*CJNR 2012, Vol. 44 N° 3, 128–149*

*Résumé*

# Gestion des médicaments par les infirmières et infirmiers œuvrant dans les centres de soins de longue durée

**Wendy Ellis, Sharon Kaasalainen, Pamela Baxter, Jenny Ploeg**

Dans les centres de soins de longue durée (SLD), la complexité de l'état de santé des résidents et de leurs besoins en matière de traitement représente pour les infirmières et les infirmiers un défi de taille en ce qui a trait à la gestion des médicaments. L'objectif de la présente étude descriptive et qualitative était d'examiner la tâche de gestion des médicaments à partir de descriptions données par des infirmières et infirmiers autorisés travaillant dans des centres de SLD. Un total de 22 infirmières et infirmiers autorisés provenant de deux centres de SLD situés dans la province canadienne de l'Ontario ont participé à quatre groupes de discussion. Après une analyse de leur contenu thématique, les données recueillies lors des séances de discussion ont été classées par thèmes et un modèle théorique a été élaboré. Le thème dominant qui est ressorti des données est que les infirmières et infirmiers doivent se livrer à une « course contre la montre » dans la gestion des médicaments, et les trois sous-thèmes qui ont pu être cernés concernent les étapes de cette importante tâche dans la prestation des soins : *la préparation à la course, la course elle-même et la fin de la course.* Les obstacles à une gestion sécuritaire des médicaments comprennent les contraintes de temps, le manque de connaissances, les interruptions et distractions, ainsi que la mauvaise communication. Les conclusions de l'étude pourront servir à mieux informer les fournisseurs de soins de santé et à orienter la recherche future. Ils sont également susceptibles d'avoir un effet direct sur les résultats liés à la gestion sécuritaire des médicaments dans la prestation des SLD.

Mots clés : prestation de soins, gestion des médicaments, soins de longue durée

*CJNR 2012, Vol. 44 N° 3, 128–149*

# Medication Management for Nurses Working in Long-Term Care

**Wendy Ellis, Sharon Kaasalainen, Pamela Baxter, Jenny Ploeg**

In long-term care (LTC), the complexity of residents' conditions and their treatment requirements present challenges for nurses managing medications. The purpose of this qualitative descriptive study was to explore medication management as described by licensed nurses working in LTC. A total of 22 licensed nurses from 2 LTC facilities located in the Canadian province of Ontario participated in 4 focus groups. Thematic content analysis was used to organize data into themes and a conceptual model was developed. The overarching theme was that nurses are "racing against time" to manage medications and 3 subthemes described how they coped with this important care process: preparing to race, running the race, and finishing the race. Barriers to safe medication management included time restraints, knowledge limitations, interruptions and distractions, and poor communication. The findings can be used to better inform health-care providers and to guide future research. They also have the potential to directly impact outcomes related to safe medication management in LTC.

Keywords: advanced nursing practice and education, care delivery, collaborative practice education, delivery systems, geriatric

The long-term-care (LTC) setting is unique and complex, requiring safe, ethical medication management. LTC residents are prescribed more medications than individuals in any other setting to treat multiple co-morbid conditions, and are at risk of adverse events, including death, associated with poor management of medications. Nurse staffing and workload issues increase the potential for unsafe medication-management practices, resulting in poor outcomes for residents. There has been little research examining the experiences of nurses in managing medications in LTC settings. This qualitative descriptive study explored how nurses describe their experience of medication management in LTC settings.

## Medication Management in LTC

The complexity of the conditions and treatment requirements of LTC residents presents a challenge for nurses managing medications (Bergman-Evans, 2004; Eisenhauer, Hurley, & Dolan, 2007). With the increasing number and acuity of older adults living in LTC, coupled with nurses' workload and care demands, LTC residents are at risk for serious

problems related to safety, and even death (Goodyer, 2002; Gurwitz, Field, & Avron, 2000).

The extensive use of medications in LTC settings is evident. In Canadian LTC facilities, 75% of current residents have severe age-related debilitating conditions (Statistics Canada, 2009) and more medications are prescribed to treat complex co-morbid conditions than in any other health-care setting (Guay, Artz, Hanlon, & Schmader, 2003). Treating multiple co-morbidities results in polypharmacy (Goodyer, 2002; Rancourt et al., 2004). Doshi, Shaffer, and Briesacher (2005) report that residents in American LTC facilities received an average of 8.8 routine prescribed medications per day (7.6 regular and 1.2 *pro re nata* [p.r.n.], or as needed) and 32% of residents received 9 or more medications per day.

Medication management involves the administration, monitoring, evaluation, and documentation of medications (Aitken, Manias, & Dunning, 2000; Galbraith, Bullock, & Manias, 2000). An adverse event is defined as injury resulting from the use of a drug (Gurwitz et al., 2000). This includes medication errors (i.e., errors in prescribing, dispensing, administering, or monitoring) and adverse reactions in which an error was present. Given the number of medications that residents consume daily, there is a high risk of adverse drug events, including death, related to medication error (Baker et al., 2004; Forster, 2006; Gurwitz et al., 2005; Lau, Kasper, Potter, & Lyles, 2005). Of all medication errors, 19% involve an incorrectly timed dose (43% of the time), an omitted drug (30% of the time), or the wrong dose (17% of the time) (Perri et al., 2005). As the number of medications ordered per resident rises, so too does the risk of a resident receiving an inappropriate medication (Perri et al., 2005).

Nurses, as part of their practice, must ensure that medications are managed in a safe, competent, ethical, and therapeutic manner (College of Nurses of Ontario [CNO], 2008). Thomson et al. (2009) estimate that approximately one third of a nurse's scheduled time per shift in LTC is used to administer medications. However, how nurses manage medications in LTC remains unclear. Although the literature is mostly focused on the acute-care setting, it indicates that both nursing practice and structure-system issues are barriers to safe medication management (Baker, Jeffs, Law, & Norton, 2007; Dilles, Elesviers, Rompaey, Bortel, & Vander Stickele, 2011; Forster, 2006).

Causes of medication errors by nurses include lack of attentiveness, poor judgement, and misreading of physicians' orders (Benner et al., 2002). A survey of 61 acute-care nurses was conducted to explore medication error and patient safety (Ulamino, O'Leary-Kelly, & Conelly, 2007). Many respondents (45.8%) perceived that nurse error was a primary issue (not checking dose and bypassing safety checks), while

other perceived factors contributing to error included nurse fatigue (33.3%), illegible physician writing (28%), and distraction (25%).

Lack of pharmaceutical knowledge also appears to be a persistent problem among nurses (Cheek, Gilbert, Ballantyne, & Penhall, 2004; Dilles et al., 2011; Leape, Bates, & Cullen, 1995; Schmidt & Svarstad, 2002; Winn & Dentino, 2004). Results of one study indicate that 29% of medication errors by nurses are due to lack of pharmaceutical knowledge (Leape et al., 1995). The increased complexity of LTC residents requires nurses to know and understand complex pharmaceutical trends and treatment regimens. LTC nurses report that they lack adequate information regarding medications and their side effects (Dilles et al., 2011). Evidence suggests that LTC nurses who continually update their knowledge base make fewer medication errors (Leape et al., 1995).

It is estimated that almost 50% of LTC residents have some form of cognitive impairment or dementia (Canadian Study of Health and Aging Working Group, 2000). Almost 25% of LTC residents exhibit difficulties with swallowing, which include frequently spitting out medications, consistently chewing medications, or hiding tablets/capsules (Wright, 2002). In a survey of 540 LTC nurses, 56.5% said they concealed medication in food without residents' knowledge, 26% omitted the dose, and over 60% crushed medications before administration. In this study, over 58% of nurses stated that it was a challenge to obtain an alternative route for administration and perceived that cost was a factor (Wright, 2002). Another administration strategy when low doses of medications are not available is pill-splitting (Fischbach & Gold, 2001). Pill-splitting involves nurses splitting medications apart prior to administration to decrease the dosage (thought to minimize the adverse reactions of inadequate dosing specific to older adults). Crushing, opening, or splitting pills is considered unlicensed administration and nurses are liable for such actions. All of these strategies are controversial, with ethical and legal implications, and are considered medication errors that can lead to adverse events (Fischbach & Gold, 2001).

Mayo and Duncan (2004) discuss the potential for not reporting an adverse event if no harm has been caused to the patient. They suggest that the rates of adverse events due to medication mismanagement may in fact be higher than reported. Nurses in their study believed that negative pressure from staff and managers was a barrier to reporting such events. Similarly, Scott-Cawiezell and Vogelsmeier (2006) conclude that the "culture" of LTC homes is not conducive to nurses reporting errors because of the "blaming" that occurs in these settings. They note that patient safety will continue to be compromised as long as nurses feel they cannot report errors.

Bowers, Lauring, and Jacobson (2001) interviewed and observed 18 nurses who worked at two LTC facilities in the Midwestern United States. They report that nurses' workload, nurses' attitude towards work, and patient outcomes were impacted by "time." The authors suggest that time constraints limit nurses' ability to provide adequate information and to implement current evidence-based practices. Due to time constraints and constant interruptions, the nurses in their study had to develop strategies to minimize the time required to complete tasks, which affected the quality of care provided, including the way in which they managed medications. A greater focus on improving the individual and systems issues linked to unsafe medication practices is needed (Baket et al., 2007; Biron, Loiselle, & Lavoie-Tremblay, 2009; Dilles et al., 2011; Forster, 2006; MacDonald, 2010; Thomson et al., 2009), starting with a thorough understanding of how nurses are managing medications in the LTC setting. There has been little qualitative research conducted in Canada addressing this important care process.

## Purpose

The purpose of this qualitative descriptive study was to explore medication management from the perspective of registered nurses (RNs) and registered practical nurses (RPNs) working in LTC facilities. The study also explored the factors that influence nurses' experiences when they manage medications for LTC residents. The study was guided by two research questions: *How do nurses (RNs and RPNs) describe their experience of medication management for LTC residents? What barriers and facilitators influence how nurses manage medications when caring for LTC residents?*

## Methods

A qualitative descriptive approach was used to describe nurses' experiences with medication management when working with LTC residents (Creswell, 2007; Patton, 2002; Sandelowski, 2000). This approach captures the richness and diversity of the human experience (nurses) and facilitates understanding of a behaviour (medication management) based on the participants' (nurses') own interpretation (Sandelowski, 2000).

### *Settings and Sample*

Two LTC facilities located in southwestern Ontario, Canada, took part in the study. Both facilities were not-for profit and together they housed over 600 residents. The two facilities had similar medication-management practices, which included a blister-pack system for the distribution and administration of medications by both RNs and RPNs. Typical medication administration times were 8 a.m., noon, 5 p.m., and 8 p.m. Ethics

approval was obtained from a university-based Research Ethics Board and the two LTC facilities.

Purposive criterion sampling techniques were used to identify RNs and RPNs who would be able to provide rich information (Fain, 2004; Patton, 2002). The criteria for inclusion were as follows: (a) speak and read English well enough to participate in the study and to provide informed consent, (b) licensed nurse in good standing with the College of Nurses in Ontario, and (c) work in LTC and be involved in managing medications. At each facility, nurses were notified by administrative staff about the study and were given the principal investigator's contact information and details about the focus groups. Confidential informed consent was obtained (Tri-council Policy Statement: Ethical Conduct for Research Involving Humans, 1998) from nurses who volunteered to participate.

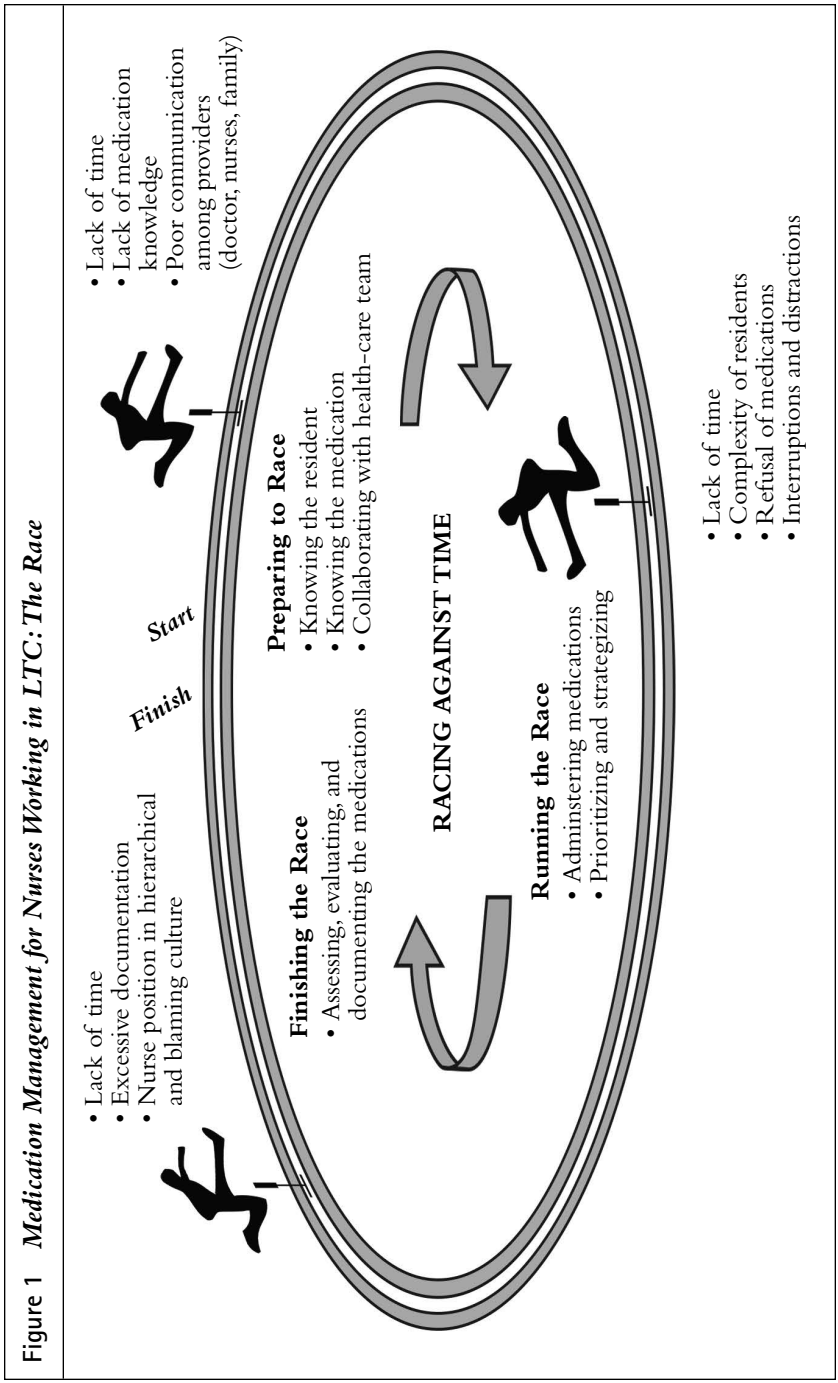
### *Data Collection*

Four focus groups were conducted — one for RNs and one for RPNs at each of the two LTC facilities — using a semi-structured interview guide (available from the first author upon request). Separate focus groups for RNs and RPNs were conducted in order to obtain a full description of their unique experiences (Brown, 1999). The 1-hour sessions took place in a quiet, private meeting room at each facility at a time that coincided with scheduled shifts, to prevent travel and time burden on the participants. Each group comprised from four to seven participants, consistent with recommendations in the literature (Greenbaum, 1993; Krueger, 2000; Sandelowski, 1995). A trained facilitator took notes during the audiorecorded sessions.

### *Data Management and Analysis*

All audiorecordings were transcribed verbatim and names and identifying markers were erased manually by the principal investigator. The transcripts were reviewed by the principal investigator for accuracy and data were organized using NVivo software. Each participant's non-verbal language (facial expressions, posture), mood, and tone of voice were noted and included in memos that were used during data analysis (Krueger, 2000). These observations helped the reviewers to understand the context in which statements were made as the transcripts were reviewed and analyzed (Duggleby, 2005). The use of thematic content analysis (Patton, 2002; Sandelowski, 2000) required that the transcripts be coded in order to identify themes and organize the data under these. Codes were generated and defined based on the research questions and systematically used to develop a coding scheme. The data were reviewed and collapsed or grouped in order to identify themes. Next, connections were made

Figure 1 *Medication Management for Nurses Working in LTC: The Race*



between codes to allow for robust description of the medication-management process by identifying subthemes as they emerged from the data. Once the themes and subthemes were identified, a model was developed to illustrate the findings. The four members of the research team met regularly to analyze and validate the data and to discuss findings. A final conceptual model was developed (Figure 1).

The research team took a number of measures to ensure rigour (Guba & Lincoln, 1989). The credibility of data was addressed through member checking with participants during an informal meeting at their facility to review and discuss the preliminary findings (i.e., themes and categories). Twelve participants from the two sites provided feedback, which was used to make revisions. Peer debriefing within the research team was used to ensure credibility of the findings and trustworthiness of the process by acknowledging possible biases, assumptions, and past experience. By obtaining multiple viewpoints through the inclusion of RNs and RPNs at two LTC facilities, the researchers improved the transferability of the findings. An audit trail of the processes used and decisions made in data collection and analysis ensured dependability of the data.

Table 1 ***Participant Demographics***

| Variable | Registered Nurses Female ($n$ = 10) | Registered Practical Nurses Female ($n$ = 12) |
|---|---|---|
| Mean age (years) | 42.5 ± 2.5 | 39 ± 2.3 |
| Work experience (years) | 8.6 ± 2.1 | 6.9 ± 1.4 |
| Employment position | 8 full-time, 2 part-time | 10 full-time, 2 part-time |
| Education | 3-year diploma program | 2-year certificate program[a] |

[a] 2 RPNS did not report their education level.

## Findings

Twenty-two nurses (10 RNs and 12 RPNs) participated in four focus groups. Demographic data are provided in Table 1.

Both RNs and RPNs described the process of medication management in LTC as "racing against time," noting that they wanted to finish the race in a safe and timely manner despite facing many barriers, over and above those encountered in their other care duties:

> *[Medication management is] a race . . . you're just running back and forth doing pills . . . up and down and up and down in the elevator. . . . You're trying to stay on top of everything with the patients . . . it's just expected you do it.* (RN)

> *. . . race against the clock . . . all day long, all day long. So you have to go like hell to make sure you get those pills out before it [the day] ends . . . perform magic.* (RPN)

Within this race to manage medications, nurses reported three distinct phases: *preparing to race, running the race,* and *finishing the race* (see Figure 1). These phases were sequential but could also be simultaneous and recurrent, depending on the individual nurse, the needs of the resident, or barriers that impeded the medication-management process. Within each of the phases, a number of barriers influenced optimal medication management. Each of the three phases and the associated facilitators and barriers are described below.

### *Preparing to Race*

Preparing to race refers to the way nurses collected information about the residents and medications prior to administration. This included knowing the resident, knowing the medications, and collaborating with other members of the health-care team.

***Knowing the resident.*** During this first phase of the medication-management process, nurses reviewed the residents' charts and systematically gathered information about their conditions, co-morbidities, and current health status. Nurses explained that by reviewing each individual chart and talking with the residents and their families, they got to know the residents better. Making decisions about the plan of care was facilitated by knowing the resident. One RN said, "Because the triage nurse knows all the residents really well, she might second check [the medications]."

***Knowing the medications.*** Nurses stated they were responsible for knowing the medications in order to prepare for their safe administration. Knowing the medications included obtaining medication orders for residents and understanding the use and side effects of each drug. Knowing the medications was facilitated when nurses knew, recognized, and could distinguish between the name, brand, colour, and appearance of each medication:

> *You have to be able to recognize [drug name]: Oh, that's the little pink pill, okay, yeah, but does it say right on it? Because I have another little pink pill in here — you have to know your meds really well, what they look like.* (RN)

Nurses noted that sometimes their knowledge was lacking in this area.

***Collaborating with other members of the health-care team.*** Nurses stated that collaboration, including effective communication, within the health-care team was a vital component of the *preparing to race* phase. Collaboration was required to adequately collect information about the residents' medications and health status. Effective communication among all members was seen as essential in order to maintain safety standards when there were issues with prescribed medications and also facilitated collaboration within the team. Nurses explained that expertise within the health-care team was diverse and that when resource persons at the facility were not available they would attempt to collaborate with health-care providers located off-site, in order to gather necessary information so that safety standards were met:

> *I'll talk to other nurses in my office, but I find most of us are secluded. It's nothing to go and talk to three other nurses and try to get their opinions on medications. But I find even with management they're not always readily available. That's why I call the pharmacy [consultant] more often and deal with the doctors more often than anyone else.* (RN)

Nurses collaborated with pharmacy staff to clarify issues around the ordering of medications or to confirm the appropriateness of a medication based on the resident's conditions. Nurses acknowledged that in this phase it was helpful to use communication books and leave interdisciplinary notes outlining issues or concerns. This sharing of vital information helped the nurses to be better prepared:

> *Sometimes the pharmacies, if they do note that a resident has an allergy to a certain medication and they may have the same allergy to a different medication, they'll send us a note saying that they may have this or that side effect and we can monitor for that.* (RN)

### *Running the Race*

The second phase of the medication-management process was *running the race,* and it included administering medications to residents while prioritizing and strategizing. After relevant information was collected (first phase), the nurse interpreted the information and determined what needed to be done.

***Administering medications while prioritizing and strategizing.*** In this phase, nurses considered a number of factors when prioritizing care demands and administering the medications. Nurses strived to complete this phase as quickly as possible in order to fulfil their other care demands:

> *[In medication management] you really have to time-manage and prioritize . . . But most importantly, you have to get it done, especially when it comes to meds and treatments. You can't leave the person on the floor and not give out your meds and get to them later. You have to be quick . . . otherwise you're there all morning and it's time for the lunchtime meds.* (RN)

Nurses stated that the number of medications and the number of residents played a role in the medication-management process. One nurse estimated that the 40 to 50 residents received an average of 7 to 10 medications per day and said that one nurse was assigned to administer these. If a resident could take only one pill at a time, it affected the amount of time spent with that resident. The nurses reported that being "flexible" and "quick" was important in the successful completion of this phase.

Nurses employed various creative techniques to quickly and efficiently administer medications. These included diverting the resident's attention, re-approaching, crushing and hiding medications in food, pre-pouring medication, and lying in order to ensure that the residents received their medications on time. Because they were under time constraints, being creative was the only way they could complete this phase:

> *It's quite a challenge . . . you get very manipulative and lie, [or you] hide it, and if they're adamant about not taking it, then you'll leave it. I'm not going to force them. We crush it, put it in applesauce and get them to take it, because they need it.* (RN)

Although there was acknowledgement that some of the strategies ran against policy, the majority of participants said that the priority was to administer the medications. There were few alternatives, given the time pressures and the workload:

> *What's important is that they get the medication.* (RPN)

> *For example, potassium — you can't crush it, but the liquid has a distinct taste and if you do have someone who has behaviours and thinks you're poisoning them, you have to find various ways to hide it, like in chocolate, or put it in juice.* (RN)

In one focus group there were conflicting views among the nurses regarding the pre-pouring of medications. The discussion became confrontational:

> RN 1: *A lot of people pre-pour here. It cuts back on the time.* (concerned tone)

RN 2: *It's not accurate if you've got your hands on the wrong container. We're not supposed to do it!* (raised voice)
RN 3: *I know, but a lot do!* (sharp tone)
RN 4: *I know — I'm guilty of it the majority of the time too.*

However, strategies were rationalized and justified by nurses who stated that they had little choice with residents who spat out their pills, were cognitively impaired, and/or had difficulties swallowing. They felt that, because of their heavy workload, they had no time to re-approach and coax residents.

### *Finishing the Race*

Finishing the race was the final phase of the process. Once the nurse had completed the administration of medications, there was a shift towards assessment and evaluation and then documentation.

***Assessing and evaluating.*** Responsibility for adequately and safely evaluating the effectiveness of the medications being administered was delegated to nurses. Depending on the facility, it was the responsibility of either RNs or RPNs to evaluate and then advocate for the resident by reporting to the physician on the need for or the effectiveness of a medication. The nurses felt a sense of responsibility concerning the reliability of their recommendations and their assessment of possible adverse events:

> *You're the one that suggested it [medication], so you feel like . . . it's not that easy trying things. A lot of people are having side effects, so you have to watch*. (RPN)

Nurses stated that it was imperative they try and decrease the amount of unnecessary medication to prevent adverse events, complications, and interference with medically necessary medications.

***Documenting.*** Documenting and recording the medications administered and the needs of the residents were useful in the transmission of information to various team members. When team members recorded their assessments, the nurses could better evaluate the effectiveness of the medication for each resident:

> *You have to write on the back of the MAR [Medication Administration Record] . . . in lines, the date, the time, why you gave it, was it effective, and if they're writing it four to five times daily you might as well get it ordered as a regular order so you don't have to do as much writing.* (RN)

Documenting was seen by nurses as an essential part of the process and not a task to be skipped. If documentation was missing, there were consequences, such as medication errors.

***Barriers to Medication Management***

Participants identified lack of time as the most common barrier in medication management. This barrier traversed all phases of the medication-management process. Other barriers described were as follows: lack of knowledge about medication, increased complexity of residents, resident refusal of medications, interruptions and distractions, excessive documentation, poor communication within the health-care team, and the position of nurses in a hierarchical and blaming climate (see Figure 1).

Lack of time clearly affected the way in which nurses moved through all phases of the medication-management process. Nurses expressed the view that more of a focus on "time, resources, and authority" would greatly impact how time is used in LTC:

> *The length of time it takes in doing medications. It takes a very long time . . . time crushing — the cost to the health-care system . . .* (RPN)

> *Well, you've got 5 minutes to do your pills, and then you've got to sign all those forms to make sure everyone else has [done] their job. But that's the management style here: "If people aren't doing their jobs, we'll just make it the nurses' responsibility."* (RN)

Time pressures and an excessive workload prevented nurses from properly assessing and evaluating the effectiveness of medications. Nurses explained that because of time issues, this phase of medication management was often missed. They commented that if they did not administer a medication on time, then a medication-error report was completed.

Nurses explained that they lacked knowledge about the medications the residents were taking and relied on colour and shape to identify drugs. This knowledge gap was seen as an obstacle in the *preparing to race* phase. Interestingly, seeking advice about medications from managers was seen as a barrier, management being focused more on reprimanding nurses for their errors than on creating a supportive work environment. Nurses did not consider managers to be resources — "the majority of them in management don't have the experience to answer your question" — which served to widen the knowledge gap.

According to some nurses, communication among nurses, physicians, and pharmacists was less than effective. When nurses tried to communicate information about residents to other members of the health-care team, particularly physicians, they met with resistance:

> *Whether they agree or they don't agree, many of the doctors won't listen to you, so you may have a resident who refuses pills every day for years.* (RPN)

The complexity of residents' conditions increased the amount of time required to administer the large number of drugs and was an additional barrier in medication management. Swallowing difficulties, cognitive impairment (especially dementia), and complex medical conditions played a role in how medications were administered. Medication refusal was a major barrier for the nurses during this phase. The frustration was evident in nurses' tone when this issue came up in the focus groups:

> *You have to look at what point do we say they have the right to refuse and we don't give it, and at what point do you say they need their medicine, no matter what we have to do to get it into them. Let's take, for example, insulin. She'll practically kill you if she could and you don't want to give her any insulin. You have to just do your best to calm her down, get somebody else to talk to her. It's very challenging. When you have a person sitting with them to make sure they have all their pills, it's very challenging. Some of them will get smart and be able to lose the pill, without you even noticing that it's not in their mouth, and hide it.* (RN)

Nurses reported that interruptions were an impediment to administering medications. They explained that the reality in LTC is that there are many interruptions and distractions, which affect not only *how* medications are administered, but how *safely*:

> *It can be quite lengthy, depending on the floor you're on. It can take as long as 3 hours in the morning. Plus the phone rings and you have family coming up to you. You need a big sign that says, "Leave me alone" on the cart. Especially when they teach you in school that you shouldn't be interrupted — you should really pay attention to administering.* (RN)

Nurses agreed that during the *finishing the race* phase a major barrier was the excessive amount of documentation required, both on paper and electronic, which hindered effective assessment and evaluation. The participants stated that it was difficult to produce the amount of documentation expected in the LTC setting because of time constraints:

> *Paperwork. You've got to give the medication, sign for it on the MAR space for the RN. You've got to flip over the back and sign for that, put a little paperclip on top, go back and write in the effects later. Then chart that you've given them p.r.n. [and] whether it was effective, put it on the Kardex so the next shift knows. You have to do all that for one Tylenol because somebody's got a headache.* (RN)

Another barrier involved concerns about the perceived hierarchical culture and lack of autonomy. Interestingly, nurses felt that they had little authority or control over the current expanded role expectations. For example, RPNs felt that they were less valued than RNs in this setting:

*They [RNs] put us on the floor to do a job, then they're trying to dictate how to do our job . . . The problem for RPNs is really that we're sandwiched. We're expected to pick up the slack from the RNs.* (RPN)

Nurses also perceived a culture of blame and viewed it as a predominant factor in how medications are managed in LTC. Specifically, nurses believed that they were not living up to professional expectations, in that they had little time to make informed decisions and to engage in critical thinking. Much of this belief was rooted in what they considered "poor" RN medication-management practices, especially poor assessments directly attributable to time constraints, fear of being reprimanded for not completing assessments in a timely fashion, and a general lack of knowledge about medication specifics:

*And all those things add up to what it is today, but it's not just one specific thing overall. Because we all get the blame for it.* (RN)

Nurses expressed the deep conviction that although they knew the importance of a thorough assessment on a theoretical level, they were prevented from doing their job properly by systemic issues beyond their control — mostly involving time constraints and workload. They made it clear that they would simply "do the job" and conform. Nurses indicated both emotional "frustration" with the entrenched systems that discouraged them from challenging convention and an awareness of structural systems that limited their ability to manage medications — no matter how much they wished to do so.

### *Facilitators of Medication Management*

According to the nurses, key facilitators of the medication-management process were knowing the resident, medication knowledge, effective communication and collaboration within the health-care team, sufficient staffing, and support from management in the LTC environment.

## Discussion

The participants described managing medications in LTC as "racing against time." Time was a prominent contextual factor in medication management. Nurses voiced considerable concern about time constraints, particularly when they described trying to safely and accurately manage medications. A lack of time — real and perceived — limited the amount of detailed information that could be collected about residents' medication and medical history. Time impacted how medications were delivered to patients, since the amount of time involved in medication administration influenced the behaviour of nurses to a significant degree. Time constraints resulted in nurses having to strategize and prioritize in order

to find alternative ways of ensuring that residents took their medications. At times the nurses even engaged in unsafe practices in order to respect the schedule. Time constraints had a measurable impact on the ability of nurses to effectively and consistently monitor, assess, evaluate, and document the administration of medications and their effects over both the short and long terms.

As described by Thomson et al. (2009), a considerable amount of time is required to administer medications in the LTC setting. Lack of time is documented in the literature as an issue for nurses as they perform various tasks, including medication management (Bowers et al., 2001; Crespin et al., 2010; Vogelsmeier, Scott-Cawiezell, & Zellmer, 2007). Time is reported to be the key concern associated with managing medications, with nurses finding it "impossible" to keep to the schedule for medication administration in the LTC setting due to the ever-increasing number of residents assigned to each nurse. In addition, nurses are reported as believing that, because of time constraints, medication-management practices are compromised.

As described by participants in this study, it is important for nurses to know each resident in order to manage medications properly — a conclusion that is supported by the literature on medication management (Cheek et al., 2004). The participants made it clear that "knowing the resident" involves the nurse gathering information from the chart and from other members of the health-care team to obtain a complete clinical picture of the resident. When residents are unable to communicate, interactions with family members are viewed as essential so that the nurse will become acquainted with the patient. Knowing the resident well is vital to the safe management of medications (Cheek et al., 2004), and in the present study *preparing to race* was the first phase of the medication-management process.

The participants also highlighted the importance of "knowing the medications," to avoid the risk of medication error, and voiced particular concern over their lack of knowledge about medications. Leape et al. (1995) report that over 29% of all medication errors by nurses are due to lack of knowledge concerning medications.

Effective communication and collaboration within the health-care team was found to facilitate the medication-management process. This finding is consistent with the results reported in the literature (Binch et al., 2005; Dilles et al., 2011; Thomson et al., 2009). Specifically, nurses commented that poor communication within the health-care team hindered the effective use of medications, a finding that is supported by previous research (Binch et al., 2005; Cheek et al., 2004; Eisenhauer et al., 2007). An interdisciplinary approach has been recommended as best practice (Bergman-Evans, 2004).

The *running the race* phase of medication administration was the most difficult to complete due to time demands, interruptions and distractions, the number of residents and the complexity of their conditions, and polypharmacy in LTC. Safe practices dictate that nurses follow the rights of medication administration outlined in current standards (CNO, 2008). However, these practices are complicated by the high number and frequency of medications administered per day and do little to promote collaboration among members of the health-care team (MacDonald, 2010). According to Bergman-Evans (2004), to overcome barriers to the effective management of medications, nurses endlessly strategize and prioritize in order to deliver quality care within current limitations. This also was an important finding of the present study.

The participants conveyed a sense that *finishing the race* was regularly neglected because of time constraints. Nurses described how excessive documentation, both written and electronic, required them to focus on this aspect of the process instead of spending time with individual residents. Nurses felt that barriers connected to workload issues and time constraints had a direct impact on the evaluation and assessment of medication effectiveness because complete and thorough safety checks were not always possible (Bowers et al., 2001; Dilles et al., 2011). Moreover, nurses believed that if they did not document effectively, they would be reprimanded for medication errors and poor performance.

### *Strengths and Limitations of the Study*

This study makes an important contribution to the small body of research available to guide our understanding of medication management for nurses working in LTC. Its strengths include the development of a new model illustrating the process of medication management, data collection from two LTC sites, and the use of both RNs and RPNs to gain a rich perspective of the barriers that nurses face while managing medications. Its limitations include the relatively small sample size and exclusion of the nurse practitioner (NP) perspective. It is within NPs' scope of practice to perform, as members of an interdisciplinary team, clinical tasks that are essential to the medication-management process (CNO, 2008).

### *Implications*

The findings of this study offer health-care providers, senior managers, nursing leaders, and frontline nurses, as well as educators, valuable information related not only to the process of medication management, but also to the challenges that nurses face and the specific nurse, resident, organization, and system factors that together produce these challenges. Medication-management procedures, both those in place and those that are needed, should be acknowledged and documented, in order to help

decrease the number of adverse events and medication errors and, most importantly, to improve the quality of care. Deploring the prevalence of adverse events and medication errors is simply not enough. Understanding the context in which they occur, especially how it diverges from the theoretical or the ideal, is vital to getting at the heart of why medication-management problems continue in the LTC setting. The importance of knowing residents and their medications, of interdisciplinary collaboration and communication, and of moving away from a culture of blame has major implications for nursing practice and the implementation of best practice. Minimizing distractions and interruptions through proper staffing and providing dedicated time for the management of medications are essential for resident safety.

This study generated a conceptual model of medication management that can be used as a tool for educating nurses and other health professionals. By illustrating the different phases that nurses move through in striving to successfully and safely manage medications, this model can direct learning, address systems issues, and shed further light on the process of medication management. Though the metaphor of a "race" is not complicated in and of itself, it is the very familiarity of the concept of racing — to those within the LTC setting as well as those outside — that makes it so useful in conveying the practical realities of day-to-day medication management.

Time barriers also had a clear effect on the delivery of medications. However, nursing education must, over the short and long terms, examine "time" within the context of an aging population, increasing polypharmacy (whether justified or not), and the increasing need for — and desire of — nurses to be more familiar with new and ever more widely prescribed medications (especially antipsychotics). This simple and yet novel model highlights the specific barriers that LTC nurses and residents face and could be used to facilitate educational reform in LTC.

The implications of these results for future research are manifold. Additional research could help to develop the model presented in this study and could go a long way towards validating, or invalidating, its central assumptions. It would be particularly interesting to see if, and to what extent, knowledge gained through research on the medication-management process helps to direct educational strategies, assist with (and possibly reform) staffing and workforce planning, and ultimately improve the quality of care for residents.

The system issues that directly influence the medication-management process in LTC need to be addressed. For example, both human and financial resources must be increased in order to meet the needs of LTC residents with complex conditions; implement and sustain staffing models to improve the quality of the work environment, which impacts resident

outcomes; and improve the reporting of quality organizational indicators that promote accountability for the quality of care provided (Armstrong et al., 2009; Canadian Healthcare Association, 2009; Sharkey, 2008). The health and safety of LTC residents and those who work in this uniquely complex environment are a priority, and action is needed.

## References

Aitken, R., Manias, E., & Dunning, T. (2000). Documentation of medication management by graduate nurses in patient progress notes: A way forward for patient safety. *Collegian: Journal of the Royal College of Nursing Australia, 13*(4), 5–11.

Armstrong, P., Banerjee A., Szebehely, M., Armstrong, H., Daly, T., & Lafrance, S. (2009). *They deserve better: The long-term care experience in Canada and Scandinavia*. Ottawa: Canadian Centre for Policy Alternatives.

Baker, G. R., Jeffs, L., Law, M., & Norton, P. G. (2007). Improving the safety and quality of health care in Canada. In N. J. MacKinnon (Ed.), *Safe and effective: The eight essential elements of an optimal medication-use system* (pp. 1–18). Ottawa: Canadian Pharmacists Association.

Baker, G. R., Norton, R., Flintolf, V., Blais, R., Brown, A., Etchells, E., et al. (2004). The Canadian Adverse Events Study: The incidence of adverse events among hospital patients in Canada. *Canadian Medical Association Journal, 170*(11), 1678–1686.

Benner, P., Sheets, V., Uris, P., Malloch, K., Schwed, K., & Jamison, D. (2002). Individual, practice, and system causes of errors in nursing: A taxonomy. *Journal of Nursing Administration, 32,* 509–523.

Bergman-Evans, B. (2004). *Improving medication management for older adult clients.* Iowa City: Gerontological Nursing Interventions Research Center, University of Iowa.

Binch, J., Beaman, R., Clontz, S., Goodwin, P., Hartwig, H., Kolhatkar, R., et al. (2005). Incorporating medication regimen reviews into the interdisciplinary care planning process. *Geriatric Nursing, 26,* 89–93.

Biron, A. D., Loiselle, C. G., & Lavoie-Tremblay, M. (2009). Work interruptions and their contribution to medication administration errors: An evidence review. *Worldviews Evidence Based Nursing, 6*(2), 70–86.

Bowers, B. J., Lauring, C., & Jacobson, N. (2001). How nurses manage time and work in long term care. *Journal of Advanced Nursing, 33*(4), 484–491.

Brown, J. B. (1999). The use of focus groups in clinical research. In B. F. Crabtree & W. L. Miller (Eds.), *Doing qualitative research* (2nd ed.) (pp. 109–124). Thousand Oaks, CA: Sage.

Canadian Healthcare Association. (2009). *New directions for facility-based long term care.* Ottawa: Author.

Canadian Study of Health and Aging Working Group. (2000). The incidence of dementia in Canada. *Neurology, 55*(1), 66–73.

Cheek, J., Gilbert, A., Ballantyne, A., & Penhall, R. (2004). Factors influencing the implementation of quality use of medicines in residential aged care. *Drugs and Aging, 21*(12), 813–824.

College of Nurses of Ontario. (2008). *Practice standard: Medication, revised 2008*. Toronto: Author. Available online: http://www.cno.org/Global/docs/prac/41007_Medication.pdf.

Crespin, D. J., Modi, A. V., Wei, D., Williams, C. E., Greene, S. B., Pierson, S., et al. (2010). Repeat medication errors in nursing homes: Contributing factors and their association with patient harm. *American Journal of Geriatric Pharmacotherapy, 8,* 258–270.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five traditions*. London: Sage.

Dilles, T., Elesviers, M., Rompaey, B., Bortel, L., & Vander Stickele, R. (2011). Barriers for nurses to safe medication management in nursing homes. *Journal of Nursing Scholarship, 43*(2), 171–180.

Doshi, J., Shaffer, T., & Briesacher B. A. (2005). National estimates of medication use in nursing homes: Findings from the 1997 Medicare Current Beneficiary Survey and the 1996 Medical Expenditure Survey. *Journal of the American Geriatrics Society, 53,* 438–443.

Duggleby, W. (2005). What about focus group interaction data? *Qualitative Health Research, 15,* 832–840.

Eisenhauer, L., Hurley, A., & Dolan, N. (2007). Nurses' reported thinking during medication administration. *Journal of Nursing Scholarship, 39*(1), 82–87.

Fain, J. (2004). *Reading, understanding and applying nursing research*. Philadelphia: F. A. Davis.

Fischbach, M., & Gold, J. (2001). Pill splitting in long term care. *Canadian Medication Administration Journal, 164*(6), 97–105.

Forster, A. J. (2006). Can you prevent adverse drug events after hospital discharge? *Canadian Medical Association Journal, 174*(7), 921–922.

Galbraith, A., Bullock, S., & Manias, E. (2000). *Fundamentals of pharmacology* (3rd ed.). Melbourne: Addison-Wesley.

Goodyer, L. (2002). Compliance, concordance and polypharmacy in the elderly. In D. Armour & C. Cairns (Eds.), *Medicines and the elderly* (pp. 371–397). London: Pharmaceutical Press.

Greenbaum, T. L. (1993). *The handbook for focus group research*. New York: Macmillan.

Guay, D. R., Artz, M. B., Hanlon, T., & Schmader, K. (2003). The pharmacology of aging. In R. C. Tallis & H. M. Fillit (Eds.), *Geriatric medicine and gerontology* (pp. 155–162). London: Churchill Livingstone.

Guba, G., & Lincoln, Y. 1989. Judging the quality of fourth generation evaluation. In E. G. Guba & Y. Lincoln, *Fourth generation evaluation* (pp. 228–251). Newbury Park, CA: Sage.

Gurwitz, J. H., Field, T. S., & Avron, J. (2000). Incidence and preventability of adverse drug events in nursing homes. *American Journal of Medicine, 109,* 87–94.

Gurwitz, J. H., Field, T. S., Judge, J., Rochon, P., Harrold, L., & Cadoret, C. (2005). The incidence of adverse drug events in two large academic long-term care facilities. *American Journal of Medicine, 18,* 251–258.

Krueger, R. A. (2000). *Focus groups: A practical guide for applied research.* Thousand Oaks, CA: Sage.

Lau, D., Kasper, J. D., Potter, D., Lyles, A., & Bennett, R.G. (2005). Hospitalization and death associated with potentially inappropriate medication prescriptions among elderly nursing home residents. *Archives of Internal Medicine, 165,* 68–74.

Leape, L. L., Bates, D.W., & Cullen, D. J. (1995). Systems analysis of adverse drug events. *Journal of the American Medical Association, 274,* 35–43.

MacDonald, M. (2010). Examining the adequacy of the five rights of medication administration. *Clinical Nurse Specialist, 24*(4), 196–201.

Mayo, A. M., & Duncan, D. (2004). Nurse perceptions of medication errors: What we need to know for patient safety. *Journal of Nursing Care Quality, 19,* 209–217.

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.

Perri, M., Menon, A., Deshpande, A., Shinde, S., Jiang, R., & Cooper, B. (2005). Adverse events associated with inappropriate drug use in nursing homes. *Annals of Pharmacotherapy, 39,* 405–411.

Rancourt, C., Moisan, J., Baillargeon, L.,Verreault, R., Laurin, J., & Grégoire, J. P. (2004). Potentially inappropriate prescriptions for older patients in long-term care. *BMC Geriatrics, 4,* 9.

Sandelowski, M. (1995). Focus on qualitative methods: Sample sizes in qualitative research. *Research in Nursing and Health, 18,* 179–183.

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing and Health, 23,* 334–340.

Schmidt, I. K., & Svarstad, B. L. (2002). Nurse-physician communication and quality of drug use in Swedish nursing homes. *Social Science and Medicine, 54,* 1767–1777.

Scott-Cawiezell, J., & Vogelsmeier, A. (2006). Nursing home safety: A review of the literature. *Annual Review of Nursing Research, 24,* 179–212.

Sharkey, S. (2008). *People caring for people: Impacting the quality of life and care of residents of long-term care homes.* A report of the independent review of staff and care standards for long-term care homes in Ontario. Retrieved May 1, 2011, from http://hdl.handle.net/1873/12714.

Statistics Canada. (2009). *Table 051-001: Estimates of population by age group and sex for Canada, provinces and territories, annual.* Retrieved June 1, 2011, from http://www.statcan.ca/cgibin/imdb/p2SV.pl?Function=getSurvey&SDDS=3604&lang=en.

Thomson, M. S., Gruneir, A., Lee, M., Baril, J., Field, T. S., & Gurwitz, J. H. (2009). Nursing time devoted to medication administration in long-term care: Clinical, safety, and resource implications. *Journal of the American Geriatrics Society, 57*(2), 266–272.

Ulamino, V., O'Leary-Kelly, O., & Conelly, P. (2007). Nurses' perceptions of causes of medication error and barriers to reporting. *Nursing Care Quality, 22,* 28–33.

Vogelsmeier, A., Scott-Cawiezell, J., & Zellmer, D. (2007). Barriers to safe medication administration in the nursing home: Exploring staff perceptions and concerns about the medication use process. *Journal of Gerontological Nursing, 33*(4), 5–12.

Winn, P. S., & Dentino, A. N. (2004). Effective pain management in the long term setting. *Journal of the American Medical Directors Association, 5,* 342–52.

Wright, D. (2002). Medication administration in nursing homes. *Nursing Standard, 16*(42), 30–38.

**Acknowledgements**

This research was partially funded by the Team for Individualizing Pharmacotherapy in Primary Care for Seniors (TIPPS).

We thank all those who participated in the research.

There is no conflict of interest.

---

*Wendy Ellis, RN, MSc, is a PhD student and Professor, School of Health Sciences/University of New Brunswick-Humber Collaborative Nursing Program, Toronto, Ontario, Canada. Sharon Kaasalainen, RN, PhD, is Associate Professor, School of Nursing, McMaster University, Hamilton, Ontario. Pamela Baxter, RN, PhD, is Associate Professor, School of Nursing, McMaster University. Jenny Ploeg, RN, PhD, is Associate Professor, School of Nursing, McMaster University.*