Medication Reconciliation in Older Adults Transitioning From Acute Care to Home Care

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By

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To the Faculty of Washington State University:

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Approximately 35% of older adults will experience an adverse drug event (ADE). Older adults are particularly vulnerable to ADEs following transfer from the acute care to home because of the addition of new medications and/or removal of previous ones during hospitalization. The home care clinician can positively affect the outcome of these changes by compiling a list of medications taken by the older adult in the home setting and reconciling it against the list of medications from any recent acute care discharge. While examining the medications taken by the older adult the home care clinician should also look for medications known to be of high risk in older adult populations using tools such as the Institute for Safe Medication Practices List of High Alert Medications. Interviewing clients to determine if prescribed medications are causing any unanticipated side effects, or reactions, or if there are issues related to nonadherence is also necessary. Any potential medication issues discovered should be investigated and communicated to the older adult’s physician(s) and pharmacist(s).
Once the reconciliation process is completed, a compressive and accurate list of medicines should be shared with the older adult client as well as the pharmacy and other healthcare professionals involved in the client’s care. Throughout the client’s homecare, ongoing vigilance in assessing for medication effects is necessary to promote optimal pharmacotherapy and health outcomes.

Key Words: Home care, medication use, medication reconciliation, adverse drug events, medication discrepancies, older adults
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Abstract

Approximately 35% of older adults will experience an adverse drug event (ADE). Older adults are particularly vulnerable to ADEs following transfer from the acute care to home because of the addition of new medications and/or removal of previous ones during hospitalization. The home care clinician can positively affect the outcome of these changes by compiling a list of medications taken by the older adult in the home setting and reconciling it against the list of medications from any recent acute care discharge. While examining the medications taken by the older adult the home care clinician should also look for medications known to be of high risk in older adult populations using tools such as the Institute for Safe Medication Practices List of High Alert Medications. Interviewing clients to determine if prescribed medications are causing any unanticipated side effects, or reactions, or if there are issues related to nonadherence is also necessary. Any potential medication issues discovered should be investigated and communicated to the older adult’s physician(s) and pharmacist(s). Once the reconciliation process is completed, a compressive and accurate list of medicines should be shared with the older adult client as well as the pharmacy and other healthcare professionals involved in the client’s care. Throughout the client’s homecare, ongoing vigilance in assessing for medication effects is necessary to promote optimal pharmacotherapy and health outcomes.
Medication Reconciliation in Older Adults Transitioning From Acute Care to Home Care

Introduction

A significant healthcare issue facing older adults over 65 years of age is the adverse effects of medication. Older adults comprise 12.9% of the population yet consume about 40% of all prescription drugs and more than 40% of non-prescription drugs in the United States (Rocchiccioli, Sanford, & Caplinger, 2007; U.S. Census Bureau, 2010).

It is estimated that 35% of older adults will have an adverse drug event (Planton & Edlund, 2010; Zwicker & Fulmer, 2008). Older adults, while the largest population to use medication, are also the largest population, 69%, to receive home care (National Association for Home Care and Hospice, 2010). Polypharmacy, the use of five or more drugs at one time, is the norm for home care clients (Haider, Johnell, Weitoft, Thorslund, & Fastbom, 2008). Older adults living in the community are estimated to use, on average, between 2.7-3.9 medications each (Young et al., 2008). Older adults receiving home care services average at least 8 medications (Corbett, Setter, Daratha, Neumiller, & Wood, 2010; Setter et al., 2009; Triller, Clause, & Domarew, 2002). Hospitalized older adults who are referred to home care commonly use multiple medications, due to age related changes and co-morbid conditions, which are prescribed by several healthcare professionals. These issues and the resultant changes in their medication regimen during hospitalization, place older adults being admitted for home care services following hospitalization at very high risk for medication-related problems (Corbett et al., 2010; Mager & Madigan, 2010; Setter et al., 2009; Triller et al., 2002; Zwicker & Fulmer, 2008). Recognizing this risk, the Center for Medicare and Medicaid Services (CMS), added several medication related items to the 2010 version of the Outcome Assessment and
Information Set (OASIS-C) (Centers for Medicare and Medicaid Services, 2010). The purpose of this paper is to provide home-care clinicians with practical information and tips to effectively and efficiently evaluate clients’ medication regimens. Specifically, the information will assist clinicians to identify and resolve clinically significant medication problems.

Medication Reconciliation

Medication reconciliation is the first step in preventing an ADE. The Institute for Healthcare Improvement defines drug reconciliation as “creating the most accurate list possible of all medications a client is taking – including name, dosage, frequency and route – and comparing that list against the physician’s admission, transfer, and/or discharge order with the goal of providing correct medications to the client at all transition points” (Ketchum, Grass, & Padwojski, 2005, p.78-79). Reconciling medications between those on the hospital discharge medication list with those older adult clients report actually taking in the home should be a standard part of the home care admission. Accurate medication reconciliation is essential because it has been estimated that 50%-90% of home care clients have medication discrepancies following a hospitalization (Corbett, et.al, 2010; Setter et al., 2009). Hospitalizations generally result in medication changes such as adding new medications, discontinuing medications, and changing dosing times or dosages. Careful reconciliation of the hospital to home list should be done as these changes may not always be necessary, or additional client monitoring may be necessary upon return to the homecare setting. Two medication issues are common. The first is a purposeful change in drug therapy that is not documented. The second, and more serious, is the change in drug therapy that was not planned (Coffey, Cornish, Koonthanam, Etchells, & Matlow, 2009). In addition, duplication is not uncommon because of inadequate communication about medication substitutions or confusion between generic and brand names of medications. The
discovery of any discrepancies in drug therapy necessitates communication with the prescribing provider to address the concern and assure that both the drug and dosage are correct.

Unaddressed discrepancies can have a profound effect on older adult clients with one study finding that a medication discrepancy could more than double the chances of a return hospitalization within 30 days of discharge (Young, 2008). Similarly, Coleman and colleagues (2005) reported that 14.3% of clients who had a medication discrepancy were readmitted to the hospital within 30 days as compared to only 6.1% of clients who did not have a medication discrepancy (Coleman, Smith, Raha, & Min, 2005).

Evaluating non-prescription medications found in the home is also essential because they may interact with the prescription medications. Non-prescription medications include over-the-counter medications, vitamins, herbals, supplements, and home remedies. Detective work to identify some non-prescription medications may be necessary because older adults may not consider them to be drugs. Other sources for obtaining an accurate medication profile include family members and other caregivers.

Home medication audits often uncover medications that are in the home, but that are not currently being prescribe or being used. Older adults often retain unused medications for potential future use to prevent being wasteful, and to avoid the need to repurchase the same medication if it is prescribed again in the future (Rocchiccioli, Sanford, & Caplinger, 2007). When the clinician locates medications not currently being used, clients should be advised to either dispose of the medication or to clearly separate and label the medications not being used from medications that are currently being used. Many times medications not currently being used are outdated and clients should be advised on proper disposal of expired medications. Also, while conducting the medication audit, the clinician may discover multiple supplies of the same
medication that may be originating from various sources such as differing pharmacies and prescribing healthcare professionals. Again, proper disposal of outdated medications and education about the appropriate use is warranted.

Medication histories are often the most successful when done not only with older adult clients but also any family members or caregivers who are familiar with the client’s drug therapy. A systematic process for obtaining a medication history was proposed by Tessier and colleagues (2010). The steps of the medication reconciliation process, adapted for use in homecare are:

1. Assemble demographic information which is nearly always available prior to the home visit.
2. Review existing medication lists and compare them to all medicines found in the home.
3. Consider whether clients’ medication regimens correspond to their health histories and the clinicians’ assessment of current health problems. Does there seem to be an indication for all medicines the client is taking?
4. Consider “what’s missing.” Does the client’s health history and/or assessment indicate a problem that generally requires pharmacotherapy, but is not part of the client’s medication regimen?
5. Probe for more: ask open-ended questions to encourage the client to raise issues not previously addressed in medication history and systems review.
6. Conduct a final check by asking one last open-ended question to encourage clients and their family members or caregivers to raise issues not previously addressed in the medication history or systems assessment.
7. Reconcile as many discrepancies as possible immediately. Often all that is required is client or family education to correct misinformation. Reconciling other discrepancies may need to be done in conjunction with the client’s prescribing health care professionals, but can be initiated with phone calls or emails from the home. (Tessier, Henneman, Nathanson, Plotkin, & Heelon, 2010)

After the older adult’s medication history has been taken and reconciled, an accurate and comprehensive medication list can be developed (Table 1). This list will serve as reference for clients, family members, or other caregivers to set up and take medications. Clients can also share the list, and should be counseled to do so, with health care professionals when seeking care in settings such as a specialist’s office, outpatient clinic, or other health care setting. If any changes to the medication regimen are made during the outpatient appointment, having the medication list available provides an opportunity to update it immediately.

Potential Clinically Significant Medication Issues and Ineffective Therapy

Older adults who have been hospitalized frequently have new medications. The addition of new medication may cause side-effects including changes in GI function, unusual sensations and sensitivities, fatigue, cognitive impairment, drowsiness, or a host of other symptoms. Allergic reactions are the most serious and may include sneezing, itching, or skin rashes. A severe form of allergy is anaphylaxis. Anaphylaxis often involves multiple systems, is unpredictable, can have rapid onset and be life threatening (Scarlet, 2006).

Vigilance in assessing, observing and questioning older adults who are on new medications or new doses of medication for adherence is recommended. In one study investigating antibiotic adherences, reasons for non-adherence included; not remembering to take the medication, improved health and perceptions of medication side-effects (Ho, Taylor,
Cabalag, Ugoni, & Yeoh, 2010). Side-effects, such as nausea, may not be noticed in the first few doses, and may result from the use of more than one class of medication in combination such as the use of opioids and antibiotics.

Carefully investigating complaints of side effects will promote optimal medication use. Older adults may simply stop taking one or all of their medications if they perceive that the medication may be causing a side effect and may not mention this unless specifically asked. When older adults report medication side effects, or discontinuation of a medicine, clinician investigation of the symptoms, onset and duration, as well as the older adult’s perception of the issue is warranted.

"Polypharmacy has been defined in different ways, but one of the most commonly used definitions is the concurrent use of five or more drugs" (Haider, Johnell, Weitoft, Thorslund, & Fastbom, 2008, p.62).” Planton and Edlund (2010) noted multiple factors, not just the number of medications, can lead to ineffective drug therapy in the older adult population including: multiple prescribers; multiple pharmacies; incomplete medication histories; client expectation of a prescription as the outcome of an office visit; duplicate medications; sub-therapeutic dosing; and non-adherence.

Using multiple medications can lead to unanticipated side effects as a result of interactions. As previously noted, older adult home care clients, on average, use 8-10 medications per day, though some take substantially more. This is not to say, as noted earlier, that older adults with several co-morbid conditions do not benefit from the use of multiple medications. However, the use of multiple medications reinforces the need for a thorough assessment to assure medications are providing effective therapy for the older adult. Evaluating the therapeutic benefit of each medication and working with clients and their other healthcare
professionals to discontinue any unnecessary, redundant, or inappropriate medications that may be causing unnecessary side effects and expense to the client is an important intervention.

Duplications and Omissions and Dosage Errors

As previously mentioned, duplications and omissions are frequently the sources of medication discrepancies during client transitions from hospital to home care (Ketchum, Grass, & Padwojski, 2005). There are several reasons for medication duplication and omissions. First, the older adult or family may not be able to provide an accurate medication history at the time of hospital admission (Young, 2008). Second, using multiple pharmacies for drug therapy may result in duplications (Planton & Edlund, 2010). Third, duplication often centers around confusion between trade and generic names of medication. Polypharmacy and the involvement of multiple prescribing healthcare professionals contribute to medication duplication and omission (Planton & Edlund, 2010). Careful medication reconciliation in the home setting will afford clinicians the opportunity to identify and resolve medication duplication and omissions.

Another potentially harmful medication discrepancy that can occur during transitional care is an unintentional dosage error. A dosage error can be as simple as the change of a decimal point. This change can significantly adjust the dose from a therapeutic range to the potentially critical error of a sub-optimal dose or, to the critical error of an overdose. Checking that the medication and dose are appropriate is an essential component of medication reconciliation (Young, 2008). Once discovered, dosage errors can be readily resolved.

Nonadherence

One of the challenges of the home-care clinician is to promote medication adherence, “the extent to which the client continues the agreed-upon mode of treatment” (The American
among older adults. In a recent study of clients receiving home care, nearly two-thirds were non-adherent with one or more of their medications, and a substantial number of purposeful medication omissions were reported (Mager & Madigan, 2010). The findings of this study suggest that home-care providers must be vigilant in assessing older adults’ medication use, and it is important for clinicians to assess why a patient may not be taking a medication. A significant obstacle is the idea that an older adult is non-adherent when symptoms that necessitated the medication have already been relieved. (Coffey, Cornish, Koonthanam, Etchells, & Matlow, 2009; Mager & Madigan, 2010). Nonadherence can be related to a lack of knowledge about the necessity of taking medication for a prescribed or indefinite period of time (Planton & Edlund, 2010). As previously discussed, medication side effects can also be a factor in discontinuing the use of a medication (Ho, Taylor, Cabalag, Ugoni, & Yeoh, 2010). Additional factors include forgetting to take medication, falling asleep prior to taking medication, physical difficulty in taking the medication (swallowing), inability to hold the medication (dropped), or being unaware that the medication is prescribed (Ho et al., 2010; Mager & Madigan, 2010). Sadly, medication affordability also impacts adherence. To cope with medication affordability older adults may hoard medication, take partial doses, share with their spouse, or simply refrain from taking medications (Rocchiccioli, Sanford, & Caplinger, 2007).

When nonadherence is identified, assessment and sensitivity to the associated factors is a useful approach. Prior to contacting the client’s physician to report the nonadherence, other interventions such as the need for education and counseling, the need for a better system of managing medications (e.g., pill box; reminder systems), and clients’ abilities to afford the medications should be considered. Medical social workers, local elder programs, faith based organizations and pharmaceutical companies can potentially provide varying levels of assistance.
to the older adult who needs help to afford prescription medication. Physicians and Pharmacists can offer generic medications, and in some instances, less expensive medication alternatives to help older adults afford medication, the indication or rationale for the client to take the medication, the medication’s effectiveness, and whether the medication is causing any cognitive impairment is warranted.

Potentially Inappropriate Medications

Tools are available to help home care clinicians identify potentially inappropriate medications. One widely used tool is the Beers Criteria. The Beers Criteria was developed in the 1990’s by a panel of experts in geriatric care. Its purpose was to propose consensus criteria for the safe use of medication in the older adult population. As a result of this project, a list of medications that are potentially inappropriate in adults older than 65 years was established (Fick et al., 2003). The Hartford Institute for Geriatric Nursing has published two assessment tools for using the Beers Criteria (Molony, 2008a; 2008b). These tools are intended to direct home care clinicians to best practice information when utilizing the Beers Criteria. Information about concerns related to certain drug use in older adults is provided (Molony, 2008a) as is information about the inappropriate use of certain drugs for older adults with specific diagnoses (e.g., anticholinergic drugs in clients with dementia) (Molony, 2008b). These tools can also be found on the World Wide Web at http://consultgerim.org/resources/.

Another resource in identifying medications that may cause harmful effects in clients is the List of High-Alert Medications from the Institute for Safe Medication Practice (ISMP). This list identifies medications that have “a heightened risk of causing significant client harm” when they are used inappropriately (ISMP, 2008). Though not necessarily specific to older adults, this list is a useful resource for identifying medications that can create significant harm, have side
effects, narrow therapeutic ranges, and require extra vigilance when using to minimize risks associated with an adverse drug event (Table 2).

The Beers Criteria and ISMP List of High Alert Medications are resources that can alert home care clinicians to the need for more thorough medication evaluation. When clients are prescribed medications that are identified in these resources, clinicians need to assess how long the client has been taking the medication, the purpose of the medication and whether the client is experiencing any unanticipated symptoms as a result of those medications to determine if taking the medication may be appropriate. The client's pharmacist and prescribing healthcare professional are additional resources for home care clinicians. These additional team members can work together to address questions and concerns regarding medications which are often necessary for optimal outcomes. It is important to provide other healthcare professionals with a complete list of all the medications home care clients are taking prior to discussing questions or concerns enhances the efficiency and effectiveness of interprofessional communication.

Another source for identifying potentially adverse drug to drug interactions is computerized drug interaction software. Drug interaction software is intended to detect potentially harmful drug to drug interactions when a client's medication history is entered into the program. Wong and Holbrook (2010) completed a systematic literature review and found that very little data exists regarding specific benefits to the use of drug interaction software on clinical outcomes. However, computerized drug interaction software can be used effectively to help clinicians identify potential drug to drug interactions when conducting a medication history. If potential drug to drug interactions are identified with computerized software, or any other means, such as the Beers Criteria, careful assessment of the client must be made to determine if the potential interaction is of concern for the older adult client in question. The client’s
pharmacist is always an appropriate resource for the evaluation and interpretation of any
questions raised concerning drug to drug interactions by any means of drug therapy analysis
(Bertoli et al., 2010).

Summary

Older adults are prescribed a disproportionate amount of medication creating greater
potential for ADEs. Accurate and comprehensive identification and resolution of medication
discrepancies is a first step in preventing ADEs. The medication history and home medication
assessment process should include built in redundancies designed to uncover all medications
used by the older adult. Duplication of drugs by class or name, omissions, and non-adherence,
either unintentional or intentional, are common sources of medication discrepancies. Tools such
as the Beers Criteria and ISMP List of High Alert Medications and on-line drug guides can
identify established high risk drug therapies, potential interactions, reactions to, or side effects of
drug therapy. Once an accurate list of medications currently being used is obtained it should be
reconciled against lists from any recent hospitalization. The goal is to establish an accurate list of
medications being taken and account for any new medications or dosage changes. Creating a
comprehensive medication list including prescriptions, over the counter medication, and
herbal/natural supplements currently be used is the next step in preventing potential medication
problems.

Vigilance in observing for potential side-effects, reactions, or interactions to medications
throughout the period of home care services will promote favorable outcomes. Any unanticipated
results of drug therapy should be investigated and reported to clients’ prescribing healthcare
professionals and/or pharmacists. If the home care clinician is meticulous in taking a drug
history, vigilant in looking for potential interactions and errors, as well as conversant with the
older adult’s medication habits, the client will have the optimal chance of benefiting from the prescribed drug therapy.
References


Table 1.

Sources for Medication Lists

**Institute for Healthcare Improvement**: (extensive detail on process)

http://www.ihi.org/ihi

Search: topics > office practices > primary care access > tools > delivery system design

tools > medication list for clients and families (download file)

- This requires establishing a free account / password

**Tennessee Pharmacists Association**: Universal Medication List

http://www.tnpharm.org/UML/umd.html

**Saint Barnabas Healthcare Systems**: My Medication List

http://www.saintbarnabas.com/medicationlist/index.html

-click on one of the two choices of PDF file medication lists

These are simply examples. Many more lists may be located by doing a Google Search using the terms: *medication carry list*. 
Table 2.

**High Alert Medications Commonly used by Older Adults**

1. Anticoagulants
2. Diabetes Medications
3. Digoxin
4. Opiates
5. Benzodiazepines
6. Methotrexate
7. Chemotherapeutic Drugs
8. Medication delivered via Epidural/Intrathecal catheters
9. Dialysis Solutions
10. Promethezine IV

(Institute for Safe Medication Practices, 2008)

11. NSAIDS

(Pharmacology Corner: Pharmacology CME for Physicians, Pharmacists and Nurses, Marcu, 2011)