assisting participants to manage the busyness that occurred at that these regular medication times. Pre-setting was the reason why at times the bench top in the treatment room was observed to be covered with injection trays. Participants were observed to pre-set medications on dressing trolleys (N17, N20) and on the side of the sink (N14). Sometimes pre-set medications were stacked on top of each other and occasionally had to be moved so that dressing trolleys could be used for their intended purpose (N17).

One interesting observation with regard to the participants' abilities to accurately check medications against the NIMC was that the lighting in the ward and work areas was not conducive to being able to easily read the NIMC or medication packaging. Even in the daylight hours, the rooms were not brightly lit, and after dark this was even worse. On one occasion, in the middle of the day, during episode N14:13 the outside automatic window shades activated, making it impossible to see. N14 turned the lights on to be able to complete the medication activities.

Participants used a variety of techniques to be able to see the details on the NIMC and medication packaging, including: using the torch application on their phone

(N15); moving to the window to catch the sunlight on the NIMC (N19); and switching on the overhead examination light (N13, N17). N14 carried a small torch during the day to assist with seeing the contents of the bedside medication drawer. In two clinical settings there were magnifying glasses left in the medication preparation areas, which N6 explained are for anyone's use because the writing on the medication packages is so small it cannot be read without them. These observations highlight some of the limitations of the environment to undertaking medication administration safely.

5.6.3 Subtheme C: Equipment

The most vital tool for the administration of medication is the NIMC. Participants frequently engaged with the NIMC and as mentioned in the previous two themes organised their tasks in a variety of ways to remind themselves of medications that were due. In addition to the strategies already discussed the following were other commonalities observed that contributed to participant's administration of medications.

Parenteral medications were sometimes highlighted on the NIMC using a highlighter pen. N11, N15, N16, N19 and N20 all explained that this technique was so that they could easily see the injections which they were required to prepare. N17:2 identified a new order and highlighted it following administration. The highlighted medications appeared to act as a visual reminder to the participants.

Medical and surgical ward participants were observed at the end of the evening shifts to collect the NIMCs and numerically organise them across the benchtop at the nurses' station. The patients who required medications to be given during the night shift were identified by lifting the relevant NIMC to stick out of the top of the document folder (N11, N13, N14, N15, N16, N19 and N20).

In another example, the NIMC was lifted as described above but then flipped upside down to indicate that the NIMC had expired. This old NIMC was retained in the patient bedside folder as a way of communicating the prior medications administered

during the current hospital admission. The new NIMC displays the current medication regimen. N16 reviewed it and placed a '/' in the time spaces that had lapsed on this day and where medication had already been administered and documented on the old NIMC. N17:12 did the same for a new medication ordered on the NIMC.

The prescriber handwriting on the NIMC was sometimes not legible. N5:1 was overheard describing a prescription as saying, 'It could be moth balls, you know Naptholene?' In this episode N5 clarifies the order with a colleague who heard the prescriber verbalise the order and the IV Cephalothin that was intended was administered. Conversely, N12 applauded the support offered by the clinical pharmacist's contribution to the NIMC, even though it came as a bit of a surprise. For example, in episode N12:3 the participant noticed some markings on the NIMC that were made in purple pen. N12 had recognised the medication being administered as a schedule 8 controlled substance and did not recognise the small purple triangle with DD inside it that was penned next to the prescriber's contribution. After consulting with the checking nurse it was suggested that the notations were made by the clinical pharmacist who had been employed two weeks earlier. Neither the participant nor the checking nurse was familiar with the symbol inscribed in purple but they interpreted the markings as an alert from the pharmacist that the medication prescribed required special attention. A discussion ensued between the participant and the checking colleague valuing the contribution that the clinical pharmacist role had in assisting safe medication administration.

The ability to prescribe medications in multiple places was also an issue in relation to the NIMC. Participants and patients identified duplicated prescriptions in 11 episodes. N17 was heard to say 'Here's how accidents happen' and showed me a NIMC that had two medications containing paracetamol, both prescribed for QID administration in the regular medication section of the NIMC. In these cases participant time was consumed by seeking out doctors to alter the NIMC so that overdosing did not occur. There were similar episodes explained in theme 1 where patients originating in other departments had medications prescribed and administered from the 'once only' section of the NIMC that were subsequently prescribed on the 'regular medication' section of the NIMC which did not indicate the recent previous dose, which was

misleading for the busy participants and again led to the potential to overdose patients.

Decision support tools mentioned previously were valued by participants but not universally available. In many instances the MIMS was observed to be out of date, in poor condition and unavailable in all areas even though the resource is a necessary tool to support safe practice. N7:5 used the ward-based computer to gain access to reliable information saying, 'I hate the small MIMs. It doesn't give the full story.' Another participant, N15, produced a personal copy of a nursing drug textbook to mitigate against the lack of available resources and difficulty accessing the computer.

The patient identification bracelet was another decision support tool that when attached to the right patient and holding the right data was clearly helpful. N2 ensured that patients moving from the emergency department to the wards were tagged correctly to assist colleagues in checking patient identification.

An accessible supply of medication was another essential resource required to be able to complete the administration of medication. As noted in the previous two themes, right-time administration was often negatively impacted by a lack of supply (N1, N11, N15, N16 and N18). If medications were not available then the nursing time required to source and supply the medications took participants away from other nursing activities. The longest time recorded between initiation of medication administration and completion of the process after the medication was sourced was 83 minutes.

Another vital piece of equipment required for the safe administration of medication was the intravenous infusion pump. Pumps are required to deliver the right dose of medication after they have been manually programmed to do so. Scarcity of infusion pumps created additional workload for participants, with N16, N17, N19 having to source them for other areas to be able to administer medications. The pump alarms were also demanding and distracting for participants (N2, N4, N8, N16), who sometimes verbally responded to them with 'I'm coming' (N2:5). Participants (N2, N8) were observed to turn pumps off at times of significant distraction. N17 identified an issue when discovering that a pump which had been placed on standby

hours earlier by an EN colleague, had not be adjusted to ensure the right time and right dose of this medication. N8 needed to seek the input of a second nurse when a pump containing an insulin infusion continually alarmed and N8 could not independently solve the problem. Together they determined that the rate calculated by the machine was unrealistic, so they recalculated the dose, checked the lines, systematically checked the data display of the machine and realised that it had been defaulted to a paediatric setting rather than the adult ranges. This took 20 minutes to resolve, at which time the pump stopped alarming.

A number of the participants were observed managing the lack of equipment by supplying their own books (N15) or carrying frequently used medications in their pockets (N1, N5, N8, N18), proactively securing equipment such as the controlled drug cupboard keys (N11) and IV pumps and trolleys (N16). N15 used the calculator application or torch on a smartphone to address the lack of ward-based calculators and poor lighting. N16 was observed to collect an IV trolley and drag it to the room where medical officers congregate to write the medical records. N16 took the trolley because if it were left in place beside the patient bed then it might be taken by someone else and the patient would be further delayed in receiving treatment.

Participant time was also consumed by searching for or waiting for access to the restricted medication cupboard. Legislation requires that only one set of keys are available for the controlled medication storage cupboards and safes in each clinical area (Queensland Government, 2012). It is the practice of this hospital that the team leader assumes possession of those keys at the commencement of each shift. The team leader can delegate the keys to other RNs for the purpose of administering a controlled medication.

At regular medication times, participants were seen to congregate in the medication preparation area where the controlled medication safe is located. Outside of these times, participants would need to seek (N11, N19) and find (N9, N4, N5, N13) whoever had the keys to be able to open the safe to access the controlled medication. Sometimes the keys were delivered to the participant (N4, N5, N9, N13 and N18) by other nurses to facilitate this process.

A doorbell arrangement was in place in each of the general wards to assist nurses to locate the keys. Nurses who wanted the keys pressed the doorbell. Participants (N11, N17, N19) were observed to be distracted by the doorbell. Each time it was heard, they would respond by tapping their pockets or moving their hands to other places where they carried the keys. However, delays were experienced, as the doorbell was activated the holder of the keys might be otherwise occupied. For example, N11 was supervising a patient in a walking frame when the alarm was heard. N11 had the keys but could not respond as expected. In this case, I took the keys to the nurse who had activated the doorbell. N18:11 is an episode where the EN delivers the controlled medication keys in order to facilitate the administration of medication to a patient. The ENs are not authorised to hold these keys and in this instance the EN was heard to say 'I'm not touching them!' while lifting the keys by their lanyard and passing them to the accepting participant. N18 checked out the medication with the EN and then handed off the administration of that S4 controlled medication to the EN. So while the EN was not authorised to possess the keys to access the cupboard, adding to the workload of the participant to supervise the dispensing, checking and reconciling, the EN was authorised in this hospital to deliver the medication for administration.

5.6.4 Summary

Four settings were included in this study and each had particular workflow, environment and equipment differences. However, all were consistent in the effects these had on participants. All participants were consistently and fully occupied with nursing activities from the commencement of their shift to its completion. There was no downtime for anyone. Therefore, issues of environment and equipment concerns contributed to increase their workloads. They assisted other staff to fulfil their roles in medication administration, sometimes repurposing equipment to facilitate completion of medication-related tasks and to gain access to needed resources. When resources were not available, participants got creative and produced their own.

5.7 Chapter summary

This chapter has provided an analysis of the observation data organised as three key themes and associated subthemes. Firstly, the observations were organised into non-routine and routine episodes of medication administration. Then Theme 3 outlined the organisational and contextual factors noted during the observations. Together the three themes provide an overview of participant practices of medication administration. Clearly, these observations do not provide insights into the cognitive processes that underpinned the observed actions.

Theme 1 discussed episodes that did not lead to medication being administered or episodes for which the process was not straightforward. Participants abandoned episodes because medication was not due, not available or was not appropriate for administration at the time. Checking of medications with colleagues occasionally resulted in medications being handed off to non-participant nurses. Non-participant nurses also assumed responsibility for medications delegated by participants.

Theme 2 consisted of episodes that were more routine because they were completed by the participants, but not always without interruption. In these 151 episodes, the participants initiated and were involved throughout to the completion of the episode. Participants were observed to manage multiple NIMCs at times and there were episodes that were extended way past the due time for administration. Despite a number of interferences, the participants managed to safely administer the medications to their patients as well as offer information and education.

Theme 3 highlighted that the process of administering medications is complex and convoluted in a majority of situations. It was evident that hospital environments and equipment can have an impact on practice by adding to the workload of the participants in this study. Different clinical settings have their own issues regarding environment and equipment, but the participants' ability to manage all things related to medication administration was evident. These themes will be further explored in the next chapter where participant insights from the interview phase are presented.

Chapter 6: Data analysis of interviews

6.1 Introduction

Following the analysis of the practice observations and contextual descriptions in Chapter 5, this chapter analyses the participant interviews to provide a deeper understanding of the participants' observed behaviours. This chapter begins by briefly revisiting the interview process described in Chapter 4. The rights framework is reflected here as a connective thread linking the themes identified in Chapter 5 to the discoveries from the interviews. The chapter presents four themes and their subthemes, which capture the practice patterns reflected in the participant responses.

6.2 Overview of the interviews

The interviews totalled nearly 20 hours in duration. Every interview commenced with an expression of gratitude from me for the participant's commitment to the study, both to establish rapport with and demonstrate respect for the participant. The conversation then flowed freely and started with asking the participants about the experience of the observation phase of the study. The interviews were specifically designed to explore positive medication administration practices and actions. The positively framed questions and reflective questioning techniques used in this phase of the data collection helped the participants to discover and rediscover their strengths and assets within the practice of medication administration. Participants were encouraged to explain their thought processes and motivations. First, they reflected on their educational foundations and the application of that knowledge to practice. Then they were asked to discuss their clinical judgements in relation to their observed practices and to discuss their feelings, values and beliefs in relation to those observations. The interviews have highlighted the valuable contributions that these participants made to safe medication administration that might otherwise have gone unnoticed. It will become clear that patient-centred medication administration was foremost in the participant's minds.

The interviews were informal, friendly and flexible to encourage dialogue. Recollections of what participants knew about medication administration and what they think is best practice were discussed with visions for the future. As discussed in Chapter 4, circular questioning guided by appreciative inquiry focused the participants' awareness of their personal practice strengths. Despite this appreciate inquiry framework, the discussions often included the participants' experiences of challenges, errors and obstacles as a means to contextualise the creative strategies they developed.

However, recalling details about past experiences was difficult for some of the participants. For example, their pre-registration education was described as 'It all seems like a bit of a blur now' by N20. N13 said, 'I can't answer the question', when asked to give details of how their learning was applied in practice. Likewise, when participants were asked about medication administration practices, they often used terms such as 'automatic', 'routine', 'mechanical' and 'robotic'. N15 suggested that the automatic nature of medication administration practices accounts for the inability to recall the practice in detail, and N10 summed up medication administration practice as:

> It's just an automatic thing that I do and I just don't really think a
> lot about it anymore. Not unless there's something there that needs
> to be thought about. It's just routine; like it's really a routine thing.

As discussed in Chapter 1, I anticipated this response and conducted the interviews as soon as possible after each observation in order to give participants the best opportunity to recall the events and explore their 'automatic' actions. For example, only after a discussion about reporting medication incidents and then being reminded of an incident that occurred during the shift was N11 able to recall the problem-solving actions taken to manage an unattended medication:

> N11: You know they say don't report it. I think that happens a lot
> you know. Talking about reporting stuff to the team leader, and
> they go, 'Oh yeah that's OK', you know, things like medications
> left on lockers. Or medications not being signed for or stuff being

given at different times. That's just prompted me about the medications being left on lockers. Even as simple as two Panadol being given to somebody at five o'clock in the afternoon and [the nurse] says 'Here take this with your dinner', and the patient doesn't take them and then someone comes around maybe an hour later and says, 'Oh you didn't take those Panadol', and 'Oh, ok I'll take them now', but it's been signed for at six o'clock and then the next dose of paracetamol was not due until 10 or 12 or whatever, and that person comes along and gives it, but there may have only been two hours since they last had it. Or that paracetamol's been thrown in the bin accidently or left on a tray or something, and I mean if it was something other than paracetamol that could have huge effects. I have actually spoken to somebody who says, 'Well you just put it there and tell them to take it with their dinner', and you know, they're of good mind they can. They can remember things like that and yeah I've come up behind them and it has happened you know. They've not taken their paracetamol or they've not taken their, whatever tablets and they've just been sitting there two or three hours after they've actually been given an hour before dinner. When you go back and say Oh look did you happen to leave such and such on that patient's table. Oh yeah I gave that before I went to tea. Knowing that that person went to tea at five o'clock, it's like well, it's now eight o'clock and they haven't had it.

Me: Has that happened recently?

N11: Yeah. Oh within probably the last 24 hours.

Me: Do you recall it happening on the shift that we worked together?

N11: um…

Me: You picked up the drug that had been left on the locker and you disposed of it in the sharps container I think.

N11: Oh yeah …

The prevalence of such hidden problem-solving behaviours was introduced in Chapter 5 and will be elaborated upon in the discussion of the themes in this chapter.

In addition to having trouble recalling their habitual practice, and as anticipated in Chapter 4, the participants focused on the mitigation of medication errors using the rights framework. Criticism of their own and others' practice was typical. While I listened to each participant discussing examples of incidents or errors, I used phrases such as 'So can I take you back to something you said earlier?' or 'Something else I just want to go back on…' and 'Can you talk to me more about…?' or 'That's interesting. Can you tell me more about that?' to explore solution-based activities. This prompting guided the participants to talk about their positive contributions to safe and effective medication administration.

Participants reported that their awareness of being observed was short lived (10–30 minutes) in the 'busyness' of their shift. Feelings of being 'nervous' about being 'watched' were experienced, but most participants said they were conscious of not changing their practice so that it could be observed as naturally as possible. The participant consensus was summed up by N9 who said, 'I tried to make sure I didn't change otherwise it stuffs it up, making it [the research] not worth doing'. There was only one participant (N17) who reported needing considerable time until 'after the first tea break' to feel relaxed about being observed, which was approximately three hours after the commencement of the shift. The experience of being observed was beneficial for some, as N11 said, 'it wasn't difficult and I found it good for me in a sense that it kept me focused on what I was doing … just made me more aware of what I was doing and why I was doing it'.

The participants' thoughts about their pre-registration education generated the first theme, *teaching*, followed by *teamwork*, *tools* and *time.*

6.3 Theme 1: Teaching

Early in the interviews, participants were invited to comment on their experiences of pre-registration educational programs. In particular, they were asked about how medication administration was taught. In the style of an appreciative inquiry interview, the participants were asked about 'stand out' features of their educational experiences. Theme 1 is organised to reflect the key standouts identified.

Participants referred to themselves as hospital, college or university 'trained' or 'educated'. Some participants also spoke about receiving introductory medication administration education prior to undertaking pre-registration programs, as part of their EN education or another Vocational Education and Training (VET) program.

Regardless of the source of education, all participants recalled being taught about the rights framework. Section 6.3.1 presents the participant recollections of the rights as predominant educational features. The need to practice beyond the rights is presented in Section 6.3.2 and in particular in Section 6.3.3 the medication safety role of the RN when administering medication is discussed. The interview topics highlighted by the participants in these early sections of Theme 1 echo much of the discussion in Chapter 2.

The role of the clinical preceptor in modelling nursing practice to these participants is explored in Section 6.3.4 Several of the participants were complimentary about their educational experience, describing it as 'excellent' and 'good'. There was recognition from the majority of the participants in Section 6.3.5 that pre-registration education is foundational only and that there are significant responsibilities on RN's for safe practice. For example, N20 explained that 'Uni's only a start point. You get that initial bit of education but I think it's up to you to put in the hard yards and read up on medications, and if you don't know: Ask'.

6.3.1 Subtheme A: The rights were 'a big thing'

Participants were unanimous that the rights featured as the central curriculum concept in relation to medication administration. Participant N2 said, 'The five rights was a big thing', and N10 commented, 'The R's [rights] are very important'. N2 and N16 added that the rights were the thing they 'remembered the most' from their education about medication administration. Participant N12 recalled being 'grilled' about the rights, while N7 described the rights framework as being 'drilled', and others (N2, N10 and N20) recalled having the framework 'drummed into' them. One participant (N15) even described the rights as being 'brainwashed into you'.

The participants all commented that they were taught to trust this rights framework as the key means of ensuring safe practice. N19 explained that 'nurses are told to just follow the five rights', and added, 'We need these rules in place; simple rules to help us to reduce the errors'. 'The five rights save a lot of errors from reaching the patient', explained N7. The importance placed on the rights framework as 'basic safe practice' (N4) was evident across all the interviews. The rights framework is taught in the vast majority of pre-registration programs as the way to ensure safe practice. N12 said that the rights are taught as 'strategies to reduce risks' and 'you are taking risks if you don't follow the [rights] process properly'. N4 reflected that if the rights were not completed correctly you could 'get you into hot water'. Thus, all the participants appeared to believe that an adverse outcome would undoubtedly result if the rights were not followed.

Incidentally, while the rights framework was mentioned by all the participants, the number of the rights mentioned by the participants in the interviews varied from five to six and seven or more. For example, N10 said when recalling the framework:

> I think it was the right person, the right drug and probably allergies. It was the 3 R's or something at that time. It was like the 5 R's or something. It was the right patient, the right drug, and I think the reactions. It was something like that yeah. I think.

Some of the participants discussed the expectations on them for error-free medication calculations and dosage accuracy. One hundred per cent accuracy requirements for medication calculations made N8 'anxious' because of 'a fear of failing', and N19 sometimes felt 'terrified' when learning complex clinical skills like medication administration. However, as N19 explained, 'So many people's lives are at risk when giving medications… we've got to be diligent'.

In relation to what they were taught about medication administration, the participants consistently raised RN accountability for safe practice as the primary reason for adherence to the rights framework. In general, participants discussed their knowledge of patient safety responsibilities and the principles of the rights framework even if they could not recite them. However, the fear of failure and adverse outcomes was what they talked of as underpinning their practice. The persistent desire to do right by the patient is explored in the subsequent subthemes where participants discuss education and practice that goes beyond the rights framework.

6.3.2 Subtheme B: Beyond the rights – 'The bigger picture'

During the observations and the interviews, participants demonstrated knowledge and skills beyond the rights framework and safety checks. Invariably, they discussed application of their clinical reasoning and extensions to their practice in response to their holistic assessment of the patient needs. The practice of reviewing the patient's medications holistically was called the 'bigger picture' by a couple of the participants. N8 explained the broader view of the medications was 'getting yourself in the right frame of mind of what you're giving and why you're giving it and what you're expecting'. N8 included 'knowing the lab values and what you're trying to correct' as important for gaining an understanding of the patient condition and being able to anticipate the patients clinical needs. Knowing 'that you're aware of the things with the systems' such as the International Normalised Ratio (INR) levels 'gives you a more holistic look at the patient and what's going on' (N8).

N11 spoke of the 'bigger picture' and the need to 'delve into' patient data when medications are prescribed to check that they are not contradictory to the patient

condition. N11 discussed seeking clarification from the electronic and paper-based medical records before consulting with the doctor if there were any concerns about the medication and that limited access to computers sometimes extends the time taken for this review. Participants' experiences in the timely delivery of patient medication are further explored in Theme 4.

Pharmacology was a particular aspect of most of the participants' medication education that merited a mention. Nearly all the participants recalled that they were taught to become familiar with the medication being administered, in particular the action of medications and the clinical indication for it. Many of the participants remembered being taught to always check with decision-making support resources such as the MIMS and *Australian Injectable Drug Book* (Society of Hospital Pharmacists of Australia, 2011) for information about the medication, its compatibility, or the way in which it should be administered. There was strong recall about being taught never to give anything if they were unsure of the indication and effect and to ask the patient about prior medication. N1 reinforced this, saying, 'If I don't know a drug before I give it, I'm looking it up or I'll ask the patient'. Theme 3 will explore this strategy in more depth as it relates to a comment made by N15 that 'clinical decision-making resources are not freely available in the ward'.

In summary, the participants were taught to critically think about the medications in relation to the patient and the consequences of administration. As N8 said:

> Knowing about the drugs and if it was a safe dose. So checking that, if the doctor wrote 2 grams and they're a dialysis patient then you have to have a little bit of understanding and knowledge about the drugs and your patient. You wouldn't just give it because the doctor ordered it. To think a little bit about questioning some orders sometime. So depending on which drug you were giving, like if it was for pain like assessing what type of pain. What made it worse what made it better? If the drug was effective, if not then what are you going to do about it? And just making sure that you follow up so if you give morphine, don't give it to a patient and walk away. Or critically think [about] things like an old lady and they've got 2.5 to 10 milligrams of morphine. Think about what

you're gonna give and why you're gonna give it and a little bit of the rationale behind what you're giving and not just give it because it's ordered. So we used to do a lot of scenarios in our labs. They would do things to trick us a little bit. Like finding what the errors are on the med sheets and the drugs and checking them. Finding the problem with how things were written. So they'd make us really critically think about what we were doing and why… Following up documenting if it was effective or not effective … understanding a little bit of labs [blood chemistry] with some of the medications like with warfarin and vancomycin and knowing the things that you need to look at with them.

However, fulfilling the clinical decision-making role as an RN in relation to the 'bigger picture' of medication administration is often not a simple process. The context of nursing practice needs to be taken in account to understand practice. For example, in this hospital, nurses in the ICU compared to those in the general ward had an allocation of fewer patients. N8 commented that the different workload for ICU nurses made:

… a huge difference because you have a lot more understanding of what you wanna correct. What's the problem? How you going to fix it than say if you're on the floor [general ward], where you don't really have access to look at: OK what's their potassium? What's their sodium? What's their…or why is my patient acting this way? You don't really have the chance to look.

These contextual factors were described in Chapter 5 and are further explored in Theme 3 in relation to access to medication administration resources.

In summary, this subtheme has established that, as anticipated, the rights framework formed the basis of recollections of most of the participants regarding medication administration educational experiences. However, the framework was clearly not used in isolation; participants described how they gained broader, more comprehensive knowledge and skills about medication administration required for safe practice during their foundational education program and then in practice. The

next subtheme focuses on the participants' comments on the correlation of the safety aspect of their education with the licensing requirements and regulation of nursing practice.

6.3.3 Subtheme C: The RN role – 'I Don't want to hurt anyone – it's my registration'

According to all the participants, the patient safety message – concern for the patients' well-being – was woven through all nursing curricula. For example, the teaching message was explained by N20 as: 'They [the teachers] were always pushing the error side'. The patient safety agenda was expressed by N5 as: 'I wanted to get it right for the patient', and by N7 as 'Like I want to make sure I get good outcomes for my patients, I don't want anything bad to happen to them'. The participants all commented on the role nurses play in protecting patients during medication administration. Furthermore, they all had a clear expectation of the role of the RN in the identification and management of medication mistakes and errors. There was a general perception among them that failure to detect a medication error or their involvement in one would directly affect their nursing registration.

The professional implications and consequences of medication incidents and errors were foremost in the minds of the participants as they shared their thoughts about medication education and practice. N11 explained:

> At the end of the day if it's my registration on the line, I'm not gonna be, you know, stuffing around and thinking, Oh she'll be right mate you know. OK I missed a two o'clock dose of something, oh that's alright we'll just give it at eight and everything will be dandy. You know you can't be like that. You can't be complacent.

Diligence and accuracy in medication administration were core concepts discussed by all the participants in relation to what was emphasised in their educational preparation. These concepts were undeniably associated with a desire to mitigate risks to patient health and any subsequent risk to the participants' professional status,

personal credibility and future employment. N16 remembers the focus of education regarding medication administration as the expectation of 'always making sure I'm doing it accurately'. N8's comment expands on the seriousness of being accurate: 'I don't want to lose my nursing registration and I don't want to kill a patient'.

Additionally, the participants were not only concerned for the impact on their capacity to practice but were mindful of their role in error prevention and patient safety. This concern was summed up by N16, who said, 'The biggest thing that goes through my mind is making sure I don't make errors because I realise it's my registration that is affected if errors occur, it's the patients' health status'. Another participant expressed their concern as 'I'm always concerned giving out medications. It worries me. I want to make sure I'm giving them the right thing'. N12 added, 'I try to do the right thing if there's such a thing as the right thing', and N2 said, 'I'm paranoid, I like my job, I really want to keep it, so I don't want to do anything wrong'. Regarding mistakes, N19 said, 'It's always been a fear of mine actually', particularly when administering dangerous drugs. Participants believed that they avoided errors by adhering to the right framework. N8 added that doing the right thing would achieve 'good outcomes'.

Reflecting on their education, all participants talked about being taught to 'pick up errors' on the NIMC by reviewing the components of the medication charts. As N19 explained, in many cases this was taught by embedding 'deliberate errors' into simulated examples of medication administration using the NIMC. Adding to N20's previous comments of expectations to identify errors, Theme 2 in Section 6.4 explores the transfer of these educational concepts into practice. N8 suggested that problem-based teaching methods address 'teaching on the safety side of things'.

Participants were taught to critically appraise the NIMC in relation to the condition of patients. N8 and N11 both identified critical thinking to discern the appropriateness of the prescriptions as a common objective of the teaching approach they experienced. N8 discussed valuing the PBL approach as a means of developing a deeper understanding of the indispensable role that nurses have in the safe administration of medications, saying, 'Thinking about what you're doing, not just doing it because it's a task to do, but just 'cos you know, we could kill a patient if

we're not aware of what we're doing'. N11 added that critical thinking was actualised when 'eventually the penny would fall and you would go, "Oh my God this is what I'm doing"'. N11 said this discovery came only after completing formal nursing education and becoming employed as an RN.

Assessment and monitoring of a patient's condition with regard to the medications prescribed is a major aspect of the critical thinking of medication administration. For example, N11 said:

> My understanding is that there's a reason a person is on a medication and there's a reason why it's prescribed the way that it is and there's a reason that there's a time for it. Whether that's because it may interact with another drug that's given if they were given together or you know for whatever reason. But you know when I check a medication chart, I check the chart! I check the person that I'm giving it to, to find out what allergies they might have particularly if they're on IV antibiotics and they've got an allergy to penicillin and you sort of think, well OK why are you giving this medication. Oh well it's not a severe allergy. It's just a sensitivity so then you gotta sort of delve into, well OK, they've had all these doses and obviously there's been no problem, but you know in the back of your mind is that it's still something that you should watch for.

In essence, the participants unanimously identified that they were taught to manage the medication administration process from a patient safety point of view. N19 provided a description of the teaching practices that encapsulated the recollections of most of the other participants related to curricula content and teaching methods:

> We did practical tutorials where they would give us a scenario and they would have certain medications there and we would have to work through and be able to sort of say, well this is the medication and this is the reason why this person's having the medication, and then get doing your checks you know to make sure that the person is the person on this medication chart. That's their date of birth and

then making sure that the UR [universal record] numbers were correct and making sure they had the correct arm band. So you had the medication chart, the armband and the patient. Making sure that they didn't have any allergies seeing whether they had that medication before or whether this was a new medication and whether that patient would then need to be monitored in some way or observed just in case they have a reaction. We role played the administration of medications. We had the theory base, we knew that you know if you had an S8 drug then you needed two nurses and you needed two signatures and you had to do your double checks when you got to the bedside. So then, it was just taking that theory and putting it into practice and getting to know what is an S8 drug, compared to an S4 drug? That type of thing so the theory side of it but then it was putting it into practice.

The participants also discussed the assessment of clinical competence in relation to medication administration that was carried out during their clinical placements. N11 said that clinical placement was considered the opportunity for student nurses to 'apply theory', explaining that the learning process was connected to and reliant on clinical practice:

I think all those medications that they told us to learn you know… you learnt them, you remembered what you had to, to get through the exam and unless you had a clinical experience where you could put all of that into practice, it just went.

In summary, this theme has reflected the recollections of the participants in relation to what and how they were taught to undertake their role as an RN. Moreover, this theme highlighted the concern that the participants had for the safety of the patient. The consequences of medication errors and their impact on professional practice were another issue that was foremost in the thoughts of the participants at the interviews. The next subtheme adds to the discussion of the role that preceptors played in skill acquisition and professional development during the participants' clinical learning experiences.

6.3.4 Subtheme D: The power of the preceptor – 'The cornerstone of life-long learning'

The impact that nursing teachers had on the participants was significant to their future practice. The teachers were remembered by many of the participants as encouraging and reassuring. For example, N19 described this as having 'their doors open for any student to come and see', and N8 provided an example of the link between the teaching approach and the learning that occurred:

> We had one teacher and she was so good and so patient and [she would say] 'just breathe, go through it, you can do this', trying to get you to calm down. Because I think if you're not calm and you're not in your right mind it's easy to make a mistake. You know, or distractions and stuff like that. That's a big thing I think for giving drugs in ICU is that having distractions can easily make you make a med error.

Aside from classroom teachers, the participants identified the clinical preceptors as those who made the biggest impact on their clinical education as nursing students. Participants spoke at length about how what they learned during clinical placements contributed to their development of practice attitudes, knowledge and behaviour. Working with preceptors in the clinical setting was described by many of the participants as the only way to learn how to actually do things. As described by N11, real-world application of theory to practice occurs during clinical placements: 'it's when the student gets into the real world that they realise the application of theory to practice'. Similarly, N19 said that 'going out on clinical and recognising the things that you were taught in the workplace' was the way that 'theory was linked to practice'.

Participants mentioned that the many aspects of medication administration that were taught by clinical preceptors helped students to develop their knowledge and skills.

For example, both N10 and N13 found that preceptors helped them to develop practice time management, while N16 found that remembering medication names was something that preceptors taught them. N13 and N20 commented that preceptors generally assisted with developing their knowledge and skills in administration techniques. Having an 'exceptionally good' preceptor provided N10 with valuable learning opportunities through questioning about medications and their administration. N10 commented that attitudes towards life-long learning are developed during clinical placements as the benefit of a 'good' preceptor was acknowledged, and that the preceptor is the 'cornerstone' of the educational development of nursing students:

> I did most of my learning hands-on in clinical practice. Most of my things that I fall back on today are things that I learned in my first 12 months of nursing when I was out. And I think that I was fortunate because I had an exceptionally good preceptor for that entire time that I was there. My preceptor is the person that I tend to fall back on you know, like the things that she taught me are the things that are embedded into me today more so than anything else. You know and she was very, very good. I think that preceptors are you know, the cornerstone of what makes you the person you are.

The role of preceptors was commented on by a number of participants who said that they contributed to increased 'confidence' and feeling 'comfortable', and they were 'encouraging' and 'reassuring'. Good preceptors and teachers were described as people 'who have been there and done that' and who 'have had pitfalls and can pre-warn' students about the complexities of nursing work with real-world clinical examples. N13 recalled 'being nervous about injection techniques' as a student, and described the preceptor as being trusted to identify any learning needs, provide a constructive learning environment and guide N13 towards safe medication administration practice:

> I plucked up the courage and asked to do an injection. Because I was a student then, and I thought if I can't be wrong then, I can be taught on a patient how to do the technique with the clexane. Whether I put the clexane in right or wrong you know. Whether

they you know 90 degrees or 45 degrees [angle of injection]. We
were taught by some people you never put it in like a dart. So that
was my good experiences. Getting feedback from the patient. How
injections and everything was going. [compared] To what I got in
the actual lab sessions. It's more real and I had the opportunity to
do it. I would ask to do anything that I was allowed to do. And if I
wasn't, I learned by observation too. I'm very good at learning
from observation. Visual learners. Actually I do one, see one, do
one and now teach one.

Thus, despite feeling anxious, N13 had seized an opportunity to learn about
medication administration in practice. Skilled preceptors were valued for
encouraging students to relax. N20 reflected on a reassuring discussion with a
preceptor:

I always think back to my preceptor in the ward. He just said,
'Don't worry, I'm always the last one to finish my medications I
just go through slowly bit by bit'. And after him sort of saying that,
I don't stress as much.

Preceptors were remembered fondly by many of the participants. Some preceptors
had used checklists to assess competence with medication administration and provide
the students with feedback on their performance. N15 stated that during the
undergraduate education program, 'You had to demonstrate your competence in
doing all these things so when it comes to doing your placements that's all you
concentrated on… it was like a competition to see who could get the most skills
done'.

However, the standard assessments varied from preceptor to preceptor. N11 said that
student supervision adds to preceptors' workloads, which sometimes hinders learning
about medication administration as students need to be allowed to practice slowly:

Even though I've done my preceptorship thing, I've only ever got
the students if someone has fallen sick or something you know and
they've teamed them up with me. I watch and I think, there's the

student and there's the RN and the RN's like, 'OK we've gotta do medications but it's gonna be a really busy day today so you just stand back and watch and I'll just do it'. So they're not getting the medication experience that they want or they've come in and they're just going through the drills of the day you know by the time the end of four weeks has come about that the medication round is gonna take half an hour longer. The student is dishing out drugs that they really have no idea what they're doing but have gotta get this ticked off so we'll just do it. I think that impacts on you [the student] when you come out as a new grad and you've really gotta stand there and do it yourself without anybody supervising and 'cos I found the first week when I came out of doing uni into doing my grad program I was standing there waiting for someone to come watch me dish out the drugs. It's like well who's gonna watch me? Like no you're on your own. It was like, 'Oh my god. Am I really safe to do this?'

Often, the ways participants engaged with nursing students were determined by how they themselves had interacted with preceptors. N10 recounted a conversation with a student and explained the importance of preceptors to role model best practice:

So I'm not a teacher, but I just know preceptors are very important in the roles that they do. How they teach what people are gonna learn from. So, in terms of what we do with medications it just needs to be really enforced on the person that's teaching them at the beginning. I don't think it matters what you teach them at university. They've got so much stuff that they're learning at university. They need to know what they need to know to get them through the exam or do the assignment. It's not embedded until they actually get out there and do it on the wards. That's where they need to be taught and be better with these things. You need to pick preceptors that are going to teach them these things. The preceptors need to be given guidelines and say whenever you give a medication you have to do these things. This is where, from my experience, this is where they learn.

Here, N10 was reinforcing the need for nursing students to have good clinical experiences with expert preceptors and suggesting that the transfer of safe and effective medication theory to practice occurs during clinical placements.

While the participants made positive comments about the preceptors' role and influence in helping students build confidence and competence, they also commented that, on occasions, preceptors modelled behaviours that were contradictory to best practice. For example, N20 commented that one preceptor would 'run through things really quickly; it just wouldn't compute'. N2 and N20 mentioned that preceptors would occasionally sign for the medication before the patient has received it. One participant, N13, even described a 'devastating' experience of being 'yelled at' by a preceptor as a student, which left them questioning whether to return to nursing:

> N13: There are awful preceptors. One made me cry.
>
> Me: Really? Tell me about that
>
> N13: I was away from home and in a horrible cabin. I was very nervous at that time. I was very unsure of myself a lot. It was quite intimidating. The preceptor was just absolutely awful. I can remember her saying, 'You know I don't think you're gonna make a good nurse'. And after that I went home crying. You know I was thinking I'm 40 years old and crying. I was fully crying actually, like a little chook. And I was devastated. So when she put me down, I thought it was gonna ruin my whole career. So you know it can ruin you because I was a mess and was prepared to walk out the back door. It seemed like she didn't care and I could just have walked out that back door. I was ready to walk because my confidence had been shattered. It was all just too much to bear really. Yeah at that time.

Despite this encounter, N13 went on to complete the nursing education and has since become a preceptor. N13 transferred this lesson into practice:

> I like them [the students] to ask a lot of questions and find out stuff on their own instead of me telling them. And then when we see each other – so we meet up because I think that is a better way

because that forces them to learn – I would always put them at their ease. I would never shout at them and put them down like I experienced. That was just an awful experience for me.

Me: So from that point of view can you tell me about your experience with the preceptor? How did it impact on your learning, and I suppose I'm interested primarily in medication administration, but how did it impact on the learning?

N13: Oh I was shocking. Every time I saw her I was nervous I couldn't, I couldn't even open a bottle 'cos fear of her like sort of like intimidating me and, hard to think now, yeah there's a couple of mental blocks when she was around but when she wasn't around, I was fine.

Me: So how has your experiences affected how you behave as a preceptor?

N13: I'd never, I've never ever put my students down. I'd never. I try to, when they come to me, I just say, 'This is what I expect from you' or work as a team. 'I'd like you to ask many questions'. Not like an interview question but you know they know where I'm going. At the beginning, I find every opportunity for them to do something, and I'll encourage them 'cos I don't think anybody needs to be told that they're not good enough.

In summary, the participants agreed that preceptors are valuable role models and teachers who have the capacity to positively guide future nurses' knowledge, skills and attitudes. Moreover, the preceptor attributes described above as having the greatest capacity to benefit nursing students' acquisition of knowledge and skills relevant to medication administration are those of being kind, caring, competent and constructive. The last subtheme here is about linking theory to practice.

6.3.5 Subtheme E: Linking theory to practice – 'You can't be complacent'

As mentioned in Subtheme C, concerns for patient safety were raised by all participants in relation to identifying and managing clinical mistakes. Prior experiences of errors and incidents were discussed to explore this and to uncover the

strategies participants implemented to address them. Collectively, they indicated that as healthcare professionals, nurses detect, manage and prevent many more medication errors than are actually reported. N16 shared the sentiment of most of the participants in saying 'you'd be surprised at how many errors we find… there's a lot of errors that we find'. For example, N20 found errors on the NIMC of a patient with a complex medical condition who had been transferred from another hospital:

> This lady came in with four medication sheets. She's on this huge amount of medications. Do you think some of them were doubled-up? Yep. So, I think one was supposed to be a morning tablet but I think it had actually been written up as a morning [medication] and then on another page it's been written up as an evening one. We were trying to sort of battle through trying to find this big lot of medication in the drawer…even Endone. They'd written her up for QID [four times a day] Endone. It was supposed to be PRN [as required]. The alarm bells just start going off, and you're thinking, 'holy damn am I gonna narc this patient out?'

N20 described providing the doctor with the discharge list from the previous hospital:

> 'Here's the list. Please you've gotta sort this out'. You try and ask a doctor on an evening shift who's not the doctor of the patient and they're trying to figure this stuff out, but it's almost like they kind of, don't wanna know yet. We just had to put 'withheld' [on many of the medications]. I guess I try and go by my instincts as well as my gut feeling and if there's ever an instance that I'm a bit unsure of, I go and ask another more senior nurse, which is I guess what they teach you at uni as well, and the doctor as well.

N20 added that this incident was so complex that 'resolving it wasn't possible until more senior medical staff were available'. The discussion of medication errors was generally associated with negative accounts that have stayed with the participants, sometimes years after the incidents. N9 commented:

> I made one mistake when I was a student…and thought, 'Oh shit I've really stuffed up…I nearly died and might as well give up now'.

N9 explained how this event prompted a practice change, making them singularly focused on medication administration after becoming acutely aware of being accountable for safe practice:

> I make out that there's a video camera up there looking at everything I do…it's sort of something that is not so much as to keep me honest but to make sure I'm diligent in my work practice.

Strategies to ensure safe and competent practice were also discussed by N15, who indicated that even when familiar with the patients, this participant developed the practice of when 'moving to the next level' of administering, such as for an injectable medication or controlled medication, and 'even though I know it's that person I'll go through the routine and check with the armband also have the patient tell me their name and also check it on the chart'. N15 describes this practice as safety checks because of the risk of 'an instant, allergic reaction or an instant overdose' with the injection of a medication.

This 'next level' of risk associated with controlled and injectable medications was mentioned by a number of participants, with some describing their behaviour linked to safe medication administration:

> N10: 'When we give a dangerous drug or an S8 [schedule 8], every single time, even though we know that patients who they are, because of protocol we make them repeat who they are and their date of birth and then we repeat the UR number and you look at it on the armband, the name everything.
>
> Me: What's the difference with your process? Why do you use a different process for S3 [schedule 3] to S8s?
>
> N10: Because an S8 drug can be dangerous. You know the dose. It's a bit of a protective thing as well for us. You know, if you happen to drop it or if I go to the patient's bedside on my own and

the patient says, 'I didn't get that drug'. They'll be lookin' at me and they will scrutinise the way we gave it. There are legalities involved as well. So it's protective for us.

N8 added to this sub-theme, saying: 'it's an extra safety check because you could make a mistake even if you think you've done all the checks. For the safety of the patient, always two people'. This discussion suggests that even when the rights framework is believed to be confirmed, there is still a risk of medication errors.

Participants indicated that they used their past experiences of errors to reinforce or clarify their actions. N1 talked of an experience when 'way back when we didn't have as many drugs' and the wrong drug was dispensed from the controlled drug cupboard. In response to this incident, N1 now 'shows the person [checking nurse] the packets I'm taking it out of' and makes 'sure someone [checking nurse] comes with me'. N1 now does not sign the medication chart until the patient has been observed to take the medication, because of a belief that this 'compromises' practice. N1 suggests that pre-signing the chart is often suggested as a time-saving measure – 'cos they're in a hurry. That's why. The time factor again'. N1 believes it is the 'busyness' of nursing that encourages people to practice in ways that are 'unsafe'.

Reinforced by the experiences of N8 and harking back to the discussion of accountability and the principles of practice discussed in Section 6.3.3, N8 discusses an incident when 2.5 mgs of morphine had to be discarded to be able to administer the correct dose of medication:

Last night I had to waste 2.5 out of the 5 milligrams of morphine and they [nursing colleagues] just walked away and I'm sitting with this syringe and I said, 'Do you need to watch me waste this?' and I had to pull them back in to watch me get rid of it from the syringe. You know and I'm thinking it's not safe. You know so. It's just, being mindful of things like that for your own safety as an RN. One of the things that we are taught is that when you administer an S8 medication, two nurses go to the bedside. At uni we were taught that with signing out drugs. We had mock books

for signing things out and we would have to go to the bedside together in our mock labs together.

Participants explained how they strived to practice in ways that reflected their nursing education and registration standards, but the environments were not always conducive to safety. The assumption of responsibility is linked directly to education and regulation but practice contexts need to be considered. N11 said, 'You can't be complacent', while N9 commented:

> I'm a bit pedantic. Just being obsessive. It stemmed from that [previous medication error experience]…Um, it's just one of those things. You've just gotta be, I dunno you just gotta be so pedantic with it. Making sure you do all your checks. Don't friggin' cut corners and unfortunately, you know on a busy ward that's gonna be really friggin' hard because they are gonna go home at the end of the day, if they're just concentrating on doing their medications correctly I could guarantee they'd go home at the end of the day, half their other work wouldn't be done because there's just not enough time. Luckily for me in ICU the actual patient number is lower so it should be easily achieved. Well you know, which is it? It's just one of those things where and fortunately for nurses, I think we've always tried to do everything for our patient so we think of ways on how can we cut down time, cut corners. Oh yep we can shave a bit off that should be all right and down the track someone gets double dosed or whatever. Oh shit, bugger.

This theme reinforces the participants' behaviours seen in the observation phase of the study. As discussed in Chapter 5, participants were often observed sharing medication administration tasks with other members of the nursing team. Many participants explained this during the interviews. Some participants acknowledged the role of their EN colleagues and talked about their responsibility to 'guide', 'lead' and 'educate' ENs and other colleagues in aspects of medication administration. While a thorough exploration of the role of the EN in medication administration is outside the scope of this study, the comments of the participants are relevant to their observed behaviours.

For example, a number of the participants said that they 'expanded' their 'focus' to cover the patient care that had been delegated to the EN. N13 ensured that ENs had 'a handle on it' by regularly reviewing all patients under their care. Some participants, such as N16, discussed how they used clear instructions and regular collaboration to effectively work with their EN colleagues to 'give a bit of extra guidance' and 'sort things out before an error happens'. The link between the observed behaviours and the interviews is explored in Themes 2 and 4 below.

6.4 Theme 2: Teamwork – 'Nurses are the squishy bit'

The second major theme is teamwork. This theme highlights the participants' experiences of coordinating and managing individual and organisational processes to facilitate safe and effective medication administration. The nurse's role is to be the glue of the medication administration process, as noted in Chapter 2. This brokerage or coordination role of nurses is described as 'squishy' by N5:

> Nurses are the squishy bit between the patient and the doctor. We're dealing with people and diseases and processes. Nursing is a science and an art and we keep it all together.

Despite heavy workloads, participants focused on effectively managing the competing aspects of medication administration to fulfil their understanding of 'good' medication administration practices. The teamwork required incorporated honest, clear communication, effective collaboration, cooperation and comprehensive consultation. Even at very busy times, communication was pivotal to safely managing the clinical workload, including medication administration. The characteristics of teamwork described by the participants make up the subthemes below.

6.4.1 Subtheme A: Collaborative communication helps to 'have a handle on it'

Honest and frank communication when teamed with other nurses, doctors and patients was mentioned by most participants as a means of safely delegating responsibility. Medication administration was described as most effective when the healthcare team members trust each other's knowledge and skill. For example, N9 and N11 said regular feedback between the team members and a shared understanding of patient management helped to direct and consolidate team efforts. N10 also identified that trust was most important, explaining that it is not an automatic characteristic of work-based relationships; rather, 'it is earned and it takes time'.

The participants had respect for their professional accountability, as recognised in Theme 1. The actions they took relating to their accountability will be discussed here and in Theme 4. N13 clarified the accountability of the RN in the process of delegation of duties to others: 'It's about the registered nurse being responsible for the care of the patient… even though we delegate tasks'. N13 said: 'l have a handle on everything. You do have to make sure that you just got a handle on them all [the medications] because you're ultimately responsible for the whole of them [the patients]'.

Further to the participants' understanding of accountability and reflecting earlier considerations for professional consequences, N16 explained, 'I don't want to lose my registration and I don't wanna be up there and in court you know?' N16 prepared for this by communicating clearly with health professional counterparts and providing 'a little bit of extra guidance' during medication administration activities by 'going around and have a look at the charts. Help them [nurse colleagues] out or say at the start of the shift, "Anything you're unsure of please come and ask me", because I'd rather it be sorted out before an error happens to the patient'.

In addition to teamwork with other nurses, participants respected the contributions of other health professionals such as doctors in medication administration. The teamwork with doctors was mostly associated with medication problem solving. Chapter 5 described the observations of the participants' behaviours when they encountered prescription discrepancies, medication delays or when concerned about

a patient's medications. N16 had observed an incident where a blood transfusion was delayed. In order to ensure that the patient received the necessary treatment, N16 prioritised its commencement and, as described in Chapter 5, gathered equipment to assist the doctor to commence the task of establishing IV access. N16 describes feeling anxious about the delay that this patient experienced and the priority placed on patient care:

> When you were there it sort of made me realise how difficult it is to get things done, like 'cos you could start something at this time but the amount of things that put you back. I sort of realised with the blood transfusion, how long it took. I was astounded. I couldn't believe it. But then it wasn't organised at the start so, I chased it and got it on the ward so it was there for later. Probably prioritising things when you were there, I made sure the blood transfusion was sorted because that was the reason why he [the patient] was admitted to the ward. It was for the blood transfusion but that took so long for it to get started. I like to, if it's written down to be given on my shift, I won't be gone until it's done because I don't like to be handing over that, this hasn't been done or if a circumstance happens that it's behind because of the blood transfusion. Yeah I wanted it done, for the fact that the patient was admitted for it is the first reason. It had kept getting put off and put off I wanted it to be started and going on my shift, before I left. Then I was a little bit anxious and a bit annoyed because nothing was sorted out on the previous shift about it.

As well as communication with other nurses and doctors, communication with patients was also essential for effective care. N8 commented that there is reciprocity in the nurse-patient relationship with a sense of satisfaction and 'feeling good' for 'making a difference' by having 'done your job properly' when it works well. A couple of participants (N1 and N16) were observed using humour and a friendly demeanour to build nurse-patient rapport to facilitate effective medication administration. N16 explained during the interview that nurses need to build 'an atmosphere for the patient to enjoy the camaraderie with the nurse' and 'effectively communicate with the patient'. Similarly, N1 talked about a positive outcome that

was observed with an unhappy patient after the participant provided additional information and education.

Further to accountability and responsibility involved in teamwork, N11 said the biggest thing learnt was to be honest:

> Being upfront and honest about something and learning from it: that's the biggest thing that I've taken away from the transition from being a student to a grad to now three years on. If you've made a medication error then be upfront and deal with it there and then; don't try and push it under the carpet and hope that no one notices and that the patient doesn't suffer for it.

For the participants, patient advocacy was key to safe medication administration practices. Communication between the participants and others while participants were advocating for their patients is central to the safe administration of medication. In particular, patient advocacy was mentioned by a number of participants warranting attention, particularly at times of medical officer ward rounds as described by N13:

> Unfortunately, the doctors come in packs! Yeah and they get there and they [the patient] can't be listened to and most of them are elderly. They're deaf, hard of hearing and they only need a little bit of dementia happening or whatever and they ain't got a clue and it's like, they're looking what's happening to me and you can see their faces and they're like looking around at who do I listen to 'cos there's like five of them [doctors] in the ward.

N19 addressed a similar concern, discussing the actions as this participant was observed to join the doctors' round and providing patient assessment data that supported the doctors' medication decision-making. N19 explained that engaging in the doctors' rounds was not a part of normal practice because of other patient-related priorities, but it was necessary to cut in to a doctor's conversation to advocate for the patient when such discussions were heard and nursing knowledge could contribute to patient care. N19 explained the advocacy role when recounting the action taken after

happening upon a doctor/patient discussion. N19 heard the doctor say, 'I want to see the gentlemen in bed D with his Doppler'. Then N19 explains:

> I hung around because I needed to hear the story from the doctors telling the patient because he [the patient] was going to tell his partner, who wasn't there that day. Yeah so I was just listening 'cos what was his interpretation could be taken to be meant two different ways. So I'm hanging around here because if he says that to her, then they are going to ask questions. That did take a bit of time out of the day.

N19 suggested in the excerpt above that the advocacy role is necessary for the clear communication of medication information from the prescriber to the patient and it takes up participant time to perform this role. In another example, N8 explained this is especially important in situations where the medication is prescribed as the generic name as well as the pharmaceutical name and 'unless you've got your mind open to what you're giving or understanding what you're giving, you could give the double drug and then it's your fault that you didn't know'.

Furthermore, N8 gathered patient details through questioning such as: 'Now I just have a question I need to ask you', and then, 'I just have another question I just want to ask you'. N8 explained that this extracts the information from the patient quickly. This technique was described by N8 as assisting the doctor 'cos the doctors like sometimes they come in and don't ask the questions … they just zoom, zoom, zoom … and then you're left wondering what they're doing'. This also assisted N8 by providing the necessary information from which to make medication-related decisions.

N11 also discussed the need to work collaboratively to assist doctors to make medication decisions and advocate for patients as follows:

> A patient might have been written up for QID paracetamol and you think, 'paracetamol, that's alright, everybody has paracetamol'. But is this patient a renal patient or do they have hepatic problems? ….Things like that, so you gotta be aware and bring that to the

doctors' attention and sort of say well, 'hey listen do you think there might be an alternative because this patient has these underlying problems'. So just taking a little bit of responsibility and just being accountable for your actions.

The review of and support for the roles of others described above facilitates safe and effective medication administration. Participants were advocating for their colleagues to use collaborative communication. Further to this, when working relationships were supportive, they were perceived as contributing to a 'good day'. N11 believed that 'it comes down to the type of relationship you have with that person' as to whether the administration of medication is effective.

In addition, N16 explained the reason for being nice to other clinicians who were being rude and obstructive was to get the patient what they needed. N8 and N5 were noticed to apologise to the doctors during the observation shift for 'disturbing' and 'bugging' them to have medication prescriptions clarified or rectified. During the interview, N5 described a phone conversation that was made during the observation shift to a prescriber. N5 reinforced the importance the participants placed on their advocacy role in medication administration:

> You've gotta play the game. Somebody's not going to respond well to you if you're rude to them. I like, play the game. You've gotta know how to ask for something from somebody. You can't demand it and especially in our job. We are that bit in between the patient and the doctor. As much as we have our own responsibilities, ultimately it's still the doctor that makes the decisions. You have to know the best way. If you want something, where if you look at it like a team sport and you've got the doctors on one side and the patients on the other and we're like the referees in the middle. You have to still be biased towards your patient, I think. 'Cos we're supposed to be the patient advocates. So if the doctor wants something and the patient doesn't want it done, you have to go with the patient. You have to make a judgement call and go with the patient most of the time. And if you don't want something done or if you think it's inappropriate again, you have to

be the referee OK? And go, 'I dunno if we should do this; how about if we give you this instead?' And sometimes they will still stay with their decision and that's fine. But yeah gotta make sure you know how to ask for something: don't be rude. Well if you're rude, the doctor's gonna ignore you. They're not gonna answer the phone. They're not gonna do what you want them to do. Manners goes a very long way.

Working collaboratively and achieving patient care goals was classified by several participants (N2, N12, N16 and N19) as a 'good day'. N12 defined the good day as 'all the work was done and there were no incidents'.

Despite the challenges of always being the ones responsible for maintaining effective workplace collaboration, participants worked hard to cooperate with others to meet the needs of their patients, even if this sometimes increased their workloads. For example, N10 reflected on the NIMC review behaviours observed in Chapter 5, saying:

So I'm checking all of the medication charts at the end of the shift and I'm checking all of the care plans…that's where it's unfair…if that load was two registered nurses it would be realistic. But that load was one registered nurse and an EN is unrealistic. As a registered nurse you're called to go and help when patient conditions deteriorate.

The next subtheme picks up the discussion of the participants' strategies in addressing medication errors and issues.

6.4.2 Subtheme B: Cooperation – 'Find it and fix it', 'step it up, expand the focus'

Many of the participants were observed searching for medications and seeking out prescribers to finalise or rectify medication orders, as discussed in Chapter 5. In the interviews, a number of the participants referred to this behaviour as 'chasing the

doctors'. N10 said, 'It's a common thing that nurses have to find it and fix it … we spend a lot of time doing that and it impacts on administering medications'. N13 reported that sometimes 'it would take another half an hour to find them [the doctors]'. 'Frustration' was expressed by several participants (N9, N12 N14, N16, and N20) in describing situations where they had to resort to 'chasing' to have prescriptions rectified. However, the actions of participants described in Chapter 5 coupled with their discussions of their behaviours demonstrate their commitment to productive and cooperative actions to get positive outcomes for their patients.

For example, N16 recalled a particularly disturbing encounter with a senior doctor that was described in Chapter 5 as 'shocking'. Nevertheless, N16 pressed on and humoured the doctor. N16 explained:

> I went to find the doctor team and all there was, was the consultant. The head doctor of the team. So I went to her and I asked for the Warfarin dose and she said 'do I look like my RMO [Resident Medical Officer]' (indignant)…I was gob smacked…yep as if to say I'm the boss…and then I sort of tapped her on the back and said, 'Come on, I've done it already for you'.

After cajoling this senior doctor into ordering the necessary medication, the participant was able to provide the treatment required. Another participant describes using humour to encourage prescribers to complete the NIMC. N6 explained using a light-hearted request to the doctor 'to make it legal' when the prescription identification requirements of the NIMC are omitted. In the case of N16 during the observation shift, despite delivering the patient pathology results and the NIMC to the doctor so the medication that was due could be prescribed, the doctor was dismissive and reluctant to oblige. N16 recalled:

> I didn't know whether I should've done that but then I thought, 'oh why not, I've done everything. All I want is the dose written up'. It got done anyway but I thought I did it in a good way anyway. I could have stood there and had an argument with them but it's not working is it? 'Cos then it just gets put off longer.

In addition, N11 spoke of the vigilant and frequent review of the NIMC that was described in Chapter 5 as 'stepped up', and 'expanded' the 'focus' to be more 'in tune' with and 'cover' all the patient's needs. N11 explained these behaviours relating to increased accountability when teamed with others who are not familiar with the patients or work practices:

> All these people are my responsibility because I didn't have the trust in this other person. Depending on who you work with, you build up a trust and you know what their capabilities are and you know what they can and can't do and 'cos I mean it comes down to your registration in the end. I felt that I didn't trust this person and so then I had to step up and really expand my focus amongst those three rooms that I had. And just be more in tune with what I was doing.

In the example above, N11 described the practice adaptations made to cooperate with colleagues to safely administer medications. Participants relied on the development of a trusting relationship with colleagues as well as patients. Becoming familiar enough with the patient to be able to recognise them instantly was one strategy that assisted with the right patient identification responsibilities of the participants.

Participants explained that deviations from the rights framework were at times justified. For example, omitting to ask the identification questions did not necessarily contravene the accountability for safe practice, as already discussed. N1 sums up the perspective of all others who discussed patient identification in saying, 'If I've already ascertained that that's my patient and that's who they say they are, then I don't ask them every single time'. Observations of participants introducing themselves to the patient at the beginning of the shift and then constantly reviewing patient charts was noted and discussed in Chapter 5 as when the patient identification was ascertained. Additionally, N10 suggested that being able to 'visualise' the patient for 'facial recognition' in the ICU negated the need to ask the patient to confirm their identification every time.

Not only does knowledge of the patient facilitate safe practice but clear instructions of what the patient needs was essential. N8 discussed how sometimes the documentation is a source of aggravation and conflict between doctors and nurses when documentation is incorrect. For example, correctly ceasing a medication on the NIMC is essential to clearly communicate the prescriber's intention. N9 pre-empted problems by checking the prescriptions of patients and instructing doctors how to change them when there are mistakes. N9 also suggested that the orientation for the doctors does not adequately inform them of the medication charts and processes to facilitate correct documentation and avoid mistakes. N9 indicated that there was a lack of role orientation for medical staff that contributed to NIMC issues and tension within the medication administration team:

> Orientation of medical staff on the paperwork they have to use and how to fill it out. [for example] the primary nurse showed me... that the [prescription] is wrong – 'Go and show the doctor the correct insulin chart and just get her to redo it' [said N9]. So she [the doctor] did, albeit, with no ID label and half the documentation on that chart wasn't done. So I grabbed the chart, took it into her and said, 'Oh, have you ever seen one of these before?' and she said, 'Oh about five minutes ago when your nurse showed me'. I said, 'Oh shit, shows how good your bloody orientation is doesn't it?' And I just then, I had to educate her on how to fill it in as part of her prescribing role on the insulin order. I know that the medical director or the director of medicine knows of the problems. Two years ago we chatted. All the doctors were great for about then months then we got a new batch of doctors and two months later: back to square one. Today for instance, there's a new doctor relieving in our area and I had to show him how to order units of blood. He thought that telling me, 'I want that person to have two units of blood' was how we order. I had to say, 'No, you have to write it on the pathology form which is that one there and send it to the lab'.

Cooperation between members of the team was categorically identified as essential for successful medication administration. The participants described how they used

conversations with the patient to gain information and build therapeutic relationships. N1 was observed to encounter a hostile patient but after calmly dealing with the patients' concerns, N1 saw a change in the attitude: 'I reckon that's because I gave him quite a few explanations'.

In another example of how consulting with the patient can contribute to safe medication administration practices, N14 explained:

> I always like to know that the medications are the medications that they [the patient] normally would have. If a patient says 'I'm not normally on that', then I find out why there's been a change because that's when a patient may refuse to take a medication if there's something there and no one's educated them on why there's a change. It just comes down to that communication and being the advocate between the patient and the doctor if the patient doesn't understand but you have an understanding and you're communicating with the doctor and feeding back to the patient.

As discussed in Chapter 5, participants were observed assessing the patients' conditions through questioning and consulting about physical status and the effects of medication as well as communicating their findings to the doctors. N11 discussed how patient risk assessment data was communicated to medical staff:

> Then you can sort of say, 'OK you've got this medication, and this medication'. They [the medications] might be two different types of anti-hypertensive so then you've sort of got to go back and think well, OK these two hypertensives work in a different way. They [the patient] may have been on these medications for years but that may have also contributed to them having a fall so then you would be more aware that this patient needs maybe a little bit closer monitoring and maybe bring it to the doctor's attention that this could happen. They [the doctor] might shove it off and say, 'Well no, they've [the patient] been on it for years. It's all good they're fine'. But I think in the back of your mind, you know what, we'll still keep an eye on that patient.

Similarly, N8 said that 'the thing about nursing, it's about people not about tasks and what you're doing'. As discussed in Chapter 5, the participants were often observed using social chatter as part of their identity checks and some do not ask to confirm patient identity and allergy status each time a medication is administered. N10 explained that familiarity and proximity to the patient helps ICU nurses to effectively manage care:

> We are a bit naughty here in the unit… we don't do the R's [rights] because we know the patients. We have time to meet the patient and get to know them. They don't tend to move beds like they do in other wards and we only have one to two patients each. If they do move we recognise them. We take calls from their family and we spend time getting to know them so we don't need to ask them their name and everything again. In the wards you run from room to room and people can move.

Likewise, N17, N18 and N19 explained that if they did not ask the identification questions it was probably because they had previously administered medication to that patient and already checked that the patient identity matched the NIMC. They talked about knowing their patients through developing a relationship with them over the time that they were an inpatients. N7 talked about developing close relationships with patients: 'I treat them like they're my family. Like I treat them how I would treat my family. I gotta treat them with respect'. N13 said that consulting the patient was vital to medication safety and described this as a 'big thing'.

Furthermore, patient safety was suggested as enhanced in the ICU setting since the environment was configured in a way that facilitated simultaneous visualisation of all patients. The station where nurses and doctors collaborated on patient care matters and reviewed medical records is located centrally within the unit and all beds can be seen from the desk. N10 worked in ICU and talked about 'facial recognition' as a means of safely administering the right medication. N10 recalls that in former years of nursing the traditional six-bed wards provided an environment for patient 'social interaction' and a level of 'situational awareness'. 'Facial recognition' was more

likely because of the proximity to the patient, as the nurse could 'see them and communicate to them individually and as a group simultaneously'. 'When we had six bed wards and allocated six patients it was alright because they were in the same room but now there is four in one and two in another so effectively we end up with eight patients and it's too much'. N10 believed that this 'art of nurse-patient chat has been lost' due to the change in the physical layout of the wards and also the busy workloads that do not provide time for relationship building through 'chat'. Others working in ICU (N7, N8 and N12) commented that the difference in ward layout and workload allocation in ICU enabled them to spend more time getting to know the patient and reviewing their medications. Likewise, in the general wards, N11 and N15 talked about the relationship that they developed with patients when they were allocated to care for the same people for a few days. 'It's nice to have a patient over a couple of days because you do get to know that patient and a lot more comes to light' says N11. We are reminded that nurse-patient interactions contribute to the 'bigger picture' understanding of medications.

As an example of the contribution that establishing the relationship with the patient makes to medication administration, N11 was observed to assess the patient at the beginning of the shift and describes the assessment as necessary for gathering the 'bigger picture' information required to make broader medication-related decisions:

> Um so you still gotta do that ongoing assessment and think well, 'OK yesterday he didn't feel so good but he was eating a lot more, whereas today he's saying he's feeling good but his appetite just isn't there do I need to bring the dietician in?' Do I need to you know do I need something else for this patient? So yeah every day is a new assessment and you may not always have that same person every shift that you work so you're sort of getting to know different people and you've gotta be able to, I guess, get to know them quickly and know what's normal for them and what's not normal for them and then what special needs need to be put in place for them.

In the emergency department the participants met numerous people who were not inpatients, and the consultation process with patients was contextualised differently.

N2 was observed questioning patients on arrival to the emergency department about their medications. N2 then explained in the interview that it was not necessary to go through questioning the identification of the patient again when administering medication because they had met only minutes before. Instead, N2 focused on consulting with the patient about the medication to be administered, including information about previous medications taken and the actions and intended outcomes of the medication to be administered. N2 confirmed whether there had been a previous dose of medications by stating various names of the same medications:

> Have you had this before? Especially Panadol…I'll say, 'Have you had Panadol, Febridol, Panamax', some of the ones I know that I've seen around. Yeah 'cos they'll say, 'No I haven't had any Panadol but I've had two Panamax this morning…' 'Ok let's not give you this [prescribed paracetamol] then…' Same with Tramadol: 'Have you had Toradol, Tramal, Tramadol?'

The participants were unanimous in their beliefs that having informed patients was valuable in helping to fulfil all the rights of safe medication administration. For example, N11 and N20 discussed how patients can act as a source of vital information that can assist in ensuring the medications to be administered have not already been given and are appropriate for the patient. Similarly, N9 ensured that the patients were well informed of the medications and treatment plan because of a belief that 'it's their right to know what's going on'. N9 described showing the NIMC to the patients as the focus of an informative conversation saying, 'honesty is the best policy. I don't like keeping people in the dark. Especially when you're giving them something they're ingesting into their body'. N5 reiterated this respect for patient rights as: 'It is really important that they understand what is going into their own body'.

In relation to the patient's right to information, many participants described how they used strategies to engage the patient in the medication administration process. N10 expressed the thoughts of all participants in relation to professional standards and sums up their desire to ensure safe practice, saying that 'ultimately I don't ever want to lose my licence and kill someone'. N10 goes on to explain that nurses need to

have a 'sense of the bigger picture' for the patient to be provided 'holistic care', and notes the importance of 'camaraderie' with colleagues so that the 'team of caring professionals are working collaboratively' and 'deliver nursing that is holistic and evidence-based'. N10 explained that these attributes are core to providing safe patient care.

6.5 Theme 3: Tools

Theme 3 relates to the participants' discussions of the tools and resources they actively sourced to safely undertake medication administration and, as N1 said, to 'get patients what they need'. Medication administration resources and access to them were described by the participants as factors that either facilitate or interfere with safe and effective practice. The subthemes discuss participant experiences with the NIMC, polypharmacy and access to medication equipment, with headings that include quotations from participants.

6.5.1 Subtheme A: NIMC – 'Completed charts, protocols and pens'

Having an accurately written NIMC is essential to safe and effective medication administration. The NIMC is the tool where the patient details are documented and medication prescriptions are ordered. It must be complete for the administration of medication to be legal and safe. As previously discussed and reinforced by N13, 'when there is medication chart written out, the practice goes smoothly. If not you go and chase the doctors…' and ask for it to be completed. Chasing the doctors was a common strategy that features in a number of the themes in both this chapter and Chapter 5.

In the interviews, the participants discussed their collaboration with colleagues in the medication administration team (Theme 2). In this subtheme the role of the pharmacist emerges as contributing to the participants' practice and necessary for clarifying aspects of the medication prescription. N12 commented on the valuable role that the pharmacist has in correcting and enhancing medication information on

the NIMC. As described in Chapter 5, N12 experienced an NIMC that had been marked up with a purple pen by the ward pharmacist:

> Just going back to those five rights. Reading things is really important. The legibility of some of the handwriting, and people using trade-names instead of generic names. Having a pharmacist is really good because then they're correcting that. It's been helpful because not only have they given us the name but they've given us indications and special instructions you know with food, after food, two hours before whatever. Things that doctors don't always take into account.

Several participants were observed colour coding the patient information in the NIMC and on their handover sheets; for example, N11, N13, N14, N16 and N19, all used highlighter pens on the NIMC to indicate areas of importance and made progressive notes on their handover sheets as well. N16 explained this practice:

> I use pens that have to be four colours 'cos on my handover sheet I write my IV's in green and the DD's [dangerous drugs] in red. Everything's colour coded. Handover sheets are colour coded; the other thing I do is use a highlighter pen. That was basically for the IV AB's [antibiotics]. Anything that is out of the ordinary, like the IV AB's or the DD drugs, which I know may take a little bit of time. It's just a reminder to know that, that's when it's due and when you open it [the NIMC] up you can see straight away that that's how many [medications] I've got to do, to prioritise as well.

Embedded within the NIMC are protocols such as the VTE treatment plan. In Chapter 2, protocols were described as intended to standardise practice and help to guide practice. However, the implementation of the medication administration protocols is sometimes not as simple as it seems. N6 suggests that protocols do not always reflect reality and describes the practice as it occurs when giving titrated morphine:

Yeah I don't follow people. With the protocol. You gotta hang onto the morphine for what up to 20 minutes, if you've got 10 mgs. You can't have two people in the ED spending a solid 20 minutes watching that ampoule. So you give it to the person [administering nurse], they go and do what they're gonna do with it and they record what they do with it as they go. So it's 2.5 mgs every five minutes according to the observations and the sedation score until it's used. The protocol does not talk about the double checking thing.

N6 went on to say that team relationships that are established on trust and respect for professional accountability are the main ingredient to facilitate safe and effective medication administration when protocols are unrealistic and unhelpful.

6.5.2 Subtheme B: Patient polypharmacy – 'The chemist in the cupboard'

The observations of participant practices identified that some patients with complex or multiple conditions had multiple medications prescribed. N20 told a story of a medication incident involving a patient who was prescribed many medications that completely filled four medication charts. 'This huge amount of medications' presented a 'battle' for N20, who was 'trying to find this big lot of medication in the drawer', While this was an exceptional case, sifting through the patients' medications to find the right medication was not uncommon. N14 talked about patients who arrive at hospital 'with two shopping bags full of drugs' or ones who 'use an overnight bag to carry their pills', and then there are those 'with the ice-cream containers full of out-of-date medications'. N19 described this as being like a 'chemist in the drawer'. N14 talked at length about the time it takes to organise the medications in the drawer so that the correct drugs can be easily found. Medications are available by different names in various forms and/or compounds and there are new medications appearing on the market regularly. N19 was observed to organise the medications by placing the blister packs back into their original boxes and explained that this practice made it easier to identify the right medication. N19 used a pen to circle the expiry dates on the foil blister packs and explained it as another

intervention to improve visibility. 'The imprinted expiry dates of the medications are extremely hard to read because they are pressed in silver and often have light coloured writing on them. Circling the dates makes it stand out so we can read it'.

The excessive number of medications prescribed for some patients demanded a heightened awareness of accountability as discussed in the previous two themes. Participant vigilance when checking the NIMC was observed in Phase 1of this study and is discussed in the next theme as contributing to the 'busy' workload. In Phase 1 the participants were observed to use visual reminders for administering medications. To ensure the right dose was given, a number of the participants were observed to place a small dot in the signature box of the NIMC as they dispensed each medication into the pill cup. N14 explained this strategy, saying: 'I just put my little dot there so that I know I've actually got that pill. So, that I know that I've done that and I'm not going to give it out twice'. This action was used by others too, as a way of indicating that the drug has been dispensed into the pill cup. N8 said, 'That way…I can check, "OK I've got this, got this, got this" and then I can give it to them'.

As discussed in Chapter 5, lack of available medications sometimes sabotaged the participants' efforts to be organised: N12 talked about 'when you're going to the drawer and you presume that the medications are in the drawer', but they are not. N16 also explained this as a common situation when reflecting on the observation phase:

> You probably noticed … the other day when a patient was admitted the medications weren't in the top drawer already for you. Particularly common when they are admitted via the emergency department.

N16 was observed stocking medications drawers and recalled the practice as helpful for student learning:

> It's something that I always make sure I go and get. I get my medication chart and go and get all the medications that are on there so that they're there for the other shifts. When you go to start

your medications round that's taken more time out of it. That's something I learnt as a student on clinical placements and it really helped me learn where a medication was in the cupboard, the name…the two different names for the medication and it sort of helped me just learn the basics of medication and their names.

In summary, the creative ways some of the participants used to focus on ensuring safe medication administration, while not always aligned with the rights framework, are explained as strategies to achieve right-time, person-centred medication administration. Participants strived to manage the medication administration factors that they could influence. Factors outside their influence are discussed next and highlight further strategies to ensure right-time medication administration.

6.5.3 Subtheme C: Equipment – Keys, cupboards, computers, and chaos in 'Piccadilly Circus'

N8 was observed to prepare for the shift by collecting keys to the regular medication drawers. However, in the example described in Chapter 5, there were no keys available, requiring N8 to negotiate with a nurse from the previous shift to surrender the keys in order undertake the role of medication administration. One participant, N12, describes how this situation was addressed:

In our area we know they're [the medication drawers] not locked, and we know they should be but nobody has a key. So you know. We all wanted keys and we asked for keys and we got our own keys cut from an external source and then they [the organisation] changed the locks. Yeah, and why were the nurses having to make that step of actually going and getting keys cut themselves you know? That was the wrong thing to be doing anyway but the nurses felt so un-empowered with the system that they thought that they had to take that step to get their own keys and that's wrong. That should never have happened.

Moreover, in Chapter 5 the actions of the participant to gain access to the dangerous drug cupboard required the participants to locate the person who was holding the

dangerous drug keys and also to find a nurse willing and authorised to check the dispensing of the controlled substances. The extra steps, described in Chapter 2, required to fulfil this administration process places time pressure on the participants, particularly when access to the dangerous drug cupboard was at highest demand, such as at eight o'clock in the morning and evening when analgesia and sedations are commonly scheduled to be given.

Participants discussed how they were cognisant of accountabilities and responsibility in relation to controlled substances. As previously discussed, they sometimes breached the organisation's rules in order to fulfil right-time administration of medications. Digression from the protocol was described by N19, who sometimes simultaneously dispensed scheduled medications for more than one patient at the same time to save time. N19 said, 'I'm very, very diligent. There are two different medications. So I'll take one chart and one pill for me and the other nurse takes one chart and one pill. We keep those two together and I keep my two together and we go…' Despite this digression from the rules, the practice, as described in Chapter 5, did not lead to a medication error.

The medication administration dilemmas described above are not exclusive to participant factors. N12 provided insight into an unusual set of circumstances where the organisation was in breach of the rules, placing the participants in a professional ethics predicament:

> But anyway, there's still no locking of drug cupboards and drug lockers in XXXXXX. I mean you've seen our DD cupboard. The doors are chocked open and now we have no cupboard, on our cupboard because it became loose one day so this fella got the screwdriver to it and took the doors off (laughing). It was a hazard. It was hanging by a screw you know, like it would not have been that difficult to fix that problem on that day?
> Maintenance but no … The doors are off and they're still waiting to be put on. But in the meantime the DD cupboard! That's not legal. You know? And you've got all those things happening. It's the least you can do to make your own practice legal. You know, like I mean we're all part of that. Though we're all at fault because

we're letting it all happen but I don't think any of us feels powerful enough to actually fix the problem. Yeah so my thing is that if you can do what you have to do the right way you know. There is gonna be all this other stuff that's not gonna be right, which yeah you don't feel like you can fix.

N12 recalled the core themes of responsibility and accountability that participants described earlier. The circumstances described above, while extreme, were managed by the participants with one goal in mind: to safely and effectively administer the medications. N8 says an attitude of 'going with the flow' is a way to deal with the obstructions that are encountered. When 'I try to do the right thing', but '… sometimes you have no control over everything… And if you try to be in control all the time then you're gonna have problems… You kinda gotta go with the flow'.

Quiet space to prepare and problem-solve medication issues was another elusive element for the participants in this study. It was observed that computer terminals were limited and in high demand. Space in the nurses' station was at a premium and when the area was being used by many people the noise levels were high. Participants complained of not being able to 'think clearly' at these times. For example, at a time when multiple infusion pumps were alarming in close proximity to N18, the participant was observed to spontaneously say out loud, 'What is that noise? I can't think clearly'. Likewise, N13 recalled the observation shift and called it 'Piccadilly Circus', saying that 'It's a very chaotic and noisy environment. You should hear it in the morning'. On a Monday or whatever morning that was, that middle office is just like a Piccadilly Circus. Funny, you sort of think I'm sure it's a workplace health and safety issue'. N13 explained that out of concern for patient confidentiality, N13 chooses to take sensitive conversations to the treatment room for privacy.

If the 'busy' time was at night, there was also concern for the comfort of the patients (N13). Medication administration was not observed to occur in the nurses' station space but participants were observed communicating with prescribers in this area. This was also the space where telephone access was available and telephone orders

were observed to be received, where medical records were kept and where computerised patient data was available.

Limited computer access was an issue observed to be restricted to the ward-based participants. As previously mentioned, the ward layout was advantageous for participants working in the ICU/CCU. N8 sums this up as:

> … say if you're on the floor you don't really have access to look at what's their [the patient's] potassium? What's their sodium? What's their… or why is my patient acting this way? You don't really have the chance to look could it be their sodium's out of whack or their potassium…and you don't have the time you know and I think ICU, I think it gives you a lot more holistic look at the patient of what's going on and to understand a little bit more.

On the ward, for example, when N11 could not gain access to a computer or medical record information, the patient became the source to expand on the medical history. N11 says: 'I always look at their patient history…when I admit a patient I'll say you know, "I've noticed in your chart that the doctor has written that your medical history consists of this this this and this". From there the patient will expand and sort of give you their life history'. Others too (N2, N5, N7, N13, N14, N18) develop relationships with the patient to explore the patient details when other sources are not available.

Similar to the Piccadilly Circus metaphor above, the treatment room was another densely populated space at medication times. Chapter 5 discussed limited work bench space in every ward regardless of setting. The noise levels in the treatment room were high at regular medication times and this space was described as 'chaos and mayhem' by N18. Participants were observed to hold medication-related conversations in the pan room, equipment bay, beverage bay and treatment room, where noise levels were less of a problem.

Communication between the clinicians was necessary for managing the physical environment to facilitate the timely administration of medication. As discussed, pre-setting was observed to be standard practice in the ward areas. Described in Chapter

5, participants used available bench space and dressing trolleys to pre-set medications and save time. N16 offers a rationale this:

> It's not accessible for the amount of people that are coming and going, all wanting to go in the same cupboard. You just can't move and that's why it's good to get in there and get them [the parenteral medications] all done and sorted so that you don't have to be all standing in there at the same time. There are other nurses who do it and we always make sure that we communicate that this is my allocated spot and that's yours. There isn't much space in that room, which is why you've also gotta make sure that you check it again before you go and give it because somebody could have swapped it over or taken your one and replaced it. I also like to use the trolley and I sort of line mine up and I know which ones are which and if the trolley's being used nobody touches it. It's good to put your charts on it with your antibiotics and then you can take it with you and you don't have to come back and forth. The dressing trolley, that's a little square trolley. 'Cos there's no other room to put things, I tend to do that now because it helps with the time management side of things.

In essence, Theme 3 has demonstrated that the participants needed access to educational and environmental resources to support them in their role to administer medications safely. The tools they required or desired were at times elusive. Despite the lack of resources, these participants managed by repurposing equipment, redesigning processes and being resourceful to complete medication administration safely.

6.6 Theme 4: Time – 'Busy'

The time of day are described as affecting most aspects of the participants' clinical focus and associated behaviour. Time is a workflow factor that seemed to be constantly on the mind of each participant. As described in Themes 2 and 3, participants developed a number of strategies to help them save time and keep on time with medication administration. Time pressure was commonly discussed as directly affecting medication administration. Theme 4 is about the participants' experiences of time as it related to them feeling 'busy' and 'altering actions to accommodate the workload'.

Medication administration was observed to be prioritised when workloads were high and other nursing care activities were adjusted to ensure that medications were given in a timely manner. N15 explains:

> It's funny it can be very robotic. In the morning it can be like, what you're thinking about depends on how much lays ahead of you. Like, if you turn up and it's you and another nurse, and you've got 12 patients, then things are sped up somewhat. OK prioritising. But usually when it comes to that, other things have to go. Other things may have to be missed out on, like the person who was gonna get a shower ends up getting a wash in bed or something like that. Personal hygiene is not omitted but actions are altered to accommodate workload. Rather than, I won't go like a machine over medications but yeah if it's busy, I'm probably still more focused on the medications.

Participants used a range of visual remainders, noted in Chapter 5, to ensure right-time administration of medications. Flagging by lifting the NIMC within its folder is explained as a practice that:

> … only works on a late shift and a night shift because on a morning shift the doctors come around and they end up pulling all the pages out. So on a late shift and night shift I put the pages up in the medication chart for the medications that I know need to be

administered at times within my shift. It's like a reminder. Even though I've got the reminder on my handover sheet, I also do that because I know when I go around I've still got medications to administer because the page is still up.

The patient allocation system described in Chapter 1 and responsibility for team workload allocation in relation to Theme 2 of this chapter was described as 'ridiculous' and 'unfair'. The observation shift with N11 was discussed in Chapter 5 as a shift where the care of patients was shared with another nurse and the workload allocation was in excess of 3.40 hours for that shift. N10 explained 'the system does not reflect the extra load on the RN' and the 'load is the same as for the EN but with added responsibility for administering IVs in the EN's room and also for the outcome of care decisions made by the EN'.

Even though the experience of working with others 'sort of makes you have to think and do things for two people sometimes…it sort of does make you stressed sometimes', N16 voluntarily increased surveillance of the patients when teamed with an EN. N16 explained that 'Well, I always, when you're partnered with an EN…You've got a responsibility for them as well. So I always keep an eye on if they've [the EN] given their medications all correctly or if something's withheld why is the reason behind it. I've always gotta be in charge of them as well'. N16 was referring to the accountability of the RN in the delegation of tasks to an EN. N16 felt an increased responsibility and workload saying that 'when you're in a partnership they're all your patients… the RN is supervising them [ENs] and…you have to keep that extra eye out'.

N8 explained that time pressures in the smaller specialty units where staff-to-patient ratios are lower was less of an issue:

I think the thing I like about ICU with giving drugs you can take the time and have the time to understand what you're giving and why you're giving it and the reasons what maybe what you expect to see as the outcome. Whereas on the floor [ward area] you just

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> pop, pop, pop, pop next. Pop, pop, pop, pop next, and then at the
> end of the shift you get to look at the chart.

In addressing this problem N8 recommended lead time at the beginning of each shift for the nurse to orientate to the patients ''cos you don't get all their information in hand over and I just reckon that long term it would be better if nurses at the beginning of their shift had the opportunity to know what's going on about their patients'. In providing this time to review and evaluate the upcoming situation, N8 suggests that if 'you knew what was going on with your patients I think a lot of nurses would probably feel more comfortable with the drugs' once again indicating that 'the bigger picture' review of the patient is necessary for safely and effectively administering medications.

In Theme 2, the 'chasing doctors' behaviour was explained as being related to right-medication and right-time practices. 'Chasing' also had an impact on the participant's available time for medication administration, and relates to Theme 2 about teamwork because, as N13 suggests, 'communication is a big thing'. N13 was observed using the nursing team leader as a communication conduit with doctors as well as a communication board to list tasks for them.

To avoid confusion, N13 has established a process of firstly 'you've just got to be mindful of looking at your chart regularly at the bedside because you know the communication is a big thing' and 'let the doctors know when we first start on the daily board that if they need anything altering and if they can't find a nurse come to me'. N13 explains that:

> Communication can get a bit distorted when not gone through the
> channels when doctors don't know the difference between an EN
> and an RN and communicating changes to prescriptions is like
> chasing them and it becomes a bit of a free for all… They chase us.
> The doctors are chasing nurses, nurses are chasing doctors.

Ultimately, regardless of the 'busy' workload, the participants prioritised medication administration over a number of other tasks. The number of medications, their complexity and availability added to the workload and led to the sense of 'busyness'.

6.7 Summary of interview data

By and large, the interviews facilitated conversations that further explored the themes from Chapter 5 and focused on affirmative participant actions and aspirations for future practice. Collected as interpretive descriptions, the participants provided reflections on their practice and discussed the rationales for their observed actions.

Throughout the interviews, the desire for safe and effective medication administration was consistent across all of the participants' narratives and reflected the participants' awareness of their responsibility and accountability for patient care and well-being. All participants described their practice as directed towards the goal of making sure the patient received the medications they needed. Woven throughout the stories were some of the difficulties the participants experienced in fulfilling their aims and objectives. They talked about the positive strategies such as teamwork that they implemented to meet their challenges. The teamwork included communication and negotiation skills that were used to advocate for and facilitate effective administration of medications to patients. Furthermore, featuring in the participant stories were the creative actions taken to organise themselves and others.

The participants discussed their need for and use of physical resources. Finally, they described the complexities of delivering medications to patients in acute care hospital settings where workloads are high, environments are not always fit for purpose, they are extremely busy and time is precious. The nurses in this study showed themselves to be knowledgeable, skilled and focused on safely administering medications to all patients in all contexts. It was clear that the process of medication administration is complex and not the simple and routine practice suggested by the rights framework.

The model in Figure 6.1 incorporates the themes described in this chapter, epitomising the medication administration practice as it is experienced and described by the participants of this study.
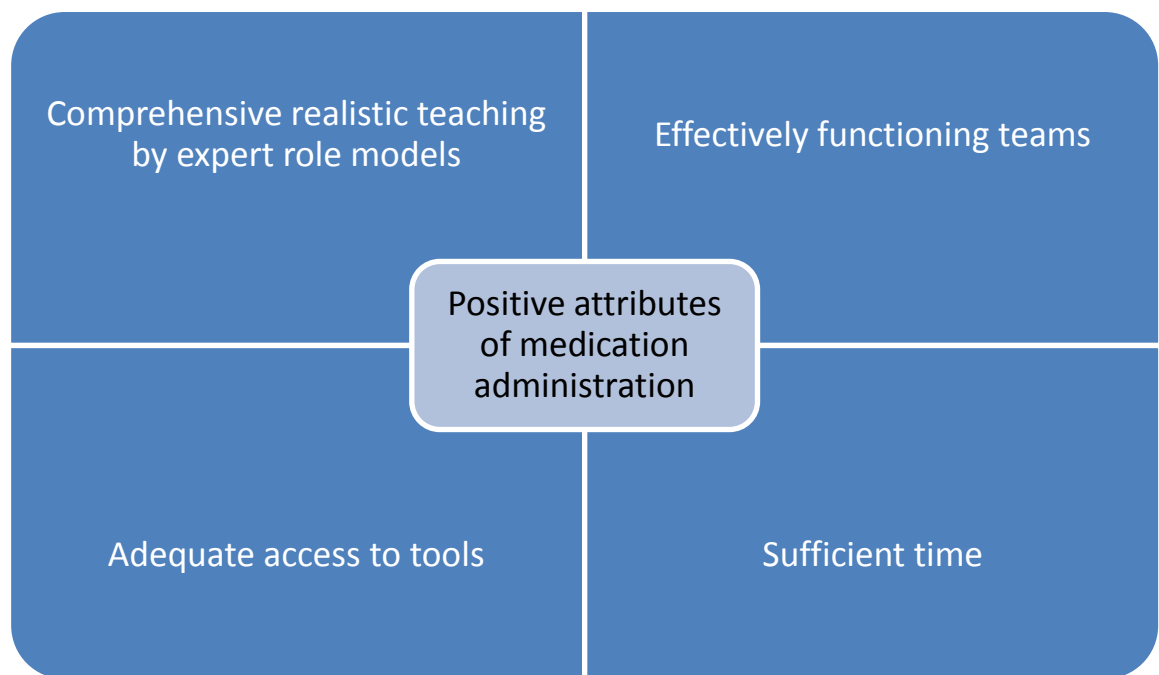
Figure 6.1: The positive attributes of medication administration

Source: Developed by J. Martyn, 2015

6.8 Chapter summary

In conclusion, the findings from the participant interviews demonstrated that medication administration is a central activity in the nursing care of patients. The participants spent significant amounts of time and energy on this task. The participants created strategies to facilitate safe and effective medication administration. This chapter discussed the findings within four broad themes that emerged from participants' discussions of their experiences and behaviours related to: teaching, teamwork, tools and time. The significance of the findings from both this chapter and Chapter 5 will be discussed in the next chapter.