



A National Community-Based Participatory Research Partnership

The Center for Excellence in Assisted Living (CEAL)
and the University of North Carolina at Chapel Hill
Collaborative Studies of Long-Term Care (UNC)



Research Brief: Medication Administration in Assisted Living
~ Medication Administration Errors ~
~ The Importance of Training in Medication Administration ~
~ The Usefulness of Competency Assessment ~

Introduction and Purpose

Assisted living communities provide care for approximately one million older persons, the majority of whom have chronic illnesses and require multiple medications.¹ This Research Brief summarizes key findings from a study of medication administration in eleven assisted living communities in two states. The goals were to determine the frequency and type of medication administration errors, which medications are associated with potentially significant administration errors, and whether administration error rates differ between trained medication technicians and licensed nurses.

The project was conducted by the Center for Excellence in Assisted Living (CEAL) and the University of North Carolina-based Collaborative Studies of Long-Term Care (UNC).² It was conducted using a method known as *community based participatory research* in which community members work as full partners with researchers to identify an issue needing study, obtain information about that issue, and interpret what they have found and the implications for practice and policy.

Because the need for assistance in taking medications is one of the reasons that many older adults move to assisted living, this topic is relevant to all assisted living providers, consumers, policy makers, advocates, practitioners, and educators. Assisted living residents take an average of almost nine different medications daily, and as many as 80% of residents require assistance with medication administration.^{3,4} In the simplest terms, medication administration involves ensuring that the correct medication is administered to the right resident at the right time in the right dosage.

Concern has been raised that assisted living staff do not always administer the correct medications and that insufficiently trained staff may at times dispense medications.⁵ In reference to the latter point, there is ongoing debate as to whether nurses should be required to administer medications in assisted living. On one side are those who believe that the clinical expertise of a nurse is necessary to avoid medication errors; on the other side are those who contend that unlicensed medication aides can safely administer medications with appropriate training and supervision, and that allowing them to do so will reduce assisted living cost and improve access to care.

This project examined medication administration in South Carolina, which allows unlicensed but trained medication technicians ("aides") to administer medications, and Tennessee, which requires licensed nurses to administer medications. Medication preparation and administration were observed for three consecutive days, resulting in 4403 medications observed being given during 83 passes for 320 residents. Observations were compared to the orders written on the medication administration record. Errors were determined based on the discrepancy between medication orders and observations; an expert team including pharmacists, nurses, and a geriatrician determined the clinical severity of the errors. Also, the assisted living staff who administered the medications completed a paper-and-pencil medication administration knowledge and practices questionnaire.

¹ Zimmerman, S., Sloane, P.D., Eckert, J.K., Gruber-Baldini, A. L., Morgan, L.A., Hebel, J.R., Magaziner, J., Stearns, S.C., & Chen, C.K. (2005). How good is assisted living? Findings and implications from an outcomes study. *Journal of Gerontology: Social Sciences*, 60B, 195-204.

² The project was funded by the Agency for Healthcare Research and Quality (R21HS016171). The CEAL leads were Karen Love and Jane Tilly and the UNC leads were Sheryl Zimmerman, Lauren Cohen, and Philip Sloane.

³ National Center for Assisted Living. (2006). *2006 Overview of assisted living (facts & trends)*. Washington, D.C.

⁴ Hawes, C., Phillips, C., & Rose, M. *High service or high privacy assisted living facilities, their residents and staff: results from a national survey*. Available at: <http://aspe.hhs.gov/daltcp/reports/hshp.htm>

⁵ General Accounting Office, United States Congress. (1999). *Assisted living: quality of care and consumer protection issues in four states*. Report to Congressional Requesters. Washington, D.C.: U.S. Government Printing Office.

Research Brief: Medication Administration in Assisted Living Page 2

Key Findings

- While 35% of all medication administrations involved an error, 71% of these errors involved the drug being administered more than two hours outside the requested administration time. This type of error rarely has the potential to cause clinical harm.
- Fewer than 3% of all medications passed involved errors with moderate to significant potential to cause harm, meaning the potential to cause discomfort or annoyance (moderate harm) or lead to physician intervention, hospitalization, or disability (significant harm).
- Only 14 of the 4403 medication administrations involved an error with significant potential for harm. These medications included:
 - Warfarin (blood thinner; wrong dose): 5 of all potentially significant errors
 - Insulin (injectable diabetes drug; wrong dose or wrong time): 4 of all potentially significant errors
 - Risperidone (antipsychotic; wrong dose): 3 of all potentially significant errors
 - Glyburide/metformin (oral diabetes drug; wrong dose): 1 of all potentially significant errors
 - Oxybutynin (bladder medicine; wrong dose): 1 of all potentially significant errors
- Medication technicians did not have a higher rate of medication errors with a moderate to significant potential to cause harm than did nurses.
- Staff members who were less trained than medication technicians to administer medications and were “assisting” residents to administer their own medications caused the most medication errors with moderate or significant potential for harm; their error rate was higher than nurses. These individuals included certified nursing assistants, non-certified caregivers, and others. In South Carolina (the state that allowed medication technicians to administer medications) these individuals represented 42% of those who handled medications, and in Tennessee (the state that required nurses to administer medications) they represented 65% of those who handled medications.
- Those who made medication errors were more likely to score lower on the paper-and-pencil medication administration knowledge and practices questionnaire.

Heather Young and colleagues⁶ conducted a cross-sectional observational medication administration study of medication aides in 12 assisted living communities in three states (Oregon, Washington and New Jersey) which permit unlicensed staff to administer medications. This study also found that wrong time accounted for the majority of medication administration errors (71%), in this case none of which were considered to be clinically significant. Similar to the CEAL-UNC Collaborative project, there were few errors with significant potential for clinical harm, which occurred more commonly with higher risk medications (e.g., insulin and warfarin). This finding is especially important because in general, residents taking higher risk medications are in less stable health.

⁶ Young, H.M., Gray, S.L., McCormick, W.C., Sikma, S.K., Reinhard, S., Johnson Trippett, L., Christlieb, C., & Allen, T. (2008). Types, prevalence, and potential clinical significance of medication administration errors in assisted living. *Journal of the American Geriatrics Society*, 56, 1199-1205.

Research Brief: Medication Administration in Assisted Living
Page 3

Conclusions and Recommendations

- Regarding timing of medication administration:
 - Assisted living administrators and health care supervisors are advised to work with physicians and pharmacies to allow more flexibility in medication orders. Doing so will avoid considering timing an error in instances when it is not truly an error.
 - State surveyors could be flexible in determining the acceptable window of timing for medication administration. Doing so will allow them to devote attention to medication errors with a moderate to significant potential to cause harm.
- Regarding medication errors with a moderate to significant potential to cause harm:
 - Pharmacists could flag the medications that are most likely to result in errors with a significant potential to cause harm if administered incorrectly. Doing so may help assisted living staff be more vigilant to proper administration and monitoring of these important medications.
 - Additional training in the proper administration and monitoring of high-risk drugs is indicated for nurses, medication technicians, and others who supervise, administer, and assist with the medications. Doing so may increase their safe use. High-risk drugs include:
 - drugs with low therapeutic ratios (i.e., drugs where the difference between a therapeutic dose and a toxic dose is small, such as insulin, warfarin, narcotics and many tranquilizers)
 - drugs where timing is especially important, such as insulin and levodopa/carbidopa (Sinemet)
 - medications such as eye drops or breathing treatments, because their administration requires special skill, training, and care
- Regarding staff training:
 - Staff members who are less trained than medication technicians are handling resident medications in the process of assisting residents with self-administration. Given the sometimes subtle differences between the administration of medications and assistance with self-administration of medications, all staff who handle resident medications should be trained to the level of a medication technician. Doing so will decrease medication errors.
 - The need for such training seems especially important in states that do not allow medication technicians to administer medications, in that less trained staff may more often be involved assisting residents in those states.
 - Training programs that focus on specific medication-related competencies and that assess mastery of that competency should be developed and evaluated. Using such programs to train all non-licensed staff who handle medications may decrease medication errors.

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