Care in hospital, ambulatory settings, long-term care and at home: Paper

**Addressing Risk Factors for Transitional Care of the Elderly – Literature review**

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**Abstract**

Transitional care has become one of the most pressing topics in the global efforts to improve the reliability and safety of patients due to the growing evidence indicating the strong correlation of patient handovers with medical errors and adverse events. The elderly population with typically complex health problems frequently requires care in multiple settings. Elders appear to be a group particularly at risk for medical errors in general and during transitions between settings. This population is especially vulnerable for experiencing communication related adverse outcomes and problems of care fragmentation. Existing research has primarily been concerned with adverse events and medical errors occurring within the hospital. Review of the literature reveals that relatively little data is available to estimate the extent and impact of adverse events occurring during the transitions interface between primary and secondary health and care services. Despite the lack of empirical research a common message in existing literature is that adverse events occur in transitional care of the elderly. The major contributing risk factors for adverse events are ineffective care processes and poor communication. The type and incidence of adverse events reported in the literature are related to drug events, procedure related events, diagnostic test follow-up errors, nosocomial infections and falls. The severity of these adverse events varies from laboratory errors only to permanent disability and death. Risk factors related to transitional care should be recognized as a high yield area of intervention and improvement. This is particularly evident given the increasing elderly population and their repeated hospitalizations, iatrogenic complications, and uncoordinated care due to poorly executed transitions.

**1. Introduction**

Transitional care is defined as a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations and different levels of care within the same location (Coleman et al 2003). The transfer of essential information and the responsibility of care of the patient from one health care provider to another is an integral and vital component of effective communication in health care. This critical transfer point is known as a handover or handoff. An effective handoff supports the transition of critical information and continuity of care and treatment. Ineffective patient handoffs on the other hand can contribute to gaps in patient care and breaches in the systems resilience to protect the patient from harm (Friesen et al 2008; Cook et al 2000). The main goal during patient transfer is optimal patient care and safety (Boutilier 2007).

Interest in transitions, (handover or handoff) has grown steadily over the past decade and has become one of the hottest topics in the global patient safety area as researchers, hospital administrators, educators and policy makers have appreciated that patient transfers represent a dynamic risk factor. The World Health Organisation (WHO) has listed “communication during patient care handovers” as one of its top 5 patient safety initiatives (WHO 2007).

Elderly people (> 65) appear to be a group particularly at risk for medical errors. A growing body of evidence further suggests that this population is particularly vulnerable to experiencing discontinuity in care with the potential of adverse outcomes due to poorly executed transitions (Coleman 2003: Coleman & Boul 2003: Naylor & Keating 2008;Tsilimingras et al 2003). Older patients, many with reduced mental capacity, are those most dependent on a health care system that is able to communicate appropriately and to transfer information and duties properly (Gårasen & Johansen 2007). Frail older patients, particularly those with cognitive impairment consistently suffer repeated hospitalizations, iatrogenic complications, and uncoordinated care (LaMantia et al 2010).

An increase in the elderly population in many countries further implies that the interface between primary and secondary healthcare is particularly important in creating a safe and reliable health care delivery system (Alamberti et al 2005).
2. Aim
This paper focuses upon care transitions at the interface between primary and secondary service providers within elderly health and care. It aims to identify and raise awareness towards factors that are critical to patient safety. We focus upon inter-organizational pathways, in particular from hospital to community and the reverse plus/and also inter-professional communication from hospital-based nurse to community nurse and from hospital- based physician to general practitioner.

3. Methodology
We conducted a systematic literature search by using the electronic databases PubMed, Medline, Cinahl and Academic Search Elite. We also manually/hand searched references in the retrieved articles, to identify additional articles (snowballing search). The data searches were limited to English language articles that appeared in peer-reviewed journals published from 2000 until January 20111. Keywords in our searches were: care transitions, inter-hospital transfer and elderly, information transfer, transitional care and elderly, patient safety and handover, patient transfer and patient safety, transitional care outcome, discontinuities in transitional care, adverse events and medical error. The criteria for inclusion were articles studying patient transitions between nursing homes, home and hospital in either direction. Samples had to contain a majority of older people (> 65). We included studies addressing adverse events and medical errors associated with the process of transitional care. We also searched the following journals’ contents page electronically for relevant papers: Journal of clinical nursing, Social science and Medicine, Aging and society, Age and Aging, Social care in the community, International Journal of Integrated Care. A total of 49 articles matched the inclusion criteria and were included in our review. We excluded all literature relating to mental health problems.

4. Risk factors identified within transitional care
Previous research has primarily been concerned with adverse events occurring within the hospital. As a result we find in review that relatively few data are available to estimate the extent of adverse events occurring in the post-hospital period (Tsilimingras & Bates 2008). “To Err is Human” may thus have underestimated the overall safety problem, due to the fact that injuries occurring after discharge and outside the hospital was not included in the evaluation (Institute of Medicine 2000). Many of the studies in our literature review used readmission rates to identify poor transitional care. However, there is evidence that this outcome has limited value as an indicator of quality of care in general (Benbassat & Taragin 2000). There is currently a lack of methods to measure safety of patient care across levels, organizations and professions (Thomas & Lambert 2008) and strategies to improve transitional care are insufficient (LaMantia et al 2010).

Despite the lack of empirical evidence a few studies indicate that adverse events occur frequently within transitional care and that elders and patients with complex care needs are particularly at risk. Research indicates that up to 49% of the patients will experience at least one discharge-related medical error or adverse event during care transitions (Moore et al 2003). Several of these events have been identified and reported as preventable or ameliorable, meaning that although they were unavoidable their severity could have been decreased by earlier corrective actions (Foster et al 2003:2004). Results also show that the rate of adverse events seems likely to increase as patients age (Foster et al 2004). The types of adverse events reported are adverse drug events, procedure related events, diagnostic test follow-up errors, nosocomial infections and falls. Missed diagnosis and incorrect treatment were also reported, but to a lesser degree (Moore et al 2003: Foster et al 2003:2004). The severity of the adverse events varied from laboratory abnormalities to permanent disability and death. Fifty percent of patients experiencing an adverse event required the use of extra health care services and some patients was readmitted to the hospital (Moore et al 2003: Foster et al 2003:2004). System problems such as ineffective and poor communication were a contributing factor in a majority of the preventable and ameliorable adverse events occurring (Foster et al 2003, 2004; Moore et al 2003). A commonly described contributing factor causing adverse events is the exchange of patient information among health care providers. Individual abilities and characteristics, team behaviours, systemic factors, and the lack of organisational support for a safety culture are factors that have been reported as influencing effective communication in healthcare (Leonard et al 2004).

4.1 Deficits in communication
The handoff process refers to either the verbal or written communication of patient information, designed to familiarize oncoming or covering health care providers with patients from whom they will be responsible (Wachter 2008). In our review we find that when communication breaks down patients are at risk due to the

1 A ten year span was used in the first phase of the literature search reported in this paper aiming to map the recent studies on risk factors within transitional care of the elderly.
fact that vital information (diagnostic findings, complications, consultations, test results pending, follow-up care) may not be shared adequately between physicians and nurses in the transitions between primary and secondary health and care services, resulting in a disability for them to perform their role and responsibilities effectively and appropriately (Roy et al. 2005). Incomplete or inaccurate information about the hospitalization can contribute to faulty medical decision-making or failure to adequately monitor the condition of the patient during follow-up care. It may negatively affect continuity and contribute to adverse events (Kripalani et al. 2007). Despite such findings relatively little attention has been given to adverse events that are caused by inadequate communication between hospital based physicians and outpatient primary care providers (Moore et al. 2003).

We find that within profession but across organizational boundaries communication is described as difficult and in many cases the communication from hospital-based physicians to community-based general practitioners is rated as poor (Foster et al. 2003; Kripalani et al. 2007; Garåsen & Johnsen (2007) and from hospital-based nurses to community nurses (Payne et al. 2002: Hellesø & Fagermoen 2010). Poor communication and coordination are evident in several studies (Arora et al. 2008, Sharit et al. 2008).

4.2 Admission and Discharge summaries lack vital information

Our review suggests that admission and discharge summaries play a critical role in care transitions (Kripalani et al. 2007). Hospital discharge summaries serve as the primary documents communicating a patients care plan to the post-hospital care team. Direct and phone communication occurs infrequently, and the discharge summary is often the only form of communication that accompanies the patient to the next care setting (Kripalani et al. 2007). There have been reported problems with timely receipt of information. Discharge summaries are often delayed or never reach the primary care physician at all (Kripalani et al. 2007). According to Walraven and colleagues (2002) they found a trend towards greater risk for readmission among patients who were seen and treated in follow-up by a physician who had not received a discharge summary. There are several studies reporting that discharge summaries lack essential information such as diagnostic test results, treatment or hospital course, discharge medications, test results pending at discharge, patient or family counseling and follow-up plans (Wilson et al. 2001: Foster et al. 2002; Kripalani et al. 2007). Garåsen and Johnsen (2007) assert that both referral and discharge letters often lack vital medical information, and referral letters to such an extent that it might represent a health hazard for older patients. Conversely, primary care physicians may not provide sufficient information to hospitals at admission. Transfer of information from community to hospital is also crucial for the preparation of discharge planning and subsequent care packages (Werret et al. 2001).

We find that nursing research has also raised awareness towards inadequate information transfer. Several studies report that the information transfer is inadequate. A study of nursing documentation from 36 patient records in Norway revealed that in 15 of the 36 records no nursing discharge note was found. There was no written information exchanged about the patient between the hospital and the receiving service provider in the community. In the 21 remaining nursing discharge notes none of the discharge notes were filled out completely (Hellesø et al. 2004). Essential clinical information, such as medications, medication allergies, caregiver contact information, cognitive status, depression status and follow-up plans were often missing when elderly patients were transferred to the home care services. Significant discrepancies between medication regimens are often identified (Brown et al. 2006).

4.2.1 Adverse Drug Events

In our review we find that failures in transferring adequate medical information, adverse drug events and medication discrepancies both at the time of hospital admission and at discharge represents a significant source of adverse events, with the potential to cause harm (Cornish et al. 2005; Schnipper et al. 2006; Vira et al. 2006; Perren et al. 2009; Boockvar et al. 2004: Corbett et al. 2010; Gleason et al. 2010: Moore et al. 2003; Coleman et al. 2005: Rothschild et al. 2000: Wong et al. 2008: Unroe et al. 2010 ). Generally medication errors are the most described common type of adverse events within healthcare. (Dean et al. 2002: Tsilimingras & Bates 2008; Foster et al. 2003).

One study reported that medication discrepancies were more common at discharge than during admission (Pippens et al. 2008). Most changes in drug use were discontinuations, followed by dose change and class substitutions (Boockvar et al. 2004). After screening 523 admissions another study found that eighty-one patients had at least one unintended discrepancy. The most common discrepancy was omission of a regularly used medication. Further, the study identified that approximately 40% of the discrepancies had the potential to cause moderate to severe discomfort or clinical deterioration (Cornish et al. 2005).

Elderly patients seem particularly vulnerable to medication discrepancies due to chronic co-morbid medical conditions, functional impairment, complex medical regimens often with prescriptions from several providers
and extensive changes in their medication during hospitalization (Corbett et al 2010). Older age and polypharmacy are known risk factors for medication discrepancies and errors (Coleman et al 2005: Gleason et al 2010). A study conducted within Norwegian municipalities revealed serious discrepancies between general practitioners and community nurses related to the medication lists for their common patients due to flaws in their information exchange and the lack of a common integrated ICT system. There was a lack of accordance in 60 % of the medication lists that were compared between nurses in home care services and the general practitioners (Rognstad & Strand 2004).

The most common medication classes involved in errors include: cardiovascular agents (represents the majority), antidepressant, gastrointestinal agents, neurological agents, anti-diabetics, and diuretics (Gleason et al 2010: Moore et al 2003: Coleman et al 2005). However, the issue of medication problems experienced by elderly transitioning across health care settings has received relatively little attention in the medical literature (Coleman et al 2005).

4.2.2 Procedure and test follow-up errors
Another potential risk that a few studies have identified as a risk factor after hospital discharge is related to failure to follow-up on procedures suggested or scheduled and test results (eg laboratory test and radiological studies) pending at the time of discharge, which is the norm (Roy et al 2005: Gandhi 2005: Moore et al 2003). Moore and colleagues (2003) found that patients with a work-up error, described as a test or procedure suggest or scheduled by the inpatient provider but not adequately follow up by the outpatient provider was more likely to be rehospitalized within 3 months after the first outpatient visit. Roy and colleagues (2005) found that nearly half of all discharged patients have test results pending on the day of discharge of which approximately one half of these were abnormal. This study further demonstrated that primary care physicians often are unaware of potentially actionable test results returning after discharge. It is emphasized that few studies have addressed follow-up on test results pending at hospital discharge and suggesting that such test results are frequently overlooked in the handoff from the inpatient physician to the outpatient physician. This in turn can lead to adverse events in which these test result may have important clinical consequences for the patient that in some cases require urgent action (Roy et al 2005).

4.3 Summing up
Effective communication of information is a vital component of the provision of safe transitional care. The result of the literature review indicates that in relation to information transfer across organizational boundaries, most research is concentrated on the hospital to home discharge for elderly patients rather than the reverse phase. This view is supported by the findings of Payne and colleagues who also found that most studies were descriptive and originating from nursing journals (2002). Patients discharged from hospital appear especially vulnerable to adverse events because of possible worsening of their functional impairments since admission, changes in the treatment regimen, discontinuities during their transition, and a limited support system (Tsilimingras & Bates 2008). Medical errors related to the discontinuity of care may be associated with an increased risk of rehospitalization (Moore et al 2003). The potential for medical errors increases as patients undergo several care transitions (Coleman 2003). This tendency is described to be attributed to the clinical complexity of elderly care rather than age based discrimination (Thomas & Brennan 2000).

5. Discussion
The transfer of patient information between settings and health care providers has been recognized as a risk factor in transitional care (Roy et al 2005). Current studies on interactions among health care levels show evidence for a lack of communication between primary and secondary care (Dunnion & Kelly 2008). The majority of the types of communication from primary care to hospital form a one way communication rather than real teamwork (Werrett et al 2001), the communication from hospital to primary care and conversely is also insufficient (Meara et al 1992). It is stated that errors stemming from transitional care represent one of the most common and consequential errors in healthcare (Watcher 2008). However, to our knowledge there exist limited evidence-based empirical research that supports this statement. Specifically, while several studies introduce and discuss contributing factors and the potential for adverse events within transitional care, very few studies measure the actual extent and frequency of adverse outcomes affecting elderly patients who are transferred between different settings in healthcare. Despite the problem related to generalization across countries the situation appears to be typical. In figure 1, we outline the prominent risk factors described in the literature we reviewed.
Danielsen & Fjær (2010) suggest that the interaction between hospital and primary care are characterized by ineffective communication and a lack of holistic thinking. Each party tends to focus on its own tasks and resources and not on the system as a whole, which is paradoxical given that it is the system the patient actually experiences. The responsibility for improving the interaction, cooperation and communication across the interfaces appears to “fall between two stools” where either part seems to feel accountable (Kvamme et al 2000: Coleman et al 2003). We believe one should be concerned with enabling professional groups across different settings to understand their roles and make them feel that their work is complementary with that of others within the health care system (Kewell 2006, Hood et al. 2001) create challenges in creating safe and reliable health care delivery. From a holistic perspective, multidisciplinary collaboration between all health care professionals is necessary to facilitate safe transitional care for elderly patients (Dunnion & Kelly 2008).

The system of care seems to be most vulnerable at transitions, with discontinuities in care arising mainly from poor information transfer and faulty communication patterns. Effective care transitions depend on collaboration across primary and secondary service levels. However, various service levels often function in isolation, and there is no way to hold providers accountable when problems arise (Coleman et al 2004). This gap gives rise to the potential of fragmentation of care, possible leading to medical errors, service duplication, inappropriate care, and critical elements of the care plan “falling through the cracks”. Ultimately, poorly executed care transitions may subsequently lead to poor clinical outcomes, dissatisfaction among patients, and inappropriate use of hospitals, emergency, postacute and ambulatory services (Coleman & Boult 2003).

Inadequate and poor communication may result in lack of transferring vital information during inter-organizational transitions. This in turn poses a potential risk for medical errors and adverse events because essential elements of the patients care plan developed in one setting are not communicated and followed up at the next care setting (e.g. preparation for the goals of care delivered in the next setting, arrangements for...
follow-up appointments and laboratory testing and reviewing the current medication regimen) (Coleman et al 2005). When elderly patients are being transferred between health care settings it is essential that the receiving health teams have accurate information concerning the patients’ medications, advance directives, allergies, and previous medical history (Morley 2010). Failure to follow up on abnormal test results is a critical weakness in patient safety (Gandhi 2005). Diffused responsibility is a concern within handoffs, in that it can lead providers across the inpatient and outpatient settings to assume that someone else is going to follow up on test results, in the worst case resulting in none taking responsibility (Gandhi 2005). According to Bull (2000) re-admissions to hospitals are reduced once community nurses receive effective communication from the hospital care team.

The literature review suggests that most post-discharge studies have usually focused on adverse drug events with very little data on the other types of adverse events or medical errors stemming from transitional care (Tsilimingras & Bates 2008). There are limited data except from the studies conducted by Foster and colleagues (2003:2004) that examine multiple types of adverse events simultaneously related to post-discharge adverse events. Beyond these studies there are limited data regarding the frequency of procedure-related events, nosocomial infections, therapeutic errors, pressure ulcers, diagnostic errors and falls in the outpatient setting (Tsilimingras & Bates 2008). Some studies have identified and revealed high-risk patients during transitional care are related to specific diagnosis groups (Spehar et al 2005). For example, numerous efforts have been made to improve transitional care for patients with heart failure, stroke and complex care needs. However, few efforts have specifically addressed transitional adverse events in the elderly in a general population (Tsilimingras & Bates 2008). To improve safety within transitional care we first need to have information on the incidence and type of adverse events occurring (Foster et al 2003:2004).

Conclusions
It is widely recognized that effective information transfer between health professionals is vital to optimise patient care and in developing safe outcomes (Foster et al 2002). Despite an increase in studies focusing on transitions, there are still gaps in the literature in terms of how patient information should be transferred in a way that reduces risk and strategies to improve transitional care are lacking (LaMantia et. al 2010). Despite the fact that problems associated with transitional care of older people have been identified little empirical research exists (Payne et al 2002). However, the literature suggests that preventable adverse events are likely to occur within transitional care of the elderly due to breakdowns in communication across care providers. Even if there are on-going evidence based interventions aimed at improving the safety of transitional care handovers, these are plagued with the age-old problem of not translating the findings of current research into improved practice (Johnson & Arora 2009). Adverse care and problems engendered by transitions and discontinuities in care should be recognized as an important area of concern for elderly (Tsilimingras & Bates 2008).

References


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