MEDICATION RECONCILIATION in Nursing Homes

Thematic Differences Between RN and LPN Staff

ABSTRACT
The purpose of this qualitative descriptive study was to describe medication reconciliation practices in nursing homes with a specific focus on nursing staff involvement in the process. The study was conducted in eight Midwestern nursing homes and included 46 onsite observations of resident transfers to the nursing home. Informal interviews of nursing staff performing medication reconciliation were conducted during each observation. Findings suggest nursing home nursing staff, including both RN and licensed practical nurse (LPN) staff, were primarily responsible for performing medication reconciliation; however, these staff often varied in how they processed resident transfer information to identify medication order discrepancies. Patterns of differences were found related to their perceptions about medication reconciliation, as well as their actions when performing the process. RN staff were more often focused on resident safety and putting the “big picture” together, whereas LPN staff were more often focused on the administrative assignment and “completing the task.”

Adverse drug events are injuries related to medications and are common in hospitals, nursing homes, and other health care settings. Preventable adverse drug events associated with medication errors are estimated at 1.6 million events per year (Institute of Medicine [IOM], 2007). Gurwitz et al. (2005) project that nearly 800,000 preventable events will occur annually in nursing homes. Preventable adverse drug events can result from medication order discrepancies, such as drug omissions, additions, and dosage changes, that occur at times of transition to another setting (Boockvar, LaCorte, Giambanco, Fridman, & Siu, 2006; Cornish et al., 2005).

Medication order discrepancies are defined as differences between what medications a person is intended to be taking and what they are actually taking (The Joint Commission, 2011). Frail older adults in nursing homes are at high risk of medication order discrepancies and discrepancy-related adverse drug events when transitioning between health care settings (Boockvar et al., 2004, 2006). Boockvar et al. (2009) found that a mean of 1.5 medication order discrepancies occurred per resident transfer from acute care. The overall risk of adverse drug events from medication order discrepancies is between 4.4% and 14.5% (Boockvar et al., 2004, 2006) and includes adverse outcomes such as hypotension, hypoglycemia, lethargy, falls, and pain (Boockvar et al., 2004).

Medication reconciliation is a safety practice for identifying and resolving medication order discrepancies during transitions in care (The Joint Commission, 2011). Effective medication reconciliation practices involve physicians, pharmacists, and multidisciplinary teams (Boockvar et al., 2006; Nickerson, MacKinnon, Roberts, & Saulnier, 2005; Schnipper et al., 2006; Varkey et al., 2007). As a national patient safety goal, The Joint Commission (2011) defines medication reconciliation as a process to
identify and resolve medication order discrepancies when residents transition to the nursing home and should be completed by qualified individuals identified by the nursing home. Although federal regulations do not mandate that nursing homes perform medication reconciliation, nursing homes are expected to follow this safety practice to assure safe resident care (American Health Care Association, 2009). Because multidisciplinary resources such as physicians and pharmacists are scarce in many nursing homes (Vogelsmeier, Scott-Cawiezell, & Zellmer, 2007; Scott-Cawiezell et al., 2009), nursing staff may be called on by nursing home leaders to be involved in this safety practice.

Despite evidence that medication order discrepancy rates are high, little evidence exists to characterize medication reconciliation in nursing homes. Moreover, because physician and pharmacy resources are limited in nursing homes, it is important to explore the involvement of nursing staff to understand how medication reconciliation is being performed in nursing homes. Therefore, the purpose of this article is to describe the safety practice of medication reconciliation in nursing homes with the specific aim of exploring the involvement of nursing staff in the process.

METHOD

Design
This was a qualitative descriptive study conducted in eight Midwestern nursing homes to describe how medication reconciliation is performed by nursing staff to identify medication order discrepancies when residents transition to the nursing home. Because little is known about the process and because no available evidence exists to help understand the involvement of nursing staff, a qualitative descriptive design was chosen. Qualitative descriptive studies seek to provide a comprehensive summary of events that have not been well studied and are the design of choice when descriptions of phenomena are the goal (Sandelowski, 2000).

The study took place over 18 months and included 46 onsite observations and informal interviews of nursing home nursing staff as they performed medication reconciliation. For this study, medication order discrepancy was defined as any medication order omission, addition, or dosage change identified by nursing staff at transfer that required communication to a medical provider. Resident transfer was defined as any transfer to the nursing home (new admission/return) from another health care setting, such as a hospital or other long-term care facility. This study was approved by the University Institutional Review Board.

Setting, Sample, and Procedures
This study was conducted in eight Midwestern nursing homes.
that self-reported implementation of medication reconciliation. The nursing homes were a mix of urban (n = 4) and rural (n = 4), ranging in size from 60 to 180 resident beds. Onsite observations were the primary method of data collection, with informal staff interviews conducted during each observation. Observations occurred on both the day and evening shifts, when resident transfers were most likely to occur, and lasted an average of 2 to 3 hours per observation. Each observation was initiated in a private location (e.g., office or meeting room) where participants had access to paper and/or electronic resident transfer records. The remainder of each observation was often carried out in other locations within the nursing home (e.g., nurses’ station) where follow-up actions would occur (e.g., telephone calls, faxes).

During each resident transfer observation, the principal investigator (A.A.V.) recorded detailed handwritten field notes of individual nursing staff activities as nurses performed medication reconciliation. Observation documentation included an in-depth description of how the nurses reviewed transfer documents to identify medication order discrepancies, what discrepancies they identified, and what actions they carried out for follow up after discrepancies were identified. At the completion of each observation, the handwritten notes were transcribed into an Microsoft® Excel® spreadsheet and organized according to study site.

Informal staff interviews were conducted during each observation to gain insight into each staff member’s perceptions of the medication reconciliation process as well as any discrepancies they identified. All informal interviews were conducted in person in a private location (e.g., office, meeting room). The investigator also conducted follow-up interviews with staff either in person or by telephone within 1 to 3 days after completion of the transfer observation to determine what discrepancies were verified with medical providers as either intentional order changes or unintentional medication order discrepancies. All interview data were recorded by hand and immediately transcribed into an Excel spreadsheet to correspond with the observational data.

Data Analysis

Analysis for this descriptive qualitative study was conducted using the qualitative content analysis approach suggested by Sandelowski (2000), where data analysis begins when data collection begins. The analysis included an iterative review of field notes of participant observations and interviews to identify patterns of their perceptions and behaviors (actions) when performing medication reconciliation. Initial data interpretations were made by the principal investigator when still onsite and reviewed with individual participants to validate accuracy of interpretation and to seek further clarification of findings.

After initial data analysis and validation by participants, the data were organized according to each of the nursing homes. At this point, distinct differences began to emerge between RN and licensed practical nurse (LPN) staff across the eight nursing homes. The principal investigator and two expert nurse researchers (J.R.S.-C., G.A.P.) reviewed the data at this second level of analysis to assure consistency of thought and approach to assure validation of findings. Once saturation was achieved, final data analysis was complete. During the final analysis, the principal investigator and expert researchers came together again, discussed the final data, and summarized the findings into distinct differences between the two groups.

Several analytical strategies were used to assure the findings were credible, dependable, and confirmable (Crabtree & Miller, 1992). These strategies included member checking through participant feedback to ensure the data reflected the realities of the participants under study, maintenance of a detailed audit trail to ensure data dependability and stability, and the inclusion of expert consultants experienced in medication safety research and nursing home research to ensure the findings were consistent and objective.

### Table 1

<table>
<thead>
<tr>
<th>Nursing Homes by Bed Size</th>
<th>No. of RN Staff Observed</th>
<th>No. of RN Observationsa</th>
<th>No. of LPN Staff Observed</th>
<th>No. of LPN Observationsa</th>
<th>No. of Resident Transfer Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100 beds (n = 4)</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>≥ 100 beds (n = 4)</td>
<td>10</td>
<td>18</td>
<td>5</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>27</td>
<td>15</td>
<td>19</td>
<td>46</td>
</tr>
</tbody>
</table>

Note. LPN = licensed practical nurse.

a Some staff were observed more than once.
RESULTS

Forty-six resident transfer observations occurred as part of this study. In all eight nursing homes, nursing staff were assigned primary responsibility by nursing home leaders to perform medication reconciliation when residents transitioned to the nursing home. Six nursing homes (75%) assigned medication reconciliation to any nursing staff admitting the resident (RN or LPN), whereas only two nursing homes (25%) assigned medication reconciliation to any nursing staff admitting the resident (RN or LPN), whereas only two nursing homes (25%) assigned medication reconciliation exclusively to RNs. RNs performed the observed medication reconciliations more often in larger nursing homes (70%), whereas LPNs performed it more often in smaller nursing homes (55%) (Table 1).

During the observations and informal interviews, distinct patterns of differences emerged between RNs and LPNs when performing medication reconciliation. Differences were related to their perceptions about medication reconciliation, as well as their actions when performing the process. RNs’ and LPNs’ perceptual differences were related to why medication reconciliation was being performed, including their role in the process and the kinds of medication order discrepancies they identified. Differences were found in their actions related to how they reviewed resident transfer records to identify medication order discrepancies and their follow up with medical providers and others to resolve any identified discrepancies (Table 2).

RN Staff

The majority of RN staff spoke about medication reconciliation as a clinical process to ensure the residents received their medications as intended. Differences were found in their actions related to how they reviewed resident transfer records to identify medication order discrepancies and their follow up with medical providers and others to resolve any identified discrepancies (Table 2).

Because medical care was perceived to be fragmented, many RNs spoke about the value of detailed transfer documentation to help understand the resident’s clinical condition. The RNs often reviewed transfer documents in detail (e.g., hospital records such as history and physical assessment, progress/consult notes, medication records, and physician orders) to identify medication order inconsistencies they perceived to “happen all the time.”

When clinical information was not available or unclear, most RNs would seek clarification via telephone calls to the transferring agency and prescribing physician. For example, one RN noted an antibiotic agent dose discrepancy between the hospital discharge record and the nursing home transfer orders and contacted the hospitalist to clarify the dose. Another RN discovered that a cardiologist’s written recommendation for a dosage change in the progress notes was not included on the transfer orders and contacted the cardiologist who confirmed the discrepancy and clarified the dose. One RN commented, “This type of thing happens all the time, I try to make sure nothing gets missed.”

TABLE 2
DIFFERENCES IN PERCEPTION AND ACTION BETWEEN RN AND LPN STAFF

<table>
<thead>
<tr>
<th>Perceptions</th>
<th>RN Staff</th>
<th>LPN Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>Resident safety</td>
<td>Administrative task</td>
</tr>
<tr>
<td>Role</td>
<td>• Assure medications are as intended</td>
<td>• Assure medication lists match; complete the form</td>
</tr>
<tr>
<td></td>
<td>• Pull “big picture” together</td>
<td></td>
</tr>
<tr>
<td>Discrepancy concerns</td>
<td>Inconsistencies with clinical history; high-risk medications</td>
<td>Inconsistencies with NH rules and regulations</td>
</tr>
<tr>
<td>Transfer documents</td>
<td>Valued detailed documents</td>
<td>Overwhelmed by detailed documents</td>
</tr>
</tbody>
</table>

Note. LPN = licensed practical nurse; NH = nursing home.
Although the majority of RNs raised questions and sought clarification to resolve possible discrepancies, a few were hesitant to question the intent of transfer orders. In one instance, an RN new to her nursing home role commented, “I don’t know this hospitalist very well, so I’m guessing he ordered what he wanted.” In that same instance, the RN sought the support of a supervising RN who readily questioned the orders and contacted the hospitalist for clarification. Another RN new to the nursing home contacted the consulting pharmacist to assure she was “on target” with her questions for the physician. The RN stated, “I’m new here and so afraid I’m going to miss something.”

When reviewing transfer records, many RNs spoke about the imperative to know the resident’s clinical history as a way to make sense of their medication orders. Therefore, routine home medications not resumed at transfer or new medications not justified in the documentation were considered areas of concern. For example, one RN was concerned about a long-term antidepressant agent taken at home that was discontinued during hospitalization and contacted the specialist to clarify the omission. Another RN voiced concern about a routine hospital medication (standing order) continued at transfer and contacted the hospitalist to clarify if the medication should be discontinued.

In other observations, RNs raised questions about medications perceived as high risk. For example, one RN found that a tapering dose of a steroid agent was not continued at transfer and contacted the hospitalist with concerns about abruptly stopping the dose. Another RN found that an antibiotic agent initiated 2 days prior to transfer was not continued and contacted the hospitalist for clarification. In another observation, an anticoagulant agent was not continued postoperatively so the RN contacted the surgeon to clarify whether the medication was to be continued. One RN commented, “It’s not up to me to decide if the orders are wrong, but I do have to raise the questions.” Another RN said, “Tracking down this stuff gets old, but if we don’t there could be problems.”

**LPN Staff**

The majority of LPN staff viewed medication reconciliation as a task, citing it as “something I have to do.” According to one LPN, medication reconciliation had to be “checked off” her list in order to complete the transfer paperwork. Many also spoke about organizational rules and an assigned responsibility to complete the medication reconciliation “form.” Others spoke about the burden of medication reconciliation because it was one more thing to do before medication orders could be verified by the nursing home physician and obtained from the pharmacy.

Most LPNs suggested medication reconciliation was a process to compare medication lists from the transferring agency. Thus, when performing medication reconciliation, most would focus on discharge documents (e.g., discharge orders, nursing home transfer form) to note any inconsistencies. The remaining transfer documents were often not reviewed. When discussing transfer documents, some LPNs talked about being overwhelmed and unable to “sort through all the paperwork.” One LPN commented, “It’s confusing when they [hospital] send too much information. I just concentrate on the discharge orders; if there are problems, the family or someone will usually let us know.” Another LPN said, “I just file the bulk of this in the chart; the doctor looks at it later.”

While the majority of LPNs were concerned about matching medication lists to identify discrepancies, others had different views about discrepancies. Some were concerned about common nursing home medications not ordered at transfer (e.g., analgesic, antacid, laxative agents) because the resident might need them. One LPN commented, “I’m guessing the hospital doctors order what they want, I usually just watch for missing [omitted] PRNs [as-needed medications].” Another LPN said, “We don’t want the residents to be without what they need” when referring to routine as-needed nursing home medication orders. Others considered medications not routinely administered in the nursing home as discrepancies. For example, an LPN noted an intravenous (IV) pain medication ordered at transfer as discrepant because the nursing home did not administer IV medications. Another LPN considered a high-cost anticoagulant agent as discrepant because “the administrator says we can’t pay for it.”

LPNs often spoke about having to make decisions about which discrepancies to communicate. One LPN commented, “I usually review the meds in a lot of detail before I talk to the [nursing home] doc [sic]… so I go through the discharge orders and think, I guess this should be PRN and this should be changed.” Another LPN stated, “Sometimes the hospital changes their meds and the nurse has to decide if those changes should be changed back… we know them [residents] better and sometimes know how they handle [respond to] certain medications.”

**DISCUSSION**

Medication reconciliation is a safety practice to identify and resolve medication order discrepancies (The Joint Commission, 2011). Effective medication reconciliation practices involve physicians, pharmacists, and multidisciplinary teams to carry out the process (Boockvar et al., 2006; Schnipper et al., 2006). However, these resources are not readily available onsite in nursing homes (Scott-Cawiezell et al., 2009; Vogelsmeier et al., 2007). Scarce resources coupled with inconsistent medical provid-
ers (Boockvar & Burack, 2007) leave nursing home nursing staff assigned to fill the gaps.

Findings from this study suggest that nursing home nursing staff, including both RNs and LPNs, are assigned to perform medication reconciliation when residents transition to the nursing home. However, RNs and LPNs often varied in how they performed medication reconciliation. Differences were related to the processing of resident transfer information to identify discrepancies and following up with medical providers to resolve discrepancies. The variability between RN and LPN staff seemed influenced by their perceptions of why medication reconciliation was being done and their assigned role in the process.

When considering RNs’ and LPNs’ perceptions, LPNs more often focused on medication reconciliation as a task to be completed, whereas RNs more often focused on the clinical intent of the process. Therefore, LPNs considered medication reconciliation their assigned responsibility to complete the task, whereas RNs considered it their clinical responsibility to assure residents were safe. Moreover, RNs understood the realities of limited physician and pharmacy resources in the nursing home (Scott-Cawiezell et al., 2009; Vogelsmeier et al., 2007) and fragmented medical care between settings (Boockvar & Burack, 2007), which seemed to heighten their sense of clinical responsibility to “put it all together” for resident safety.

When considering how RN and LPN staff processed transfer information, LPNs more often focused on medication orders they perceived as either inappropriate or necessary for the nursing home. These decisions were seemingly influenced by organizational rules and regulations. In contrast, RNs more often focused on medication orders they perceived to be high risk or those not making clinical sense. These behaviors are consistent with evidence suggesting RNs include clinical reasoning in their decision-making process (Boblin, Baxter, Alvarado, Baumann, & Akhtar-Danesh, 2008).

Finally, when considering how RN and LPN staff resolved medication order discrepancies, LPNs more often made assumptions about intention and appropriateness of orders and sought follow up from the nursing home physician, rather than the prescribing physician. In contrast, RNs more often raised clinical questions and sought clarification from the prescribing physician to resolve any identified discrepancies. These findings suggest that RN and LPN staff differ in both what they communicate and to whom, and provides insight into what nursing home nurses communicate to physicians that may in turn influence what physicians prescribe (Schmidt & Svarstad, 2002).

LIMITATIONS
Several study limitations are important because RN and LPN differences seem to relate to their perceptions about medication reconciliation and medication order discrepancies, as well as their actions when performing the process.

Findings from this study suggest that nursing home nurses—both RNs and licensed practical nurses (LPNs)—are assigned to perform medication reconciliation, yet how they process resident transfer information to identify discrepancies varies.

Further study is necessary to explicate the differences between nursing home nursing staff as they perform safety practices such as medication reconciliation.

KEYPOINTS

1 Medication reconciliation is a safety practice to identify and resolve medication order discrepancies when transitions in care occur.

2 Nursing home nurses—both RNs and licensed practical nurses (LPNs)—are assigned to perform medication reconciliation, yet how they process resident transfer information to identify discrepancies varies.

3 Patterns of RN and LPN differences seem to relate to their perceptions about medication reconciliation and medication order discrepancies, as well as their actions when performing the process.

4 Further study is necessary to explicate the differences between nursing home nursing staff as they perform safety practices such as medication reconciliation.

IMPLICATIONS FOR PRACTICE
This study begins to provide important insight into how nursing home RN and LPN staff may differ in their clinical practice. These findings are important because RN and
Safety practices such as medication reconciliation require nursing staff who possess the necessary cognitive skills to ensure medication order discrepancies are appropriately identified and managed.

Cognitive skills to ensure medication order discrepancies are appropriately identified and managed. Thus, nursing home leaders need to make certain that nursing staff assigned to perform safety practices such as medication reconciliation have the necessary clinical and cognitive skills to do so. Moreover, given that LPN education is limited (1 year to 18 months) with a focus on training in basic nursing skills (Seago et al., 2006), it is reasonable to expect LPNs to have the necessary cognitive skills to engage in this kind of clinical reasoning? Perhaps not, but with the declining number of RNs in nursing homes (Seblega et al., 2010), LPNs are being expected to function in highly clinical roles. As such, perhaps consideration should be given to enhanced education and training for LPNs to build the necessary cognitive skills to work in the complex nursing home environment.

IMPLICATIONS FOR FUTURE STUDY

Studies exploring differences between RN and LPN staff identify RNs as having a greater positive effect on clinical outcomes (Horn, Buhrman, Bergstrom, & Smout, 2005; Scott-Cawiezell et al., 2007; Weech-Maldonado, Meret-Hanke, Neff, & Mor, 2004) where differences may relate to their cognitive processes (Boblin et al., 2008; Royle et al., 2000). However, to clearly understand the gap, further study is warranted to understand how RN and LPN staff differ in their practice. Considerations for future research should include further study of differences between RN and LPN staff when performing safety practices so interventions can be developed to assure safe and consistent practices are in place. Interventions to verify safety and consistency among RN and LPN staff are particularly important in the nursing home setting where RNs and LPNs often perform the same functions. Moreover, as RN staffing continues to decline in nursing homes (Seblega et al., 2010), fewer RNs will be engaged in performing practices such as medication reconciliation, a necessary practice to keep residents safe.

CONCLUSION

Medication order discrepancies pose a significant risk of harm to residents when transitioning to the nursing home. Medication reconciliation is an important safety practice designed to identify and resolve medication order discrepancies when transitions occur. However, medication reconciliation is more than a mere task to match medication order lists at transfer. In reality, medication reconciliation is a complex clinical process to prevent resident harm. Nursing home nursing staff can play an important role in identifying and communicating potentially serious medication order discrepancies to physicians. However, because nursing staff vary in how they perform medication reconciliation, serious medication order discrepancies may be going undetected and unresolved, thus increasing the risk of harm to nursing home residents. Further study is necessary to explicate the differences between nursing home nursing staff so that strategies to resolve these differences can occur.

REFERENCES
