

Medication Errors and the Home Care Patient

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Medication errors specific to home care include taking the wrong dose or quantity of medications, omitting medications, or taking an unauthorized drug. This article includes information regarding types of errors, contributing factors, and potential solutions to the identified problems.

“Please go out and see Mrs. Smith . . . She’s confused about her medications, and we think she is taking them wrong.” As home care clinicians, we all have heard this referral. Too often, we sadly watch as our once independent patients become victims of age and time and the slow process of deterioration begins. Some patients become frail, forgetful, and dependent on others in order to remain in their homes as they age. Many of the physical concerns confronting older adults can be effectively addressed with the assistance of a creative home care clinician. However, it seems that once a patient starts to exhibit confusion over his or her medications, a turning point occurs. Whether the patient is taking the wrong medications, taking the wrong dose, or forgetting doses, a medication error is occurring. Medication errors occur in all settings, including home care (Wu, 2006), yet very little research exists about the actual rates of errors within the home.

Research and Errors

Numerous research studies have investigated medication

errors among hospitalized patients. Some studies show that errors may be occurring as frequently as 1 per patient per day in most hospitals (Cowley, 2000; Wu, 2006). Despite the numerous studies and the staggering error statistics from acute care settings, there is extremely limited information in the literature with regard to home care settings (Aherns, 2003; Cohen & Proulx, 1998; Ellenbecker, 2004; Forster et al., 2003; Kovner et al., 2005). Although studies vary in their findings of error rates for home care patients, it is estimated that 1 in 3 home care patients is at risk for a medication error (Aherns, 2003; Joint Commission on Accreditation of Healthcare Organizations [JCAHO], 2004).

Types of Medication Errors

A medication error is much more than simply ingesting an unauthorized drug, or more simply stated, taking the wrong pill. Errors also include taking the wrong dose, missing a dose, and taking a dose at the wrong time (Ellenbecker, 2004). Other types of errors include taking an extra dose of a medication,

using an inappropriate technique to administer a drug, preparing an incorrect dilution of a drug, giving a drug to the wrong patient or via the wrong route, or continuing to give a drug after it has been discontinued (Cowley, 2000; Ellenbecker, 2004). Finally, inappropriate use of a medication or use of a medication despite the availability of a more appropriate alternative is considered a medication error (Aherns, 2003; Fialova et al., 2005; Frey & Rahman, 2003; Kovner et al., 2005). For older adults, examples of inappropriate medication use include prescribing diazepam as a sedative or a psychotropic drug for a patient who has had a recent fall (Frey & Rahman, 2003). Table 1 summarizes the types of medication errors.

The Problems: Causes of Medication Errors Polypharmacy

One of the largest concerns that may contribute to medication errors in the home care setting is polypharmacy, defined as the use of 5 or more medications (some references say 6) for one patient (Ellenbecker, 2004; Fialova et al., 2005). The use of multiple drugs puts patients at risk for adverse effects (Fialova et al., 2005). In addition, the more medications a person has to take, the more confusing the

Table 1. Types of Medication Errors

- Taking an unauthorized drug
- Taking the wrong dose
- Missing a dose/not completing a regimen
- Taking a dose at the wrong time
- Taking an extra dose
- Continuing a drug after it is discontinued
- Inappropriate use of a medication
- Giving a drug to the wrong patient
- Giving a drug via the wrong route
- Incorrect dilution of a drug
- Inappropriate administration of a drug



Note. Data from Aherns, 2003; Cowley, 2000; Ellenbecker, 2004; Fialova et al, 2005; Frey & Rahman, 2003; & Kovner et al, 2005.

administration can be, increasing the possibility of medication errors. Many patients are under the care of more than one physician, perhaps from different specialties, and this too may contribute to polypharmacy (Aherns, 2003; Ellenbecker, 2004; JCAHO, 2004).

Improper Doses and Unauthorized Medications

Using an improper dose and taking an unauthorized medication are the two most frequent types of medication errors reported in home care settings (Cowley, 2000; JCAHO, 2004). Many times these errors occur because of patient knowledge deficits or transcription errors (Cowley, 2000; Ellenbecker, 2004; JCAHO, 2004). Sometimes errors result from therapeutic duplication or when a patient takes more than one medication of the same class (Frey & Rahman, 2003). Patients may try to make their prescriptions last longer by cutting pills in half, or by reducing the number of doses they take in a day. Similarly, some may choose to share medications with others to save on costs incurred.

Confusion Related to Medication Orders and Names

Hospital discharge and home care admission or readmission can be very rushed. This can be a confusing time for both the patient and the home care clinician. Often, at hospital discharge, patients are given a list of the medications initiated in the hospital. Medications that they had taken before hospital admission may not be addressed at discharge (Ellenbecker, 2004). This creates confusion for the patient and the clinician, and could easily contribute to an error. Discharge instructions for patients sometimes list only the brand name for each medication. If a patient already has the generic version of the same medication at home, confusion between brand and generic brand could easily cause a patient to take a duplicate dose. Similarly, when medications have names that look or sound alike, a patient or clinician could mistake one medication for another (Ellenbecker, 2004; JCAHO, 2004; McGoldrick Friedman, 2005).

Medication Boxes

Although a medication box is a

very useful tool when the patient must take several medications at various times of the day, the potential for mistakes and misuse is great. If the box is newly instituted and the medication bottles are left at the spot where the patient normally removes his pills from the box, the patient may mistakenly take both the medications in the box and those in the bottles. Errors also occur when physicians make changes to the patient's medication regimen and the change is not immediately implemented and reflected in the patient's medication box. In addition, patients may forget the changes that were made, or the discussions they had during the physician visit, with the result that the change may never get instituted once the patient is at home.

Skipping Doses

Patients may skip medications for a variety of reasons. Cost of refills, fear of side effects, visual problems, difficulty reading a label, and cognitive deficiencies all can contribute to nonadherence to medication regimens (Ellenbecker, 2004). At times patients discontinue their own medications because they are feeling better and believe they no longer need to continue taking their prescription. Something very basic, such as lack of transportation to the pharmacy, can limit accessibility to much needed medications. Simple forgetfulness also is a common problem for many people, old and young alike (Table 2).

The Solutions: Minimizing Medication Errors

Multiple interventions can be implemented by the home care clinician to reduce the risks of

medication errors. Many of the interventions incorporate some combination of patient or caregiver education and increased collaboration with the physician (Table 3).

Utilizing the Outcome and Assessment Information Set to Predict Potential Errors

The Centers for Medicare and Medicaid Services (CMS) have designed a data set to measure outcomes and risk factors for home care patients over time. This Outcome and Assessment Information Set (OASIS) tool has a section relating to medication management that may help to predict which patients are at risk for a medication error. The three related questions include information about oral, inhaled, and injectable medications as well as the patient's level of independence in his or her ability to prepare and take the medications safely (CMS, 2006). As home care clinicians complete this part of the OASIS tool, they can begin to assess for factors that may contribute to a future medication error on the part of their patients.

Reducing the Risks of Polypharmacy

Reducing the number of medications a patient uses may be helpful in alleviating errors if polypharmacy is an issue. Coordinating this type of intervention between one or more prescribing physicians may seem daunting and time consuming, but it will be in the patient's best interest over time. By the use of fewer medications, a patient's regimen is much simpler. In addition, costs are reduced, and the risks of adverse effects as well as the likelihood of an error are reduced. Seemingly small changes such as these may extend the time that a patient is able to remain independent at home.

Collaborating With a Pharmacist

Pharmacist review of medication regimens is a valuable tool that more and more agencies are using (Aherns, 2003; Frey & Rahman, 2003). Even if an organization does not employ its own pharmacist, the patient's local pharmacist can be extremely helpful in determining

inappropriate use of medications and in reducing problems related to polypharmacy or look-alike/sound-alike drugs.

Written Lists of Medications

Thorough patient education includes teaching the patient to keep a current list of his or her medications, and to bring the list to the physician's office during each visit (Wu, 2006). This makes it easier for physicians to coordinate the patient's medication regimen effectively. Changes can be written directly on the sheet for the patient to view, and the changes then can be reviewed by all of the patient's healthcare providers, including home care clinicians. It is helpful to keep this updated list at a common place such as on the refrigerator door so it is accessible to all in an emergency situation.

Charts or Diagrams

A well-made chart or diagram for use by the patient also can be helpful when more than one medication is ordered. It should consist of large blue or black letters on white paper for easier viewing by an older adult patient. Each medication should be listed with the generic and brand names, the time of day it should be taken, and the reason it is to be taken. The language should be clear, simple, and free of abbreviations. If the patient's primary language is not English, the chart should be written in the patient's primary language. To do this, the clinician may need to engage the help of some other person fluent in the patient's primary language such as a family, staff, or a church member, with the patient's permission and knowledge.

Occasionally, it may be helpful to glue a sample of each pill next

Table 2. Causes of Medication Errors

- Polypharmacy
- Knowledge deficits (patient and/or caregiver)
- Transcription errors/errors in communication
- Confusion over hospital discharge instructions (patient and/or clinician)
- Confusion over brand name versus generic name
- Medications that look alike or sound alike
- Incorrect use of medication boxes
- Skipped doses due to cost, fear of side effects, lack of transportation to pharmacy
- Cognitive and visual problems

Note. Data from Aherns, 2003; Cowley, 2000; Ellenbecker, 2004; Fialova et al, 2005; Frey & Rahman, 2003; Joint Commission, 2004; & McGoldrick Friedman, 2005.



to its name on the chart. However, if the brand or dose changes, so also could the appearance of the pill, so careful monitoring is needed if this method is used. Patients must be reminded that the glued-on sample is no longer edible because it has been glued and the strength of the medication degrades over time. The chart also becomes a useful educational tool when medications are reviewed with the patient, and it can be brought to the doctor for revisions with each visit. For patients who cannot read, a simple chart with attached samples may be crucial.

Medication Boxes

To be effective, medication boxes require two important factors: (1) the patient or a designee who is able to fill it after the nursing care is discontinued and (2) an understanding of how it works as well as the ability to demonstrate that understanding. If these two factors are in place, a medication box may be a good plan for the patient who is mixing up which medications to take at what times.

Patient education should include instructions to keep pill bottles in the home, but separate from the location of the medication box. This will minimize the risk of the patient mistakenly taking both the medications in the box and those in the pill bottles. In addition, if the physician changes a medication order, the medication box needs to be adjusted immediately. Finally, it is always beneficial to have the patient or his designee prefill the box with the home care clinician present so this individual's ability to do so properly and without error can be evaluated.

Effective communication between the home care clinician (or the person designated to "prepour" the medication box) and the physician is vital. Whether the patient is using a prepoured medication box or not, any changes in medication regimens should be communicated clearly to the home care clinician. This may be accomplished via telephone, fax, or written medication lists, as described earlier.

Minimizing Skipped Doses

To reduce the frequency of skipped doses, the clinician must do a careful evaluation of why the patient is skipping doses. The risk of missing a dose needs to be explained, and the patient's understanding must be evaluated on an ongoing basis while the clinician is providing care. External factors contributing to the possibility of skipped doses also must be addressed by the clinician. For example, if transportation to the pharmacy is an issue, a plan must be implemented such as the use of community-based elder care services, mail order, or delivery prescription services. At times, it is beneficial to refer the patient to a social worker for financial planning assistance. Other factors contributing to skipped doses, such as patient forgetfulness, can be reduced through the use of charts and medication boxes, as discussed earlier. In addition, numerous "reminder" resources are available for cueing older adults to take their medications.

Summary

The common thread that runs throughout all the solutions for medication errors in home care is patient and caregiver education. This starts with clear communication and coordination between and among healthcare professionals. All need access to each other to alleviate some of the errors for which the patient is at risk in the home. If errors do occur, it is essential to look at why they occurred and to determine whether it is a system-wide problem within an agency (Cohen & Proulx, 1998; Ellenbecker, 2004; Kovner et al., 2005). Only then can solutions be implemented. In addition,

Table 3. Ways to Minimize Medication Errors

- Use of OASIS tool to predict potential medication errors
- Patient and/or caregiver education
- Increased communication, collaboration, and coordination between healthcare professionals
- Reduction in polypharmacy
- Referral to social worker
- Collaboration with pharmacist
- Utilization of written lists for patient use
- Creation of diagrams or charts for patient use
- Institution of medication boxes
- Evaluation of the cause of skipped doses



Note. Data from Aherns, 2003; CMS, 2006; Frey & Rahman, 2003; & Wu, 2006.

Table 4. United States Pharmacopeia (USP)

Medication Error-Reporting Programs Within the USP:

- **MEDMARX:** interactive, anonymous, Internet-accessible
- **Medication Errors Reporting Program:** direct reporting to USP, confidential and anonymous
- **Contact Information for Above Reporting Programs:**
 - 1-800-227-8772 or 1-301-881-0666
 - Web Site: <http://www.USP.org/patientSafety/>



Note. Data from United States Pharmacopeia, 2006.

nurses have an obligation to report errors so that the home care industry can begin to determine causes and rates of errors, and thus to alleviate some of the larger system problems. The United States Pharmacopeia (USP, 2006) has a confidential medication error reporting program for collecting data with regard to medication errors (Cowley, 2000) (Table 4).

The aging population in conjunction with rapid discharge rates and issues such as polypharmacy put our patients at risk for medication errors in the home care setting. The numerous medications currently on the market, the many chronic diseases for which our patients are being treated, and unclear communication that can potentially occur between healthcare professionals all contribute to errors. Cognitive changes, visual loss, cost, and fear of side effects also may put patients at risk for medication errors. Home care clinicians are a rich resource of creative ideas that can be used to keep patients independent and safe within their homes. Effective communication skills, thorough patient education, and diligent monitoring also can help to

lessen the risk of medication errors for our patients.

If additional types of medication errors are being observed in the home care setting that were not mentioned in this article, please feel free to e-mail the author with this pertinent information. ■

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REFERENCES

Aherns, J. (2003). Combating medication errors in home health. *Caring, 22*(1), 56-57.

Centers for Medicare and Medicaid Services (CMS). Web site. Retrieved November 18, 2006 from <http://www.cms.hhs.gov>.

Cohen, H., & Proulx, S. (1998). Preventing medication errors in

home care: Applying system process improvements. *Infusion, 4*(6), 50.

Cowley, E. (2000). Assessing and preventing medication errors in home care. *Home Health Care Consultant, 7*(3), 33-40.

Ellenbecker, C. H., Frazier, S. C., & Verney, S. (2004). Nurses' observations and experiences of problems and adverse effects of medication management in home care. *Geriatric Nursing, 25*(3), 164-170.

Fialova, D., Tponilova, E., Gambassi, G., Finne-Soveri, H., Palmi, J., & Carpenter, I., et al. (2005). Potentially inappropriate medication use among elderly home care patients in Europe. *JAMA, 293*, 1348-1358.

Forster, A., Murff, H., Peterson, J., Gandhi, T., & Bates, D. (2003). The incidence and severity of adverse events affecting patients after discharge from the hospital. *Annals of Internal Medicine, 138*, 161-167.

Frey, D., & Rahman, A. (2003). Medication management: An evidence-based model that decreases adverse events. *Home Healthcare Nurse, 21*, 404-412.

Joint Commission on Accreditation of Healthcare Organizations. (2004). Root causes: Getting to the bottom of medication errors in home care. *Joint Commission Perspectives on Patient Safety, 4*(8), 5-6.

Kovner, C., Menezes, M., & Goldberg, J. (2005). Examining nurses' decision process for medication management in home care. *Joint Commission Journal on Quality and Patient Safety, 31*, 379-385.

McGoldrick Friedman, M. (2005). Medication safety look-alike/ sound-alike drugs in home care. *Home Healthcare Nurse, 23*(4), 243-253.

United States Pharmacopeia. (2006). Retrieved October 8, 2006 from <http://USP.org/patientSafety/>.

Wu, A. (2006). Q & A: Medication errors in the United States. *John Hopkins Bloomberg School of Public Health News Letter*. Retrieved August 3, 2006 from <http://lom.edu/CMS/3809/22526/35939.aspx>