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The Impact of Communication on Medication Errors

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The Case

A 93-year-old man with a history of chronic systolic heart failure and with a ventricular assist device (VAD) had been on warfarin for his VAD and for stroke prevention for his atrial fibrillation. He had been followed by an anticoagulation clinic at his local hospital for several years. He was admitted to the hospital after being referred by the VAD team for an elevated internal normalized ratio (INR) of 13.4. During medication review, the hospital team discovered that he was prescribed warfarin 4 mg daily on Mondays and Fridays and 3 mg daily on all other days of the week. The patient had multiple outpatient visits prior to his hospital admission at which both 1 mg and 5 mg strengths of warfarin were noted as active on his medication list. After discussions with the patient's family, it was determined that the patient's daughter had given the patient three 5 mg tablets of warfarin (total daily dose 15 mg) for two days in a row instead of three 1 mg tablets (total daily dose 3 mg). The patient received a daily dose of warfarin five times that of the intended dose. The patient did not experience any signs or symptoms of bleeding and was discharged the next day after a vitamin K infusion.

The Commentary

By Jennifer Branch, PharmD, Dakota Hiner, PharmD, and Victoria Jackson, MS, NP-C, PA-C

Understanding Patient Safety Risks Associated with Medication Errors

The National Coordinating Council for Medication Error Reporting and Prevention defines a medication error as: "... any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer." Medication errors are most common at the ordering or prescribing stage. Typical errors include prescribing the wrong

medication, route, dose, or frequency. These errors account for almost 50% of medication errors. Data suggests that nurses and pharmacists identify 30% to 70% of medication-ordering errors. Medication errors are a pervasive problem but preventable in most cases.[1]

Adults over the age of 65 years are more likely to experience adverse drug events. In 2013-2014, this patient population accounted for approximately 34.5% of emergency department visits; of these emergency department visits for adverse drug events, 32.5% were related to anticoagulant use, 18.8% to antidiabetic agents, and 3.4% involved potentially inappropriate medications as indicated by the Beers Criteria.[2] Contributing factors include alterations in absorption, distribution, metabolism, and excretion of medications that occur with advanced age. Decreased gastrointestinal motility and delayed gastric emptying may result in variations in medication absorption. Distribution is affected when muscle mass is reduced and adipose composition is increased, which can lead to an increase in the volume of distribution of lipophilic medications and a decrease in volume of distribution of hydrophilic medications. Decreased hepatic blood flow and hepatic function reduces medication metabolism, and reduced renal function increases risk for diminished excretion of medication.[3]

Increased use of multiple medications, often referred to as polypharmacy, also contributes to increased chance of adverse effects. Some institutions recognize concomitant use of 5 or more prescription drugs (excluding over-the-counter medications) as an independent risk factor for adverse drug events[4] and in 2008, for example, the Centers for Disease Control and Prevention reported that 36.7% of patients 60 years of age and older were prescribed 5 or more medications.[5] In addition to prescription use, many geriatric patients use over-the-counter (OTC) medications and supplements. A 2017 study of 3,469 adults aged 62 to 85 years old found that 54% of these patients use 1-2 OTC products daily and 29% of them use ?4 OTC products daily[6] which may also contribute to the risk of drug-drug or drug-disease interactions. OTC medications, including herbals, vitamins, and nutritional supplements are often overlooked by providers and patients.[7]

Medication errors may occur in both inpatient and outpatient settings, and many of these errors are preventable. In particular, anticoagulation errors can cause harms such as bruising and bleeding and those occurring in an acute care setting have the potential to cause severe harm. Inpatient anticoagulation errors often result in an increased length of stay and greater healthcare costs. Complex dosing, requirements for frequent monitoring, transitioning between parenteral and oral medications, and the utilization of outdated weight or renal function information when determining dosing can all increase risk of error. Ambulatory care settings also present risks for errors including missed doses, patient/caregiver misunderstanding of dosing instructions, and incorrect administration.[8]

Warfarin, the oral anticoagulant most frequently used to control and prevent thromboembolic disorders, is commonly used among older adults.[9] Warfarin-related bleeding is among the most common causes of

hospital admissions resulting from adverse drug events.[10] Annual incidence rates of fatal, major, and minor bleeding associated with warfarin therapy have been reported as 0.6%, 3.0%, and 9.6%, respectively, which are five times greater than in patients without warfarin therapy.[11]

Improving Communication through Transitions of Care

Providers can decrease risk of adverse drug events by improving the effectiveness of transitioning patients between healthcare settings. Transferring a patient from one care setting (e.g. hospital, nursing facility, primary care, long-term care, home health care, or specialist care) to another is termed a “transition of care” by the Centers for Medicare & Medicaid Services (CMS).[12]

Hospital discharges are one example of a transition of care, and over 35 million hospital discharges occur annually in the United States. One randomized controlled trial found that more than half of the patients discharged from a hospital experienced a clinically important medication error within 30 days of discharge, and approximately 4% of these adverse drug events were related to anticoagulants.[13] It has been estimated that the cost of unplanned readmissions is 15 to 20 billion dollars annually.[14]

Many factors contribute to ineffective transitions of patient care, and these root causes often differ from one healthcare organization to another. Root causes can include breakdowns in communication, patient and caregiver education, and accountability. The Joint Commission Center for Transforming Healthcare reports that communication breakdowns occur when providers do not effectively or completely communicate important information among themselves, to the patient, or to those taking care of the patient. Risk factors for unsuccessful handoffs include conflicting expectations between sender and receiver, cultural differences, inadequate time, and lack of standardized procedures. Breakdowns in patient education can occur when conflicting recommendations are made. Patients may also find their medication regimens confusing or complicated, especially if not given clear instructions about follow-up care. Accountability breakdowns occur when there is no primary provider to take responsibility for assuring that the patient’s care is coordinated across multiple settings with all providers.[15]

To improve outcomes, decrease adverse events, and reduce readmissions, evidence-based models for transitions of care have been developed.[16] Although each model may differ in detail, they all support effective provider communication, the use of health information technology, medication reconciliation on admission and discharge, ensuring access to care after discharge, and post-discharge follow-up. Using components of transitions of care models in managing use of anticoagulants across various settings, we can focus on engaging patients and caregivers, promoting continuity with a single anticoagulation provider, and fostering communication among all of a patient’s healthcare providers.

Strategies to Reduce Medication Errors

A complete, accurate, and current medication list is a critical tool for identifying medication management issues. In the case described previously, an old prescription on the patient's medication list contributed to an administration error and was subsequently identified upon review of the medication list. By completing a thorough medication reconciliation with emphasis on high-risk medications during each encounter, healthcare providers can reduce risks related to medication interactions and duplications, and thus the potential for patient harm, regardless of care team size.[8]

Completing a stepwise medication reconciliation is a strategy that may reduce preventable medication errors of all kinds. Discrepancies and errors in omissions, supplications, contraindications, and information clarity during medication reconciliation have been linked to medication errors, administration delays, and rehospitalizations.[16] The majority of studies included in a 2012 systematic review illustrated that medication reconciliation was associated with a decrease in both actual and potential adverse drug events.[17]

Medication reconciliation should occur at each encounter with the patient. The goal of this process is to provide the patient with an accurate list that includes all of their medications and their strengths, frequency of doses, and other directions for use. The healthcare provider should also assess for inappropriate prescribing, pill burden, and regimen complexity. Reconciling the medication list increases the likelihood that the patient has been prescribed the correct medication, in the correct dose, to be taken at the correct frequency. Medication reconciliation also allows providers to review potential drug-drug or drug-disease interactions.[16]

The "brown bag" method is a form of medication reconciliation, specifically for use in primary care. This practice involves encouraging patients (or caregivers) to bring all prescription and nonprescription medications to each encounter for review by the healthcare provider. During the process, the healthcare provider can assess medication understanding ("What are you taking this medicine for? When do you take this medicine? Can you show me how much you take each time?"), field concerns or questions the patient may have, clarify instructions, and identify or avoid medication errors and drug-drug interactions.[18] In one study, implementing "brown bag" medication reconciliation resulted in an increase in the number of problems with medication regimens identified (from 17.8% before implementation to 34.2% after implementation) and an increase in the percentage of patients whose medication regimens were changed as a result of the reconciliation (17.8% before implementation and 41.5% after implementation).[19]

Additional strategies to reduce medication errors include obtaining baseline labs and current weight to prevent underdosing or overdosing. Improved patient understanding and adherence can be achieved by providing both written and verbal instructions following each encounter. Administering medications at consistent times and providing the exact amount required for each dose may also increase adherence and

decrease misunderstanding or errors.[8] Lastly, it is important to evaluate therapy duration and cost to ensure regimens include the least expensive alternatives compared to others of similar effectiveness.[20]

Improving Communication through Patient and Caregiver Education and Engagement

Caregivers perform a variety of tasks that are essential to providing healthcare to patients. According to one study, 50% of caregivers help with the administration of medications and 65% of caregivers communicate with healthcare professionals.[21] Because caregivers are an integral part of a patient's care team, healthcare providers must educate and engage not only patients but also their caregivers by clearly communicating information about the patient's medications, including administration instructions and potential side effects and adverse effects.

An important aspect of ensuring effective education of, and engagement with, patients and caregivers is assessing their learning preferences. Individuals have different learning styles, defined as "natural, habitual, and preferred way(s) of absorbing, processing, and retaining new information and skills."[22] Whereas some prefer to learn through visual diagrams and pictures, others prefer to listen to lectures, perform hands-on activities, or read written brochures. This is part of a bigger picture called health literacy, defined as "the degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services to make appropriate health decisions," and is also an important element in effectively educating both caregivers and patients.[23] It is not enough that people simply understand the information; they must be able to use it.

In addition to assessing learning preferences and health literacy status, healthcare providers should also understand that a patient's sociocultural background may influence their perspective, values, beliefs, and behaviors regarding health and well-being. When a provider interacts with a patient, three cultures are involved in the interaction—the patient's culture, the provider's culture, and the culture of medicine—and, at times, these cultures diverge and create communication difficulties. The ability to communicate effectively with patients and caregivers from diverse sociocultural backgrounds is at the center of cross-cultural care.[24] Healthcare providers can build trusting relationships and preserve dignity by asking patients and caregivers about their cultural beliefs surrounding health. By remaining open and non-judgmental during discussions surrounding the social and contextual factors influencing adherence to medical regimens, healthcare providers can develop partnerships with patients and caregivers who are culturally different. Healthcare providers can also attend training on cultural competence and cultural humility through an organization or continuing education course.[25]

Healthcare professionals can engage patients and caregivers utilizing the teach-back method, an evidence-based health literacy intervention, to ensure information has been provided in a way that patients and caregivers understand.[24,26,27] Using the teach-back method, the healthcare professional uses plain

language, spoken in a clear tone at a moderate pace, to deliver the most important message, along with 2-4 additional key points.[26] After providing the patient and caregiver(s) with the educational information, the healthcare provider should use non-shaming, open-ended questions to assess their understanding; for example, using the teach-back method, a healthcare provider might say the following: *"Just to be safe I want to make sure we are on the same page. Can you tell me...?."* The patient and caregiver are thereby asked to explain, in their own words, what they have just learned. If the patient and caregiver are not able to teach-back correctly, the healthcare provider should rephrase the message until the patient and caregiver demonstrate clear understanding.[26] By improving communication and understanding, the teach-back method has been positively correlated with improved patient adherence and outcomes.[27]

Conclusion

Various factors may increase risk for medication errors, particularly in the geriatric population. Lack of effective communication among multiple providers or between provider and patient may result in medication errors. Having multiple specialists and providers on a patient's care team may increase care complexity and the risk for medication errors due to miscommunications and having more than one provider prescribing medications, as was the issue in this case. When possible, utilizing a single anticoagulation provider may reduce these risks. The institution in this case was able to implement a process change to allow for one anticoagulation prescriber. Regardless of care team size and prescribing policies, strategies that improve communication, such as complete medication reconciliation as well as effective engagement and education of patients and caregivers during every transition of care is essential to reducing errors. Additionally, healthcare providers can adopt evidence-based best practices like the teach-back method and "brown bag" medication reviews to help decrease medication errors and improve patient outcomes.

Take-Home Points

- In addition to potential communication breakdowns, age-related pharmacokinetic changes and polypharmacy contribute to medication errors in the geriatric population.
- Medication reconciliation at each patient encounter offers a chance for the healthcare provider to correct any discrepancies or misinformation about medication management.
- Caregivers play an integral role in supporting the plan of care, and healthcare providers should engage these valuable team members.
- Effective communication between patients, caregivers, and healthcare providers during transitions of care can positively impact health outcomes.
- Examples of evidence-based strategies that healthcare providers can employ for engaging patients and caregivers include the teach-back method and "brown bag" medication reviews.

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