

A Systematic Review of Interventions to Improve the Communication of Advanced Directives and Medication Administration Records for Elderly Patients Transferring Between Nursing Homes and Acute Care Hospitals

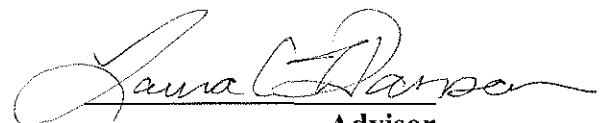
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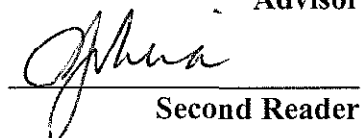
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ABSTRACT

Objectives:

To conduct a systematic review of the literature to identify interventions that can improve the communication of advanced care directives and accurate and appropriate medication lists for elderly patients transferring between nursing homes and acute care hospitals.

Methods:

The MEDLINE, ISI, and EBSCO Host databases were searched from inception to February 17, 2008 for appropriate articles. All abstracts identified by a prespecified strategy were reviewed. Studies met inclusion criteria if their design was of a randomized control trial, pre/post observational trial, or post-intervention observational study.

Data regarding each study were abstracted from the manuscript by the reviewer to a standardized collection instrument and details regarding type of study, study population, intervention, and results were recorded in evidence tables.

Results:

Six hundred ninety-six titles were identified by the pre-specified search strategies. Eighteen articles were submitted for full review. Thirteen articles did not meet inclusion/exclusion criteria and five articles were determined to describe interventions that resulted in the enhanced transition of appropriate medication lists or advanced directives between skilled nursing facilities and acute care hospital settings, whether to the emergency department or inpatient units. Of these articles, two articles described interventions that resulted in the enhanced transmission of advanced directives, two articles described interventions that resulted in the better transmission of medication lists, and one article described an intervention that accomplished both of these goals.

Conclusions:

The accurate communication of key patient information is integral to providing high quality health care to elderly, skilled nursing facility patients transferring to and from acute care hospitals. A standardized patient transfer document may assist with the successful communication of advanced care directives and medication lists, while a pharmacist-developed review of medication lists may help identify omitted or indicated medications on patient transfer. Randomized controlled trials with large number of patients in varied health care systems may be needed to determine the ideal design and medium for a patient transfer document. Further work will be needed to coordinate research efforts and adopt standardized definitions of high quality transitional care.

INTRODUCTION

Aging: International and Domestic Scope

The baby boom generation, those persons born in the post-World War II era between 1946 and 1964, represent a population cohort that is quickly approaching the age of retirement. International leaders and researchers around the globe recognize that the graying of this generation will present a major challenge to the financing and provision of health care.¹⁻⁶ The World Health Organization (WHO) reports that the cohort over age 60 is the fastest growing segment of the global population and that due to decreases in fertility rates and increases in life-expectancy world-wide, many nations will face adjustments in the age composition of their populations in coming years.¹ By WHO and United Nations estimates, approximately 35% of Japan's population and 34% of Italy's population will be above age 60 in 2025. China's aging population, alone, is expected to swell from 134 million inhabitants over age 60 in 2002 to 287 million in 2025. Accordingly, the WHO has identified the promotion of "healthy and active ageing" as a key policy concern for leaders worldwide.

In the United States, a similar shift in the nation's demographics can be expected. As the American population of approximately 80 million baby boomers continues to age, demographers project that the number of people over age 60 will increase from 46.9 million in 2002 to 86.1 million in 2025.^{1,7} Colloquially, this phenomenon has been called by many writers and population researchers an aging "tsunami." The aging of the baby boom generation will necessitate careful planning for and anticipation of this population's future health care needs by politicians, public health officials, physicians, and allied health professionals.

Impact of the Baby Boom Generation on Future Health Care Expenditures:

Beyond Future Disability Projections to Quality

It is generally held that health care costs for a population cohort will increase, as the cohort ages, chronic disease accumulates in the group, and disability levels rise.^{4, 8} According to the Centers for Disease Control (CDC), it is currently three to five times more expensive to provide health care to someone over age 65 than to someone under age 65. Based on demographic shifts alone, national health care spending in the United States is predicted to increase 25% by 2030.³ These figures are based partially on predictions of future disability and take into account data demonstrating that the profile of the baby boom generation differs fundamentally from previous generations in its members' level of educational attainment as well as racial and ethnic composition.^{7, 9} According to the National Institute on Aging (NIA),⁹ the US population over age 65 in 2030 will be more diverse than it was in 2003, with the elderly Hispanic population increasing from 6% to 11%, the elderly Black population increasing from 8% to 10%, and the non-Hispanic White population decreasing from 83% to 72% of people over age 65. Current data from the National Center for Health Statistics¹⁰ show that Black and Hispanic elderly have higher total personal care needs than White elderly, spurring partially predictions of the need for increases in spending across the continuum of long-term care. As the baby boom generation ages, gerontologists and health economists have raised concerns that disability and health care costs for this cohort may threaten the future solvency of federally-sponsored health insurance for the elderly.⁴

Not all experts are clear though on the real threat of aging to the national health care budget. Recent analyses of the National Long-Term Care Survey by some suggest

that disability rates in the elderly are decreasing and that annual costs to Medicare to maintain patients in a non-disabled state are decreasing too.^{11, 12} Research by others holds that care for those persons near death, and not in all elderly, may be the true driver of increases in health care spending,¹³ while further work by other groups shows that there are a number of complex reasons for increases in health care spending and that “the aging of the population is not an adequate explanation.”¹⁴ In any case, it remains unclear if improvements in access to care and the application of future developed health care technologies will mitigate rates of health care use in the disabled elderly population.

Though the financial impact that the aging of the baby boom generation will have upon the cost of providing care to our disabled elderly remains to be seen, it is clear that there are other reasons for physicians, health services researchers and the public to be concerned about care provided to the elderly. Among these is the quality of medical care that our elderly receive. In its report *Crossing the Quality Chasm*,¹⁵ the Institute of Medicine identified the provision of high quality medical care to the general population as a major challenge to the American health care system. Among the most vulnerable people in the elderly population are those who suffer from a variety of conditions that leave them disabled, unable to perform their usual Activities of Daily Living (ADL’s), dependent on others, and unable to participate in the pursuit of their own health care plans. Indeed, further research has shown that vulnerable elderly patients are likely to receive suboptimal health care across a variety of settings^{16, 17} and subsequently, there have been calls for improvement of care of the frail elderly by leaders in the field of medicine.¹⁸

Defining the Target Population of Elderly: Frailty, Vulnerability, and Nursing Home Residents

In the medical literature, a great deal of attention has been paid to defining subgroups of the elderly population who differ fundamentally from the "well" elderly and who might benefit from targeted intervention. This population of patients is sometimes described as the "frail elderly," though the definition of this term has evolved over the last several decades.¹⁹ In recent work, Fried et al. state, "It is generally agreed that frailty is a state of high vulnerability for adverse health outcomes, including disability, dependency, falls, need for long-term care, and mortality (p 256)." Despite this clear definition, the challenge until recently has been in formulating an operational definition of this concept.²⁰ In an attempt to connect the manifestations of aging with their root cause, some researchers have sought to define frailty by the presence of serum markers of disease, though this work is on-going.²¹ More recently, however, others have argued that "frailty is a distinct entity recognized by clinicians, with multiple possible manifestations and no single manifestation, by itself, being sufficient or essential in the presentation (p 257)."²⁰ Indeed, an operational definition for "frailty" has been proposed, "based on the presence of a critical mass of three or more core 'frail' elements, with the core entities being weakness, poor endurance, weight loss, low physical activity, and slow gait speed (p 257)."²⁰

In the medical literature, the "vulnerable" elderly have been defined "as persons age 65 and older who are at increased risk of functional decline or death over 2 years (p1691)."²² This definition, used in the Assessing Care of Vulnerable Elders project, seeks to "[capture] persons typically labeled 'frail' (older people at highest risk of decline

or death) and older people at moderately high risk (p 1691)."²² We can see that these definitions of the vulnerable and frail elderly, while seeking to explain similar phenomena, may describe two different subpopulations of patients, if serum markers are used to define frailty, or may define the same subpopulation if the operational definition of frailty proposed by Fried et al.²⁰ is employed.

Elderly nursing home patients on the whole though, might easily be described as either frail or vulnerable. Frail or vulnerable elderly patients may indeed live in assisted living facilities or at home in the community and be at risk for dependency. However, given their high number of comorbidities and their high degree of reliance on others for assistance with the activities of daily living, elderly nursing home residents compose a dependent population of individuals. By studying this population of patients who may be at higher risk for adverse outcomes, we may ultimately be able to understand how to provide better coordinated, quality health care to all elderly adults.

Nursing Homes, Hospitals and Transitional Care

Though the majority of long-term care provided to the elderly is delivered by family and friends in the community, there are 17,000 nursing homes that provide care to 1.6 million nursing home residents in the United States.²³ On average, nursing home residents tend to be elderly, possess significant disability, and suffer from some degree of cognitive impairment: 74.9% of residents require assistance with 3 or more activities of daily living, approximately half of all residents are aged 85 or older, and an estimated 50 to 70% suffer from dementia.²³ Research also suggests that the level of illness and disability among nursing home residents is increasing over time, as community and social models of care support those with less dependency.^{23,24} Given this portrait of the

nursing home population, it is evident that nursing home residents represent a group of elderly who may not be able to adequately communicate details of or participate in the administration of their own plan of care.

The communication of accurate medical information is fundamental to providing seamless, coherent care to all patients as they transfer between nodes in our health care system. However, when elderly patients cannot participate in this process, as many nursing home residents cannot due to frailty or vulnerability, these patients are at risk for “falling through the cracks.”²⁵ Inevitably, with each transition of care, there are opportunities for miscommunication of patient care information. And it is this miscommunication of information that challenges our splintered health care system as elderly patients consequently suffer through repeat hospitalizations, iatrogenic complications, and uncoordinated and poor quality care.

Indeed, transitions of elderly between acute care hospitals and nursing homes are a frequent occurrence. Recent data show that most nursing home admissions originate from hospital discharges and that there are 549 hospital admissions per 1000 nursing home beds per year.²³ It is estimated that nursing home residents account for 2-3% of all emergency room visits.²³ Once hospitalized, elderly patients have a high likelihood of being transferred to another institution and of being rehospitalized. Studies show that 23% of hospitalized elderly patients are transferred to another institution at hospital discharge and that 19% of patients transferred from a hospital to a skilled nursing facility will be transferred back to the hospital within 30 days.²⁵

Recognizing the importance of this phenomenon, the American Geriatrics Society (AGS) issued a statement in 2003 entitled *Improving the Quality of Transitional Care for*

*Persons with Complex Care Needs.*²⁶ In this document, the AGS defined transitional care as “a set of actions designed to ensure the coordination and continuity of healthcare as patients transfer between different locations or different levels of care within the same location.” The AGS identified that during transitions in care, “patients are at risk for medical errors, service duplication, inappropriate care, and critical elements of the care plan ‘falling through the cracks.’” While many clinicians might agree from their own anecdotal experience that patients with complex care needs are at risk for error, overtreatment, and undertreatment as a result of poor transitional care, it has been more difficult to define study outcomes that might be representative of high quality transitional care. As Terrell and Miller note²⁷, it is difficult to report if nursing home residents receive high quality transitional care due to “the lack of operational definitions for quality transitional care (p 37)” in the literature.

Prior Work

Conceptually, however, the provision of effective transitional care can be understood as a summation of several key steps: communication between sending and receiving clinicians, preparation of the caregiver and patient for the transition, reconciliation of patients’ pre and post-hospitalization medication lists, arrangement of a plan for follow-up of outstanding tests and for an appointment with the receiving physician, and discussion of warning signs that might necessitate further more emergent medical evaluation.²⁵ A variety of changes to health care delivery systems, information transfer technology, and health care policy have been suggested, which may potentially improve the provision of transitional care.^{25, 28} However, investigators have highlighted the dearth of high quality research in the area of transitional care, relative to the number

of transitions of care that occur daily in clinical practice, and have called for further research to be conducted.^{25, 28} Indeed, no clear definition of study outcomes that might define high quality transitional care have emerged or been adopted. And, to date, no single, clear method of ensuring the smooth transition of care of elderly between acute care hospitals and skilled nursing facilities has emerged and been widely implemented.

Proposed Research Question

In order to understand the types of interventions that might be useful in ensuring high quality transitional care of elderly nursing home residents to and from acute care hospitals, it may be potentially useful to explore the literature for successful interventions that have resulted in the effective communication of two key pieces of medical information: accurate and appropriate medication lists and advanced care directives. Medication associated errors have been identified as a major source of morbidity and mortality in transitional care.^{29, 30} Previously completed advanced care directives are often not available to hospital physicians³¹, though when present, can influence medical decision making.³² If interventions that ease the communication of reconciled medication lists and advanced care directives can be identified, they may allow extrapolation and application of their constituent techniques to other components in the transitional care process. To determine the existence of such interventions, I will conduct a systematic review of the literature to examine the following clinical questions: a) “Can a clinical intervention improve the communication of accurate and appropriate medication lists for patients aged 65 and older transferring between nursing home and hospital settings?” and b) “Can a clinical intervention improve the communication of

advanced directives for patients aged 65 and older moving between nursing home and hospital settings?”

METHODS

Data Sources and Search Strategy

To identify articles addressing my research questions regarding transitional care of the elderly, I performed an electronic search of the MEDLINE, ISI Web of Knowledge, and EBSCO Host databases. I was assisted in the formulation of a search strategy and the selection of relevant search terms by a research librarian at the Health Sciences Library of the University of North Carolina at Chapel Hill.

MEDLINE search

The MEDLINE database was searched from inception to February 17, 2008 initially for the combined MeSH terms: *nursing home AND hospital* with the query limited to practice guidelines, meta-analyses, clinical trials and randomized control trials that were published in English. Results from the initial search were then matched with the MeSH terms: *patient transfer OR patient discharge OR medication systems, hospital OR medication errors OR advanced directives OR resuscitation orders OR advanced directive adherence*. All abstracts identified by this search strategy were reviewed. Abstracts were selected for full review if the article met pre-specified inclusion and exclusion criteria.

ISI Web of Knowledge search

The ISI web database was searched from 1955 to 2008 for articles or reviews in the English language that matched the search terms: *nursing home AND hospital*. Articles identified from this first query were then searched for those that matched the following search terms: *patient transfer* OR patient discharge* OR medication error**

OR *advanced directive** OR *resuscitation order** OR *medication reconciliation**. Titles identified by this method were then reviewed with relevant abstracts pulled for further review. From these abstracts, articles were identified for full review by applying the same criteria for full review described above in the MEDLINE search.

EBSCO Host search

The EBSCO Host database was searched from 1955 to 2008 using for research articles or peer reviewed articles in the English language that matched the search terms: *nursing home AND hospital AND transfer** OR *discharge** OR *error** OR *advanced directive** OR *resuscitation order** OR *medication reconciliation** in the abstract. The search was limited to articles that had an abstract available. Titles identified by this method were then reviewed with relevant abstracts pulled for further review. From these abstracts, articles were identified for full review by applying the same criteria for full review described above in the MEDLINE search.

Additional Articles

Additional articles for full review were suggested by other geriatric specialists, were known already to the author, or were identified from a review of selected articles' bibliographies.

Inclusion and Exclusion Criteria

Studies met inclusion criteria if their design was of a randomized control trial, pre/post observational trial, or post-intervention observational study. Additionally, acceptable articles described an intervention or strategy to ease communication of advance directives or medication lists for patients aged 65 or older, transitioning care between skilled nursing facilities and acute care hospitals. Studies were excluded if they

did not describe the intervention undertaken to improve communication of advanced directives or medication lists, if they described interventions of frail elderly transferring from the hospital to home, or if in describing a population of elderly residing in the community and in nursing homes, data was not presented separately for each sub-population.

Data Extraction/Data Quality Assessment

Data regarding each study were abstracted from the manuscript by the reviewer to a standardized collection instrument. Details regarding type of study, study population, intervention, and results were recorded in evidence tables. Judgments were made of each study's potential for selection and measurement bias as well as potential for confounding (low, moderate, or high). Each study was then assigned a judgment of its internal validity, external validity, and its clinical and public health significance. Based on the summary of these judgments, studies were then assigned a quality grade (low, medium or high). For identified randomized controlled trials, Jadad scores were assigned.

RESULTS

Six hundred ninety-six titles were identified by the pre-specified search strategies (Figure 1). After review of the title and abstracts, fourteen articles were initially found to meet the search criteria. Four additional articles were submitted to full review as potentially relevant, based on the suggestion of the study author or by other experts in geriatric medicine. In total, eighteen articles were reviewed for potential inclusion in the final systematic review.³³⁻⁵⁰

Of the eighteen articles submitted for full review, thirteen articles did not meet inclusion/exclusion criteria and five articles³³⁻³⁷ were determined to describe interventions that resulted in the enhanced transition of appropriate medication lists or advanced directives between skilled nursing facilities and acute care hospital settings, whether to the emergency department or inpatient units. Of these articles, two articles^{36, 37} described interventions that resulted in the enhanced transmission of advanced directives, two articles^{33, 34} described interventions that resulted in the better transmission of medication lists, and one³⁵ article described an intervention that accomplished both of these goals.

Of the three studies³³⁻³⁵ that described interventions that affected transmission of accurate and appropriate medication administration records, one study³³ was a single blind randomized control trial, one study³⁴ was a retrospective chart review performed to validate a study instrument, and the final study³⁵ described the results of a combination of a prospectively designed observational intervention and cross-sectional convenience sample survey (Table 1). The RCT³³ was analyzed and assigned a Jadad score of three (Table 2).

Of the three studies³⁵⁻³⁷ that described interventions that affected the transmission of advanced directives, one³⁶ was an observational study of the effect of an intervention upon a cohort of individuals, one study³⁷ involved a chart review performed before and after an intervention, and the final study³⁵ was the combined prospective observational study and cross-sectional convenience survey described above.

Due to the heterogeneity in the study designs and interventions performed in these research projects, it was not possible to perform a meta-analysis as part of this systematic review. In fact, given the scarcity of published research on interventions in this field, it was noted that the authors of these reviewed studies reflected on the current dearth of published studies in this area of scholarship and on occasion, cited earlier published studies included in this review.

Table 1. Overview of 5 Studies Included in Review

Reference	Design/Presence of Comparison Group	Intervention/Goal	Setting/Direction of Transfer	Number of Patients	Result
Crotty et al. ³³	Single-blind RCT. Comparison group described.	Evidence-based medication review followed by case conference between medical providers to discuss medications.	Transition to 85 long-term care facilities in Southern Australia.	110 patients consented to participate, 98 patients finished study	·Intervention group had increase in appropriate medication use
Barry et al. ³⁴	Observational study. No comparison group described.	Describe the prevalence of medication error using new tool to evaluate for missing indicated medications.	Transition to an acute care hospital in Ireland.	600 patients	·57.9% of patients were found to be missing an indicated medication
Madden et al. ³⁵	Prospective observational study with cross-sectional survey. No comparison group described.	Patient transfer sheet used for NH patients transferred to ED.	Transition to an emergency department in North Carolina.	420 patient visits; 34 nurses and 7 doctors surveyed	·Survey respondents said that list of medications made care “a lot easier” 88% of time ·234 (55.7%) patients had DNR preference reported
Tolle et al. ³⁶	Prospective chart review of cohort of individuals. No comparison group described.	Use of POLST (prospective order form for life-sustaining treatment).	Transition from 8 long-term care facilities to acute care hospitals in Oregon.	180 residents of long-term care facilities	·Of 180 cases, only 26 cases (13%) were hospitalized with none receiving CPR, intubation or ICU admission
Terrell et al. ³⁷	Observational study pre and post-intervention. Comparison group described.	Use of a one page transfer sheet for extended care facility patients transferred to ED.	Transition to an emergency department in Indiana.	65 patients in the pre-intervention time period; 72 patients in the post-intervention time period	·“Successful” documentation rates increased from 58.5% to 77.8% ·DNR status recorded increased from 64.6% to 87.5%

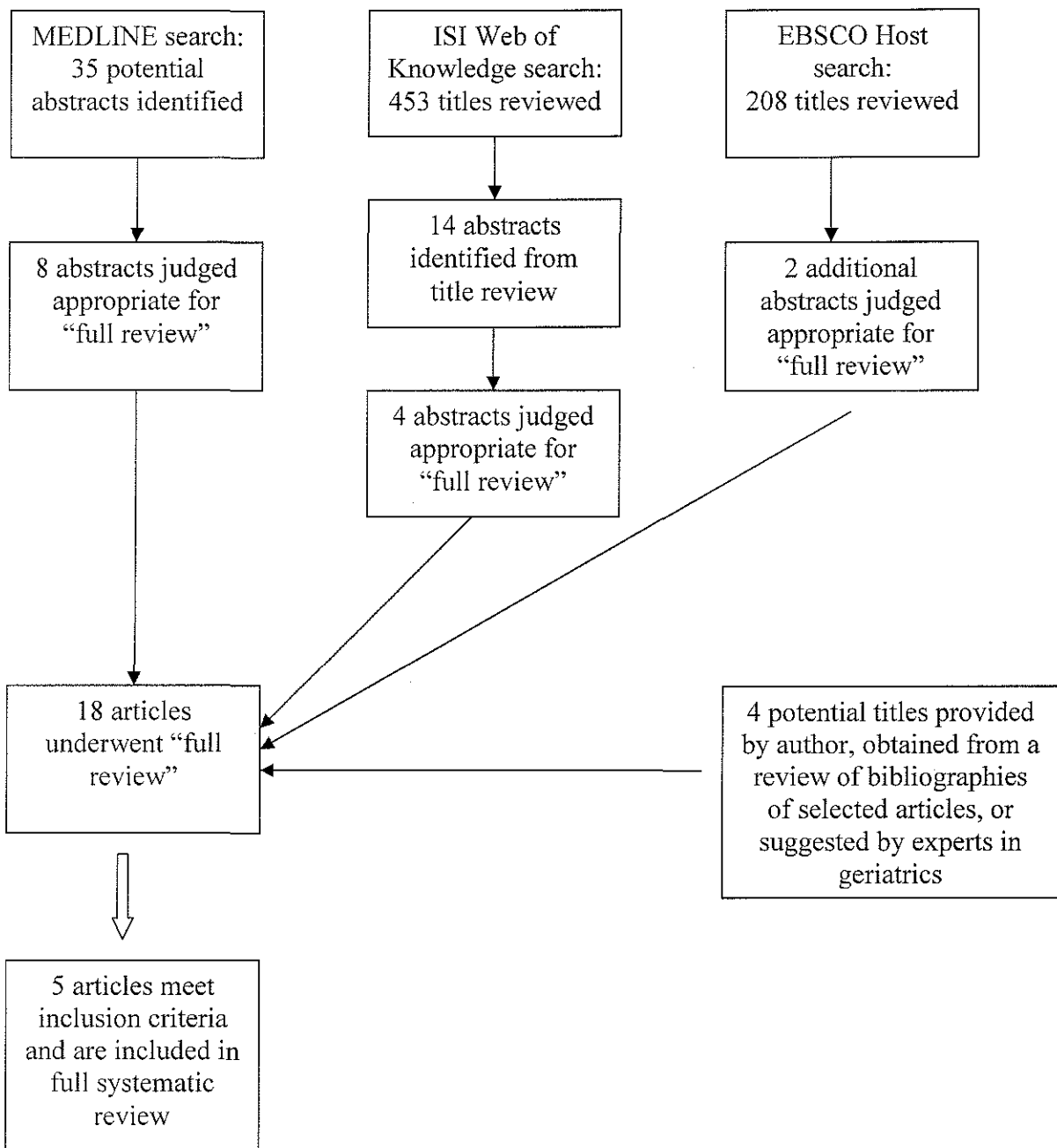


Figure 1. Search results and selection of studies for systematic review.

Table 2. Jadad score for Quality Assessment of Randomized Control Trial: Low (0 to 2), Moderate (3 to 4), and High (5)

Reference	Study Described as Randomized (0=no, 1=yes)	Method Used to Generated Sequence of Randomization Was Described and Appropriate (0=no, 1=yes)	Study Described as Double Blind (0=no, 1=yes)	Method of Double Blinding was Described and Appropriate (0=no, 1=yes)	Withdrawals and Dropouts Were Described (0=no, 1=yes)	Jadad Score
Crotty et al. ³³	1	1	0	0	1	3

Interventions to Improve Communication of Appropriate Medication Regimens

Of the five included studies, three³³⁻³⁵ addressed the transfer of appropriate medication regimens for elderly patients transitioning into a hospital or a nursing home. Each of the studies were of differing research design and described different interventions in settings in three countries that were performed among a varying number of patients with a range of results.

Crotty et al.³³ describe a single blind randomized control trial of a pharmacy consultant intervention powered to detect an increase in appropriate medication use for patients admitted to skilled nursing facilities in Southern Australia after hospitalization. Based on prior studies, the authors predicted that 110 patients would be needed in both study arms to have a 90% power to detect a 4.0 point decrease in the MAI (Medication Appropriateness Index) used in this study over an 8 week period. In turn, 686 patients were considered for inclusion; of these, 122 met inclusion criteria and 110 eventually consented to participation and were enrolled in the study. At baseline, the control and intervention patients were similar in most aspects, except in one area: the intervention group was slightly healthier, though this difference was not statistically significant.

At discharge from the hospital, the control group was given standard pharmacy care while the intervention group's providers were provided with an evidence-based medication review of the patient's medications within 10 to 14 days of their admission to the nursing home. Between post-hospital days 14 and 28, the study pharmacist then met with the subjects' medical providers and pharmacists to review appropriateness of the patient's medication regimen. Approximately 10 weeks after hospital discharge, other pharmacists, blinded to group assignment, conducted medication reviews of both control and intervention patients' medication regimens and calculated a MAI score.

Subsequently, a chart review was undertaken to assess for secondary outcomes: unplanned emergency department visits, adverse drug events, falls, changes in patient mobility, as well as evidence for confusion or increased pain.

Using an intention-to-treat analysis, Crotty et al. found a statistically significant difference between the MAI score of control and intervention patients of 4 points on an 18 point scale, indicating that intervention patients had more appropriate use of medications than control patients at the study's conclusion. Similar numbers of patients were lost from each study arm during the course of the intervention. When these patients were excluded from the analysis, intervention patients showed better controlled pain scores and lower hospital usage rates than control patients.

In the second identified study, Barry et al.³⁴ describe the development and validation of a new screening tool to assess the appropriate use of medications in patients transferred to acute care hospitals from skilled nursing facilities and the community in Ireland. The START (screening tool to alert doctors to the right treatment) instrument was developed by a group of geriatricians and pharmacists via consensus achieved by the

Delphi process. The instrument was designed to detect prescribing omissions in patients at the time of hospitalization. Subsequently, the authors report on data they collected on the discovered rates of omitted appropriate medication use in elderly hospitalized patients.

The START instrument comprises 22 evidence-based prescribing indicators for medications that the expert panel felt should be used frequently by geriatric patients. It covers 6 different organ systems and includes indications to use medications in a variety of clinical circumstances, from ace-inhibitors after an acute myocardial infarction to calcium and vitamin D supplementation for maintenance of bone health. In a series of 600 elderly patients sequentially admitted to the hospital, Barry et al. report that 57.9% of patients were found to have an omitted (never prescribed) medication that did not have an obvious contraindication in their pharmacy regimen. The most frequently omitted medications were atorvastatin in 156 patients who had an indication for its use, warfarin in 57 patients with chronic atrial fibrillation, and ramipril in 48 patients with chronic heart failure. There was no report in this study of whether the introduction of the START instrument in this hospital resulted in these patients being placed successfully on these indicated medications by their medical providers.

In the third identified study, Madden et al.³⁵ report the results of a prospectively designed, observational study of the effectiveness of a one-page transfer document to ease transition of nursing home patients to a university hospital emergency department in North Carolina. Before initiation of the study, a task force of community members, skilled nursing facility employees, nurses and physicians met to develop a standardized transfer form based on the previously published "Universal Nursing Home Transfer

Form” and adapted to the local community’s needs. Included on this form was a section where the patient’s current medication regimen could be recorded, as well as the time of the last given dose of medication.

Over a 12-month period of observation, results were collected on the demographics and reasons for transfer of 420 patients who were seen in the emergency department from nine nursing facilities. No information was collected as to the accuracy of transmitted medication administration lists. However, during the course of the study, a survey regarding the transfer form’s ability to improve providers’ ability to care for their patients was administered to a cross-sectional convenience sample of 34 nurses and 7 physicians in the emergency department. Of these 41 providers surveyed, 88 % replied that the list of medications included in the transfer form document made providing care to these elderly patients “a lot easier” than previously.

Interventions to Improve Communication of Advanced Directives

Of the five studies analyzed in this systematic review, three³⁵⁻³⁷ addressed the transfer of advanced directives for elderly patients into a hospital or a nursing home. Each of the studies was of differing research design and described different interventions that were performed among differing numbers of patients.

Madden et al.³⁵ conducted a prospectively designed observational study of the effectiveness of a patient transfer sheet to ease transitions from a nursing home to an emergency department, as described above. In this study, the authors report that 234 patients (55.7% of the study population) had a DNR preference recorded on their transfer form and that 156 patients (37% of the study population) had indication of the presence of a living will recorded on their accompanying transfer form. By way of comparison,

however, there is no indication of how often providers were aware of the presence of DNR orders or living will forms for this same population of patients presenting to the emergency department prior to this intervention .

In the second identified study that addresses the communication of advanced directives, Tolle et al.³⁶ describe the influence of a POLST (prospective order form for life-sustaining treatment) on end-of-life care provided to residents of 8 skilled nursing facilities in Oregon. Performing a chart review of a prospectively identified cohort of 180 individuals who had a POLST form completed with an indication to “transfer only if comfort measures fail,” the authors collected data over a 12-month period for all patients on discharges, health status changes, hospitalizations, and deaths as well as admitting diagnosis, treatment provided, and circumstances of transfer if a patient was admitted to the hospital. Presence of the POLST form in the patient’s chart was also recorded at the end of the study period.

In this population of elderly nursing home residents, Tolle et al. report that POLST forms were found in 169 of 180 (94%) patients at the end of the study period, with a statement that on “occasion” the form was not transferred with the patient appropriately across care settings. There are no hard figures, however, reported in this study as to the frequency that POLST forms were available on patient transfer from the skilled nursing facility to the hospital. Over the course of a year, in this population of 180 patients who wished to be hospitalized only if comfort measures fail, the authors state there were 26 instances, representing 13% of the population, in which patients were transferred to the hospital. Of these 26 cases, 22 (85%) were to pursue more aggressive comfort measures and 4 (15%) were to pursue life-extending therapies. Further, of these

26 cases, no patient was admitted to an intensive care unit, intubated, or received CPR. Among the patients who died in this study, 95% died in their skilled nursing facility. In the study, however, no hospitalization rates or rates of ICU admission, ventilator use, or CPR administration were reported for this population prior to this intervention.

In the third identified study, Terrell et al.³⁷ report the results of a pre- and post-intervention observational study on the “successful” communication of 11 pieces of medical information for nursing home patients transferring to an emergency department in Indiana after the implementation of a one page ED transfer form. The transfer form used in this study was developed from interviews with “out-of-hospital personnel” as well as emergency room doctors and nurses. Chart abstraction was performed to assess presence of 11 pieces of medical information in the charts of all patients transferring from one of ten “study” nursing homes during a three month pre-intervention period and then again, during a three month period after implementation of the transfer form. The 11 pieces of medical information to be listed on the transfer form included the patient’s name and demographic information, the patient’s usual mental and functional status, the reason for the patient’s transfer and the patient’s DNR status.

During the pre-intervention period, data was collected on 65 patients; while during the post-intervention time period, data was collected on 72 patients. Over the course of the study, “successful” documentation, defined as the verified presence of 9 of 11 pieces of medical information in the patient’s chart, increased from 58.5% to 77.8% with use of the transfer form. During this same time period, the rate of the recording in a patient’s chart of the DNR status rose from 64.6% to 87.5%.

DISCUSSION

Elderly nursing home residents transitioning care between skilled nursing facilities and acute care hospitals are often beset by a combination of physical and cognitive impairments that leave them unable to aid in the transfer of key information needed to ensure the continuity of their health care. Though medication errors have been identified as a major source of morbidity and mortality for patients transitioning between nodes on the continuum of care^{29, 30}, there is no clear, single intervention identified in our literature search that has been shown to improve the communication of accurate and appropriate medication lists bidirectionally between nursing homes and hospitals. In this systematic review, only three articles were identified in the literature that described interventions meant to evaluate the communication of appropriate medication lists for patients on transfer. And, though these studies utilized a variety of research designs and were conducted in a variety of settings in three different countries, they illustrate the potential feasibility of distinct aspects of separate interventions to contribute to the improved communication of medication regimens.

In their prospective, observational study, Madden et al. report on the introduction of a patient transfer sheet for skilled nursing facility patients sent to a North Carolina emergency department.³⁵ In a survey of the emergency department providers in this study, 88% of survey respondents report that access to the list of patient medications included on this transfer form made providing care “a lot easier,” while the remaining 12% of responders stated that this list made providing care “a little easier.” Though this study does not report the frequency with which medication lists were communicated or evaluate the accuracy of the communicated lists, it does suggest that emergency

department providers found these transfer forms an improvement over the usual method of communicating medication lists.

In further studies, Barry et al. and Crotty et al. describe interventions to evaluate the medication lists of patients either admitted to or discharged from the hospital, respectively.^{33, 34} Barry et al describe the design and testing of a new tool to evaluate for missing indicated medication for patients admitted to the hospital.³⁴ While this tool does not evaluate the accuracy of a patient's medication list on admission, the tool may be useful in evaluating this list for potentially omitted and indicated medications. Crotty et al. demonstrate that a pharmacist-led review of patients' medication lists on admission to a long-term care facility from the hospital can increase the appropriate use of medications.³³ Both of these studies, though not seeking to improve the accurate transmission of medication administration records, demonstrate that some form of review, whether done by use of a tool or performed by a pharmacist, may identify omitted medications and increase appropriate medication use on transfer. This outcome may ultimately be a more important goal to achieve than just accurately reporting the medication administration record on patient transfer.

Honoring a patient's recorded wishes is a central goal in modern, patient-centered health care. Often, however, the documents that facilitate the communication of these wishes are not present at the time of a patient's transfer to the hospital.^{31, 32} Even when a transfer sheet is used, data from work by Madden et al. show that only 55.7% of nursing home patients have their DNR preference reported on transfer to an emergency department.³⁵ Terrel et al. report though that adoption of a one page transfer sheet by skilled nursing facilities sending their patients to an Indiana emergency department

increased the recording of patients' DNR status from 64.6% to 87.5%.³⁷ And, among a cohort of 180 residents of long-term care facilities in Oregon who desired transfer to a hospital "only if comfort measures fail," Tolle et al. demonstrate that with use of the POLST form only 26 cases were hospitalized with none receiving CPR, intubation or ICU admission.³⁶ Importantly, from these studies, we can conclude that there is evidence that a hospital transfer document may improve the communication of resuscitation preferences for skilled nursing facility patients transitioning to a hospital.

As the number of elderly Americans continues to increase in coming decades, the need to identify methods to improve the communication of medication lists and advanced care directives for patients transferring between nursing homes and acute care hospitals will grow. From this systematic review, it can be suggested preliminarily that the widespread adoption of patient transfer sheets may aid in the communication of this information, while a review of medication lists by a pharmacist after patient transfer may increase appropriate medication use. Future work, however, will be needed to determine the optimum amount of information to be included on any transfer document and the ideal medium for its transmission. As a form is developed, the information it requires must be detailed enough to be useful to hospital-based providers but not too long, so as to impede the efficient transfer of the patient. Paper-based forms are attractive in that they are inexpensively produced, but conversely, these forms may be easily lost in a busy emergency department. Electronically transmitted forms that are linked to a patient's medical record are attractive in that they are not subject to being misplaced, but they will require the purchase of computer equipment by nursing facilities and some access to a patient's hospital medical record. In either case, changes will need to be made to our

current methods of transitioning patients between nodes on the continuum of care if we are to ensure the delivery of coordinated, high quality health services.

From this review of the literature, it is evident that there is a paucity of articles that test interventions to improve the transitional care provided to vulnerable and frail elderly as they transfer between hospitals and nursing homes. Beyond this, it is clear that the authors of the studies included in our review have used differing outcome measures to define their vision of what constitutes the improved provision of care. Fundamentally, the fact that there is no standardized set of clinical outcomes used in these studies can be seen as a reflection of the present difficulty in defining high quality transitional care and of the relative youth of this field of scientific inquiry.

Indeed, the body of literature in transitional care is hampered by the absence of universally agreed-upon and applicable descriptions of which end-points define high quality transitions.⁵¹ Researchers in the field have previously described various processes that they believe are associated with high quality care and have developed tools that address discrepancies for some transitions made by some populations of elderly patients.⁵²⁻⁵⁵ Without operational definitions of quality transitional care though and without a national body coordinating research efforts, researchers risk continuing to work towards disparate care end points, in uncoordinated endeavors situated in siloed research centers. To date, policy statements on the importance of transitional care have been made without randomized control trial-based evidence of just what excellent transitional care should look like in all its forms. Ultimately, we may need the results of larger, randomized studies and future demonstration projects commissioned by national

organizations such as the Centers for Medicare and Medicaid Services to develop operational definitions of high quality transitional care.

Limitations

This study may be limited by the search strategy employed, its review of English-language only articles, and publication bias. To limit the impact of these potential biases, the search strategy was developed with the assistance of a research librarian and articles that were known to the author previously were included in the review. It is acknowledged that the interventions described in the reviewed studies were performed in a variety of health care systems and with a limited number of patients, which may constrain the external validity of their results.

CONCLUSION

The accurate communication of key patient information is one of several prerequisites to providing excellent health care to elderly, skilled nursing facility patients transferring to and from acute care hospitals. Interventions performed in a variety of settings show that a standardized patient transfer document may assist with the successful communication of advanced care directives and medication lists, while a pharmacist-developed review of medication lists may help identify omitted or indicated medications on patient transfer. Randomized controlled trials with large number of patients in varied health care systems may be needed to determine the ideal design and medium for a patient transfer document. Further work will be needed to coordinate research efforts and adopt standardized definitions of high quality transitional care.

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