Early And Intermediate Hospital-to-home Transition Outcomes Of Older Adults Diagnosed With Diabetes

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EARLY AND INTERMEDIATE HOSPITAL-TO-HOME TRANSITION OUTCOMES OF OLDER ADULTS DIAGNOSED WITH DIABETES

by

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ABSTRACT

Over 5 million older adults with diabetes are hospitalized each year. Though typically not the index condition that leads to hospitalization, diabetes control often decompensates during the course of an admission and necessitates changes in home self-management plans. The specific transitional care needs of older adults with diabetes have been largely unstudied.

Transition theory provided the guiding framework for this research and proposes that each transition is a complex process created by the continuous interaction of personal, community, and societal-level conditions that facilitate or inhibit the health of a transition. Hospitalization has been described as a series of three successive, interrelated transitions.

The aims of this study were to determine whether personal and community transition conditions impacted the early and intermediate post-discharge outcomes in a sample of older adults with diabetes. A simultaneous quantitative/qualitative mixed method design was used to identify factors that impacted the home recovery transition experiences in a sample of 96 older adults with a mean age of 75 years.

A supplementary content analysis of free-response data gathered during administration of the Post-Discharge Coping Difficulty Scale (PDCDS) clarified difficulties encountered by elders and caregivers during in the first 30 days following discharge. Four overarching themes emerged: “the daily stuff is difficult”; “engineering care at home is difficult”; “life is stressful” and “difficulty managing complex health problems”.

Difficulties managing a complex medication regimen, regulating blood glucose, and managing a non-diabetes chronic health problem such as hypertension and chronic lung disease were subthemes that emerged during qualitative data analyses. These subthemes were transposed

into discrete nominal level variables and served as additional indicators of post-discharge coping difficulty in the descriptive correlational core component of the research project.

Participants in this study who experienced an event of recidivism had lower pre-discharge assessments of readiness on the Readiness for Hospital Discharge Scale (RHDS) (t = 2.274, df = 48, p =.028). Higher PDCDS scores were observed in patients who experienced an event of recidivism within 30 days of discharge (t = -3.363, df=24.7, p = .003) and also in respondents who described difficulties with managing medications, controlling diabetes, and managing a chronic illness. Binary logistic regression was used to identify factors that may predict recidivism risk. No condition-specific predictor variables were identified. A statistically significant three-variable model (X^2 = 26.737, df = 3, p < .001) revealed that PDCDS scores at 7 days (Wald X^2 =3.671, df = 1, p =.050), PDCDS scores at 30 days (Wald X^2 = 6.723, df = 1, p =.010), and difficulty managing a chronic health condition (Wald X^2 = 8.200, df = 1, p =.004) were predictive of an event of recidivism within 30 days of discharge. Difficulty managing a chronic health problem other than diabetes was particularly predictive of recidivism.

The nurse's skill in delivering discharge education was a factor in limiting early post-discharge difficulties. Elders with residual information needs on the day of discharge as measured by scores the Quality of Discharge Teaching Scale (QDTS) reported a lower readiness for discharge (r = -.314, p = .003) and experienced greater difficulties with early post-discharge coping (r =. 288, p = .023). Greater satisfaction with the post-discharge transition was noted in participants with higher QDTS scores (r = .444, p <.001).

Outcomes of the hospital-to-home transition experience were impacted by a variety of personal, hospital, and community factors. Findings of this study suggest that there is a need to better understand the sequential nature of the home recovery transition and the fluid needs of

older adults during this high-risk phase of care. The environments in which older adults receive post-discharge care are complex and need to be thoroughly considered when planning the post-discharge transition. Metrics of institutional performance of transitional care practices need to extend beyond events to recidivism and include evaluations of post-discharge coping and transition satisfaction. The nurse as the primary provider of discharge education has the potential to significantly promote positive transition outcomes for older adults and their family care providers.

This dissertation is dedicated to my mother, Marilyn Burton, RN, who was my inspiration to pursue a career in nursing and my partner in data collection for this study. Thank you for the hundreds of phone calls she made and the patience she exhibited as each elder shared his or her story. I could not have completed the study without her help and support and would not be the nurse I am today without her caring example of professional nursing practice

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CHAPTER ONE: INTRODUCTION

Background and Significance

Older adults experience the highest rates of acute care hospitalization (Hall, DeFrances, Williams, Golosinskiy, & Swartzman, 2010). Individuals over the age of 65 comprise 13% of the United States population, but generate over one-third of in-patient hospital stays (Levit, Wier, Stranges, Ryan, & Elixhauser, 2009). While utilization of in-patient services for most age groups has declined over the past 30 years, rates of hospitalization for older adults have not decreased (Hall et al., 2010).

Multimorbidity, the occurrence of three or more chronic illnesses in one individual, affects over 50% of older adults (American Geriatrics Society [AGS], 2012). Chronic health conditions such as heart failure, hypertension, and diabetes are factors in 74% of hospitalizations. Exacerbations of chronic illnesses are the primary cause of over one-third of hospital admissions and potentially complicate another 35% of in-patient stays (Levit et al., 2009). A patient's chronic disease self-management abilities largely determine whether a chronic illness is a primary cause or a contributing factor to a hospitalization.

Diabetes mellitus is a chronic health condition that has a profound impact on the health and well-being of millions of older Americans (Centers for Disease Control and Prevention [CDC], 2011). Over one-fourth of people over the age of 65 are affected by diabetes, and diabetes prevalence in the aged is expected to increase significantly over the next several decades (Narayan, Boyle, Geiss, Saaddine, & Thompson, 2006). Due to the coexistence of age-associated chronic conditions and disease-related complications, hospitalization rates of elders with diabetes exceed those of the general population (Bethel, Sloan, Belsky, & Feinglos, 2007).

The home recovery transitions of older adults with diabetes are intricate and involve the interaction between physiological, psychosocial, and environmental factors. Elders become particularly susceptible to poor outcomes when transitioning from the acute care setting because they are often discharged with ongoing care needs that exceed those that preceded the hospitalization (Miller, Piacentine, & Weiss, 2008; Mistiaen, Francke, & Poot, 2007; Murtaugh & Litke, 2002). Older adults with diabetes experience higher rates of post-discharge recidivism in the forms of readmission, emergency room utilization, and unplanned provider visits (Jiang, Stryker, Friedman, & Andrews, 2003).

Although elders with diabetes are frequent consumers of acute-care services, there is little known about the post-discharge transition needs of this high-risk patient population (American Diabetes Association [ADA], 2013). Enhanced understanding of the experiences and difficulties encountered by older adults with complex, pre-existing health conditions such as diabetes may assist in identifying patients at risk-for poor home recovery transitions and in developing pre-emptive interventions to support elders and family caregivers as they enter this vulnerable phase of care.

Study Aims and Research Questions

The specific aims of this study were to:

1. Determine what factors are associated with the development of home recovery transition difficulties in a sample of older adults with a pre-existing diagnosis of diabetes.
2. Describe common transition difficulties encountered by older adults with diabetes and their family caregivers during the early (7-day) and intermediate (30-day) post-discharge transition periods.

3. Determine if post-discharge difficulties encountered by older adults and family caregivers differ in the early (7-day) and intermediate (30-day) transitional periods following an acute hospitalization.
4. Determine if any of these factors are predictive of development of poor transition outcomes during the home recovery transition.

The research questions regarding older adults with pre-existing diabetes who were newly-discharged to home from an in-patient setting were:

1. What personal transition conditions (health-illness factors, diabetes-related factors, and perceived discharge readiness) impact early and intermediate transition outcomes?
2. What hospital-related community transition conditions (length-of-stay, discharge teaching quality, perceived discharge quality) impact early and intermediate transition outcomes?
3. Does the availability of post-discharge community support resources (family and home health care) impact early and intermediate transition outcomes of older adults with diabetes?
4. Are any of the identified personal, hospital-based, or community support transition conditions predictive of risk for 30-day recidivism?

Theoretical Framework

Transition is defined as "a passage from one state, place, stage, or subject to another; a change" (Transition, 2013). Transitions occur during periods of instability and may be precipitated by significant developmental, situational, and/or health and illness events (Schumacher, Jones, & Meleis, 1999; Schumacher & Meleis, 1994). Individuals in the process of

transition experience a heightened state of vulnerability (Meleis, Sawyer, Im, Messias, & Schumacher, 2000). Hospitalization has been described as a series of three overlapping transition processes in which an individual attempts to return to a state of normalcy (Miller et al., 2008). During the discharge and home recovery transition periods, in particular, patients and family caregivers often struggle to redefine their self-concepts, resume prior roles, and employ the new knowledge and skills required to manage condition-associated changes in health and wellness (Miller et al., 2008). Nurses are often primary providers of interventions that support patients and families during these vulnerable periods.

The middle range theory of transitions provided the guiding framework for this study. The theory conceptualizes transition as both a process and an outcome and provides a theoretical construct for the development of nursing therapeutics that meet the individual needs of patients and families during the throes of transition (Meleis et al., 2000). Aging is characterized by a series of gains and losses that may prompt interrelated changes in the health, function, and roles of elders and individuals within their social networks. Transition theory is particularly applicable in the care of aging families because age-related transitions that may result in hospitalization of an older adult often precipitate the need for nursing care for the elder and associated family members (Schumacher et al., 1999). An adapted model of transitions used in this study is depicted in Figure 1.

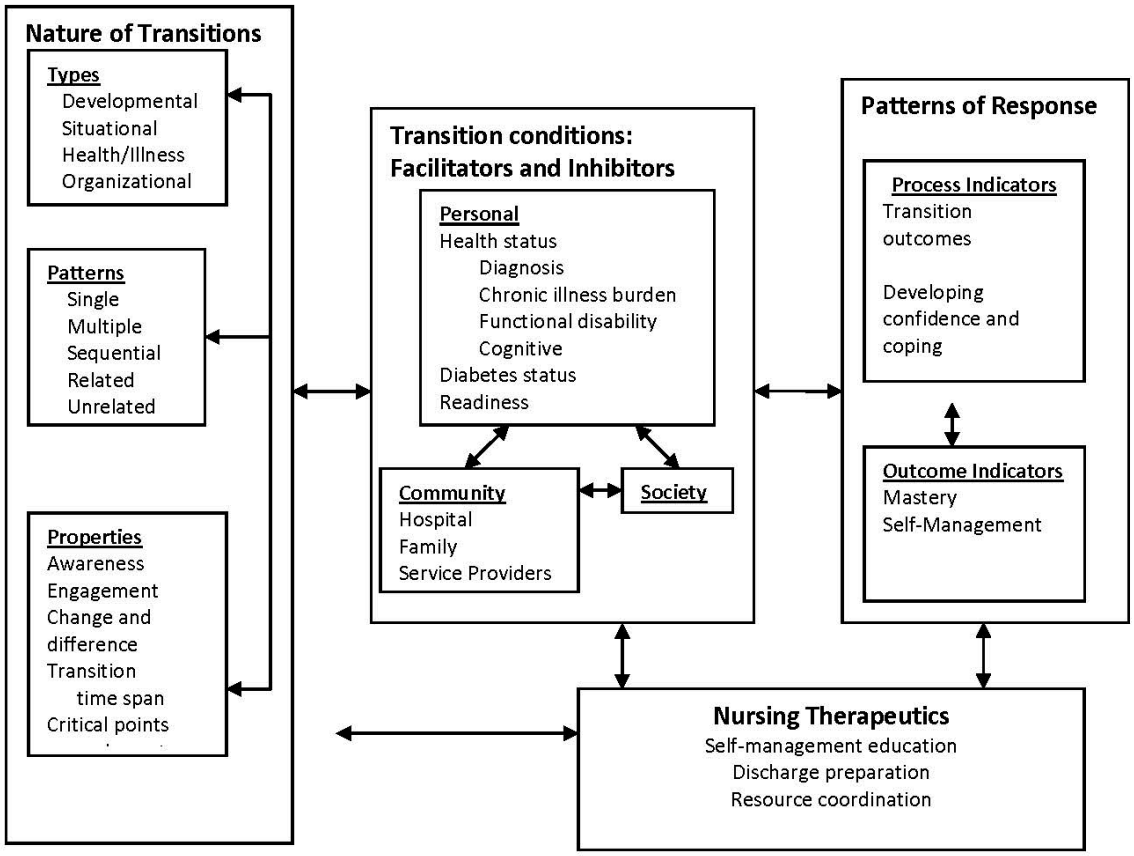

Figure 1. Adapted Model of Transition (Meleis et al., 2000) p. 17

Meleis et al. (2000) assert that transition is a complex phenomenon and that the nature of a transition is a product of various types, patterns and properties of change that may or may not be related. A transition may affect multiple individuals and must be understood from the point of view of each person impacted by the situation. Hospitalization of an older adult potentially creates a multidimensional transition experience for the elder and all affected family members (Meleis et al., 2000; Schumacher et al., 1999). Because transitions such as home recovery may occur over a period of time, the health of a transition may require reassessment during several critical points in the process.

Transition conditions are created by the continuous interaction of personal, community, and societal level factors that facilitate or inhibit the health of the transition (Meleis et al., 2000). The depiction of transition conditions as an interacting triangle in the center of the model illustrates the potential for these factors to significantly influence the nature of a transition as well as transition outcomes (Meleis et al., 2000).

Personal transition conditions in a hospitalized, chronically-ill older adult are jointly created by age-related health changes and disease-specific concerns (Meleis et al., 2000; Schumacher & Meleis, 1994). Health instability, functional disabilities, cognitive deficits, and chronic illness burdens contribute to the personal conditions that may significantly impact the well-being and subsequent transition outcomes of hospitalized older adults. The degree of glycemic control, the presence of diabetes-related macrovascular and microvascular complications, and the complexity of the self-management regimen are disease-specific personal conditions that also may particularly affect home recovery transition experiences in older adults with diabetes (Munshi et al., 2006; Suhl & Bonsignore, 2006). Because the burden for most post-discharge care rests with elders and their family caregivers, the perceived readiness to assume these responsibilities at the time of discharge creates another personal transition condition (Weiss & Piacentine, 2006; Weiss et al., 2007).

Older adults often rely upon formal and informal support from family, social networks, and community resources when navigating the home recovery transition (Schumacher et al., 1999). Changes in physical and functional status that may follow an acute hospitalization of an elder often necessitate the inclusion of family and community supports after discharge. The placement of these community-level transition conditions at the base of the model's triangle depicts the need for stability in these resources in order to attain and maintain a healthy, safe

environment for home recovery (Schumacher et al., 1999). Changes in a critical support resource such as illness or relocation of a family caregiver may require reallocation of care resources or supplemental referrals. Hospital discharge planning services, family caregivers, and home care utilization comprise the frequently-used community-level transition conditions that facilitate the post-discharge phase of care. Elders who lack access to a family caregiver are more likely to require at least temporary relocation to a skilled nursing facility (SNF) after discharge and are at higher risk for a poor transition outcome (Mahoney, Eisner, Havighurst, Gray, & Palta, 2000).

Societal transition conditions such as cultural background and governmental factors may facilitate or inhibit a transition (Meleis et al., 2000). Although societal conditions were not examined in the current study, it should be noted that that they may have significant influence on the older adult's transition experience. Cultural and other family factors may drive a family's decision to support an elder in home care efforts (Quadagno, 2008). Additionally, most third-party payers including Medicare do not reimburse for discharge planning interventions, transitional care services, or unskilled personal care making the availability of many of these supports limitedly available to many elders (Coleman, 2008; Parrish, O'Malley, Adams, Adams, & Coleman, 2009). Recent changes in hospital reimbursement structures have tied payment to readmission for high-risk diagnoses and patient satisfaction. These policies are driving changes in hospital transition practices (Goldfield et al., 2008; Medicare Payment Advisory Committee, 2007).

Patterns of response depicted in the model of transitions include those process and outcome indicators that are suggestive of an individual's movement toward restored health and away from vulnerability (Schumacher et al., 1999). Outcomes that reflect achievement of a successful home recovery transition include confidence in self-care and restoration of physical,

social, and environmental stability. Recidivism, medical errors, difficulties coping, and troubles managing existing or newly-emerging health problems are markers of poor hospital-to-home transition outcomes.

Nursing therapeutics traverse the duration of a transition and have the ability to impact or be impacted by the other components of the model (Meleis et al., 2000). Assessment of readiness, role supplementation in the form of discharge preparation including self-management education, and mobilization of community resources are common nursing therapeutics that are provided in the course of preparing an elder and family for the home recovery phase of care.

Home Recovery Transition Experiences

Post-hospitalization transitions of older adults with chronic illnesses are complex processes that place millions of elders and their family caregivers at risk for poor outcomes each year. The dynamic nature of post-discharge transitions suggests that experiences and needs of older adults and individuals within their support system may change as the transition progresses. Current system-level metrics of transition quality center around 30-day readmission rates for high-risk diagnoses such as heart failure and have given little consideration to the individual physical, social, and environmental factors that may precipitate a poor home recovery transition in a patient affected by multiple chronic illnesses.

This research study used a mixed-methods approach to investigate factors associated with early and intermediate transition outcomes of recently-discharged older adults with diabetes. Following receipt of Institutional Review Board approval, 96 consenting, hospitalized older adults with diabetes participated in face-to-face interviews within several hours of discharge. Participants were contacted by phone 7 and 30 days following discharge and provided

information on events of recidivism and experiences with post-discharge coping difficulty. Participants were afforded the opportunity to offer free-response comments describing specific difficulties encountered with regard to stress, recovery, self-management, and family concerns. A summary of the qualitative supplementary component of this research project is provided in Chapter Four.

The following three recurring post-discharge coping problems encountered by elders or caregivers during the early and intermediate phases of transition emerged during qualitative data analyses: difficulty managing medications; difficulty controlling blood glucose or managing diabetes; and difficulty managing other chronic health conditions. Nominal level variables were created to represent each of these subthemes. The problem-specific variables were included in analyses that examined statistical relationships of factors associated with the development of post-discharge coping difficulties. Specific descriptions of the core component of this research project and associated findings are provided in Chapter Three.

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CHAPTER TWO: HOSPITAL-TO-HOME TRANSITION OUTCOMES OF OLDER ADULTS WITH DIABETES — STATE OF THE SCIENCE

Abstract

Over five million older adults with a prior history of diabetes are hospitalized each year. Older adults with diabetes are at high-risk for multimorbidity related to chronic health changes secondary to long-standing diabetes and experience a greater prevalence of geriatric syndromes including cognitive dysfunction, functional impairment, incontinence, and pain. These factors contribute to the higher in-patient utilization seen in older adults with diabetes. Individuals with diabetes are at higher risk for poor hospital-to-home transition outcomes. Readmission rates for elders with diabetes may approach 30%, and adverse drug reactions also occur with greater frequency. Current transition research has focused on identification of predictors for readmission in disease-specific populations such as heart failure. The needs of individuals who live with chronic illnesses that exert heavy self-management burdens such as diabetes are not well-studied.

Hospitalization has been described as a series of three overlapping transitions: the hospitalization; the period surrounding discharge; and the home recovery. During this time, elders and individuals within their family network become particularly vulnerable to poor transition outcomes. Because elders leave the hospital with ongoing care needs, they are often reliant on supplemental help from family and support services during the home recovery transition. Older adults and family caregivers have described unmet needs during the post-discharge transition. Diabetes self-management skills serve as mainstays in optimizing the health of elders with diabetes. Changes in diabetes treatment plan that accompany hospitalization may necessitate new approaches in diabetes management. The unique post-discharge discharge needs of individuals with diabetes have been largely unstudied.

Introduction

Diabetes mellitus has a profound impact on the health and well-being of millions of older Americans (American Diabetes Association [ADA], 2013a). Over one-fourth of people over the age of 65 are affected by diabetes, and diabetes prevalence in the aged is expected to increase significantly over the next several decades (ADA, 2013a; Centers for Disease Control and Prevention [CDC], 2011). Due to the coexistence of age-associated chronic conditions and disease-related complications, hospitalization rates of elders with diabetes exceed those of the general population (Bethel, Sloan, Belsky, & Feinglos, 2007; DeFrances, Lucas, Bluie, & Golosinskiy, 2008; Jiang, Stryker, Friedman, & Andrews, 2003). Older adults with diabetes also experience higher rates of post-discharge recidivism in the forms of readmission, emergency room utilization, and unplanned provider visits (Jencks, Williams, & Coleman, 2009; Jiang et al., 2003).

Diabetes is a common contributor to the multimorbidity of many older adults (Marengoni, Rizzuto, Wang, Winbland, & Fratiglioni, 2009; Steinman et al., 2012). Though typically not the index condition that leads to a hospitalization, diabetes may complicate the course of treatment. In-patient diabetes care for patients of all ages frequently focuses on glycemic control during the acute episode of illness (ADA, 2013a). Modifications to diabetes treatment regimens during the course of a hospitalization are common and often result in substantial changes to home diabetes treatment plans (ADA, 2013a). Diabetes self-management skills serve as mainstays in achieving long-term glycemic control and limiting the development of acute and chronic disease-related complications.

Hospitalization has been described as a series of three overlapping transition processes in which one strives to biographically reconstruct a sense of normalcy (Miller, Piacentine, & Weiss,

2008). During the hospitalization, discharge, and home recovery transition periods, patients and family caregivers attempt to restructure their self-concepts, resume prior roles, and integrate the knowledge and skills required to manage health and illness and associated changes (Miller et al., 2008). At discharge, day-to-day responsibility for health management including diabetes care is returned back to patients and their family caregivers. Because older adults often leave hospitals with residual health problems and new functional deficits, the ability to independently manage intricate diabetes care skills at time of discharge may be limited, increasing the risk for poor transition outcomes (Suhl & Bonsignore, 2006).

Individuals experience a heightened state of vulnerability during times of change, including the transition periods that surround a hospitalization. The interaction between personal, community and societal transition conditions may positively or negatively impact transition outcomes (Meleis, Sawyer, Im, Messias, & Schumacher, 2000; Schumacher & Meleis, 1994; Schumaker, Jones, & Meleis, 1999). The intensified care needs of recently-discharged older adults and their family support systems are often unmet by healthcare providers (Bull, Hansen, & Gross, 2000; LeClerc, Wells, Craig, & Wilson, 2002; Mistiaen, Duijunhouwer, Wijkel, de Bont, & Veeger, 1997) Recidivism, medical errors, and caregiving difficulties are poor transition outcomes that are commonly experienced by older adults (Coleman, 2003; Coleman & Boult, 2003; Coleman, Mahoney, & Parry, 2005; Coleman, Parry, Chalmers, Chugh, & Mahoney, 2007) Extensive research has been conducted on post-discharge experiences of older adults and their caregivers (Bobay, Jerofke, Weiss, & Yakusheva, 2010; Brooten et al., 2002; Bull et al., 2000; Bull, Hansen, & Gross, 2000; Bull & Jervis, 1997; Coleman et al., 2005; Coleman, Min, Chomiak, & Kramer, 2004; Coleman, Parry, Chalmers, & Min, 2006; Coleman et al., 2002; Jencks et al., 2009; Miller et al., 2008; Naylor et al., 2004; Parry, Coleman, Smith, Frank, &

Kramer, 2003; Parry, Mahoney, Chalmers, & Coleman, 2008; Saleh, Freire, Morris-Dickinson, & Shannon, ; Shyu, 2000; Watkins, Hall, & Kring, 2012). There is, however, a paucity of literature that specifically addresses the impact of pre-existing chronic illnesses on transition outcomes in combination with resumption of disease-specific self-management behaviors. Diabetes serves as a prototype of a chronic condition that carries significant lifelong personal self-management burdens that may be significantly impacted following a hospitalization.

Diabetes in Older Adulthood

Diabetes affects 10.9 million or 26.9% of Americans over the age of 65 (CDC, 2011). By the year 2050, the prevalence rate of diabetes is expected to increase by 220% for individuals age 65 to 74 and by 449% for those age 75 or greater (Narayan, Boyle, Geiss, Saaddine, & Thompson, 2006). Older adults with diabetes present clinically and functionally as a heterogeneous population that exists on a continuum from physically robust to medically frail (ADA, 2013b; California Healthcare Foundation & American Geriatrics Society on Improving Care for Elders with Diabetes, 2003; Durso, 2006; Norris & Olson, 2004; Olson & Norris, 2004; Selvin, Coresh, & Brancati, 2006). Elders with diabetes carry an increased risk for premature death, functional disability, and development of co-morbid health conditions, particularly cardiovascular disease (ADA, 2013a; California Healthcare Foundation & American Geriatrics Society on Improving Care for Elders with Diabetes, 2003). Elders with diabetes also are at greater risk for the development of geriatric syndromes in the form of cognitive impairment, depression, urinary incontinence, falls, and pain (California Healthcare Foundation & American Geriatrics Society on Improving Care for Elders with Diabetes, 2003; Hewer, Mussell, Rist, Kulzer, & Bergis, 2003; Munshi et al., 2006; Travis, Buchanan, Wang, & Kim, 2004). Acute and

chronic changes in health and declines in cognitive and functional status that often accompany the aging process additionally have the potential to impair an elder's ability to independently self-manage diabetes care. Dependence on family and other support resources, therefore, may be increased in the period following a health-illness transition that resulted in hospitalization (Mistiaen et al., 1997; Schumaker et al., 1999).

Chronic Illness and Hospitalization in Older Adulthood

Older adults experience the highest rates of acute care hospitalization (DeFrances et al., 2008; Levit, Wier, Stranges, Ryan, & Elixhauser, 2009). Individuals over the age of 65 comprise 13% of the United States population but generate 33% of acute-care hospital visits (Levit et al., 2009). Elders over the age of 75 utilize approximately 25% of all hospital encounters (Hall, DeFrances, Williams, Golosinskiy, & Swartzman, 2010). Rates of hospitalization for adults over the age of 65 have shown an upward trend over the past 30 years, while rates of all other age groups have significantly declined (Hall et al., 2010).

Over 40% of non-institutionalized people, most of whom are middle or older-aged, are affected by at least one chronic health problem (Paez, Zhao, & Whang, 2009). Multimorbidity, the presence of two acute or chronic medical conditions in the same individual, may affect more than 50% of older adults (Marengoni et al., 2011; Steinman et al., 2012). Multimorbidity is a major contributor to national health care expenditures. In a study of over 2 million elderly veterans, a mean of 5.5 chronic conditions per veteran was reported (Steinman et al., 2012). Over three-fourths of Medicare spending is generated by the 50% of Medicare beneficiaries who are affected by five or more chronic conditions (Medicare Payment Advisory Committee, 2007).

Multimorbidity typically presents in patterns. Hypertension, hyperlipidemia, and coronary heart disease occurred in combination in 37.4% of elderly male veterans (Steinman et al., 2012). Diabetes was a contributing factor in several chronic condition triplets that primarily included hypertension, hyperlipidemia and coronary heart disease. Individuals affected by multimorbidity are more likely to be affected by functional impairments, disability, and poor quality of life (Marengoni et al., 2011). Twenty-five percent of elders with one or more chronic health conditions additionally experience at least one geriatric syndrome (Lee, Cigolle, & Blaum, 2009). The presence of multimorbidity increases the complexity of an elder's treatment plan and heightens the risk for drug-disease and drug-drug interactions (Steinman et al., 2012). Diabetes is a complicating factor in many hospital admissions of older adults but is rarely the index condition that precipitates admission. Clinical practice guidelines typically have not given consideration to the impact of multimorbidity on chronic disease management practices (Marengoni et al., 2011; Marengoni et al., 2009; Steinman et al., 2012).

Chronic health conditions such as heart failure (HF), hypertension, and diabetes are factors in 74% of hospitalizations (Levit et al., 2009). Exacerbations of chronic illnesses are the primary cause of 37% of hospitalizations and potentially complicate another 35% of admissions (Levit et al., 2009). A patient's chronic disease self-management abilities largely determine whether the health condition is a primary cause or a contributing factor to a hospitalization (Levit et al., 2009). Functional deficits associated with aging, such as degenerative joint disease, also drive the high in-patient utilization rates in the older adult population (DeFrances et al., 2008; Hall et al., 2010; Levit et al., 2009).

Hospital readmission has been identified as an indicator of poor care quality. Over 17% of Medicare beneficiaries who are discharged from acute care facilities are readmitted within 30

days (Hall et al., 2010; Medicare Payment Advisory Committee [Med-Pac], 2007). The risk for poor hospital-to-home transition outcomes has been associated with the following factors: advanced age, multimorbidity, polypharmacy, impaired cognition, depression, functional disabilities, prior hospital admission, extended length-of-stay, and inadequate social support (Preyde & Brassard, 2011). Readmission rates for patients who have chronic kidney disease, a common sequela of diabetes, are almost twice those of the general Medicare population (Med-Pac, 2007). Med-Pac estimates that approximately 84% of 7-day readmissions and 76% of 30-day readmissions may be preventable (Med-Pac, 2007).

Hospital-to-Home Transition Experiences of Older Adults

Older adults and family care providers frequently report unmet transitional care needs as they leave the hospital (Brazil, Roberts, Hode, & VanderBent, 2000; Bull & Jervis, 1997; Clark, Steinberg, & Bischoff, 1997; Coleman, 2003; Coleman et al., 2007; Congdon, 1994; LeClerc et al., 2002; Naylor & Keating, 2008; Naylor, 2002; Tsilimingras & Bates, 2008). Most elders are discharged to the home environment following a hospitalization, the majority of them without home care supervision (Levit et al., 2009). Current hospital-based discharge planning processes typically address the immediate relocation needs of the patient within the confines of an individual admission (Holland & Harris, 2007). These services often occur in isolation and are often ineffective because elder health-illness transitions are complex, have profound effects on elders and families, and extend well beyond the walls of institutions (Bull & Jervis, 1997; Kripalani, Jackson, Schnipper, & Coleman, 2007; LeClerc et al., 2002).

Older adults become particularly susceptible to poor outcomes when transitioning from the acute care setting because they are often discharged with ongoing care demands that exceed

those that preceded the hospitalization (Levine et al., 2006; Miller et al., 2008; Mistiaen, Francke, & Poot, 2007; Murtaugh & Litke, 2002). The health-illness, role, and relocation transitions that follow hospitalizations of older adults, particularly those with chronic conditions such as diabetes, are intricate and involve the interaction between physiological, psychosocial, and environmental factors. Difficulties arise because many of these discharges are poorly planned, are coordinated by clinicians without ongoing relationships with patients or families, lack effective communication between members of the healthcare team, fail to consider all ongoing medical and social needs, and occur abruptly with limited preparation time for the patient and family care providers (Coleman & Berenson, 2004; Greenwald, Denham, & Jack, 2007; Preyde & Brassard, 2011). Discharge planning processes often inadequately address psychosocial factors that may impede or support function and post-discharge adjustment (Preyde & Brassard, 2011). Many hospitalized patients are discharged with ongoing care needs at an intermediate stage of recovery (Weiss & Piacentine, 2006).The complexity of many diabetes self-management plans increases the risk that these elders will experience poor transitions as they move from the hospital to the home environments.

Mortality, readmission, emergency room utilization, unplanned provider visits, medical errors, living situation instability, and coping difficulties are potential consequences of poorly executed transitions (Coleman, 2003; Greenwald et al., 2007; Preyde & Brassard, 2011). Common post-discharge difficulties encountered by older patients in the home setting include: increased dependence on others to meet personal and self-care needs; greater reliance on others to perform household tasks; difficulty with reading medication labels and basic medication management; lack of information on appropriate support services and how to engage them; unmet informational needs; poor understanding of symptom control; social instability; and

coping issues including fatigue, anxiety, and depression (Preyde & Brassard, 2011; Mistiaen et al., 2007).

Weekend discharges, which are typically characterized by limited service availability, are more apt to result in poor discharge outcomes (Cumbler, Carter, & Kutner, 2008). Additionally, timely acquisition of discharge medications is a problem faced by many older adults and may contribute to compromise of the elder's health status on the first days following discharge (Cumbler et al., 2008). Elders with diabetes may be more vulnerable to poor outcomes from these discharge scenarios because they are often released from the hospital with new prescriptions for self-management supplies such a blood glucose testing equipment and injectable medications such as insulin. Elders may be unable to fully operationalize a diabetes treatment plan if they lack necessary supplies or self-management skill competence.

Failures of community and family support systems contribute to readmission. Many family caregivers experience unrealistic expectations of the post-discharge experience and may experience difficulty in caregiving as well as emotional burdens in the form of stress and depression (Preyde & Brassard, 2011). Elders who live alone are at particular risk for poor discharge outcomes (Lysack, Neufeld, MacNeil, & Lichtenberg, 2001; Preyde & Brassard, 2011).

Hospital Discharge as a Transition

The middle range theory of transitions provides a framework for understanding the complexity of the post-hospital transition experience on elders, families, and their support systems. The theory conceptualizes transition as both a process and an outcome and provides a theoretical construct for the development of nursing therapeutics that meet the individual needs

of patients and families (Meleis et al., 2000). Because aging is characterized by a series of gains and losses that may prompt multiple changes in the health, function, and roles of elders and individuals within their social networks, transition theory is particularly applicable in the care of aging families (Schumacher et al., 1999). Age-related transitions that result in hospitalization often precipitate the need for nursing care for both elders and their families (Schumacher et al., 1999).

Meleis et al. assert that transition is a complex phenomenon with a final desired outcome of mastery of the new situation (Meleis et al., 2000). The nature of a transition is a product of various types, patterns and properties of change that may or may not be related (Schumacher & Meleis, 1994). A transition may impact multiple individuals and must be understood from the point of view of each person affected by the transition (Schumacher & Meleis, 1994). Hospitalization of an older adult potentially creates a multidimensional transition experience for the elder, involved family members, and social supports (Schumacher & Meleis, 1994; Schumaker et al., 1999).

Process indicators provide a means by which the quality of a transition or attainment of new physical, psychosocial, self-care, and environmental states can be assessed over time (Meleis et al., 2000). Development of confidence as one progresses through a transition reflects a movement toward adaptation to a new situation. Hospitalization frequently results in changes of established disease-specific self-care routines and may require an elder to gain confidence with new or changing self-management skills upon return to the home environment. Comprehension of the disease process, treatment, and recovery, appropriate resource utilization, and the acquisition of effective coping skills are indicators of attainment of confidence and reflect a healthy transition outcome (Meleis et al., 2000).

Mastery occurs later in the transition process and is indicative of the healthy completion of a transition. Attainment of mastery suggests that an individual has achieved competency with new self-management skills and coping behaviors that facilitate a healthy transition experience (Meleis et al., 2000). Mastery reflects attainment of confidence and a return to stability. Traditional measures of hospital-to-home transition quality have not focused on attainment of mastery. Instead indicators that reflect movement away from health and toward heightened vulnerability such as recidivism, unplanned use of healthcare resources, and medical errors rates have been used in evaluation of transitional care interventions and are currently being used as indicators of quality care by payers such Medicare.

Medical Error Risk and Hospital Discharge

Each care transition places the patient at risk for medical errors, duplication of services, and poorly-relayed plans of care (Clark et al., 1997; Greenwald et al., 2007). Adverse event rates following discharge are estimated to be five to six times higher than those reported in hospitalized patients (Tsilimingras & Bates, 2008). In a study of 328 Canadian adults, the incidence, severity, preventability and ameliorability of adverse events were examined (Forster et al., 2004). Twenty-three study participants experienced at least one post-discharge medical error, most of which were adverse drug events (ADE's) (Forster et al., 2004). A history of type 2 diabetes, a diagnosis of pneumonia and female gender were associated with higher prevalence of adverse events (Forster et al., 2004). In a similar study conducted in the United States, one in nine patients experienced an ADE following discharge (Forster, Murff, Peterson, Gandhi, & Bates, 2005). One-third of patients who reported receipt of incomplete medication information at

discharge suffered an ADE (Forster et al., 2005). Additionally, the risk for an ADE increased as the number of medications prescribed at discharge rose (Forster et al., 2005).

Medication regimen continuity and adherence during the period immediately following a hospitalization were studied in a sample of 198 Israeli elders with a mean age of 80.7 years (Mansur, Weiss, Hoffman, Gruenewald, & Beloosesky, 2008). Non-adherence with medication regimens was observed in 30% of elders, typically secondary to under-adherence with one medication. Under-adherence was noted with elders prescribed a variety of medications including antihyperglycemic agents. Non-adherence was most common in patients who had medication regimen changes following discharge, those prescribed seven or more medications, and those who failed to follow-up with a physician in the first month after discharge (Mansur et al., 2008).

Provider Issues and Hospital Discharge

The acute care delivery model has recently evolved to include the role of the hospitalist, a physician who manages the care of a patient during the hospital phase of an illness. While the emergence of the hospitalist role has resulted in physician specialists with expertise in acute care patient management, it has also created a new element of transition because care must be transferred back to the primary care provider at discharge (Greenwald et al., 2007; Kripalani et al., 2007). The addition of a provider who has no prior knowledge of a patient increases the risk for delays and error in information exchange (Greenwald et al., 2007; Kripalani et al., 2007). Poor transition outcomes commonly result from discontinuity of care between hospitalists and follow-up care providers, modification of medication regimens with poor medication reconciliation practices, changes in self-management plans that may require additional care

resources, and the complexity of discharge instructions (Greenwald et al., 2007; Kripalani et al., 2007).

Perceived Discharge Readiness and Coping Difficulties After Discharge

Transition theory and research in the area of transitional care emphasize the import of preparation, knowledge acquisition, and communication as facilitators of healthy or well-executed transitions (Coleman, 2003; Coleman & Berenson, 2004; Coleman & Fox, 2004; Coleman et al., 2005; Coleman et al., 2002; Naylor, 2002, 2006; Parry et al., 2003; Parry et al., 2008; Weiss & Piacentine, 2006) Readiness is potentially a reflection of preparedness and knowledge attainment and thus functions as a facilitator of healthy discharge.

Elders and caregivers commonly describe disparities between perceived discharge readiness prior to leaving the hospital and lived transition experiences (Brazil et al., 2000; Bull & Jervis, 1997; Clark et al., 1997; Congdon, 1994; LeClerc et al., 2002; Reilly et al., 1996; Shyu, 2000; Weiss, Yakusheva, & Bobay, 2010). Significant discrepancies between nurses' perceptions of discharge knowledge of medications and actual patient understanding have been reported (Reilly et al., 1996). In a study of 97 patient/nurse dyads, 95% of nurses assumed that discharged patients understood their medication teaching while only 57% of patients confirmed understanding of medication side effects (Reilly et al., 1996). In an additional study of 162 medical surgical patients, a low correlation between nurse and patient assessment of discharge readiness was reported (Weiss et al., 2010). Nurses' assessments of discharge readiness, however, were most closely correlated with post-discharge utilization of healthcare resources.

Problems with pain management, complication recognition, mobility, and fatigue were frequently reported coping difficulties in a qualitative study of transition experiences of 113

hospitalized medical-surgical patients (Miller et al., 2008). The desire to return to normalcy and a dependency on family members were added concerns of study participants. Respondents desired supplemental information on the recovery process, diagnosis, and treatment plan (Miller et al., 2008). A lack of clarity on diabetes management was also specifically reported as a post-discharge care difficulty in the study.

Transitional Care Research

Because elders experience heightened vulnerability as they move between care environments, transitional care is emerging as a priority in geriatric research (Coleman & Boult, 2003). The American Geriatrics Society (AGS) defines transitional care as "a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations or different levels of care within the same location" (Coleman & Boult, 2003, p. 556).

Transitional care research has identified five factors that are integral to effective post-hospitalization transitions. These include: (1) accurate provider communication; (2) preparation of the patient and caregiver for the next level of care; (3) reconciliation of the pre and post transition medication regimens; (4) patient and caregiver involvement in decision making; and (5) education on signs and symptoms of significant clinical changes (Coleman et al., 2004; Coleman et al., 2007). The need to reengineer discharge planning processes to better delineate roles and responsibilities of each care team member, to initiate discharge education early and continue it throughout the course of the hospitalization, and to adapt patient education interventions to match a patient's health literacy level and primary language has been reported in the literature (Coleman & Fox, 2004).

A 2007 meta-review of 15 meta-analyses concluded that comprehensive programs that combine effective discharge planning with post-discharge support are most effective in improving transition outcomes. The review provided little evidence to support the benefits of individual discharge support interventions on patient discharge status, post-discharge functioning, cost, or utilization (Mistiaen et al., 2007). A 2010 Cochrane review of 21 hospital-to-home discharge planning studies arrived at similar conclusions (Shepperd et al., 2010). In both reviews, traditional system-level evaluations such length-of-stay, emergency department utilization, and readmission were used to gauge the effectiveness of discharge planning interventions. None of the studies evaluated self-management or post-hospital coping outcomes of patients with pre-existing chronic health conditions (Shepperd et al., 2010). In general, there is an absence of transition literature that specifically addresses the needs or experiences of individuals with diabetes (ADA, 2013b).

More recently, several studies have suggested that the inclusion of a nurse or social worker in the post-discharge phase of care may improve discharge outcomes when metrics are broadened to include geriatric-specific or psychosocial metrics. Model programs have been implemented to address the transitional care needs of older adults. The Community Based-Care Transition Program (CCTP) has been included as a provision of the Affordable Care Act and will provide funding to evaluate the effectiveness of various care transition initiatives (Centers for Medicare and Medicaid, 2012). The program is an element of the Partnership for Patients initiative which seeks to reduce hospital readmission by 20% by 2013 (Centers for Medicare and Medicaid, 2012).

Care Transition Intervention

The Care Transitions Intervention (CTI) is a four-week program that pairs a medically complex adult with a "transitions coach", often an advanced practice nurse (APN) (Care Transitions Program, 2007; Coleman et al., 2006; Coleman et al., 2004; Parrish, O'Malley, Adams, Adams, & Coleman, 2009; Parry et al., 2003). Pre-discharge identification of elders at-risk for poor transition outcomes is combined with home and telephonic follow-up support of elders' self-management efforts in this delivery model. "Pillar interventions" included in this intervention are medication self-management teaching, a dynamic patient-centered record, timely post-discharge provider follow-up, and education on warning signs of condition deterioration (Care Transitions Program [CTI], 2007). Diabetes has been identified as a chronic health condition that may trigger referral for CTI services (Coleman et al., 2006). The CTI has been adopted by over 600 health care organizations in 39 states (Coleman, 2012). CTI participants have experienced lower rates of readmission 30 days, 90 days, and six months after discharge (CTI, 2007; Coleman et al., 2006). Sustainability of the CTI in a resource-limited health care system has been identified as a constraint in maintaining the program (Parrish et al., 2009). CTI interventions have been incorporated into the care transition test programs funded under the CCTP.

Transitional Care Model

The University of Pennsylvania has twenty years of experience with a transitional care model that is delivered by APN's (Brooten et al., 2002; Naylor & Keating, 2008; Naylor, 2000, 2002; Naylor, Bowles, & Brooten, 2000; Naylor et al., 2004; Transitional Care Model [TCM], 2009). The Transitional Care Model (TCM) or Naylor model is targeted at high-risk, cognitively

intact elders who are returning home following a hospitalization, many with cardiovascular diagnoses such as HF. APN's, known as Transitional Care Nurses (TCNs), coordinate transition preparation during the course of the hospitalization and follow the elder after discharge by means of home visits, telephonic case management, and participation in post-discharge medical appointments (Naylor, 2002; Naylor et al., 2004; TCM, 2009).

The TCM program supports the patient and family for a period of one to three months following discharge. Key elements of the program include: in-patient and home-based patient and family education with a focus on understanding discharge instructions; facilitation of patient self-management skills with an emphasis on early recognition of changes in health status and prevention of decline; medication reconciliation and management; and development of a long-term transition planned based upon patient/family goals (TCM, 2009). The TCN serves as the patient's care coordinator during and immediately following an acute hospitalization. The TCN initiates interaction with the patient during the hospitalization and works with the patient and family to establish an evidence-based plan of care. The TCN subsequently visits the patient in the home environment and maintains phone contact for the duration of the intervention. The TCN serves as a liaison between the patient, family caregiver, community providers, and professionals.

Reported outcomes of the TCM include reduced rehospitalization, decreased health care costs, and improved patient satisfaction (Naylor & Keating, 2008; Naylor et al., 2004). The developers contend that refinement of the current model is required to include an expanded focus that addresses the needs of family caregivers during transition periods (Naylor & Keating, 2008). Relationships with third party payers have been established, and the program is typically offered as a covered health benefit (TCM, 2009).

Social Worker Navigator Program

In an interventional transition study of 298 high-risk elders, the inclusion of a social worker "navigator" resulted in improvements in discharge outcomes (Watkins et al., 2012). "Navigator" interventions included identification of at-risk elders; coordination of post-discharge services; a home visit within 72 hours of discharge; and telephone follow-up. To be eligible for the program a patient was required to be age 65 years or older, reside in the geographic catchment area of the hospital, and meet at least two high-risk criteria (Watkins et al., 2012). The navigator had the ability to refer the patient to supplemental community health services including housekeeping, transportation, prescription pick-up, and grocery shopping.

Program participants experienced fewer post-discharge emergency room visits and a readmission rate 61% lower than the local norm (Watkins et al., 2012). They additionally demonstrated post-intervention improvements in the vitality, social functioning, emotional, and mental health subscales of the SF-36 and high patient satisfaction scores (Watkins et al., 2012). Cost-savings of over $600,000 to the healthcare network were realized, much less than the program cost. Patients in this program were followed for a period of 30 days to 4 months.

Safe STEPS Initiative

The Safe and Successful Transition of Elderly Patients Study (Safe STEPS) utilized a multidisciplinary, geriatric-specific, pre-discharge intervention program to improve discharge outcomes of high-risk elders (Dedhia et al., 2009). Program interventions were initiated when the elder was admitted to the in-patient care unit. The first element of the program included hospitalist training on geriatric care principles and introduction of a "geriatricized" (Dedhia et al., 2009) history and physical form into routine care. The revised intake assessment addressed

fall risk, sleep habits, ADL performance, cognition, functional abilities, caregiver considerations, home medication administration practices, and advanced directive requests (Dedhia et al., 2009). Early admission notification of the patient's primary care provider was accomplished by case managers, and daily interdisciplinary rounds addressing patient-specific needs were instituted. Collaboration between the pharmacist and hospitalist on medication management began upon admission. A coordinated pre-discharge meeting that included the case manager, hospitalist and patient and development of a discharge contract between all parties occurred during the course of each admission. Additionally, written discharge instructions were revised to include easy-to-understand lay language and large font. The intervention did not include any formal post-discharge follow-up interventions. Statistically significant improvements in 7-day and 30-day emergency department utilization, hospital readmission rates, discharge quality measures, and patient-perceived health status were reported following implementation of the program (Dedhia et al., 2009).

BOOSTing Care Transitions

The Better Outcomes for Older Adults through Safe Transitions (BOOSTing) Care Transitions program was developed by the Society of Hospital Medicine to provide resources to support improvement in hospital-based discharge planning processes (Society of Hospital Medicine [SHM], 2008). The program provides tools that assist providers in improving discharge risk assessment and stratification, implementing teach-back methods of patient education, a patient-focused transition record, risk-specific interventions and discharge/patient education tools.

Risk assessment is based upon identification of the "8P's," which include:

- Problem medicines such as warfarin, aspirin and insulin
- Psychological problems, particularly depression
- Principal diagnoses placing the patient at risk for readmission including cancer, stroke, diabetes, COPD, and heart failure
- Polypharmacy
- Poor health literacy
- Patient support (lack of)
- Prior hospitalizations in the six months preceding the index admission
- Palliative care [SHM, 2008)

Evidence-based risk-specific interventions are then linked with each positive risk factor. Follow-up telephone contact within 72 hours of discharge is recommended for patients prescribed high-risk medications or 5 or more regular medications and those with histories of readmission, poor health literacy and poor post-discharge support (SHM, 2008). Specific outcomes of the initiative were not reported, but the Society recommends that participating organizations monitor length-of-stay, readmission rates, patient satisfactions scores, and discharge summary completion rates (SHM, 2008).

Hospitalization of Elders with Diabetes

Over five-million individuals with diabetes, the majority of whom are age $\geq$ 75, are discharged from acute care hospitals annually (CDC, 2011). Approximately 43% of hospital and 52% of nursing home admissions are initiated by patients with diabetes (Russell et al., 2005). Hospitalizations of elders with diabetes most commonly are precipitated by diagnoses other than diabetes, particularly cardiovascular disorders such as ischemic heart disease and HF (ADA,

2013a; Hall et al., 2010; Russell et al., 2005;). Elders with diabetes typically experience longer lengths-of-stay and significantly higher hospital costs than other patient groups (ADA, 2013a; CDC 2011; Moghissi et al., 2009). Recidivism is common in older adults with diabetes. In a study of hospitalized individuals with diabetes, over 30% of older adults returned to the inpatient setting after discharge (Jiang et al., 2003). Rehospitalization rates were highest amongst Hispanic and non-Hispanic black elders (Jiang et al., 2003).

Recent trials examining outcomes of intensive glycemic control in hospitalized patients have produced conflicting findings (Kavanagh & McCowen, 2010). Ideal glucose targets for hospitalized patients are a subject of debate in the diabetes community (ADA, 2013b; Kavanagh & McCowen, 2010; NICE-SUGAR Study Investigators, 2009). Despite this, glucose control during an acute episode of illness remains an in-patient care priority, particularly in critically ill patients (ADA, 2013b). Although age-specific glucose targets for hospitalized elders with diabetes have not been identified, standardized hospital protocols are commonly used in the care of older adults.

AGS guidelines for improving care of elders with diabetes suggest that long-term glycemic targets in older adults must be individualized due to the heterogeneity of the aged diabetes population (ADA, 2013b; California Healthcare Foundation & American Geriatrics Society on Improving Care for Elders with Diabetes, 2003). Guidelines recommend that older adults with longer life expectancies, functional independence, and intact cognition receive diabetes care consistent with established general diabetes treatment guidelines (ADA, 2013b; California Healthcare Foundation & American Geriatrics Society on Improving Care for Elders with Diabetes, 2003). Conversely, elders with limited life expectancy, diabetes complications such as autonomic neuropathy, or advanced cognitive deficits may be safer with higher glucose

targets (California Healthcare Foundation & American Geriatrics Society on Improving Care for Elders with Diabetes, 2003).

Recent clinical investigations such as Action to Control Cardiovascular Risk in Diabetes (ACCORD), Action in Diabetes and Vascular Disease: Preterax and Diamicron Modified Release Controlled Evaluation (ADVANCE), and Veterans Affairs Diabetes Trial (VADT) have examined the outcomes of intensive glycemic control in older populations. The studies each included large samples of elders, many with pre-existing cardiovascular disease. Findings of these studies have been conflicting with several demonstrating increased mortality in intensively controlled, high-risk elders (Action to Control Cardiovascular Risk in Diabetes Study Group, 2008; ADVANCE Collaborative Group, 2008; ADA, 2013b; Duckworth et al., 2009).

Most elders with diabetes will ultimately return to the home environment following a hospitalization (Levit et al., 2009; Russell et al., 2005). Disparities between recommended glucose targets in the hospital and home settings as well as changes in physician providers during the course of a hospitalization raise the risk that diabetes treatment plans will be altered at discharge. Illness-related health status changes may require the recently hospitalized older adult to modify existing home diabetes self-management regimens in order to achieve new glucose targets (Chau & Edelman, 2001).

There is a lack of evidence-based guidance on how to best promote resumption of a modified chronic disease self-management regimen during the transition from hospital to home (ADA, 2013b). Inadequate knowledge of meal planning skills, lack of knowledge of medications, limited access to disease-related equipment, and lack of coordinated care are barriers faced by community-dwelling elders with diabetes (Nagelkerk, Reick, & Meengs, 2006). These problems are frequently worsened by a change in care setting (Nagelkerk et al., 2006).

Frequent capillary blood glucose testing, complex insulin dosing regimens, use of supplemental injectable medications such as exanatide (Byetta®), and intricate meal plans are additional care demands placed on many elders with diabetes (Chau & Edelman, 2001). These treatment modalities often increase the risk of hypoglycemia and further heighten discharge safety risk (ADA, 2013b). The AGS has issued a position statement supporting the need to improve the process of transitional care for individuals with complex needs such as diabetes self-management.(Chau & Edelman, 2001)

Diabetes Self-Management

The Institute of Medicine (IOM) defines self-management as "the tasks that an individual must undertake to live well with one or more chronic health conditions. These tasks include having the confidence to deal with medical management, role management, and emotional management of their conditions" (Adams, Greinger, & Corrigan, 2004, p. 57). Patients and family caregivers are recognized as principal managers of chronic conditions such as diabetes (Adams, 2006). Diabetes care, which falls within the "living with illness and disability" domain of the IOM's organizational framework, has been identified as a priority for health care improvement activities (Adams & Corrigan, 2003).

Diabetes self-management education (DSME), defined as "the ongoing process of facilitating the knowledge, skill, and ability necessary for pre-diabetes and diabetes self-care," is essential in supporting an elder's mastery of a life that includes diabetes (Haas et al., 2013, p. S101). The American Association of Diabetes Educators (AADE) and AGS have developed guidelines on care of the elders with diabetes (Suhl & Bonsignore, 2006). The guidelines are largely based on expert consensus secondary to the dearth of DSME research on older adults

.(Suhl & Bonsignore, 2006) General tenets outlined in the guidelines include the need to: (1) individualize DSME with consideration to clinical variables, functional variables, and personal preferences; (2) weigh benefits and risks of therapies with attention to quality of life and life expectance; (3) involve multiple disciplines; and (4) involve a care partner as needed (Suhl & Bonsignore, 2006). Clinical elements addressed in the guidelines include baseline diabetes knowledge, nutritional status, physical activity factors, comorbidities, and polypharmacy (Suhl & Bonsignore, 2006). Functional considerations to be evaluated in the development of a diabetes self-management plan are cognitive dysfunction, depression, and physical disability. Care partners such as family caregivers and friends are particularly important in optimizing self-care when the elder is unable to do this independently (Suhl & Bonsignore, 2006).

DSME in the acute care setting is often problematic. The fast-paced hospital environment is generally not conducive to the individualized, time-consuming education required by many elders (Bobay et al., 2010). Acutely ill older adults are often too infirmed and stressed to actively participate in DSME activities while hospitalized (ADA, 2013b). These factors often necessitate the active involvement of lay family caregivers, many of whom have limited knowledge of diabetes and its treatment, in the coordination and delivery of diabetes care after discharge.

Self-management education in the hospital environment is primarily directed toward "survival skill" training (ADA, 2013b). Discharge content ideally addresses the following: (1) blood glucose monitoring procedures and use of results; (2) definition, prevention, recognition and treatment of hyperglycemia and hypoglycemia; (3) follow-up care information; (4) information on consistent eating patterns; (5) instruction on medication regimens with content on potential side effects of each agent; (6) sick day management; and (7) proper use and disposal of insulin syringes (ADA, 2013b). In a patient with pre-existing diabetes this content must be

delivered with attention to modifications in the treatment plan and acquisition of new skills. Much of this teaching is provided by the bedside nurse at as part of the discharge process.

Follow-up with an out-patient DSME program is frequently recommended as a discharge intervention. These referrals, however, are often completed sometime after discharge and do not address immediate transition needs of elders and their caregivers. Although many elders qualify for Medicare intermittent, skilled home health care after discharge, coordination of diabetes care in the period after discharge largely rests with the elder and family care provider, even when supplemental services are in place (Fortinsky, Madigan, Sheehan, Tullai-McGuinness, & Fenster, 2006). In a study of 922 older adults admitted to home care services in Ohio, patients with a primary home care admitting diagnosis of diabetes were almost three times more likely to experience an unplanned hospitalization than other patients (Fortinsky et al., 2006).

Hospital-to-home transition experiences of elders with pre-existing chronic conditions that impose a significant self-care burden on the individual including diabetes have been limitedly reported in the literature. Current literature has not described how individuals with chronic illnesses such as diabetes integrate new and established self-management behaviors following a hospitalization.

Health Policy Implications of Hospital Transitions

Poorly executed transitions place significant strain on the United States health care system. Costs associated with readmission are $15 billion annually (Med-Pac, 2007). In an effort to reduce readmission and incentivize effective transitional care practices, significant changes in Medicare funding structures and pay-for-performance initiatives have been incorporated into the Affordable Care Act. The Hospital Readmission Reduction Program, the National Pilot Program

on Payment Bundling, and CCTP are being implemented in an effort to improve the quality of post-hospital care transitions (Naylor et al., 2012).

Effective October, 2013, hospitals identified as creating excessive readmission in Medicare beneficiaries will face financial penalties. Readmission for the index conditions of HF, myocardial infarction, and pneumonia will be initially targeted with additional conditions added in 2015 (Centers for Medicare and Medicaid, 2013). There is concern that a concerted focus on programs that target specific disease-states such as HF may not adequately address the transition problems experienced by patients who are unaffected by the targeted condition but who experience significant multimorbidity (Naylor et al., 2012).

Identification of risk factors for potentially preventable readmissions (PPRs) and development of programs to reduce 30-day readmission rates has become a focus of health policy research. An analysis of a large Florida administrative data set that included information on over 5 million hospitalizations and 300,000 PPR's suggested that many readmissions may not be preventable (Goldfield et al., 2008). PPR's were examined by diagnostic-related group classifications for all discharge dispositions as investigators attempted to identify a chain of interrelated diagnoses that precipitated a readmission. PPR's in this analysis were typically a byproduct of instability of the index condition if they occurred in close proximity to the first hospitalization (Goldfield et al., 2008). The interrelationship of two admissions was more difficult to establish later in the post-discharge period. PPR's most commonly were associated with the following diagnoses: HF; chronic obstructive pulmonary disease (COPD); schizophrenia; pneumonia; major depression; and coronary artery disease (CAD).

Local hospitals are introducing the use of bedside assessment tools that identify risk for readmission into nursing workflows. The "LACE" index is one example of a risk assessment

screen that is being used to identify patients at potential risk for readmission. Analysis of hospitalization data from over 4800 Canadian adults determined that the following four variables were predictive of readmission from the community or mortality within 30 days of discharge: (L) length of stay; (A) acuity; (C) comorbidity as calculated using the Charlson comorbidity index; and (E) events of emergency department utilization within the past six months (van Walraven et al., 2010).

Payment bundling that encompasses the costs associated with an entire episode of care rather than individual provider payments has also been proposed as a pilot program. Under current prospective payment structures, providers are incentivized to control length-of-stay and thus move the patient to the next level of care as quickly as possible (Med-Pac, 2007). Transitional care services are currently not a covered benefit making the cost prohibitive to many organizations. Proposed payment bundles will potentially incorporate the costs incurred in the three days prior to admission through 30 or 90 days post discharge. Thus, the payment bundle would cover the costs of acute care expenditures, physicians' fees, care management, and post-discharge services such as short-term rehabilitation, telemonitoring, and home care (Naylor et al., 2012). Ideally, providers will effectively collaborate to better coordinate care with community partners and maintain an optimal standard of care across settings. This payment model, if poorly implemented, has the potential to result in withholding of services and a reduction in the availability of long term care providers.

The CTTP promotes the partnership of acute care facilities with transition services provided by Community Based Organizations (CBO's). The goals of the initiative are to reduce costs, to promote positive post-discharge outcomes, and to improve the care experience for patients and families (Centers for Medicare and Medicaid, 2012). Medicare beneficiaries

assessed as high-risk based upon health factors including a specified set of diagnosed chronic conditions are eligible for the program. Patients with minimal multimorbidity but high degrees of functional impairment thus may not qualify under current guidelines (Naylor et al., 2012). Performance indicators for CCTP's will include 30, 90 and 180 day readmission rates, mortality rates, acute care observation status utilization, and emergency department utilization (Centers for Medicare and Medicaid, 2012). Currently, 47 organizations have been approved for participation in the CCTP initiative. Three of these organizations are based in Florida.

Discussion and Implications

Although home recovery transition experiences of older adults have been previously investigated, prior studies have not focused on the impact of a pre-existing chronic health problem such as diabetes on transition outcomes. There is limited literature that explains how recently hospitalized elders with chronic illnesses integrate changing care demands into chronic disease self-management routines following discharge. With the rising prevalence of multimorbidity in the older population, the need to understand the interaction of chronic conditions and their effect on care at home is needed. Additionally, the current focus on 30-day readmission directed at condition-specific risk identification fails to capture the fluid nature of the hospital-to-home transition experience from the perspective of the elder and associated family care providers. In order to develop interventions that promote healthy hospital-to-home transitions, there is a need to investigate if the care needs and problems experienced at different phases of the home recovery transition vary. There is also a need to develop transition risk models that expand the definition of poor transition beyond readmission and incorporate non-medical predictors of risk.

Hospital-to home transitions do not occur in a vacuum. The transition model suggests that significant transitions such as hospitalization are multidimensional and impact and are impacted by many factors. There is therefore a need to study the hospital-to-home transition experience from various perspectives and to identify potential hospital-related, caregiver-related, family-driven, and resource-related factors that may promote or inhibit a healthy transition**.**

Conclusion

The prevalence of chronic health conditions such as diabetes is escalating as America ages. Many chronic illnesses are characterized by complex treatment regimens that are directed at controlling symptoms, preventing complications, and maintaining quality of life. Affected individuals and family caregivers are the primary daily care managers of chronic illnesses and are often dependent upon health care providers, particularly nurses, to acquire condition-specific knowledge and skills. Chronic illnesses such as diabetes often prolong or complicate disease-related and non-disease related hospitalizations. The chronically ill consume significant healthcare resources and may be at higher risk for recidivism and coping difficulties during the home recovery phase of transition.

Transitions such as hospitalization of an older adult ultimately affect people who live within complex family systems. Thus, there is a need to broaden the definition of “successful transition” beyond an event of recidivism that affects an individual to establishment of a healthy, safe post-discharge care environment that reduces the vulnerability of the older adult and family support structures. Because nurses are so integral in planning and delivering care during the hospital-to-home transition period, they are in an excellent position to drive patient-focused research that improves outcomes during home recovery transitions.

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CHAPTER THREE: EARLY AND INTERMEDIATE HOSPITAL-TO-HOME TRANSITION OUTCOMES OF OLDER ADULTS WITH DIABETES — FINDINGS

Abstract

Over five million older adults with diabetes are hospitalized each year. Complex disease-specific, self-management demands and the high prevalence of multimorbidity make older adults with chronic illnesses such as diabetes particularly vulnerable for poor hospital-to home transition outcomes including recidivism, medical errors, and excessive resource utilization.

A simultaneous quantitative/qualitative mixed method design was used to identify factors that impacted the home recovery transition experiences of 96 older adults (mean age = 75 years) with pre-existing diabetes, most of whom were affected by multimorbidity. Although diabetes was typically well-controlled upon admission, deterioration of glycemic control during course of the hospitalization necessitated changes in home self-management plan for 40% of participants.

Binary logistic regression was used to identify factors that may predict 30-day recidivism risk. A statistically significant predictor model (X^2 = 26.767, df = 3, p < .001) correctly classified 78.3% of cases. Post Discharge Coping Difficulty Scale (PDCDS) scores 7 days (Wald X^2 = 3.671, df = 1, p =.050) and 30 days following discharge (Wald X^2 = 6.723, df = 1, p =.010) and participant-reported difficulty managing a non-diabetes chronic health condition (Wald X^2 = 8.200, df = 1, p =.004) were predictive of recidivism. No diagnosis-specific predictor variables were identified.

The nurse's skill in delivering discharge education was an important factor in promoting discharge readiness and preventing early difficulties in coping and promoting positive patient satisfaction. Unmet post-discharge information needs as measured on the Quality of Discharge Teaching Scale (QDTS) were associated with lower Readiness for Hospital Discharge scores

(r = -.314, p = .003), while higher QDTS scores were associated with better overall perceptions of the transition experience (r = .444, p <.001).

The findings of this study suggest that elders at risk for hospital-to-home transition problems may be pre-identified by assessing readiness for discharge and targeting these patients for follow-up interventions. Older adults describing difficulties within 7 days of discharge may be at higher risk for readmission and may require more intensive follow-up during the first month after discharge. The nurse's role in discharge education is critical in promoting a successful early home transmission and may play a role in promoting patient satisfaction with care.

Introduction

Hospitalization rates are highest among individuals who are age 65 and older and typically result from an acute change in the health status of the older adult. In the most recent National Hospital Discharge Survey, 37% of annual hospital visits and 43% of hospital days of care were amassed by individuals who were age 65 and older (Hall, DeFrances, Williams, Golosinskiy, & Swartzman, 2010). Thirty percent of visits in this age group were due to an exacerbation of a chronic cardiovascular condition such as coronary artery disease (CAD), heart failure (HF), or a cardiac arrhythmia (Hall et al., 2010). In a large, national study that examined chronic illness patterns in older adulthood, veterans age 65 and older were found to have a mean of 5.5 chronic health conditions (Steinman et al., 2012). Chronic illnesses such HF, hypertension, and diabetes contribute to medical treatment complexity in 74% of hospitalizations, even when they are not the index condition that precipitates the admission (Levit, Wier, Stranges, Ryan, & Elixhauser, 2009). Clinical practice guidelines that drive patient care decision making on

complex health conditions often fail to incorporate the unique transition needs of individuals with pre-existing chronic health problems such as diabetes (Marengoni et al., 2011; Marengoni, Rizzuto, Wang, Winbland, & Fratiglioni, 2009; Steinman et al., 2012).

Problem

More than 25% of people over the age of 65 are affected by diabetes (Centers for Disease Control and Prevention [CDC], 2011). Hospitalization rates of older adults with diabetes significantly exceed the rates of elders who are unaffected by the condition. In 2012, elders with diabetes utilized more than 16.5 million hospital days (American Diabetes Association [ADA], 2013a). Diabetes, does not typically precipitate hospital admission of an elder, but often will decompensate during the course of a hospitalization and necessitate a change in treatment plan at discharge (ADA, 2013b). Older adults with diabetes are most commonly admitted with cardiovascular and general medical diagnoses and may suffer deterioration of a chronic diabetes-related complication such as chronic kidney disease (CKD) during an admission (ADA, 2013a). Although older adults with diabetes are frequent consumers of acute care services, the post-discharge needs of this high-risk patient population have been only limitedly studied (ADA, 2013b).

Background and Significance

Multimorbidity is defined as "the simultaneous presence of diseases/symptoms, cognitive, and physical functional limitations" (Marengoni et al., 2011, p. 431). Multimorbidity is a particular concern for older adults because more than 50% are affected by three or more chronic conditions (American Geriatrics Society [AGS], 2012). Diabetes and it attendant chronic complications including atherosclerosis, nephropathy, neuropathy, and retinopathy contribute

significantly to the multimorbidity of individuals age 65 and older. Additionally, older adults with diabetes are at higher risk for the development of geriatric syndromes such as cognitive impairment, depression, urinary incontinence, falls, and pain (California Healthcare Foundation & American Geriatrics Society on Improving Care for Elders with Diabetes, 2003; Munshi et al., 2006; Travis, Buchanan, Wang, & Kim, 2004). Each year individuals with diabetes, most of whom are $\geq$ 75 years of age, generate over 5 million hospital admissions (CDC, 2007). Nationally, 42% of acute care hospitalizations and 52% of nursing home admissions may be attributed to individuals affected with diabetes (Russell et al., 2005).

The transition from hospital-to home is complex for many elders with diabetes. At discharge, day-to-day responsibility for diabetes care is returned back to patients and their family caregivers. Because older adults often leave hospitals with residual health problems and new functional deficits, the ability to independently manage intricate diabetes care skills at the time of discharge may be limited, increasing the risk for poor transition outcomes (Weiss et al., 2007; Suhl & Bonsignore, 2006). Older adults with diabetes experience higher rates of post-discharge recidivism in the forms of unplanned provider visits, emergency room utilization, and readmission (Jencks, Williams, & Coleman, 2009).

Research on post-hospitalization experiences of older adults and their caregivers has revealed that discharge needs of aging families are often unmet (Bull, Hansen, & Gross, 2000a; LeClerc, Wells, Craig, & Wilson, 2002; Mistiaen, Duijunhouwer, Wijkel, de Bont, & Veeger, 1997). Recidivism, medical errors, and caregiving difficulties are poor transition outcomes that are frequently experienced by older adults (Coleman, 2003; Coleman & Boult, 2003; Coleman, Mahoney, & Parry, 2005; Coleman, Parry, Chalmers, Chugh, & Mahoney, 2007). The imminent implementation of Medicare's Readmission Reduction Program (RRP) as part of the Affordable

Care Act is motivating hospitals to reevaluate current transitional care practices (Centers for Medicare and Medicaid, 2013). The RRP mandates public reporting of readmission rates and exacts financial penalties on hospitals with excessive readmission for HF, myocardial infarction (MI), and pneumonia. In response, many hospitals are developing condition-specific initiatives in an effort to reduce readmission rates on these diagnoses. The condition-specific concentration of these initiatives has raised concerns that patients with complex needs who are unaffected by a targeted condition will continue to have unmet transition needs and remain at-risk for poor post-discharge outcomes (Naylor et al., 2012).

Identification of risk factors for potentially preventable readmissions (PPRs) and development of programs to reduce 30-day readmission rates has become a focus of transition research. Risk-assessment studies have most commonly used large data sets rather than individual patient experiences to identify PPR predictor variables and have not necessarily focused on unique risks of patients who are discharged directly to home (Goldfield et al., 2008; van Walraven et al., 2010). Goldfield et al. (2008) assert that many readmissions may not be preventable and are a byproduct of instability of the index condition when they occur soon after discharge. The interrelationship of two admissions may be more difficult to establish later in the post-discharge period. Hospitals are currently introducing the use of bedside tools that identify risk for readmission into general patient care workflows.

Transition theory proposes that individuals become particularly vulnerable during times of change, such as an event of hospitalization, and that the interplay between personal, community and societal transition conditions facilitate or inhibit transition outcomes (Meleis, Sawyer, Im, Messias, & Schumacher, 2000; Schumacher & Meleis, 1994; Schumaker, Jones, & Meleis, 1999). While extensive research has been conducted on the post-discharge experiences

of older adults and their caregivers, there is a lack of literature that specifically addresses the impact of a chronic illness with heavy self-management burdens, such as diabetes, on transition outcomes (Brooten et al., 2002; Bull, Hansen et al., 2000a; Bull, Hansen, & Gross, 2000b; Bull & Jervis, 1997; Coleman et al., 2005; Coleman, Min, Chomiak, & Kramer, 2004; Coleman, Parry, Chalmers, & Min, 2006; Coleman et al., 2002;; Jencks et al., 2009; Naylor et al., 2004; Parry, Coleman, Smith, Frank, & Kramer, 2003; Parry, Mahoney, Chalmers, & Coleman, 2008). Current hospitalization-related transition literature has primarily focused on 30-day recidivism and has not given consideration to the unique, evolving needs of elders and family care providers that may present in the early and intermediate periods of the home recovery transition.

Conceptual Framework

Hospitalization of an older adult is a multidimensional phenomenon that creates challenges for millions of elders each year. Changes in the physical and functional status of an older adult frequently follow an acute hospitalization and often necessitate the care integration of family and community resources following discharge. The middle range theory of transitions was selected as the framework for this research study because it appropriately conceptualizes the complexity of the many interrelated personal and support conditions that may facilitate or inhibit an effective home recovery transition for an aging family (Meleis et al., 2000; Schumaker et al., 1999). Personal transition conditions in this study incorporated characteristics of the older adult that were reflective of current health status, diabetes status, and readiness for discharge. Community transition conditions represented those factors external to the patient that potentially supported a successful post-hospital transition including hospital-driven processes such as

discharge education, the availability of a caregiver at home, and utilization of home care services. The model of transitions as adapted for this study is presented in Figure 1.

Hospitalization has been described as a complex process that incorporates three sequential transition periods: the hospitalization; the period surrounding discharge; and the home recovery (Miller, Piacentine, & Weiss, 2008). During the home recovery transition, the focus of this study, elders and their caregivers attempt to assimilate new knowledge and behaviors in order to manage health changes, restructure self-concepts and resume prior roles (Miller et al., 2008). Assessment of discharge readiness, discharge preparation and education, and community resource coordination are common nursing therapeutics that are provided in the course of supporting an elder and family through the hospital-to-home transition process (Schumacher & Meleis, 1994; Schumaker et al., 1999).

Patterns of response depicted in the transition model include process and outcome indicators that represent an individual's movement away from vulnerability and toward restored health (Meleis et al., 2000). Knowledge of the disease process and treatment plan, appropriate resource utilization, and the acquisition of effective coping skills are indicators of attainment of confidence and reflect a healthy transition outcome (Meleis et al., 2000). In this study, post-hospitalization transition effectiveness was evaluated during the early and intermediate stages of the home recovery transition using variables that measured events of recidivism, perceived quality of the post-hospitalization transition, and the presence of post-discharge coping difficulties.

Aims and Research Questions

The specific aims of this study were to:

1. Determine whether personal health transition conditions and community transition conditions impact the early and intermittent home recovery transition outcomes of recidivism, perceived transition quality, and post-discharge coping difficulty in a sample of older adults with a pre-existing diagnosis of diabetes.
2. Determine if any of the above factors are predictive of development of poor transition outcomes during the home recovery transition.

The research questions regarding older adults with pre-existing diabetes who were newly-discharged to home from an in-patient setting were:

1. What personal transition conditions (health-illness factors, diabetes-related factors and perceived discharge readiness, specific post-discharge coping difficulties) impact early (7-day) and intermediate transition (30-day) outcomes?
2. What hospital-related community transition conditions (length-of-stay, discharge teaching quality, hospitalist) impact early and intermediate transition outcomes?
3. Does the availability of post-discharge community support resources (family and home health care) impact early and intermediate transition outcomes of older adults with diabetes?
4. Are any of the identified personal, hospital-based, or community support transition conditions predictive of risk for 30-day recidivism?

Method

A mixed-methods quantitative-qualitative design was used in this research study. The core component of the project utilized a descriptive, correlational design and included variables that were transposed from qualitative findings (Morse & Liehaus, 2007). This preliminary study

addressed gaps in the literature relative to the impact of a chronic illness with heavy self-management burden on post-hospitalization transition outcomes and provided initial data on factors that may impact outcomes at different phases of the home recovery transition. A summary of independent and dependent variables examined in this study are included in Table 1.

Sample

This study included a convenience sample of 96 hospitalized older adults age 65 or older who had a pre-existing diagnosis of diabetes. All participants had a planned home discharge disposition at the time of enrollment and had been hospitalized for at least 48 hours for a medical/surgical diagnosis. A planned discharge to hospice services, rehabilitation, or an assisted living facility excluded an elder from participation. Participants were also excluded if their medical record indicated a history of cognitive deficit or treatment with medications used in the management of dementia.

This study was open to men and women of all racial and ethnic groups. Participants were also required to hear, speak, and understand English and have access to a telephone for 30 days following discharge. Participants were enrolled between March, 2012 and January, 2013 at 560-bed tertiary medical center located in east, central Florida.

Because this study specifically targeted high-risk, recently-hospitalized, older adults with chronic illnesses and required two follow-up contacts, the risk of attrition related to loss-to-follow-up and mortality was a consideration in study design. Recommendations from the literature to reduce the risk of attrition with older adult research participants include shortening follow-up interviews, decreasing the time between follow-up contacts, and including the use of proxy respondents (Chatfield, Brayne, & Matthews, 2005; Deeg, van Tilberg, Smit, & de Leeuw,

2002). All of these suggestions were incorporated into the research protocol, and participants were additionally mailed reminder follow-up appointment letters which included copies of study instruments. To increase engagement with an older-patient population, a retired registered nurse with extensive experience in health-related telephone survey of older adults conducted the post-discharge interviews.

Family care providers were permitted to serve as alternate study respondents for enrolled elders. Proxy report is appropriate when an objective outcome measure is available, when the study participant cannot provide an accurate report, or when an alternative respondent, in this case the family caregiver, has the ability to provide important information on the phenomenon under investigation (Snow, Cook, Lin, Morgan, & Magaziner, 2005). In this study, the proxy's report of discharge difficulties is a viable substitute for that of the older adult. Outcomes under investigation in this study such as reports of recidivism, perceived discharge quality, and discharge coping difficulties were readily observable by a proxy care provider, and as such, met criteria for use of a proxy responder.

Six participants experienced a change in discharge disposition or had a discharge cancelled after enrollment and were excluded from the follow-up phases of the study. Of the 90 participants who were discharged to home, 74 (82%) completed the 7-day follow-up, and 70% (*n* = 63) contributed data during the 30-day follow-up interview. Eleven participants were not reached by telephone or declined further study participation without comment. Four participants deferred additional follow-up after describing deterioration in their post-discharge health status. Another seven participants subsequently declined study participation secondary to caregiver fatigue, primarily in the later follow-up phase of the study. Five participants were actively hospitalized at the time of a follow-up appointment. No participants were lost to mortality.

Measures

Personal Transition Conditions

Personal transition conditions were evaluated using measures of health status, diabetes-related factors, and readiness for hospital discharge (Table 1). A copy of the demographic data collection form is included in Appendix E.

Health-Status Factors

Chronic Illness Burden

The Charlson Comorbidity Index (CCI) was used as a proxy measure of multimorbidity. The CCI provides an estimate of the chronic illness burden associated with the combined number and weighted severity of a variety of health conditions (Charlson, Pompei, Ales, & MacKenzie, 1987) The tool affords a means of discriminating patients with low, medium and high chronic illness burdens, including the burden associated with diabetes and diabetes with end-organ damage (Charlson et al., 1987). The CCI score been identified as a significant predictor of one-year survival ($p < .0001$) (Charlson et al., 1987). In this study, CCI scores were established through review of each participant's hospital record.

Cognitive Status

The Mini-Cog was used to screen for the potential presence of previously unrecognized cognitive dysfunction (Borson, Scanlan, Brush, Vitallano, & Dokmak, 2000) The Mini-Cog is constructed as a three-item, learning-recall test combined with a clock drawing exercise that additionally serves as a memory distractor (Borson, Scanlan, Chen, & Ganguli, 2003; Borson, Scanlan, Watanabe, Tu, & Lessig, 2005, 2006). The Mini-Cog is easy to use and interpret and

has a reported sensitivity of 76% and specificity of 89% (Borson et al., 2003). The Mini-Cog performs well in individuals of varied cultural, literacy, and language backgrounds (Borson & Scanlan, 2006; Borson et al., 2003; Borson et al., 2005). Administration time for the Mini-Cog is approximately two to four minutes. The Mini-Cog was administered during the initial intake phase of the study.

Functional Status

The Katz Index of Independence with ADLs was used to determine an elder's baseline functional status at the time of discharge. The index provides a cumulative, dichotomous (dependent/independent) rating of six basic ADLs: (1) bathing; (2) dressing; (3) toileting; (4) transferring; (5) continence; and (6) feeding (Katz, Downs, Cash, & Grotz, 1970; Wallace & Shelkey, 2007, 2008). Lower scores are reflective of greater difficulty performing ADL's. The Katz ADL has been widely used in a variety of clinical settings since its development in the 1960's and has been administered by direct observation, personal interview, mailed questionnaire, and by telephone (Ciesla et al., 1993). In this study, the Katz ADL was administered by interview of the elder participant.

Diabetes–Related Personal Factors

Duration Of Diabetes

Duration of diabetes data were reported in years and obtained by participant report during the initial enrollment interview.

A1c

The A1c value provided a measure of glycemic control during the three months that preceded hospitalization (ADA, 2013b). The most recent report of the A1c value was obtained from the medical record.

Diabetes-Related Health Complications

The Diabetes Complication Index (DCI) functioned as a proxy measure of diabetes-associated multimorbity in this study. The DCI is a 17-item questionnaire that uses self-report to assess for a patient history the following type 2 diabetes-related complications and/or condition-specific symptoms: (1) CAD; (2) cerebrovascular disease (CVD); (3) peripheral vascular disease (PVD); (4) neuropathy; (5) foot problems; and (6) eye problems (Frincke et al., 2005). Two types of questions, one based upon physician-provided diagnostic information and the other based upon symptom report, are used to collect data on each complication. A positive response to any condition-specific question is scored with a value of 1. DCI scores may range from 0 to 6 with higher scores suggesting a greater diabetes-related complication burden. DCI scores have been positively correlated with perceived diabetes-related reductions in health; diabetes-related resource utilization; physician visits; and duration of diabetes (Frincke et al., 2005). The DCI was administered during the enrollment interview phase of the study. A copy of the questionnaire is provided in Appendix F.

Readiness For Discharge

The Readiness for Hospital Discharge Scale (RHDS) adult version provided an assessment of a patient's perceived readiness to leave the hospital (Weiss et al., 2008; Weiss & Piacentine, 2006; Weiss et al., 2007). The first item on the RHDS is an unscored, dichotomous

question that assesses the respondent's self-perceived discharge readiness. The remaining 22 items provide a unidimensional measure of the construct of discharge readiness within the following four subscales: Personal Status (6 items); Knowledge (9 items); Coping Ability (3 items); and Expected Support (4 items). Each item is graded on a scale of 0 to 10 with lower scores indicating a lesser degree of readiness. Question 3 assesses the participant's pain level and is reverse coded for scoring. Developers reported Cronbach's α values of .86 to .91 in a large sample of adults age 55 or older (Bobay, Jerofke, Weiss, & Yakusheva, 2010). The Cronbach's alpha coefficient for the entire instrument was .82 in the current study sample. In a recent communication, the developer recommended deletion of the item on stress and exclusion of this item from scoring (M. Weiss, personal communication, February 11, 2011). These revised scoring recommendations were used in the current study, and the potential range of scores in the current study was 0 to 210.

The RHDS is positively predictive for development of post-discharge coping difficulties in older adults, particularly those over the age of 85 years (Bobay et al., 2010). No differences in mean RHDS scores have been noted relative to gender, socioeconomic status, or race in a variety of patient demographics (Weiss & Piacentine, 2006). The instrument has a reading grade level of 8.5 and the estimated questionnaire administration time is five to ten minutes (Weiss & Piacentine, 2006; Weiss et al., 2007). Participants completed the RHDS within four hours of a planned discharge. A copy of the adult medical-surgical RHDS and scoring grid is included in Appendix H.

Community Transition Conditions

Community transition conditions examined in this study included hospital-related discharge factors, family involvement in the post-discharge phase of care, and use of community-based services such as home care.

Hospital Discharge Factors

Length-of-Stay

Duration of hospitalization was measured as the length-of-stay. The day of admission marked Day 1 of the hospitalization. Days were "added" at midnight each evening and totaled on the day of discharge.

Hospitalist Services

The inclusion of a hospitalist, a physician with specialization in the in-patient management of complex medical problems, in the care of a participant was established through review of the hospital record.

Quality of Discharge Teaching Scale Score

The Quality of Discharge Teaching Scale (QDTS) measured the participant's perception of nurse-provided discharge-related education and served as a nurse-sensitive indicator of discharge effectiveness (Bobay et al., 2010; Weiss, 2012; Weiss, Yakusheva, & Bobay, 2010; Weiss et al., 2007). The QDTS includes 24 items that are scored on a 0 to 10 scale using the anchors none or not at all and always or a great deal. The two major subscales of content and delivery contribute to 54% of the variance (Maloney & Weiss, 2008; Weiss, 2012). "Content" responses describe a patient's perspective on both needed and received discharge information

(Maloney & Weiss, 2008). “Delivery” items address the patient’s perception of nurses’ effectiveness in providing all discharge education. QDTS scores are calculated by adding Content Received and Delivery subscale scores.

A Cronbach’s alpha coefficient of .88 to .93 in a sample of adults age 55 and older was reported for the entire scale (Bobay et al., 2010; Maloney & Weiss, 2008). Cronbach’s alpha coefficients observed in the current study sample were .804 (Content Needed), .677 (Content Received), .775 (Delivery); and .775 (Total scale). Based upon findings of a currently unpublished study of 1800 patients, the developer is recommending the use of subscales in predictive analyses rather than total instrument scores (M. Weiss, personal communication, February 11, 2011). The QDTS was administered within four hours of the projected discharge. A copied is provided in Appendix I.

Family Involvement in Post-Discharge Care

The availability of an in-home family caregiver to support the elder during the immediate discharge period was assessed during the intake interview and subsequent telephone contacts.

Community Service Providers

Use of intermittent home care services was established through participant interview during intake and during two follow-up telephone contacts.

Patterns of Response

Early and intermediate outcome measures of the hospital-to-home transition experience included events of recidivism and assessment of post-discharge coping difficulty. Participant-perceived quality with the care transition was also examined.

Measures of Recidivism

Data on emergency department utilization, hospital readmission, and unplanned provider visits were gathered during two telephone follow-up interviews. All events of recidivism were combined as a single variable for outcome analyses in this study.

Care Transition Measure-15

The Care Transition Measure (CTM)-15 provided an assessment of a participant's perceived quality with the post-discharge transition (Coleman et al., 2002). The CTM-15 includes 15 items that measure the construct of transition within the context of the acute health-illness relocation (Parry et al., 2008). Items are scored on a four-level Likert scale that uses the anchor descriptions of strongly disagree and strongly agree. Lower scores are reflective of poor transition experiences (Coleman et al., 2002; Parry et al., 2008).

Internal consistency reliability of the CTM-15 has been established with Cronbach's alpha coefficients in excess of .90 (Parry et al., 2008). Cronbach's α for the CTM-15 was .966 for the current sample. The CTM-15 has demonstrated reliability in varied patient samples with respect to age, educational level, language, and self-reported health status (Parry et al., 2008). Scores on CTM-15 have shown an excellent ability to discriminate between patients who do and do not access emergency department services following a hospital discharge (Coleman et al., 2005). The CTM-15 may be administered in written or telephone formats (Coleman, 2006). Optimal timing of instrument administration has not been specified. Patient or family members respond to the CTM-15, but variations in performance of the measure between these two respondent types have not been discussed in the literature. The CTM-15 was administered by telephone interview 7 days following discharge in the current study. CTM-15 scores were

calculated and transformed following developer guidelines (Coleman, 2006). Copies of the CTM-15, scoring procedures, and scoring grids are included in Appendix K.

Post-Discharge Coping Difficulty Scale

The Post-Discharge Coping Difficulty Scale (PDCDS) was used to gain insight into problems encountered during the early and intermediate stages of the home recovery transition (Miller et al., 2008; Weiss & Piacentine, 2006). The PDCDS includes ten close-ended items that rate potential transition concerns such as stress, recovery difficulties, self-sufficiency, emotional needs, and family difficulties on a scale of 0 to 10 (Miller et al., 2008). Items 8, 9, and 10 of the PDCDS assess perceived confidence, self-management abilities, and post-hospitalization adjustment and are reverse coded for data analysis (M. Weiss, personal communication February 18, 2011). Higher PDCDS scores are indicative of greater difficulty with post-discharge coping. Five open-ended questions afford respondents the opportunity to explicate specific problems encountered in the home setting. A Cronbach's α of .87 has been reported in an adult medical-surgical sample of patients (Miller et al., 2008). Cronbach's alpha coefficients were .916 for the 7-day follow-up sample and .921 for the 30-day post-discharge sample in this study. Copies of the PDCDS and scoring criteria are included in Appendix J.

Procedure

Approval to conduct this study was received from the University of Central Florida Institutional Review Board and administrative authorities at the study site. Screening for potential participants who met inclusion criteria was accomplished by the principal investigator through consultation with nursing staff and case managers, participation in unit discharge planning rounds, and use of hospital informatics systems. Patients meeting first-level screening

criteria were approached by the investigator, and those agreeing to participate provided written consent using the document provided in Appendix B. Only competent elders were permitted to provide consent for study participation. They could, however, designate a proxy respondent who could participate in follow-up interviews.

The initial study interview was conducted by the principal investigator. Participants provided demographic and health-related data, diabetes-specific history and treatment information, and plans for anticipated post-discharge support. Additionally, the Mini-Cog, Katz-ADL, and DCI instruments were completed. The RHDS and QDTS were administered within four hours of the estimated discharge. Due to the age and fragility of the study sample, the principal investigator stayed in the room during survey completion and was available for stand-by assistance as needed. Hospital records were reviewed to gather data on age, admitting diagnosis, length-of-stay, use of hospitalist services, A1c values, admitting and discharge treatment plans, and a history of diagnoses included on the Charlson comorbidity index. A copy of the data collection form is included in Appendix E. Upon completion of the intake interview, the participant's follow-up contact information was confirmed, and an appointment for a 7-day follow-up interview was made.

Telephone follow-up interviews were conducted by the study's research assistant 7 and 30 days following discharge. During each interview, post-discharge utilization data were gathered, and the closed-ended and free response items of the PDCDS were administered. The research assistant recorded participants' verbatim responses to the open-ended questions on the PDCDS. Responses to the CTM-15 were also gathered during the 7–day follow-up interview. Participants who were not reached on the first attempt were contacted every other day for a

period of seven days. Those who were not reached during that time period were considered lost-to-follow-up. The data collection process is outlined in Appendix D.

Data Analysis

Transformation of Qualitative Data

Analysis of qualitative data from the supplementary component of the study revealed that respondents regularly reported difficulties managing complex medication regimens**,** regulating blood glucose, and managing other chronic health problems during the home recovery transition. Qualitative data were transformed to create discrete nominal-level variables that reflected the presence or absence of each of these difficulties. These newly-created variables were analyzed as post-discharge transition outcomes during statistical testing.

Data Analysis Procedures

All statistical analyses were performed using Statistical Package for Social Services (SPSS) for windows (Version 19.0). Pre-analysis screening of data for accuracy, missing data, outliers and the assumptions of normality and linearity were completed. Data provided by the six participants who experienced a change in discharge disposition or discharge cancellation on the day of enrollment were deleted from the final data file that was used for analyses of transition outcomes. Additionally, data from individuals who were lost to follow-up during the course of the study were excluded from subsequent analyses. Because it was felt that failure to complete a follow-up interview may be a meaningful data point, a nominal level variable was created to identify participants who had not completed all phases of data collection and was used in statistical analyses. Data from 74 of the original 96 participants were available for analysis of 7-

day post-discharge transition outcomes, while 63 participants contributed data to 30-day analyses.

Review of plots and normality assessments of the continuous RHDS scores and both sets of PDCDS scores revealed that these variables lacked normality and linearity. These three variables were transformed using log transformation with a resultant improvement in normality plots. Transformed variables were used in statistical tests where assumptions of normality and linearity are required such as differences in means testing and bivariate correlations.

Descriptive statistics including means, medians, modes and standard deviations were calculated for each continuous variable. Frequency counts and percentages were computed for each categorical variable. Multimorbidity profiles of the sample were evaluated by generating counts of each possible combination of common medical conditions that were identified while gathering data for the Charleson comorbidity index and the DCI. Multimorbidity patterns were evaluated for the following diagnoses: CAD; HF; CKD; chronic obstructive pulmonary disease (COPD); CVD; PVD; and neuropathy. X^2 tests of independence were calculated to determine if there was a difference in the occurrence of an event of 30-day recidivism based upon the presence or absence of one of these diagnoses or multimorbidity patterns. Because CKD was so prevalent in the sample and was excluded from the DCI, a separate variable was created to represent the total diabetes-related comorbidity burden by combining the following disease-related variables: CAD; HF; CKD; CVD; PVD; and neuropathy. Due to the age of the sample and frequency of reports of cataracts, which are a common variant in older adults, eye problems were not included in this count. Diabetes-specific medication patterns were evaluated using the same count procedures.

Multiple X^2 analyses were performed to determine if a relationship existed between dichotomous variables that portrayed personal health-related transition conditions, diabetes-specific transition conditions, community transition conditions, and common discharge conditions and 7-day recidivism, 30-day recidivism, and common post-discharge difficulties. *t* tests were conducted to determine if differences in recidivism, difficulties managing medications, problems regulating glucose, and complications managing other chronic health conditions were related to the following variables: age; total diabetes-related conditions; length-of-stay; RHDS scores; QDTS scores; CTM-15 scores; and 7 and 30-day PDCDS scores. Bivariate correlations were performed to assess if statistically significant relationships existed between continuous variables that measured personal factors (age, total chronic health conditions), diabetes transition conditions (A1c), readiness (RHDS), hospital-related transition factors (LOS, QDTS subscale and total scores), and home recovery transition outcomes (CTM-15, 7-day and 30 day PDCDS).

Logistic regression models were analyzed to determine if chronic illness burdens (total diabetes-related complications, COPD and interaction between both variables), early and intermediate presentation of post-discharge difficulty (7 and 30-day PDCDS scores) and reports of specific post-discharge difficulties were predictive of risk for 30-day post-discharge recidivism. Statistical tests and regression predictors were deemed significant if $p \leq .05$.

Results

Sample Characteristics

The initial sample included 96 hospitalized adults, age 65 or older, who had plans to leave the hospital within four hours of study enrollment.

Personal Transition Conditions

Health Status Conditions

Characteristics of the sample's health status-related transition conditions are summarized in Table 2. The median age of participants was 75 years (range 65 to 90 years), and the sample was equally represented by males and females. Study participants were primarily Caucasian (84.4%, *n* = 81) which is consistent with the demographic of the study site. Participants in this study were hospitalized for a variety of conditions. Non-cardiovascular medical diagnoses initiated 49.8% (*n* = 47) of hospitalizations, and 34.4% (*n* = 33) of admissions resulted from a cardiovascular condition. Twenty participants were admitted for non-cardiovascular surgical procedures.

Although prospective study participants were screened for a history of dementia during recruitment, 6.3% (*n* = 6) of enrolled participants produced a Minicog score of < 3, which may be suggestive of cognitive dysfunction. Only 11.4% (*n* = 11) of the enrolled elders were experiencing difficulties performing basic ADLS's at discharge. Most participants who reported functional deficits during intake had undergone surgical procedures and were on activity or wound-related precautions at the time of discharge.

Multimorbidity was evident in 75% (*n* = 72) of enrolled elders due to the additive effects of diabetes and its associated chronic complications. (Marengoni et al., 2011). The most commonly occurring chronic illness dyads were representative of blends of diabetes-related macrovascular and microvascular conditions such as CAD and neuropathy (33.3%, *n* = 32), CAD and CKD (30.2%, *n* = 29), CKD and neuropathy (28.1%, *n* = 27), CAD and HF (28.1%, *n* = 27), CKD and neuropathy (28.1, *n* = 27), and CKD and PVD (25%, *n* = 24). A summary of the multimorbidity profile of the sample is contained in Table 3. A relationship existed between a

history of CKD (X^2 = 3.927, p = .048) and 7-day recidivism and PVD (X^2 = 4.591, p = .048) and 30-day recidivism. Neither of these conditions was independently predictive of recidivism. No significant relationships were established between chronic condition dyads and development of problems managing complex medication regimens, glycemic control and regulation, and treatment of other chronic conditions.

Diabetes-Specific Conditions

Most participants in this study had a long duration of diabetes (*Mdn* = 11 years, range 1 to 49 years). The mean A1c was 6.9% (*SD* = 1.043) with a range of 5.2 to 11.7%. Nine (11%) participants had recorded A1c values of $\geq$ 8% indicating poor glycemic control prior to admission. Changes in the established home diabetes regimen were recommended for 40% (*n* = 36) of participants prior to discharge, and 35.6% (*n* = 32) of respondents were discharged on insulin. Only two participants were new to insulin when they returned home. Diabetes-specific characteristics of the sample are presented in Table 4.

Discharge Readiness

All but two of the 96 original study participants, including those who experienced a last-minute change in discharge disposition, reported that they were ready for discharge at the time of enrollment. RHDS scores of the total sample were skewed to indicate higher levels of perceived discharge readiness (*M* = 186.65, *SD* = 19.64, *Mdn* = 194). Scores of the total sample ranged from 105 to 210 (Table 2).

Healthy perceptions of discharge readiness were associated with positive patient perceptions of the overall transition experience (r = .403, p < .001) (Table 18). Perceived discharge readiness scores were lower in elders who experienced an event of recidivism

(t = 2.274, df = 48, p = .028) within the first 30 days of discharge (Table 14). No differences in readiness scores were associated with development of difficulties in managing medications (Table 15) or diabetes (Table 16), though differences in readiness scores in patients who later reported difficulty managing a chronic health problem (Table 17) did approach statistical significance (t = 1.942, df = 66.2, p = .056).

Community Transition Conditions

Hospitalization-Related Transition Conditions

The mean LOS for study participants was 6.27 days (SD = 3.643) (Table 5). LOS was not correlated with perceived discharge readiness, quality of discharge teaching, the perceived quality of the post-discharge transition, and post-discharge coping difficulty scores. Additionally, no age-related differences in the occurrence of 30-day post discharge recidivism were noted in this sample of older adults.

Hospitalists were involved in the acute care management of 32.3% (n = 21) study participants. The inclusion of a hospitalist in care was not related to an occurrence of recidivism or reports of post-discharge management of conditions. A relationship existed between difficulties managing medications at home and non-use of hospitalist services (p = .020) (Table 13).

The nurses' effectiveness in delivery of discharge teaching was identified as a critical element in the success of the home recovery transition (Table 5). High residual needs for discharge information were associated with reduced readiness for discharge (r = -.314, p = .003) and greater early post-discharge coping difficulty (r = .288, p = .023) (Table 18). The quality of discharge teaching was positively correlated with participant perceptions of transition quality

(r = .444, p < .001). Specifically, the quality of the discharge information (r = .333, p = .004) and the skill of the nurse in delivering discharge education (r = .451, p < .001) were associated with better perceptions of transition quality (Table 18). Lower CTM-15 scores were associated with higher levels of post-discharge coping difficulty (r = -.286, p = .027) in the early phase of the home recovery transition. Patient perception of post-discharge transition quality did not significantly vary in elders who did or did not experience an event or recidivism (t = 1.661, df = 66, p = .101) (Table 14). Individuals with lower CTM-15 scores reported more difficulty managing medications (t = 2.123, df = 71, p = .037) following discharge (Table 15).

Family and Community Support Resources

Eighty percent (n = 72) of participants reported access to a caregiver who resided in the home during the initial stages of recovery (Table 6). Twelve respondents lived alone, and eight of these elders returned home with no family supervision. Ultimately, five of the participants who lived alone dropped out of the study. The availability of a caregiver was not associated with reports of recidivism, but these findings need to be interpreted cautiously in view of the small sample of independently-dwelling elders in the sample. Six participants were required to resume the role of caregiver for another immediately after their own discharge.

Almost 50% (n = 44) of respondents were referred to home care services at the time of discharge. Utilization of home care services was not associated with post-discharge recidivism in the early phase of the home recovery transition or in variations in PDCDS scores during both data periods (Table 10). There were no statistically significant relationships established between use of home care service and the development of difficulties with medication complexity, glycemic control, or chronic illness management.

Prediction of Post-Discharge Difficulties

30-Day Recidivism

A summary of outcome-related data is provided in Table 7. A series of X^2 analyses were conducted to determine if occurrences of 7-day (Table 8), 8 to 30-day (Table 9), and 30-day recidivism (Table 10) were related to nominal-level variables that were representative of chronic health conditions, diabetes-related health conditions, hospitalization-related transition conditions, and access to community support resources. The relationship of these variables to participant–reported difficulties with medication complexity, managing glucose or diabetes, and managing a chronic health problem were also examined. A series of *t* tests were calculated to ascertain if significant differences in scored measures of discharge readiness, quality of discharge teaching, perceived discharge quality, 7-day post-discharge coping difficulty, and 30-day post-discharge coping difficulty could be attributed to 30-day recidivism (Table 14), difficulty with medication complexity (Table 15), difficulty with controlling diabetes (Table 16), and difficulty in managing other chronic health problems (Table 16).

A history of CKD was the only condition-specific variable that was associated with an early event of recidivism ($X^2 = 3.927$, $p = .048$). Statistically significant associations between 30-day recidivism were observed with the following variables (Table 10): history of PVD ($X^2 = 4.591$, $p = .032$); difficulty managing medications ($X^2 = 4.653$, $p = .031$); difficulty managing diabetes ($X^2 = 4.384$, $p = .036$); and difficulty managing a chronic illness other than diabetes ($X^2 = 13.830$, $p < .001$). Continuous variables that were significantly related to 30-day recidivism included perceived discharge readiness scores ($t = 2.274$, df = 48, $p = .028$) and 30-day post-discharge coping difficulty scores ($t = -3.363$, df = 24.7, $p = .003$) (Table 14). Differences in 7-day PDCDS scores were also observed in relation to each of the specified post-discharge

difficulties which led to a decision to include this variable in predictive assessment of the risk for 30-day recidivism.

Binary logistic regression was used to explore the impact of multimorbidity on early and latent recidivism. Total diabetes-related complications, COPD, and the interactions of the two variables were run as predictors for the occurrence of recidivism during three post-discharge time periods within one month following discharge (Table 19). No chronic illness specific variables emerged as predictors of 30-day recidivism.

Six predictors were entered into a regression model with 30-day recidivism as the outcome: RHDS scores; 7-day PDCDS scores; 30-day PDCDS scores; difficulty managing medications; difficulty controlling blood glucose; and difficulty managing other chronic illnesses. Three of the six predictors contributed significantly to the initial model, and a model was re-run using these three variables. A final three-predictor model was found to be statistically significant (X^2 = 26.737, df = 3, p < .001). The following variables contributed to an event of recidivism within 30 days of discharge: 7-day PDCDS scores (Wald X^2 = 3.671, df = 1, p = .05); 30-day PDCDS scores (Wald X^2 = 6.723, df = 1, p = .010); and difficulty managing other chronic illnesses (Wald X^2 = 8.200, df = 1, p = .004). The Hosmer-Lemeshow goodness-of-fit statistic (X^2 = 7.061) was insignificant (p = .530, df = 8) indicating that the final model had a good fit with the data. The Nagelkerke R square statistic indicated that the model contributed to 49.9% of the variance. The model correctly predicted 85% of participants who did not have an event of recidivism and 65% of people who did experience recidivism and was able to correctly predict discharge transition outcomes in 78.3% of cases (Table 21). The odds of experiencing recidivism within 30 days of hospital discharge was particularly high if the elder was experiencing difficulty managing a non-diabetes related chronic illness (OR = 10.666, p = .004).

Discussion

This study examined the impact of personal health transition conditions (health-illness factors, diabetes-related factors, and discharge readiness) and community transition conditions (hospital-related discharge factors, family caregiver status, and utilization of home care resources) on the early and intermediate recovery transition outcomes of recidivism and post-discharge coping difficulty in a sample of older adults with a pre-existing diagnosis of diabetes. Study findings provided preliminary insight into the multidimensional nature of the early and intermediate home recovery transition experience from the perspective of the older adult and family care providers. The free-responses provided by older adults and their care providers in the supplementary qualitative component of the study provided an opportunity to better understand specific problems encountered during the early and later phases of the home transition and to explore their potential value in predicting the risk for recidivism.

Demographic and Health Status Transition Conditions

The study sample closely mirrored the descriptions of hospitalized older patients that were provided in the literature. Over one-third of participants were admitted for a cardiovascular diagnosis which is consistent with the 30% reported in the most recent National Discharge Survey (Hall et al., 2010). Hospitalization causes in the sample were similar to those that were previously reported in the older diabetes population (ADA, 2013a). Age and length-of-stay were not associated with difficulties encountered in home recovery transition period.

The additive effects of diabetes and diabetes-related conditions suggested that at least 73% (n = 70) of participants met baseline criteria for multimorbidity, and as in the VA study (Steinman et al., 2012), over 30% (n = 30) of participating elders suffered from at least five

comorbid conditions. Because this study was diabetes-focused and did not specifically address other common conditions that affect elders such as arthritis, hypertension, and gastrointestinal disorders it can be assumed that the multimorbidity burden of the sample is even higher. Multimorbidity patterns identified in this study were similar to those seen in the VA study (Steinman et al., 2012). A relationship was seen between CKD and early recidivism and PVD and 30-day recidivism, but these conditions were not independent predictors of overall 30-day recidivism. Because of the high prevalence of stage 3 or higher CKD in this sample (45.8%, *n* = 44) and participant-generated free-response descriptions of difficulty with home-management of CKD, additional study of this condition is warranted with larger patient samples. The preliminary findings of this study suggest that the current condition-specific approach to readmission reduction may inadequately predict patients who are at higher risk for recidivism.

Diabetes-Specific Personal Transition Conditions

Most of the older adults in this study sample had a long duration of diabetes and were affected by multiple chronic complications that are often associated with poor diabetes control. Although, the multimorbidity profile of the sample established that participating elders were afflicted by several chronic diabetes-related complications, A1c values indicated that glycemic control for most participants met current guidelines for older adults at the time of admission (ADA, 2013b; Huang, Sachs, & Chin, 2006). These findings suggest that older adults with diabetes may experience acceptable glycemic control prior to hospitalization. Over one-third of participants were discharged on insulin, and over 40% of participants experienced changes in their diabetes treatment regimen at discharge. In the qualitative component of this study, elders reported difficulty maintaining glycemic control during the early and later home recovery phases

of transition. Participants regularly reported adjustments to their diabetes treatment regimens following discharge, and a few reported glucoses in excess of 300 mg/dL. Although it was not a significant predictor in the final regression model, difficulty controlling diabetes following discharge was a common frustration reported by participants.

Discharge Readiness

An elder's perceived readiness for discharge was related to post-hospitalization transition outcomes. Though not statistically significant, scores on the RDHS were lower in patients who reported specific difficulties with handling medications, controlling glucose, and managing a chronic health problem at home. Differences in readiness scores were statistically significant with regard to recidivism – lower scores were seen in patients who experienced an event of recidivism within 30-days of discharge. Because patient satisfaction is a reportable quality metric and is now attached to hospital reimbursement equations (Medicare Payment Advisory Committee, 2007), it should be noted that higher perceived readiness for discharge was positively correlated with patient perceptions of post-discharge transition quality. Perceived readiness for discharge may have bearing in how patients describe their hospital experiences in patient satisfaction surveys and is an important consideration in evaluating the overall hospital experience.

Discharge Preparation and Education

Perceived discharge readiness was positively correlated with the patient-perceived quality of discharge teaching. Participants who reported unmet discharge information needs had a lower perceived readiness for discharge. Additionally, failure to meet an elder's information needs was correlated with higher levels of post-discharge coping difficulty in the first week following

hospitalization. These findings are supported by the qualitative responses provided to PDCDS free-response items. Effective delivery of discharge teaching by the nurse was correlated with higher levels of readiness and improved perceptions of transition quality. Although quality of discharge teaching was not a significant predictor of post-discharge recidivism, the skill of the nurse in delivering discharge education clearly influenced the patients' overall perception of the home recovery transition.

Community Transition Conditions

Transition support resources such as a caregiver who was residing in the home at the time of discharge and receipt of home care services were not associated with an event of recidivism. It should be noted, however, that recruitment of individuals who were discharged home with no in-home supervision was limited, and statistical analyses may not have adequately captured the true experience of elders who lived alone. Content analyses of the free response comments to the PDCDS of individuals who lived alone suggested that returning home after a hospitalization without formal support is extremely difficult. It was noted during study screening activities that individuals who lived alone often were transferred to intermediate care facilities following discharge. A better understanding of the transition from skilled rehabilitation to home is needed particularly for older adults with limited community support resources.

Post-Discharge Coping Difficulties

Common post-discharge coping difficulties appeared to be interrelated. Associations between medication management and difficulty controlling glucose or regulating another chronic health condition were observed. Additionally, a report of difficulty regulating glucose was significantly associated with difficulty in managing another chronic health problem. These

findings suggest that multimorbidity may play a role in the evolution of post-discharge coping difficulties during the home recovery phase of transition.

PDCDS scores were predictive of the risk for an event of recidivism in the early and later phases of the home recovery transition. Specific difficulties with management of a complex chronic health condition such as hypertension, cardiac rhythm abnormalities, or renal failure were described by almost 52% of respondents during the first week following discharge and 78% of participants who provided comments during 30-day post-hospitalization interviews. Although PDCDS scores were lower during the second interview, multiple elders did report that they were undergoing modifications to chronic illness treatment plans or work-ups for decompensated health problems.

Implications

Practice

The findings of this study suggest that sequential screening for the presence of post-discharge coping difficulties and early intervention for emerging problems is critical for the duration of the home recovery transition. Seven-day follow-up assessment of recently discharged older adults may be particularly helpful in identifying older adults and families who are struggling at home. Inclusion of these assessments during routine post-hospital provider visits may be particularly helpful in identifying elders who are actively experiencing post-discharge difficulties and may have heightened risk for recidivism. The addition of transitional care interventions within the context of evolving medical home models may be helpful in limiting problems during the home recovery transition.

Changes in the approach to hospital-to-home transitional care may improve the experience and transition outcomes of older adults and their family support systems. Structured post-discharge follow-up of recently-hospitalized older adults may be more effective if it is driven by individual patient assessment rather than condition-specific protocols. Research findings have shown that involvement of an advanced practice nurse or social worker significantly improves transitional care outcomes. Interventions that include assessment of all elders for discharge readiness and structured follow-up interventions may be particularly beneficial in identifying elder at-risk for poor home recovery transition outcomes (Naylor, 2000; Naylor et al., 2004; Watkins, Hall, & Kring, 2012). Additionally, telehealth interventions that incorporate inclusion of mobile technologies such as Facebook, tablets, and mobile videoconferencing such as Skype may provide support in post-discharge support.

Education

During data collection procedures, the principal investigator noted that older adults often stated that they knew "what to do" to care for themselves because they had "done it before." Participants additionally routinely stated that they were "sure" they would be told what care was needed at home prior to leaving the hospital. Because data were collected within four hours of discharge, there is suggestion that the patient education was not interwoven into daily care during the course of the hospitalization.

This study did find that high residual information needs at discharge were correlated with higher rates of post-discharge coping difficulties and lower perceived satisfaction with care transitions. Data from this study support prior findings that diabetes treatment plans frequently change following a hospitalization. Changes in treatment plans may increase the risk for

medication errors at home and necessitate effective communication between patients, family care providers and the health care team at time of discharge. Because older adults relied upon prior knowledge when organizing post-discharge care, assessments of current home self-management practices are critical. Better understanding of a patient's pre-admission self-care practices, may assist the bedside nurse in developing clear discharge instructions that clarify new or changing elements of care. Consideration must be given to preparing nurses who are effective patient educators and affording time in care delivery models to meet the "survival needs" of high-risk patient populations such as elders with chronic illnesses.

Research

Qualitative data gathered during the course of this research study provided insight into the specific areas that created problems for patients and caregivers during the immediate and later phases of the home recovery transition. The current focus on prevention of 30-day recidivism fails to address the concerns, trials and difficulties encountered by older adults and their families during this period of heightened vulnerability. There is a need to better understand evolving needs of older adults as they progress through the home recovery transition. This study did provide for proxy response by family care providers. Qualitative data associated with this study suggest that needs of elders and family caregivers may vary and require further study. Replication studies are required.

This research study focused on hospital-to-home transition experiences of older adults with diabetes. In addition to using acute care services, individuals with diabetes also are frequent consumers of skilled rehabilitation care (ADA, 2013b). It can be assumed that older adults leaving these facilities, particularly if they live alone, have residual transition needs. There is an

absence of literature on the hospital-to-rehabilitation and post-rehabilitation transition experiences of older adults and extensive opportunities for study in this area. The higher rates of dependency observed in older adults with diabetes supports study of the post-hospitalization transitions of older adults who reside in assisted living facilities.

Limitations

Attrition is a common issue faced in longitudinal studies that include elderly participants. Age, cognitive deficit, frailty, and higher acuity increase the risk of study attrition (Chatfield et al., 2005). Because this study included elders who were recently hospitalized, the risk of attrition was high and, due to changes in discharge disposition, actually presented before several participants had even left the hospital. The study design did incorporate recommendations to reduce attrition in an elderly patient sample and even included the use of a peer interviewer. Because common causes of attrition were rehospitalization, participant-reported changes in health status, and caregiver fatigue, it is possible that findings of this study actually underestimated the prevalence of post-discharge caregiving difficulties in participants with more complex physical conditions or social situations. Attrition potentially contributed to loss of statistical power and may have impacted interpretation of findings. In this exploratory study the risk for a Type II error with the associated failure to recognize a significant relationship was a greater concern.

This study excluded individuals with a documented history of cognitive dysfunction or a medication profile that included agents used to treat dementia. The care and supervisory needs of individuals with cognitive function may well exceed those of unaffected individuals and also may increase the need for support service following discharge. Exclusion of this high-risk

sample may underestimate the prevalence of post-discharge coping difficulties in recently-discharged older adults.

Due to the demographic make-up of the research site, there was limited inclusion of non-Caucasian participants in the study. Motivation and resources to provide care to an older adult at home may be partially culturally driven (Quadagno, 2008). Findings could vary in a sample with a different ethnic/cultural distribution. Additionally, socioeconomic indicators such as income, education level and insurance were not evaluated in this study.

The study did not specifically evaluate the type, amount, or duration of home care and potentially did not capture the impact of homecare on discharge outcomes.

Conclusion

Older adults with chronic health problems such as diabetes are a growing population and nationally experience the highest rates of hospitalization. Multimorbidity impacts over 50% of adults over the age of 65 and contributes to the complexity of the hospital-to-home transition as the elder attempts to integrate modifications in complicated treatment plans and monitor for evolving changes in diverse health problems. Hospitalization has been described as a series of three sequential transitions in which the patient is particularly vulnerable to medical errors, declines in functional status, and physiologic and social stressors. Elders typically leave the hospital with residual recovery needs and often must elicit the support of family, friends, or formal resources in order to optimize transition outcomes.

Recent changes in hospital reimbursement structures have tied post-discharge transition outcomes to payment. The current focus on readmission and recidivism has led to a national research agenda that attempts to “target” high risk patient populations based upon pre-identified

risk profiles that are typically condition or disease-focused. The intended outcome of these interventions is decreased costs, reduced service utilization, and limitation of PPR within the first 30 days of discharge. Risk identification strategies have typically utilized large datasets and have given little consideration to the dynamic needs of elders and their family caregivers as they progress through the hospital recovery transition experience. Better understanding of the evolving needs of elders in the early and later stages of transition may assist in identifying elders who are at risk for or in the throes of an unhealthy home recovery transition and developing time-appropriate interventions that address the complexity of individual patients and their families.

Tables

Table 1. Home Recovery Transition Variables Defined

Variable	Definition	
	Conceptual	Operational
Personal Transition Conditions		
Health Status		
Age	Chronological age	Documented age on day of admission
Admitting diagnosis	Primary reason for hospitalization	Documented reason for admission classified as cardiovascular, non-cardiovascular medical, and surgical
History of chronic health condition	Chronic medical condition for which the elder is receiving treatment	Documented medical history of various chronic illnesses – each treated individually as nominal level yes/no variable
Comorbidity burden	Combined weighted burden of illness contributed chronic health condition	Charleson Comorbidity Index score
Multimorbidity profile	Dyad combinations of identified chronic health conditions seen in same participant	Presence of pre-identified combinations of chronic illnesses in one elder as identified in medical record – each combination treated as nominal level yes/no variable
Functional status	Ability of elder to self-perform basic activities of daily living	Total Katz-ADL score based on data obtained by participant self-report
Readiness for discharge	Patient-perceived readiness for hospital discharge	Participant-provided Readiness for Hospital Discharge Scale Score
Diabetes-related Personal Factors		
Duration of diabetes	Time period elder has been aware of diabetes	Participant-reported duration of time of known diabetes in years
A1c (%)	Degree of glycemic control at time of admission	Recorded lab value in patient hospital record
Change in diabetes plan?	Modifications in diabetes treatment plan at time of discharge	Dissimilarities noted between recorded diabetes plan on admitting history and discharge documents – yes/no

Variable	Definition	
	Conceptual	Operational
Insulin usage?	Inclusion of insulin in the elder's diabetes treatment plan	Mention of insulin use after discharge in discharge documents – yes/no
Diabetes complication profile	Total macrovascular and microvascular disease burden exacted by diabetes	Diabetes Complication Index score obtained during patient interview
Hospital-related Transition Conditions		
Length-of-stay	Duration of hospitalization	Total days patient was hospitalized for current admission as documented in medical record
Hospitalist?	Hospital plan of care directed by hospital-based physician rather than elder's usual provider	Hospitalist is identified as attending physician in hospital record – yes/no
Discharge content needed	Participant-perceived unmet informational needs at time of discharge	Score on Content Needed subscale of the QDTS
Discharge content received	Total discharge-related information received during the course of a hospitalization	Score on Content-Received subscale of the QDTS
Discharge content delivery	Participant-perceived effectiveness of nursing staff in delivering discharge education	Score on Content-Delivered subscale of the QDTS
Discharge content quality	Participant-perceived quality of discharge content and effectiveness of delivery during the course of the hospitalization	Summed total of the Content-Received and Content-Delivered subscales of the QTDS
Community Support		
Caregiver in home	Inclusion of an in-residence support person at the time discharge	Participant-reports of anticipated caregiver support at time of discharge – yes/no
Home care	Inclusion of intermittent skilled home care services at time of discharge	Indication in case management note of referral to home care – yes/no
Transition outcomes		
Perceived quality of transition	Patient-perceived quality of the post-hospitalization transition	CTM-15 score obtained 7 days following discharge
Recidivism 7 day	Event of unplanned provider	Participant report of event of

Variable	Definition	
	Conceptual	Operational
	visit, emergency department visit or rehospitalization within 7 days of discharge	recidivism within 7 days of discharge – yes/no
Recidivism 8 to 30 days	Event of unplanned provider visit, emergency department visit or rehospitalization during the 8 to 10 days following discharge	Participant report of event of recidivism within 8 to 30 days of discharge – yes/no
Recidivism 30 days	Event of unplanned provider visit, emergency department visit or rehospitalization during the	Participant report of recidivism within 30 days of discharge – yes/no
Post-discharge coping difficulty 7 days	Participant-reported difficulties encountered during the first week after discharge	PDCDS score obtained by participant interview 7 days following discharge
Post discharge coping difficulty 30 days	Participant-reported difficulties encountered during the 8 to 30 days following discharge	PDCDS score obtained by participant interview 30 days following discharge
Problems with medicines	Participant-reported difficulties managing medications or with medication side-effects in the first 30 days following discharge	Participant-described difficulty with medication management described in PDCDS free-response interviews – yes/no
Problems with glucose control	Participant-reported difficulties with glucose regulation or diabetes management during the first 30 days following discharge	Participant-described difficulty with regulation of glucose or management of diabetes treatment plan described in the PDCDS free-response interviews – yes/no
Problems with other chronic condition	Participant-reported difficulties with managing a chronic condition other than diabetes during the first 30 days following discharge	Participant-described difficulty with managing a chronic health condition other than diabetes described in the PDCDS free-response interviews – yes/no

Table 2. General Demographic and Health-Illness Characteristics

Age	*n* = 96
Mean (*SD*) years	75.16 (5.971)
Median years	75.00
64-74 years (%)	49.0
≥ 75 years (%)	51.0
Gender	*n* = 96
Female (%)	51
Male (%)	49
Ethnicity	*n* = 96
Asian (%)	2.1
Black (%)	8.3
Caucasian (%)	84.4
Latino (%)	5.2
Comorbidity Profile	*n* = 96
Coronary artery disease (%)	61.5
Chronic kidney disease (%)	45.8
Chronic obstructive pulmonary disease (%)	22.9
Cerebrovascular disease (%)	21.9
Diabetes chronic complication (%)	81.3
Foot problems (%)	8.3
Heart failure (%)	38.5
Malignancy history (%)	13.5
Neuropathy (%)	57.3
Peripheral vascular disease (%)	36.5
Charleson Comorbidity Score	2.77
Mean (*SD*)	(1.762)
Median	3
Diabetes Complication Index Score	2.73
Mean (*SD*)	(1.285)
Median	3
Minicog Score < 3 (%)	6.3%
Katz Index of ADL Score < 5 (%)	11.4%
Readiness for Hospital Discharge score	*n* = 96
Mean (*SD*)	186.65 (19.64)
Median	194.00
Range	105-210

Table 3. Multimorbidity Illness Patterns

Common multimorbidity dyad combinations (*n*=96)	%	Count
CAD and HF	28.1	27
CAD and CKD	30.2	29
CAD and COPD	13.5	13
CAD and PVD	25.0	24
CAD and CVD	16.7	16
CAD and neuropathy	33.3	32
HF and CKD	25.0	24
HF and COPD	10.4	10
HF and PVD	20.8	20
HF and CVD	14.6	14
HF and neuropathy	22.9	22
CKD and COPD	12.5	12
CKD and PVD	25.0	24
CKD and CVD	11.5	11
CKD and neuropathy	28.1	27
COPD and neuropathy	12.5	12
PVD and neuropathy	21.9	21
CVD and neuropathy	11.5	11
Diabetes-related complication frequency per participant	*n*= 96	
Mean (*SD*) conditions	2.678 (1.610)	
Median conditions	2.0	2
0 conditions (%, *n*)	5.2	5
1 conditions (%, *n*)	19.8	19
2 conditions (%, *n*)	28.1	27
3 conditions (%, *n*)	15.6	15
4 conditions (%, *n*)	15.6	15
5 conditions (%, *n*)	10.4	10
6 conditions (%, *n)*	5.2	5

Table 4. Diabetes-specific Health Illness Characteristics

Duration diabetes	*n* = 95
Mean (*SD*) years	13.58 (11.285)
Median years	11
Range	1-49 years
A1c	*n* = 82
Mean (*SD*) %	6.857 (1.043)
Median (%)	6.7
Range	5.2-11.7
≥ 8% (%)	11.0
Diabetes treatment at discharge	*n* = 90
Change in diabetes treatment plan? (%)	40.0
Insulin at discharge? (%)	35.6
New to insulin? (%)	2.2
Number of diabetes-related medications	*n* = 95
None (%)	2.1
1 (%)	63.2
2 (%)	23.2
3 (%)	11.6

Table 5. Hospitalization-related Transition Conditions

Length-of-stay	*n* = 95
Mean (*SD*) days	6.27 (3.643)
Median days	5.00
Length-of-stay group	
≤ 3 days (%, *n*)	25.0, 24
4-7 day (%, *n*)	42.7, 41
≥ 7days (%, n)	31.3, 30
Hospitalist provider (%, n)	32.3, 31
Admitting diagnosis	n = 96
Cardiovascular (%, n)	34.4, 33
Non-cardiovascular medical (%, n)	48.9, 47
Non-cardiovascular surgical (%, n)	20.8, 20
Quality of Discharge Teaching Content Needed	*n* = 96
Mean (*SD*)	9.03 (10.681)
Median	5.5
Range	0-47
Quality of Discharge Teaching Content Received	*n* = 96
Mean (*SD*)	32.38 (14.674)
Median	33.50
Range	1-60
Quality of Discharge Teaching Delivery	n = 96
Mean (*SD*)	109.95 (13.146)
Median	112
Range	55-120
Quality of Discharge Teaching Total	*n* = 96
Mean (*SD*)	142.32 (23.968)
Median	147.50
Range	56-180

Table 6. Post-Discharge Support-related Transition Conditions

	n = 90	
Caregiver at home (%, *n*)	80	72
Lives alone (%, *n*)	13.3	12
Caregiver for another (%, *n*)	6.7	6
Homecare at discharge (%, *n*)	48.9	44

Table 7. Hospital-to-Home Transition Outcomes

Perceived transition quality	*n* = 73	
Mean (*SD*)	68.311 (20.081)	
Median	66.67	
Range	0-100	
Post discharge coping difficulty – 7 days	*n* = 73	
Mean (*SD*)	19.23 (22.027)	
Median	10	
Range	0-95	
Post discharge coping difficulty – 30 days	n = 62	
Mean (*SD*)	15.85 (21.198)	
Median	6.50	
Range	0-82	
Difficulty with diabetes control (%, *n*)	38.7	29
Difficulty with other chronic health problem (%, *n*)	50.6	39
Difficulty with medications (%, *n*)	40.8	31
Recidivism – 7 days	*n* = 83	
Event of recidivism (%, *n*)	22.9	19
Unplanned provider visit (%, *n*)	10.8	9
Emergency department visit (%, *n*)	7.2	6
Readmission (%, *n*)	9.6	8
Recidivism – 8 to 30 days	*n* = 68	
Event of recidivism (%, *n*)	30.9	21
Unplanned provider visit (%, *n*))	16.2	11
Emergency department visit (%, *n*)	10.3	7
Readmission (%, *n*)	16.2	11
Total recidivism 30 days post discharge	*n* = 73	
Event of recidivism (%, *n*)	41.1	30
Unplanned provider visit (%, *n*)	26.0	19
Emergency department visit (%, *n*)	16.4	12
Readmission (%, *n*)	21.9	16
Study completion		
Enrolled (*n*)		96
Discharged to home after enrollment (%, *n*)	93.8	90
Discharge cancelled (%, *n*)	4.2	4
Discharge disposition changed (%, *n*)	2.1	2
7-day completion discharged participants (%, *n*)	82.2	74
30-day completion discharged participants (%, *n*)	70.0	63

Table 8. Chi (X^2) Analysis of Dichotomous Variables with Recidivism within 7 Days of Hospital Discharge

Variable	X^2	df	No Recidivism	Recidivism	Total	*p*
Age ≥ 75 years						
No	.236		31 (37.3%)	8 (9.6%)	46.9%	.627
Yes			33 (39.8%)	11 (13.3%)	53.1%	
Gender						
Female	.929		29 (34.9%)	11 (13.3%)	48.2%	.335
Male			35 (42.2%)	8 (9.6%)	51.8%	
Coronary artery disease						
No	.030		25 (30.1%)	7 (8.4%)	38.5%	.861
Yes			39 (47.0%)	12 (14.5%)	61.5%	
Heart failure						
No	.003		40 (48.2%)	12 (14.5%)	62.7%	.958
Yes			24 (28.9%)	7 (8.4%)	37.3%	
COPD						
No	2.717		52 (62.7%)	12 (14.5%)	77.2%	.099
Yes			12 (14.5%)	7 (8.4%)	22.9%	
Chronic kidney disease						
No	3.927		40 (48.2%)	7 (8.4%)	52.6%	.048
Yes			24 (28.9%)	12 (14.5%)	43.4%	
Cerebrovascular disease						
No			50 (60.2%)	15 (18.1%)	78.3%	1.000
Yes			14 (16.9%)	4 (4.8%)	21.7%	
Peripheral vascular disease						
No			40 (48.2%)	15 (18.1%)	66.3%	.270
Yes			24 (28.9%)	4 (4.8%)	33.7%	
Neuropathy						
No	.160		27 (32.5%)	9 (10.8%)	43.3%	.689
Yes			37 (44.6%)	10 (12.0%)	56.6%	
Cardiovascular admission						
No	.001		44 (53.1%)	13 (15.7%)	68.8%	.978
Yes			20 (24.1%)	6 (7.2%)	31.3%	
General medical admission						
No			48 (57.8%)	16 (19.3%)	77.1%	.307
Yes			16 (19.3%)	3 (3.6%)	22.9%	

Variable	X^2	df	No Recidivism	Recidivism	Total	*p*
Surgical admission						
No	.466		36 (43.4%)	9 (10.8%)	54.2%	.495
Yes			28 (33.7%)	10 (12.0%)	45.7%	
Hospitalist						
No	.169		44 (53.1%)	14 (16.9%)	70%	.681
Yes			20 (24.1%)	5 (6.0%)	30.1%	
A1c > 8%						
No			49 (67.1%)	17 (23.3%)	90.4%	.673
Yes			6 (8.2%)	1 (1.4%)	9.6%	
Change in diabetes plan						
No	.013		38 (45.8%)	11 (13.3%)	59.1%	.908
Yes			26 (31.3%)	8 (9.6%)	40.9%	
Insulin at discharge						
No			39 (47.0%)	15 (18.1%)	65.1%	.179
Yes			25 (30.1%)	4 (4.8%)	34.9%	
Caregiver in home						
No			12 (14.5%)	2 (2.4%)	16.9%	.506
Yes			52 (62.7%)	17 (20.5%)	83.2%	
Home care						
No	.524		31 (37.3%)	11 (13.3%)	50.6%	.469
Yes			33 (39.8%)	8 (9.6%)	49.4%	
Difficulty with medications						
No	.220		36 (48.0%)	8 (10.7%)	50.7%	.639
Yes			24 (32.0%)	7 (9.3%)	49.3%	
Difficulty with diabetes						
No	.847		38 (51.4%)	7 (9.5%)	61.9%	.357
Yes			22 (29.7%)	7 (9.5%)	38.3%	
Difficulty with other chronic health problem						
No			33 (42.9%)	4 (5.2%)	48.1%	.028
Yes			27 (35.1%)	13 (16.9%)	52.0%	

Table 9. Chi (X^2) Analysis of Dichotomous Variables with Recidivism within 8 to 30 Days of Hospital Discharge

Variable	X^2	*df*	*No Recidivism*	Recidivism	Total	*p*
Age ≥ 75 years						
No	.215	1	23 (33.8%)	9 (13.3%)	47.1%	.643
Yes			24 (35.3%)	12 (17.6%)	52.9%	
Gender						
Female	.180	1	25 (36.8%)	10 (14.7%)	51.5%	.671
Male			22 (32.4%)	11 (16.2%)	48.6%	
Coronary artery disease						
No	1.540	1	15 (22.1%)	10 (14.7%)	36.8%	.215
Yes			32 (47.1%)	11 (16.2%)	63.3%	
Heart failure						
No	1.993	1	25 (36.8%)	15 (22.1%)	58.9%	.158
Yes			22 (32.4%)	6 (8.8%)	41.2%	
COPD						
No			35 (51.5%)	18 (26.5%)	78.0%	.361
Yes			12 (17.6%)	3 (4.4%)	22.0%	
Chronic kidney disease						
No	.051	1	26 (38.2%)	11 (16.2%)	54.4%	.882
Yes			21 (30.9%)	10 (14.7%)	45.6%	
Cerebrovascular disease						
No	.001	1	36 (52.9%)	16 (23.5%)	76.4%	.971
Yes			11 (16.2%)	5 (7.4%)	23.6%	
Peripheral vascular disease						
No	.601	1	29 (42.6%)	15 (22.1%)	64.7%	.438
Yes			18 (26.5%)	6 (8.8%)	35.3%	
Neuropathy						
No	.447	1	22 (32.4%)	8 (11.8%)	44.2%	.504
Yes			25 (36.8%)	13 (19.1%)	45.9%	
Cardiovascular admission						
No	.104	1	31 (45.6%)	13 (19.1%)	64.7%	.747
Yes			16 (23.5%)	8 (11.8%)	35.3%	
General medical admission						
No	.054	1	37 (54.4%)	16 (23.5%)	77.9%	.816
Yes			10 (14.7%)	5 (7.4%)	22.1%	

Variable	X^2	*df*	*No Recidivism*	Recidivism	Total	*p*
Surgical admission						
No	.257	1	26 (38.2%)	13 (19.1%)	57.3%	.612
Yes			21 (30.9%)	8 (11.8%)	42.7%	
Hospitalist						
No	.069	1	35 (51.5%)	15 (22.1%)	73.6%	.793
Yes			12 (17.6%)	6 (8.8%)	26.4%	
A1c > 8%						
No			39 (62.9%)	18 (29.0%)	91.9%	.654
Yes			3 (4.8%)	2 (3.2%)	8.0%	
Change in diabetes plan						
No	.051	1	26 (38.2%)	11 (16.2%)	54.4%	.822
Yes			21 (30.9%)	10 (14.7%)	45.6%	
Insulin at discharge						
No	1.108	1	33 (48.5%)	12 (17.6%)	66.1%	.293
Yes			14 (20.6%)	9 (13.2%)	33.8%	
Caregiver in home						
No			4 (5.9%)	5 (7.4%)	13.3%	.122
Yes			43 (63.2%)	16 (20.6%)	83.8%	
Home care						
No	.069	1	24 (35.3%)	10 (14.7%)	50.0%	.798
Yes			23 (33.8%)	11 (16.2%)	50.0%	
Difficulty with medications						
No	3.245	1	30 (44.8%)	8 (11.9%)	56.7%	.072
Yes			17 (25.4%)	12 (17.9%)	43.3%	
Difficulty with diabetes						
No	3.149	1	32 (47.8%)	9 (13.4%)	61.2%	.076
Yes			15 (22.4%)	11 (16.4%)	38.8%	
Difficulty with other chronic health problem						
No			27 (39.7%)	4 (5.9%)	45.6%	.004
Yes			20 (29.4%)	17 (25.0%)	54.4%	

Table 10. Chi (X^2) Analysis of Dichotomous Variables with Recidivism within 30 Days of Hospital Discharge

Variable	X^2	df	No Recidivism	Recidivism	Total	*p*
Age ≥ 75 years						
No	.557	1	21 (28.8%)	12 (16.4%)	45.2%	.455
Yes			22 (30.1%)	18 (24.7%)	54.8%	
Gender						
Female	.329	1	23 (31.5%)	14 (19.2%)	50.7%	.566
Male			20 (27.4%)	16 (21.9%)	49.3%	
Coronary artery disease						
No	.198	1	15 (20.5%)	12 (16.4%)	36.9%	.656
Yes			28 (38.4%)	18 (24.7%)	63.1%	
Heart failure						
No	2.012	1	23 (31.5%)	21 (28.8%)	60.3%	.156
Yes			20 (27.4%)	9 (12.3%)	39.7%	
COPD						
No	.011	1	32 (43.9%)	22 (30.1%)	74.0%	.917
Yes			11 (15.1%)	8 (11.0%)	26.1%	
Chronic kidney disease						
No	.592	1	24 (32.9%)	14 (19.2%)	52.1%	.441
Yes			19 (26.0%)	16 (21.9%)	47.9%	
Cerebrovascular disease						
No	.060	1	34 (46.6%)	23 (31.5%)	78.1%	.807
Yes			9 (12.3%)	7 (9.6%)	21.9%	
Peripheral vascular disease						
No	4.591	1	24 (32.9%)	24 (32.9%)	65.8%	.032
Yes			19 (26.0%)	6 (8.2%)	34.3%	
Neuropathy						
No	.304	1	20 (27.4%)	12 (16.4%)	43.8%	.581
Yes			23 (31.5%)	18 (24.7%)	56.2%	
Cardiovascular admission						.
No	.408	1	27 (37.0%)	21 (28.8%)	65.8%	.523
Yes			16 (21.9%)	9 (12.3%)	34.3%	
General medical admission						
No	.242	1	35 (47.9%)	23 (31.5%)	78.9%	.623
Yes			8 (11.0%)	7 (10.0%)	21.0%	

Variable	X^2	df	No Recidivism	Recidivism	Total	*p*
Surgical admission						
No	.044	1	24 (32.9%)	16 (21.9%)	54.8%	.834
Yes			19 (26.0%)	14 (19.2%)	45.2%	
Hospitalist						
No	.961	1	30 (41.1%)	24 (32.9%)	74.0%	.327
Yes			13 (17.8%)	6 (8.2%)	26.0%	
A1c > 8%						
No			35 (53.0%)	25 (37.9%)	90.9%	.693
Yes			3 (4.5%)	3 (4.5%)	9%	
Change in diabetes plan						
No	.005	1	24 (32.9%)	17 (23.3%)	56.2%	.942
Yes			19 (26.0%)	13 (17.8%)	43.8%	
Insulin at discharge						
No	.191	1	28 (38.4%)	21 (28.8%)	67.2%	.662
Yes			15 (20.5%)	9 (12.3%)	32.8%	
Caregiver in home** Multiple participants without caregiver dropped out						
No			3 (4.1%)	7 (9.6%)	13.7%	.080
Yes			40 (54.8%)	23 (31.5%)	86.3%	
Home care						
No	.592	1	24 (32.9%)	14 (19.2%)	52.1%	.441
Yes			19 (26.0%)	16 (21.9%)	47.9%	
Difficulty with medications						
No	4.653	1	28 (40.6%)	10 (14.5%)	55.1%	.031
Yes			15 (21.7%)	16 (23.2%)	44.9%	
Difficulty with diabetes						
No	4.384	1	30 (44.1%)	11 (16.2%)	60.3%	.036
Yes			13 (19.1%)	14 (20.6%)	39.7%	
Difficulty with other chronic health problem						
No	13.830	1	27 (38.0%)	5 (7.0%)	45.0%	<.001
Yes			16 (22.5%)	23 (32.4%)	55.9%	

Table 11. Chi (X^2) Analysis of Dichotomous Variables Associated with Participant-reported Difficulty with Glucose Control or Diabetes Management after Discharge

Variable	X^2	df	No Difficulty	Difficulty	Total	*p*
Age ≥ 75 years						
No	.384	1	24 (32.0%)	13 (17.3%)	49.3%	.535
Yes			22 (29.3%)	16 (21.3%)	50.6%	
Gender						
Female	.108	1	22 (29.3%)	15 (20.0%)	49.3%	.742
Male			24 (32.0%)	14 (18.7%)	50.7%	
Coronary artery disease						
No	1.161	1	20 (26.7%)	9 (12.0%)	38.7%	.281
Yes			26 (34.7%)	20 (26.7%)	61.4%	
Heart failure						
No	1.920	1	26 (34.7%)	21 (28.0%)	62.7%	.166
Yes			20 (26.7%)	8 (10.7%)	37.4%	
COPD						
No	.014	1	37 (49.3%)	23 (30.7%)	80.0%	.906
Yes			9 (12.0%)	6 (8.0%)	20.0%	
Chronic kidney disease						
No	1.920	1	23 (30.7%)	19 (25.3%)	56.0%	.187
Yes			23 (30.7%)	10 (13.3%)	44.0%	
Cerebrovascular disease						
No	.105	1	35 (46.7%)	23 (30.7%)	77.4%	.745
Yes			11 (14.7%)	6 (8.0%)	22.7%	
Peripheral vascular disease						
No	1.047	1	28 (37.3%)	21 (28.0%)	65.3%	.306
Yes			18 (24.0%)	8 (10.7%)	34.7%	
Neuropathy						
No	.707	1	22 (29.3%)	11 (14.7%)	44.0%	.401
Yes			24 (32.0%)	18 (24.0%)	56.0%	
Cardiovascular admission						
No	1.343	1	29 (38.7%)	22 (29.3%)	68.0%	.246
Yes			17 (22.7%)	7 (9.3%)	32.0%	
General medical admission						
No	<.001	1	35 (46.7%)	22 (29.3%)	76.0%	.982
Yes			11 (14.7%)	7 (9.3%)	24.0%	

Variable	X^2	df	No Difficulty	Difficulty	Total	*p*
Surgical admission						
No	1.145	1	28 (37.3%)	14 (18.7%)	56.0%	.285
Yes			18 (24.0%)	15 (20.0%)	44.0%	
Hospitalist						
No	2.715	1	30 (40.0%)	24 (32.0%)	72.0%	.099
Yes			16 (21.3%)	5 (6.7%)	28.0%	
A1c > 8%						
No			36 (54.5%)	24 (36.4%)	90.9%	.682
Yes			3 (4.5%)	3 (4.5%)	9.0%	
Change in diabetes plan						
No	.608	1	28 (37.3%)	15 (20.0%)	57.3%	.435
Yes			18 (24.0%)	14 (18.7%)	42.7%	
Insulin at discharge						
No	.164	1	28 (37.3%)	19 (25.3%)	62.6%	.685
Yes			18 (24.0%)	10 (13.3%)	37.3%	
Caregiver in home						
No			7 (9.3%)	4 (5.3%)	14.6%	1.000
Yes			39 (52.0%)	25 (33.3%)	85.3%	
Home care						
No	.108	1	24 (32.0%)	14 (18.7%)	40.7%	.742
Yes			22 (29.3%)	15 (20.0%)	49.3%	
Difficulty with medications						
No	12.828	1	35 (46.7%)	10 (13.3%)	60.0%	<.001
Yes			11 (14.7%)	19 (25.3%)	40.0%	
Difficulty with other chronic health problem						
No	16.999	1	32 (42.7%)	6 (8.0%)	50.7%	<.001
Yes			14 (18.7%)	23 (30.7%)	49.4%	

Table 12. Chi (X^2) Analysis of Dichotomous Variables Associated with Participant-reported Difficulty with Management of a Non-diabetes Chronic Illness after Discharge

Variable	X^2	df	No Difficulty	Difficulty	Total	*p*
Age ≥ 75 years						
No	1.039	1	21 (27.3%)	17 (22.1%)	49.4%	.306
Yes			17 (22.1%)	22 (28.6%)	50.7%	
Gender						
Female	.118	1	18 (23.4%)	20 (26.0%)	49.4%	.731
Male			20 (26.0%)	19 (24.7%)	50.7%	
Coronary artery disease						
No	1.052	1	17 (22.1%)	13 (16.9%)	39.0%	.305
Yes			21 (27.3%)	26 (33.8%)	61.1%	
Heart failure						
No	2.427	1	27 (35.1%)	21 (27.3%)	62.4%	.119
Yes			11 (14.3%)	18 (23.4%)	37.7%	
COPD						
No	.046	1	30 (39.0%)	30 (39.0%)	78.0%	.830
Yes			8 (10.4%)	9 (11.7%)	22.1%	
Chronic kidney disease						
No	3.826	1	25 (32.5%)	17 (22.1%)	54.6%	.05
Yes			13 (16.9%)	22 (28.6%)	45.5%	
Cerebrovascular disease						
No	1.725	1	32 (41.6%)	28 (36.4%)	78.0%	.189
Yes			6 (7.8%)	11 (14.3%)	22.1%	
Peripheral vascular disease						
No	.640	1	23 (29.9%)	27 (35.1%)	65.0%	.424
Yes			15 (19.5%)	12 (15.6%)	34.1%	
Neuropathy						
No	.128	1	16 (20.8%)	18 (23.4%)	44.2%	.721
Yes			22 (28.6%)	21 (27.3%)	55.9%	
Cardiovascular admission						
No	.027	1	26 (33.8%)	26 (33.8%)	67.6%	.869
Yes			12 (15.6%)	13 (16.9%)	32.5%	
General medical admission						
No	2.818	1	26 (33.8%)	33 (42.9%)	76.7%	.093
Yes			12 (15.6%)	6 (7.8%)	23.4%	

Variable	X^2	df	No Difficulty	Difficulty	Total	*p*
Surgical admission						
No	1.628	1	24 (31.2%)	19 (24.7%)	55.9%	.202
Yes			14 (18.2%)	20 (26.0%)	44.2%	
Hospitalist						
No	1.821	1	25 (32.5%)	31 (40.3%)	72.8%	.177
Yes			13 (16.9%)	8 (10.4%)	27.3%	
A1c > 8%						
No			28 (41.2%)	33 (48.5%)	89.7%	1.000
Yes			3 (4.4%)	4 (5.9%)	10.3%	
Change in diabetes plan						
No	.017	1	22 (28.6%)	22 (28.6%)	57.2%	.895
Yes			16 (20.8%)	17 (22.1%)	42.9%	
Insulin at discharge						
No	.105	1	23 (29.9%)	25 (32.5%)	62.4%	.746
Yes			15 (19.5%)	14 (18.2%)	37.7%	
Caregiver in home						
No			4 (5.2%)	7 (9.1%)	14.3%	.517
Yes			34 (44.2%)	32 (41.6%)	85.5%	
Home care						
No	1.063	1	22 (28.6%)	18 (23.4%)	52.0%	.303
Yes			16 (20.8%)	21 (27.3%)	48.1%	
Difficulty with medications						
No	19.667	1	32 (42.1%)	13 (17.1%)	59.2%	<.001
Yes			6 (7.9%)	25 (32.9%)	40.8%	
Difficulty with diabetes control or management						
No	16.999	1	32 (42.7%)	14 (18.7%)	61.4%	<.001
Yes			6 (8.0%)	23 (30.7%)	38.7%	

Table 13. Chi (X^2) Analysis of Dichotomous Variables Associated with Participant-reported Difficulty with Medication Management

Variable	X^2	df	No Difficulty	Difficulty	Total	*p*
Age ≥ 75 years						
No	.002	1	22 (28.9%)	15 (19.7%)	48.6%	.966
Yes			23 (30.3%)	16 (21.1%)	51.4%	
Gender						
Female	.180	1	21 (27.6%)	16 (21.1%)	48.7%	.672
Male			24 (31.6%)	15 (19.7%)	51.3%	
Coronary artery disease						
No	3.385	1	21 (27.6%)	8 (10.5%)	38.1%	.066
Yes			24 (31.6%)	23 (30.3%)	61.9%	
Heart failure						
No	.317	1	29 (38.2%)	18 (23.7%)	61.9%	.574
Yes			16 (21.1%)	13 (17.1%)	38.3%	
COPD						
No	.074	1	36 (47.4%)	24 (31.6%)	79.0%	.786
Yes			9 (11.8%)	7 (9.2%)	21%	
Chronic kidney disease						
No	.004	1	25 (32.9%)	17 (22.4%)	55.3%	.951
Yes			20 (26.3%)	14 (18.4%)	44.7%	
Cerebrovascular disease						
No	.356	1	36 (47.4%)	23 (30.3%)	77.7%	.551
Yes			9 (11.8%)	8 (10.5%)	22.3%	
Peripheral vascular disease						
No	.964	1	27 (35.5%)	22 (28.9%)	64.4%	.326
Yes			18 (23.7%)	9 (11.8%)	35.5%	
Neuropathy						
No	.004	1	20 (26.3%)	14 (18.4%)	44.7%	.951
Yes			25 (32.9%)	17 (22.4%)	55.3%	
Cardiovascular admission						
No	.010	1	30 (39.5%)	21 (27.6%)	67.1%	.922
Yes			15 (19.7%)	10 (13.2%)	22.9%	
General medical admission						
No			31(40.8%)	27 (35.5%)	76.3%	.088
Yes			14 (18.4%)	4 (5.3%)	23.7%	

Variable	X^2	df	No Difficulty	Difficulty	Total	*p*
Surgical admission						
No	2.778	1	29 (38.2%)	14 (18.4%)	56.6%	.191
Yes			16 (21.1%)	17 (22.4%)	43.5%	
Hospitalist						
No			28 (36.8%)	27 (35.5%)	72.1%	.020
Yes			17 (22.4%)	4 (5.3%)	27.8%	
A1c > 8%						
No			34 (50.7%)	26 (38.8%)	89.5%	.692
Yes			3 (4.5%)	4 (6.0%)	10.5%	
Change in diabetes plan						
No	1.941	1	29 (38.2%)	15 (19.7%)	57.9%	.164
Yes			16 (21.1%)	16 (21.1%)	42.2%	
Insulin at discharge						
No	.159	1	27 (35.5%)	20 (26.3%)	61.8%	.690
Yes			18 (23.7%)	11 (14.5%)	38.2%	
Caregiver in home						
No	.l16	1	6 (7.9%)	5 (6.6%)	14.5%	.734
Yes			39 (51.3%)	26 (34.2%)	85.5%	
Home care						
No	.002	1	23 (30.3%)	16 (21.1%)	51.4%	.966
Yes			22 (28.9%)	15 (19.7%)	48.6%	
Difficulty with diabetes control or management						
No	12.828	1	35 (46.7%)	11 (14.7%)	61.4%	<.001
Yes			10 (13.3%)	19 (25.3%)	38.6%	
Difficulty with managing other chronic health problem						
No	19.667	1	32 (42.1%)	6 (7.9%)	50.0%	<.001
Yes			13 (17.1%)	25 (32.9%)	50.0%	

Table 14. *t* tests of Continuous Variables Associated with Recidivism in First 30 Days Following Discharge

Variable	No Event Recidivism	Event Recidivism	Sample	*t*	df	*p*
Age						
n	43	30	90	-1.275	71	.206
Mean years	74.91	76.63	75.14			
SD	5.149	6.392	6.068			
Median			75.0			
Range			65-60			
Total diabetes-related chronic complications						
n	43	30	90	.700	71	.486
Mean	2.84	2.57	2.64			
SD	1.758	1.406	1.560			
Median			2.0			
Range			0-6			
Length-of-stay						
n	43	30	90	.353	71	.725
Mean days	6.44	6.13	6.16			
SD	3.990	3.170	3.636			
Median			5.0			
Range			2-18			
Perceived discharge readiness						
n	43	30	90	2.274	48	.028
Mean	193.44	183.93	187.88			
SD	13.707	19.856	19.286			
Median			195.00			
Range			105-210			
Quality of discharge teaching – content needed						
n	43	30	90	-.397	71	.693
Mean	8.86	9.93	8.78			
SD	11.865	10.583	10.707			
Median			5			
Range			0-47			
Quality of discharge teaching – content received						
n	43	30	90	.845	71	.401
Mean	34.84	31.90	32.71			
SD	14.284	15.073	14.761			
Median			35.00			
Range			1-60			

Variable	No Event Recidivism	Event Recidivism	Sample	*t*	df	*p*
Quality of discharge teaching – delivery	43	30	90	1.443	71	.153
n	113.53	109.80	110.28			
Mean	7.601	14.361	13.334			
SD			112.50			
Median			55-120			
Range						
Quality of discharge teaching – total						
n	43	30	90	1.264	46	.245
Mean	148.37	141.70	142.99			
SD	17.931	27.207	24.148			
Median			148.0			
Range			56-180			
Perceived discharge quality						
n	43	25	73	1.661	66	.101
Mean	71.18	62.90	68.31			
SD	18.636	21.786	20.08			
Median			66.67			
Range			0-100			
Post-discharge coping difficulty – 7 days						
n	43	23	73	-1.071	64	.288
Mean	17.93	24.26	19.23			
SD	20.832	26.329	22.027			
Median			10.00			
Range			0-95			
Post-discharge coping difficulty – 30 days						
n	41	22	63	-3.363	24.7	.003
Mean	8.98	30.14	16.37			
SD	11.376	28.317	21.412			
Median			6.5			
Range			0-82			

Table 15. *t* tests of Continuous Variables Associated with Difficulties Managing Medications

Variable	No Difficulty	Yes Difficulty	*t*	df	*p*
Age					
n	45	31	-1.561	74	.124
Mean years	74.09	76.23			
SD	5.304	6.607			
Total diabetes-related chronic complications					
n	38	40	-1.604	76	.113
Mean	2.37	2.95			
SD	1.584	1.616			
Length-of-stay					
n	45	31	-1.284	74	.203
Mean days	5.69	6.74			
SD	3.496	3.540			
Perceived discharge readiness					
n	45	31	1.072	50.8	.289
Mean	192.42	188.19			
SD	13.529	18.885			
Quality of discharge teaching – content needed					
n	38	40	-1.889	63.9	.063
Mean	6.63	11.23			
SD	7.76	13.15			
Quality of discharge teaching – content received					
n	45	31	1.011	74	.315
Mean	113.24	110.13			
SD	6.238	14.984			
Quality of discharge teaching – delivery					
n	45	31	1.094	37.23	.281
Mean	35.16	31.71			
SD	12.238	17.510			
Quality of discharge teaching – total					
n	45	31	1.168	42.57	.249
Mean	148.40	141.84			
SD	15.660	28.447			
Perceived discharge quality					
n	43	30	2.123	71	.037
Mean	72.38	62.48			
SD	18.25	21.41			

Variable	No Difficulty	Yes Difficulty	*t*	df	*p*
Post-discharge coping difficulty – 7 days					
n	43	28	-2.429	59	.018
Mean	15.01	26.75			
SD	19.519	24.431			
Post-discharge coping difficulty – 30 days					
n	34	29			
Mean	9.18	24.79	-2.461	49	.018
SD	18.195	22.107			

Table 16. *t* tests of Continuous Variables Associated with Difficulties Controlling or Managing Diabetes

Variable	No Difficulty	Yes Difficulty	*t*	df	*p*
Age					
n	46	29	-.234	72	.816
Mean years	74.74	75.07			
SD	5.98	5.89			
Total diabetes-related chronic complications					
n	46	29	.512	.73	.610
Mean	2.72	2.52			
SD	1.72	1.53			
Length-of-stay					
n	46	29	-.233	73	.816
Mean days	6.04	6.24			
SD	4.38	3.729			
Perceived discharge readiness					
n	46	29	.269	73	.789
Mean	190.96	189.93			
SD	14.919	17.844			
Quality of discharge teaching – content needed					
n	46	29	.047	73	.962
Mean	9.20	9.07			
SD	11.09	11.51			
Quality of discharge teaching – content received					
n	46	29	.347	73	.730
Mean	34	32.79			
SD	14.48	14.82			
Quality of discharge teaching – delivery					
n	46	29	1.287	73	.202
Mean	113.13	109.86			
SD	6.52	15.19			
Quality of discharge teaching – total					
n	46	29	.863	73	.391
Mean	147.13	142.66			
SD	18.69	26.181			
Perceived discharge quality					
n	44	29	.793	71	.431
Mean	69.82	66.0			
SD	18.16	22.83			

Variable	No Difficulty	Yes Difficulty	*t*	df	*p*
Post-discharge coping difficulty – 7 days					
n	42	29	-2.798	59	.007
Mean	14.00	19.248			
SD	27.83	23.888			
Post-discharge coping difficulty – 30 days					
n	38	25	-3.170	47	.003
Mean	8.76	27.92			
SD	16.26	23.74			

Table 17. *t* tests of Continuous Variables Associated with Difficulties Managing Other Chronic Illness

Variable	No Difficulty	Yes Difficulty	*t*	df	*p*
Age					
n	36	40	-.889	76	.377
Mean years	74.26	75.45			
SD	5.37	6.36			
Total diabetes-related chronic complications					
n	38	40	-1.604	76	.113
Mean	2.37	2.95			
SD	1.58	1.62			
Length-of-stay					
n	38	40	-1.376	76	.173
Mean days	5.61	6.73			
SD	3.48	3.70			
Perceived discharge readiness					
n	38	40	1.942	66.3	.056
Mean	193.63	186.60			
SD	12.124	192.24			
Quality of discharge teaching – content needed					
n	38	40	-1.889	63.9	.063
Mean	6.63	11.23			
SD	7.78	13.15			
Quality of discharge teaching – content received					
n	38	40	-.307	76	.758
Mean	33.26	34.28			
SD	13.27	15.62			
Quality of discharge teaching – delivery					
n					
Mean	38	40	1.266	55.4	.203
SD	113.63	110.60			
	6.19	13.462			
Quality of discharge teaching – total					
n					
Mean	38	40	.411	.76	.683
SD	146.89	144.98			
	16.25	25.86			

Variable	No Difficulty	Yes Difficulty	*t*	df	*p*
Perceived discharge quality	36	37	.673	71	.503
n	69.92	66.74			
Mean	18.76	21.43			
SD					
Post-discharge coping difficulty – 7 days					
n	37	34	-2.457	59	.017
Mean	13.03	26.85			
SD	17.08	24.96			
Post-discharge coping difficulty – 30 days					
n	29	34	-2.391	47	.021
Mean	8.59	23.00			
SD	15.70	23.532			

Table 18. Bivariate Correlations of Continuous Transition-Related Variables

	Readiness	Discharge Content Needed	Discharge Content Received	Quality Content Delivered	Quality Discharge Teaching Total	Perceived Transition Quality	Post Discharge Coping Difficulty 7 day
Discharge Content Needed							
r	-.314						
p	.003						
n	90						
Discharge Content Received							
r	.258	.263					
p	.014	.012					
n	90	90					
Quality Content Delivered							
r	.556	-.055	.475				
p	<.001	.604	<.001				
n	90	90	90				
Quality Discharge Teaching Total							
r	.465	.130	.874	.843			
p	<.001	.221	<.001	<.001			
n	90	90	90	90			
Perceived Transition Quality							
r	.403	-.193	.333	.451	.444		
p	<.001	.102	.004	<.001	<.001		
n	73	73	73	73	73		
Post Discharge Difficulty 7 day							
r	-.195	.288	.038	-.058	-.006	-.286	
p	.129	.023	.767	.653	.963	.027	
n	62	62	62	62	62	60	

	Readiness	Discharge Content Needed	Discharge Content Received	Quality Content Delivered	Quality Discharge Teaching Total	Perceived Transition Quality	Post Discharge Coping Difficulty 7 day
Post Discharge Coping Difficulty 30 day							
r	-.199	.123	-.084	-.136	-.122	-.218	.481
p	.170	.399	.566	.352	.403	.132	<.001
n	49	49	49	49	49	49	43

Table 19. Logistic Regression and Odds Ratios for Individual Chronic Condition Variables – Total 30-Day Post-Discharge Recidivism

Variable	Beta	SE	Wald X^2	df	*p*	Odds Ratio Exp (B)
Diabetes chronic complications	-.106	.150	.498	1	.480	.900
COPD	.056	.541	.011	1	.917	1.058
DM Complications*COPD	-.077	.177	.191	1	.662	.926

Table 20. Final Logistic Regression Model with Significant Predictors for Event of Recidivism within 30 Days of Discharge

Variable	Beta	SE	Wald X^2	df	*p*	Odds Ratio Exp (B)
7-day PDCDS Score	-.055	.029	3.671	1	.050	.947
30-day PDCDS Score	.088	.034	6.723	1	.010	1.092
Difficulty managing other chronic illness	2.367	.827	8.200	1	.004	10.666
Constant	-2.559	.721	12.598	1	<.001	.077
Test	X^2			df		*p*
Overall model evaluation	26.737			3		<.001
Goodness-of-fit						
Hosmer & Lemeshow	7.061			8		.530

Table 21. Classification Table for Logistic Regression Predicting Event of Recidivism

Observed	Predicted No Case of Recidivism	Predicted Case of Recidivism	Predicted % Correct
Participants experiencing no event of recidivism	34	6	85.0
Participants experiencing an event of recidivism	7	13	65.0
Overall percentage			78.3

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CHAPTER FOUR: HOSPITAL-TO-HOME TRANSITION EXPERIENCES OF OLDER ADULTS DIAGNOSED WITH DIABETES — ANALYSIS OF QUALITATIVE DATA

Abstract

Older adults experience the highest rates of acute care hospitalization. The transition from hospital-to-home is a period of heightened vulnerability for the older adult. Following hospitalization an elder is at-risk for poor transition outcomes including medication errors, events of recidivism, and development post-discharge coping difficulties. Over 50% of older adults are affected by more than three concurrent chronic illnesses that may precipitate or complicate a hospitalization and the subsequent home recovery transition. Diabetes is a prototype of a chronic illness that affects millions of older adults and adds to the intricacies of the post-discharge transition.

A simultaneous quantitative/qualitative mixed methods design was used to provide enhanced description and specificity to the problems and difficulties encountered by older adults with diabetes and their family caregivers during the early and intermediate phases of the home recovery transition. Of the 96 hospitalized older adults with diabetes who enrolled in the core component of the study, 61participants or proxy caregiver respondents provided 219 free response comments to a questionnaire that measured post-discharge coping difficulties within the first week of the home recovery transition. Another 159 comments were offered by 52 participants 30 days following discharge.

The following four overarching themes emerged during supplementary content analysis of the free response data: “the daily stuff is difficult”; “engineering care at home is difficult”; “life is stressful”; and “difficulty managing complex health problems”. Respondents painted a portrait of individuals who were striving to attain self-sufficiency and a return to health while

encountering obstacles created by physical and functional limitations, external personal and family stressors, and exacerbation of or emerging difficulties with pre-existing chronic health problems including diabetes. Difficulties managing comorbid health conditions including diabetes were more prevalent in the later transition period as participants experienced deterioration in stability of chronic illnesses, incorporated modifications in constantly changing treatment plans, and awaited results of follow-up diagnostic work-ups.

The following three subthemes related to problems managing complex health problems emerged: difficulty managing complex medication regimens; difficulty controlling glucoses or managing diabetes; and difficulty managing a chronic illness other than diabetes. Because of their potential relationship to recidivism, these subthemes were transposed into nominal level variables and included in statistical tests that examined factors related to post-discharge difficulties in the core component of the study.

The findings of this supplementary analysis revealed that the home recovery transition is dynamic and that the needs of elders and family caregivers change as they navigate the post-hospitalization transition. The complexity of the home caregiving situation precluded diagnosis-driven identification of elders who were at risk for problems during the home recovery transition. While hospital discharge planning processes typically address immediate transition needs, the changes in health status that emerged during in the first month following discharge suggest that there is a need for ongoing support of elders and family caregivers during the later phases of the home recovery transition.

Background

Millions of older adults are hospitalized each year as a result of the exacerbation or deterioration of a pre-existing chronic health problem (Condelius, Edberg, Jakobsson, & Hallberg, 2008; Hall, DeFrances, Williams, Golosinskiy, & Swartzman, 2010). Multimorbidity, defined as "the simultaneous presence of diseases/symptoms, cognitive and physical functional limitations"(Marengoni et al., 2011, p 431), affects over 50% of people who are age 65 or older (American Geriatrics Society [AGS], 2012). Older adults affected by multimorbidity are more likely to develop functional impairments, suffer from poor quality of life, experience adverse events related to complex treatment regimens, and require short-term rehabilitation and long-term care placements (AGS, 2012; Marengoni et al., 2011). During a hospitalization, clinical management of the primary diagnosis may impact the stability of one or more comorbid illnesses (AGS, 2012). The occurrence of one chronic health condition has been associated with under treatment of other unrelated medical problems (Marengoni, Rizzuto, Wang, Winbland, & Fratiglioni, 2009).

The intricacies of concurrently managing multiple health problems places significant self-management burdens on many older adults and family caregivers and contributes to higher in-patient utilization by the elderly (AGS, 2012; Marengoni et al., 2011). Following a hospitalization, modifications of established treatment plans and introduction of new therapies for emerging health problems may significantly complicate post-discharge care in elders who experience multimorbidity. Patients typically recall less than 50% of information provided by health professionals during a healthcare encounter which may lead to difficulty in correctly implementing complex self-care activities after discharge (Brown & Bussell, 2011). Inadequate health literacy that contributes to poor understanding of health conditions and their associated

treatment plans has been linked to poor adherence with home medication regimens (Brown & Bussell, 2011).

Diabetes is an example of a chronic illness that significantly contributes to the multimorbidity of over 12 million older adults (Centers for Disease Control and Prevention [CDC], 2011). The long-term systemic effects of diabetes place elders at risk for cardiovascular disease (CVD), hypertension, stroke, retinopathy, amputation, and chronic kidney disease (CKD) (American Diabetes Association [ADA], 2013a). Diabetes increases the risk for an elder to develop one or more geriatric syndromes such as functional disability, cognitive deficits, pain, and polypharmacy (ADA, 2013b).

Diabetes places significant self-management burdens on the older adult and caregiver. Community-dwelling elders with diabetes often must manage technically complex medication regimens that include problem-prone drugs such as insulin. Additionally, they must incorporate dietary restrictions for several conditions into daily meal plans, modify personal care practices, and coordinate medical follow-up appointments with specialty providers such as podiatrists and ophthalmologists (ADA, 2013a). Older adults with diabetes often require supplemental assistance with activities of daily living. They are two to three times more likely to have difficulty walking moderate distances, climbing steps, and performing basic household tasks (CDC, 2011). Hospitalization rates of elders with diabetes significantly exceed those of older adults who are not affected by the condition (ADA, 2013b). In 2012, older adults with diabetes utilized over 16.5 million hospital days and over 81 million nursing home or residential care days (ADA, 2013b).

Cardiovascular and general medical diagnoses such as infection most commonly precipitate hospital admission of an older adult with diabetes (ADA, 2013b). Diabetes typically

presents as a secondary diagnosis during a hospitalization of an affected elder. Deterioration of diabetes control and development of disease-related complications such as impairment in renal function may occur during the course of a hospitalization and commonly require changes in established treatment plans at discharge (Chau & Edelman, 2001).

Elders who suffer from multimorbidity are often reliant on the supplemental support of family and community resources to maintain their health status and to meet basic needs (van den Akker, Buntinx, Metsemakers, Roos, & Knottnerus, 1998). The escalating care needs of an elder affected by multimorbidity often place time, physical, and emotional demands on family care providers and may even necessitate restructuring of the caregiver's lifestyle (van den Akker et al., 1998).

The transition from hospital to home is an exceptionally vulnerable period for older adults. Elders become particularly susceptible to poor transitions because they are often discharged with ongoing care needs that exceed those that preceded the hospitalization (Levine et al., 2006; Miller, Piacentine, & Weiss, 2008; Mistiaen, Francke, & Poot, 2007; Murtaugh & Litke, 2002; Weiss et al., 2007). Demands on family members and other support structures typically increase during the home recovery transition. The escalating care needs of an elder affected by multimorbidity often place time, physical, and emotional demands on family care providers and may even necessitate restructuring of the caregiver's lifestyle (van den Akker et al., 1998).

The needs of and problems experienced by aging families who care for elders with a pre-existing chronic health problem as they progress through hospital-to-home transitions have been limitedly studied. Specifically, the transitional care needs of older adults with diabetes are not well-understood (ADA, 2013a). This analysis will explore the post-discharge transition needs

and difficulties experienced by older adults with diabetes and those of their family caregivers during the early and intermediate phases of their home recovery transition.

Purpose

The purpose of this supplementary analysis of free-response data obtained in core component project on hospital-to-home transition outcomes of older adults with diabetes was to:

1. Describe and add specificity to the common problems and difficulties encountered by older adults with diabetes and their family caregivers during the early (7-day) and intermediate (30-day) post-discharge transition periods.
2. To determine if older adult and family caregiver problems and difficulties differ in the early (7 day) and intermediate (30 day) transitional periods following an acute hospitalization.

Research Strategy

A simultaneous quantitative-qualitative mixed methods design was used to better understand the specific issues that older adults and their family care providers encountered during the early and intermediate phases of the home recovery transition (Morse & Niehaus, 2007). The core component of the project used a descriptive correlational design to examine factors related to post-hospitalization transition outcomes. This supplementary qualitative analysis of free-response survey data provided added description and specificity to recurring problems encountered by respondents during the home recovery transition. Three subthemes that emerged during qualitative analyses were subsequently transposed into quantitative variables and used in statistical testing of variables associated with recidivism and development of specific post-discharge coping difficulties.

Participants were recruited from multiple in-patient medical-surgical and progressive care units of a 560-bed community medical center in east, central Florida. Permission to conduct the research project was received from the university institutional review board and administration at the research site. Informed consent from each participant was obtained by the principal researcher on the on the day of discharge. Inclusion criteria were: age 65 years or older; diagnosis of diabetes that predated the hospitalization; length-of-stay of 48 hours or longer for any medical-surgical diagnosis; ability to hear, speak, understand and read English; anticipated discharge within four hours of enrollment; planned home discharge; and telephonic availability for 30 days following discharge. Individuals were excluded from the study if they had a planned discharge to a facility or to hospice services. Individuals whose medical history or medication profiles were suggestive of a pre-existing cognitive deficit were additionally excluded from the study.

Instruments

The Post-Discharge Coping Difficulty Scale (PDCDS) assesses for the presence of problems encountered during the first weeks following a hospital-to-home transition and was used as a post-discharge outcome measure in the core component of the research project (Miller et al., 2008; Weiss & Piacentine, 2006). The PDCDS includes ten items that address post-discharge stress, recovery and care challenges, help and emotional support needs, confidence in self-care and medical management, family difficulties, and personal adjustment (Miller et al., 2008). The PDCDS is scored using a 0 to 10 scale, and higher scores are indicative of greater difficulty with post-discharge coping. A Cronbach's alpha of 0.87 was previously reported in an adult medical-surgical population (Miller et al., 2008). Psychometric properties of the PDCDS in

an older adult population and in individuals with specific disease states such as diabetes have not been reported. In the parent study, Cronbach's alpha reliability coefficients of .916 and .921 were observed respectively in the 7 and 30-day post-discharge interviews.

The PDCDS affords an opportunity for participants to provide free response to questions that describe difficulties encountered in the following areas: sources of stress; recovery; caring for self; management of the medical condition; and family issues (Miller et al., 2008). Responses to these questions provided the data for the current analysis of qualitative data.

Data Collection

Data were collected March, 2012 through January, 2013.The principal investigator consulted with nursing staff, participated in unit case management rounds, and utilized hospital informatics systems to screen for potential participants who met inclusion criteria. After obtaining informed consent, demographic data that addressed the participant's general health status, multimorbidity profile, diabetes history, functional status, cognitive status, and post-discharge resource availability were gathered through participant self-report and medical record review. Assessments of perceived readiness for hospital discharge and quality of discharge teaching were also obtained (Bobay, Jerofke, Weiss, & Yakusheva, 2010; Weiss & Piacentine, 2006; Weiss et al., 2007).

An appointment for telephone follow-up was made upon study enrollment. Participants were mailed a reminder letter with copies of the post-discharge surveys at least four days prior to the scheduled appointment. Participants were contacted telephonically 7 days and 30 days following discharge. Up to four attempts to contact each participant over a 7 day period were

made. Participants not reached during the established follow-up period were considered lost follow-up.

A retired registered nurse with extensive experience in conducting telephone health-related surveys with older individuals used a standardized script to gather post-discharge data on recidivism, family care involvement, and home care support. She also administered the quantitative and free-response items of the PDCDS. Participants who declined participation in follow-up telephone surveys often described active problems with caregiving or personal health-management as the rationale. These comments were documented and incorporated into the qualitative data analysis. The research assistant additionally recorded verbatim comments provided in response to PDCDS interview questions. A total of 219 comments were provided by 61 participants who completed the PDCDS and an additional 6 participants who declined survey completion at the 7-day follow-up. Fifteen participants completed the PDCDS without comment during the 7-day follow-up. A total of 159 comments were provided by 52 participants who completed the survey and 3 participants who deferred completion of the 30-day post-discharge interview. Sixteen participants completed the final survey without comment.

Survey data were gathered from both participants and proxy caregivers. Proxy report is appropriate when an objective outcome measure is available, when the elder cannot provide an accurate report, and when an alternative respondent, in this case the family caregiver, has the ability to provide important information on the phenomenon under investigation (Snow, Cook, Lin, Morgan, & Magaziner, 2005). The instrument used in this study had been previously administered to proxy respondents.

Data Analysis

Three databases were constructed to create a portrait of the personal transition difficulties encountered by study participants during the early and intermediate periods following discharge. Initially, each transcribed response was attributed to the associated PDCDS question and referenced to the temporal period in which the response was provided. These qualitative data were then organized by participant, and the content was analyzed. After multiple iterations, four overarching themes, each with three to four accompanying subthemes, emerged. As themes and subthemes presented, codes were created, and each response was subsequently categorized by the principal investigator. The categorized responses were then reviewed by the retired registered nurse who initially gathered the free-response data. She independently assigned each response to a category and concurred with the original categorizations provided by the principal investigator. She additionally commented that the themes and subthemes accurately captured the experiences shared by participants during the actual telephone interviews. The frequencies of each thematic category were summed and then compared by response period. Several participants described more than one difficulty in post-discharge coping and contributed data that described more than one theme or subtheme. The themes and subthemes are presented by frequency and temporal period in Table 22.

Respondent Profile

Free-response data were gathered from 67 participants during the 7-day follow-up period and 55 participants at the 30-day post-discharge time interval. The median age of the qualitative respondents was approximately 75 years (n =67). Genders were equally represented during both data collection periods. Participants were primarily Caucasian which is consistent with

community demographics. Almost half of study participants (*n* = 32) were admitted for non-cardiovascular medical diagnoses. Over 85% (*n* = 57; *n* = 48) of participants had a pre-existing diagnosis of a chronic diabetes-related health condition. The most frequently reported chronic health conditions were coronary artery disease (59.7%; *n* = 40; 60.0%, *n* = 33), diabetic neuropathy (*n* = 37, 55.2%; 61.8%, *n* = 34), chronic kidney disease (41.8%, *n* = 28; 43.6%, *n* = 24), and heart failure (35.8%; *n* = 24; 35.4%, *n* = 20). Most participants were experiencing acceptable glycemic control in the period that preceded admission. The median A1c of survey respondents was 6.7% (*n* = 60). Over 40% (*n* = 25) of participants experienced a change in the home diabetes treatment regimen at discharge. The preponderance of participants (85.1%, *n* = 57; 89.1% = 49) had access to a caregiver in the home following discharge. Approximately half (*n* = 35; *n* = 28) of all participants were receiving home care services at the time of the scheduled follow-up interviews. A summary of the demographic characteristics of participants who contributed qualitative data for this supplementary component of the research project is provided in Table 23.

Results

The following major themes emerged as descriptors of the post-discharge difficulties most frequently encountered by study participants during two data collection periods: “the daily stuff is difficult”; “engineering care at home is complex”; “life is stressful”; and “managing multiple complex health problems is difficult”. Each theme along with its associated subthemes and supporting exemplars will be discussed in conjunction with the temporal placement of the reported difficulty during the post-discharge transition process.

The Daily Stuff is Difficult

Participants consistently described a desire for self-sufficiency in the post-discharge period but faced considerable obstacles in achieving this goal. A 69-year-old, married male who was discharged home after a ten-day hospitalization for heart failure exemplified this theme with the following statement, "I felt emotionally drained when I got home. I felt like I was starting from square one. The daily stuff is difficult."

Over 50% (n = 38) of respondents reported difficulty with managing daily personal tasks during the early transition period. Specifically, participants conveyed problems in the following areas: performing activities-of-daily living and basic household tasks (43.3%, n = 29); walking and mobility (17.9%, n = 12); accessing transportation (4.5%, n = 3); and acquiring supplies and medications (4.5%, n = 3).

For many elders, problems with daily tasks were persistent at the time of the 30-day follow-up interview. Over 55% (n = 31) of participants described ongoing issues meeting everyday needs. Respondents most commonly reported a latent requirement for at least stand-by assistance with hygiene (41.8%, n = 23) and help with mobility, particularly stair climbing (18.2%, n =10). These difficulties were most prevalent in participants who underwent orthopedic surgical procedures such as knee replacement, hip replacement, and spinal surgery.

A 75-year-old woman who lived alone and underwent spinal fusion surgery reflected the theme, "the daily stuff is difficult", with the following statement: "My neighbor is checking on me three times per day. I get my meals by myself, but she helps to clean up and do errands. I was not told what I would need and getting supplies is difficult. I am having so much pain. I wish I went to rehab. I like being home, but it is so hard doing everything myself."

Another 71-year-old woman who was being treated for a diabetic foot ulcer described the difficulty of integrating medical treatments with personal care needs. She stated, “Having a wound vac is stressful. I can only bathe in the sink, and it takes so long. It takes 40 minutes to do my sponge bath.”

One 90-year-old male participant was hospitalized for heart failure and resumed his role as the primary caregiver for his wife who had dementia immediately upon discharge. The gentleman had experienced substantial declines in functional status that complicated his home recovery transition. He portrayed his home situation as follows:

> My daughter came while I was in the hospital to drive my wife around. She is gone now, and now my wife is stressed. I am having trouble getting around, but my wife and I work together to do the cooking and housework. I am having trouble with my bladder which has been stressful. I had to learn how to do the laundry.

Lack of transportation can create significant problems in accessing follow-up medical care and in acquiring supplies, medications, and food for impacted individuals. Transportation problems were more frequently reported by participants (12.7%, $n = 7$) during later stages of home recovery as family caregivers resumed employment or returned home. The response of an 84-year-old woman who lived with an elderly roommate illustrated how lack of transportation complicated her home recovery transition experience with the following exemplar:

> I am doing OK with my care and cooking, but I was having problems with the bus before I went into the hospital. The bus doesn’t come on time, and I have to wait. I have to take the bus to the doctor and to get groceries... I am having pain in my leg and needed x-rays, but I don’t have a ride to the hospital and couldn’t get there. I am on new medicines, but it is difficult to get them. I shop for groceries every two weeks and carry them on the bus. How am I going to live?

Engineering Care at Home is Difficult

Older adults and individuals in their support network face a myriad of potential physical and psychosocial stressors as an elder leaves the hospital. One week following discharge, 52.2 %

(n = 35) of survey respondents reported difficulties with establishing a care environment that satisfied the mutual needs of the elder and, if available, lay care provider. Persistent issues with caregiving were expressed by 46.3% (n = 24) of respondents during the 30-day post-discharge interview. Four subthemes that specifically described the intricacies and difficulties of providing care to a recently-hospitalized older adult emerged in the free responses. The identified subthemes included: “I put myself last”; “Doing it alone”; “mobilizing family and support resources”; and “This is rough on my family.”

I Put Myself Last

This subtheme specifically addressed the personal impact of hospitalization on an individual assuming or resuming a caregiving role. Difficulties with caregiving were experienced by family members who undertook the role of care provider for the recently-hospitalized elder as well as hospitalized older adults who were immediately returning home as a care provider for another individual. Five study participants reported that they were required to resume the role of caregiver for another immediately after discharge. One 76-year-old female participant who underwent a total hip replacement described her post-discharge experience as follows:

> My husband has macular degeneration and is blind. He developed shortness of breath and had to go to the doctor. He is now on a nebulizer and home oxygen for his COPD. It is difficult trying to heal and take care of my husband. My hip condition is regressing according to my physical therapist because I am doing too much. I put myself last, and it is affecting my recovery.

An 84-year-old male who was admitted with pancreatic obstruction was discharged from the hospital on the same day as his wife who experienced a fall with injury during his hospitalization. He expressed the following frustrations with his home situation: “My wife was discharged on the same day that I was. I thought my son would give us more help than he has. I

am exhausted." Another elderly gentleman who was the primary caregiver for his wife was placed on a driving restriction following his hospitalization for a chronic subdural hematoma. He and his wife were subsequently involved in a motor vehicle crash as she attempted to drive him to a medical appointment during his first week at home.

Family caregivers reported personal health problems that affected their ability to provide care to the elder or to manage their own health needs. A 75-year-old woman who underwent a lumbar discectomy provided the following exemplar: "I can't bend, lift or turn. My sister helps me with everything but my medications. My sister had an abdominal hernia repair with complications one month ago and is still recovering from her own surgery." Another 77-year-old woman who was hospitalized with a pseudoaneurysm following an interventional cardiovascular procedure described family stress that emerged secondary to a change in the health status of her spouse:

> My husband helps me with my care. He was just diagnosed with blockage of the carotid arteries. He is not a candidate for surgery. This has been so hard on my family. They are upset that I had to have two procedures. My husband is also in bad shape.

Competing demands of multigenerational family members was another challenge reported by five study participants. In addition to providing care to a recently hospitalized elder, these family members bore primary responsibility for the care of grandchildren, children, very elderly parents, and even friends with special needs. One participant stated, "My daughter is also caring for an 11-month-old. She gets no help from her sisters." A 66-year-old participant who was hospitalized for pneumonia stated, "My daughter died four years ago, and I am the main caregiver for my 11 and 13-year-old grandchildren. I am having some difficulty caring for them, but my husband and I 'tag team' the children." A 70-year-old male who was hospitalized with

urosepsis also provided an exemplar describing his family's experience with multigenerational caregiving during his 30-day interview:

> My wife is a teacher's aide and will have to return to work soon, making transportation a problem for me. My wife and her sister care for my mother-in-law. They go to the nursing home three times per day. All of this is very rough on her.

A 71-year-old male who was discharged following cardiac surgery reported the following during his 30-day interview, "I am very concerned that my wife is so worried about me. She also cares for her mother who is in the hospital with a stroke."

Doing It Alone Is Difficult

Respondents who returned home alone were limitedly represented in this study. A 65-year-old female with long-standing type 1 diabetes who underwent an exploratory laparotomy was initially discharged into the care of her daughter who lived out of the area. She provided the following exemplar illustrating challenges she experienced during her 30-day post-discharge interview:

> My daughter and friends have been helping me. My daughter gave up a week of work to be with me. She went home, and now I am dependent on friends to drive me to doctor appointments and to get groceries.

The previously-discussed woman who underwent lumbar laminectomy provide the following exemplar on latent caregiving issues faced by people who live alone during her 30-day follow-up interview:

> My surgeon told me I would have no trouble, but I have no one at home to help me and had no idea how hard this would be. My neighbor who helps me is on vacation. She has been 'weaning' me from assistance. Doing my daily care and washing clothes has been hard since my back surgery. I figured out a new way to do it.

Mobilizing Family and Support Resources

Participants enlisted help from a variety family and social resources when creating an environment to support their home recovery transition. Respondents reported receipt of assistance from children (both local and non-local), daughters-in-law, grandchildren, siblings, nieces, friends, neighbors, and church members. Almost 15% of respondents (n = 10) described use of extended family and social network supports during the 7-day post-discharge time period. Twenty percent of respondents (n = 11) reported ongoing reliance on these resources one month after discharge. An 86-year-old female who was new to dialysis exemplified the creativity that families use to maintain a stable care environment in the following response: "My daughter hired a nurse so that she could go on vacation. My grandson is staying at the house with the nurse." The extremes that families use to maintain elders with complex care needs in the home setting is described in the following exemplar provided by a 71-year-old female who was discharged on long-term intravenous therapy and a complex wound management program: "My son quit his job because he can't work and care for me. The bills and medicines and infusions are expensive."

This Is Rough on My Family

Concern for the family caregiver was a subtheme that was expressed repeatedly by elderly care recipients. Over one-third (n = 23) of respondents described emotional and logistical challenges that were experienced by family members during the immediate post-discharge transition period. Almost 20% (n = 10) of respondents reported ongoing family stressors during the 30–day interview.

The stress experienced by family caregivers as they attempted to transition care responsibility back to an older adult was conveyed in responses that were provided by an 81-year-old woman who was hospitalized for syncope and her daughter. The daughter described the early home recovery transition experience in the following exemplar: “She needed help with basic care and getting her strength and confidence back. I had to clarify her medicines and make sure she could do them herself to be safe at home. I worry about leaving her alone.” Thirty days following discharge the elder described the demands on her family as follows:

> I am having trouble building confidence after the fall. I needed to go to my daughter’s home for a few weeks. I am home alone now. My closest daughter lives 45-minutes away but checks on me by phone every day. My daughters have more responsibilities because they visit more than before. They bring my groceries and easy meals for me to heat up.

The demands on family care providers were further exemplified by a 72-year-old male who underwent laparoscopic cholecystectomy. He stated, “My son flew down and drove me back to New York 2 days after I got out of the hospital. My family visits every day. My daughter has taken over a lot since my wife died in September.” The wife of an 82-year-old male with CHF provided the following additional exemplar on caregiver stress during the 7 day follow-up, “My husband was readmitted today. He needs more medicines for his kidneys and is starting dialysis. I have three more stops to make before I go back to the hospital. I am exhausted.”

Life is Stressful

In addition to the inherent stress associated with the hospital-to-home transition experience, recently-discharged older adults also must cope with newly-emerging and pre-existing psychosocial stressors. Over 20% (*n* = 15) of respondents described life stressors that were potentially impacting their early recovering. Psychosocial stressors were even more frequently reported during later follow-up interviews (29.1%, *n* = 16). “Family conflict”, “grief

and depression", and "anxiety and frustration" were the subthemes that emerged to illustrate common psychosocial stressors encountered by elders during the post-discharge transition.

Family Conflict

Family conflict was a source of stress that was reported by several participants. The following exemplar provided during the 30-day follow-up interview by a 72-year-old female who underwent a laparoscopic colectomy for ulcerative colitis portrayed the extreme personal and family stressors she experienced after discharge:

> I am having bowel movements every 20 minutes all day long. My husband has to do the laundry. My husband and I are fighting. We are moving out of our house and into a trailer and having an estate sale. There are too many outside influences for me to take care of myself correctly.

Comments provided by an 80-year-old female who was 7-days post total knee replacement further described stressors experienced by recovering elders: "My husband is trying to do everything. He expects more out of me and does not understand my pain." Several other participants provided additional non-specific reports of "family stressors" during post-discharge interviews.

Grief and Depression

Reports of depression were most commonly expressed during the 30-day follow-up interviews (12.3%, $n = 7$). Two participants had children who were diagnosed with terminal health conditions during their post-discharge transition. Several other participants reported grief-related depression from prior losses at the time of follow-up.

An 81-year-old female discharged following an exacerbation of COPD reported that daughter had been diagnosed with terminal cancer. She stated, "I have recovered from my

illness, but I just found out that my daughter was diagnosed with stage IV brain cancer." Another 68-year-old male who was discharged following a bout of pneumonia as a complication from a recent stem cell transplant exemplified the external stressors that older adults encounter after discharge during his 7-day follow-up interview: "I am very worried about my son. He has a problem with his pancreas and was just released from the hospital. My wife and I are very concerned." When contacted for the final interview, the gentleman became distraught and reported that his son had passed away two weeks prior from pancreatic cancer.

The aforementioned woman who was the primary caregiver for her grandchildren confided that it was the anniversary of her daughter's death, and she was feeling quite emotional. Three respondents had suffered the loss of a spouse during the year that preceded their hospitalizations and were experiencing grief reactions. Several participants reported feelings of depression or "feeling down" secondary to self-perceived slow recovery, the duration of their dependency on others, and restrictions on activities such as attendance at senior center, driving, and mobility.

Anxiety and Frustration

Anxiety and frustration were reported in the early (16.4%, $n = 11$) and intermediate stages of recovery (12.3%, $n = 7$), though the etiologies varied temporally. Several respondents in the early phase of their home recovery transitions reported frustration with having to accept help from others and having an unmet transition expectation. One married woman who underwent an orthopedic surgical procedure provided the following exemplar: "This is totally different than what I thought it would be. The nursing care did not meet my expectations. I don't think I was prepared enough for home. You are on your own." A 71-year-old male who

underwent open heart surgery expressed anxiety secondary to a lack of trust in his home care provider. He stated, “The doctor found fluid in my chest during my routine follow-up check-up. It concerns me that the nurse did not identify this.” A 79-year-old male who had just relocated to the area reported health-related anxiety in the following exemplar: “I am having trouble wheezing and will be seeing a cardiologist. We just moved to the area, and I am learning a new medical system. I am very concerned.” Pain was also reported as a worry in the early recovery process by several participants.

Reports of anxiety and frustration in the later phase of the post-discharge transition clustered around persistent issues with dependency such as back precautions and concerns about ongoing clinical work-ups for newly-emerging health concerns. Several participants were awaiting results from diagnostic procedures or were planning for subsequent surgeries. This subtheme was exemplified in the following response provided by a 78-year-old female who was hospitalized for pneumonia: “I had an arteriogram last week because I may have a clot in my heart. I am very anxious because I will need surgery when I am well enough.” An 81-year-old gentleman who had been hospitalized with a transient ischemic attack reported similar concern in the following statement:

> Life in general has been very difficult. I had to go to the nephrologist 2 weeks ago. Blood tests and urine tests were done. I will find out the results this week. My kidney function is causing worry for me and my family.

Difficulties Managing Complex Health Problems

Struggles encountered as elders and family caregivers attempted to self-manage multiple complex health problems emerged as the most-commonly reported theme related to post-discharge coping difficulty. Specifically, difficulties were reported in the following areas: controlling or managing diabetes; managing other chronic health problems such as hypertension;

the complexity of medication regimens; and the lack of needed information. Interestingly, more reports of difficulties managing complex health problems were provided during the 30-day interview (78.2%, *n* = 43) than in the early stage (52.4%, *n* = 35) of the home recovery transition.

Difficulty Controlling or Managing Diabetes

Problems with glycemic control or diabetes management were described by 17.9 % (*n* = 12) of respondents during the initial follow-up. Multimorbidity appeared to play a significant role in the development of diabetes-related post-discharge coping difficulties. Participants described significant elevations of glucose which they related to pain, medication changes such as the addition of steroids, or difficulties managing other chronic health conditions. Participants, most of who were admitted with acceptable glycemic control, often lacked skills to self-manage acute changes in their diabetes status.

A 70-year-old-male who had been admitted with a pneumomediastinum provided the following exemplar to describe difficulties he encountered with diabetes management during the early post-discharge transition: “My sugar has been up and down due to prednisone. I am having trouble finding the right balance between insulin and glucose. I am going to see an endocrinologist.” Likewise, a 77-year-old male discharged after a bout of pneumonia and a complex sinus infection reported the following struggles with glycemic regulation: “My blood sugar went over 400. It has never done that before. The doctor added glipizide. I am seeing him in two days.” A 70-year-old female who was post open-laparotomy for an abdominal abscess related to diverticular disease experienced difficulties secondary to inadequate information on how to manage a carbohydrate-controlled liquid diet.

Troubles with glycemic control and diabetes management were more frequently reported during the 30-day interview (37.3 %, *n* = 16). A 71-year-old female with acute renal failure described the following difficulties: "I know what to do if my sugar goes high, but have no idea how to manage it if is low. Diabetes medicines have been difficult. They have been changed." A 79-year-old male who suffered a myocardial infarction enrolled in a diabetes self-management program due to problems with glycemic regulation following his hospitalization. He stated: "I am working with two diabetes educators at the VA on how to manage my carbs and on how much insulin I need. I am finally learning how to take care of my diabetes." Several participants reported modification to diabetes medication regimens that included the addition of insulin, modification of insulin doses, and addition or changes in oral hypoglycemic medications.

Difficulty Managing Other Chronic Health Problems

Instability of a chronic health problem, often other than the index condition that led to hospitalization, contributed to difficulties that older adults faced during the early (31%, *n* = 19) and intermediate (47.3%, *n* = 26) home recovery transition periods. Interestingly, more respondents were experiencing issues with management of a chronic health problem at the time of the final follow-up interview, suggesting that multimorbidity may be a contributing factor to an individual's post-discharge transition experience. Although important elements in the post-discharge experience, pain and fatigue will not be included in the discussion of this subtheme because they are expected findings in many study participants, particularly those who have undergone surgical procedures.

Three respondents who were new to dialysis reported significant long-standing difficulties during the home recovery transition period. The caregiver of an 86-year-old female

who was hospitalized for 18 days with acute renal failure exemplified the problems faced by transitioning elders with chronic kidney disease in the following response:

> She is having trouble with dialysis, dressing and diet; she is exhausted. The dialysis is difficult. Her sugar level has been hard to maintain, and taking blood pressure medicines is difficult. I check her blood pressure four times per day and personally give her the blood pressure medicines. Dialysis three times per week and sorting out lots of medications have been tough.

Instability of cardiovascular conditions, specifically arrhythmias, coronary artery disease, and heart failure, was experienced by multiple participants. One gentleman who had been hospitalized for atrial fibrillation, experienced an episode of syncope which resulted in a fall within the first week of hospitalization. He subsequently fractured his femur and required surgical repair of the fracture and insertion of a pacemaker. He was residing in a short-term rehabilitation facility at the time of the 30-day follow-up. In addition to cardiovascular conditions and CKD, participants reported difficulty managing the following conditions during the home recovery transition: COPD; cerebrovascular disease in the form of transient ischemic attack; ulcerative colitis; malignant melanoma; arthritis; hypertension; osteomyelitis; lymphoma; and diverticulitis. Problems managing these conditions sometimes precipitated concurrent difficulties controlling diabetes.

So Many Medicines

Difficulties managing complex medication regimens were described by 16.4% (n = 11) of participants during the early post-hospitalization transition period and by 10.9% (n = 6) one month following discharge. Immediately upon returning home, difficulties centered on the need for clarification of medication recommendations, particularly relative to management of pre-existing health conditions, acquisition of new prescriptions, and the sheer number of prescribed

medications. A 72-year-old female provided the following exemplar of difficulties she encountered in managing medications for a pre-existing chronic illness: “I am unclear if I should take my ulcerative colitis medicines. My symptoms are getting worse.” One elderly gentleman described his difficulty with medication management in the following response: “I am on 18 medicines and get some from the VA. I have to wait 14 days to get the medicines through the mail.”

Changes in medications used in the management of chronic health problems presented challenges to elders during the later follow-up period. An 81-year-old woman who lived alone discussed her trials with medication management in the following exemplar: “Changing medications has been a problem…. when to take them and putting them in places where I will remember to take them on time.” An elderly gentleman who had been hospitalized for heart failure corroborated this theme with the following statement: “I am on 6 new pills. It is very hard to adjust these.” Multiple participants indicated that they had abdicated responsibility for medication management to a family member.

I Needed More Information

Inadequate discharge information was a concern cited by 10.4% (n = 7) of respondents during the first week of the home recovery transition. Participants perceived that they had received insufficient information on their health status and prognosis and, as previously discussed, self-management requirements in the areas of diet, medication management, and wound care. One woman who had a three-day length-of-stay following an elective colectomy with possible colostomy showed a significant lack of understanding of her condition with the following exemplar:

> I do not know what happened in surgery. I was given information while I was still asleep. I still don't know what is going on. I have not been able to speak to my doctor about it – my primary care doctor does not have the information.

A 71-year-old female who was hospitalized for acute renal failure also demonstrated a poor understanding of her changing health status with the following statement: "The doctor told me I have 18% of my kidney function. I don't know what that means."

A 69-year-old married male who was admitted with heart failure provided a portrait of the difficulties that acutely-ill older adults encounter while attempting to process the large amount of information provided during a hospitalization. His telling experience is encapsulated in the following exemplar:

> I saw half-a-dozen health professionals every day in the hospital at all hours of the day and night. I know this is how a 24-hour operation runs, but it was difficult. I realized I was not grasping large amounts of information and had my wife spend the night to help with it all and to make sure I was not missing anything. It was daunting.

Discussion

Content analysis of the many free-response comments provided by participants and their caregivers offered insight into the specific difficulties that older adults with a pre-existing chronic illness encountered at home during the early and intermittent stages of the post-hospitalization transition. Participants described the dynamic nature of the home recovery transition process and evolving needs of the older adult and family system as the transition progressed. The fragility of the post-discharge caregiving situation was displayed in comments that described the creative approaches that elders and family members used to maintain an older adult at home.

The Daily Stuff is Difficult

The theme, "the daily stuff is difficult" portrays the difficulties that elders and family caregivers face in meeting declines in functional status that often follow a hospitalization. Early in the home recovery transition, elders were typically dependent upon a family caregiver to meet basic needs such as hygiene, housekeeping, meal preparation, and transportation. Post-surgical participants, in particular, were placed on activity restrictions that precluded them from independently meeting basic needs or experienced pain while attempting to perform personal care. The unexpected duration of these restrictions and pain were problematic for several respondents.

As the post-hospitalization transition progressed, respondents articulated a strong desire for self-sufficiency and expressed frustration with continued reliance on others particularly for stand-by assistance with bathing and transportation. For elders who lived alone, a family member or friend often provided support in the first weeks following discharge. The elder subsequently had to engage other resources from their social network, particularly for transportation to obtain groceries or to attend medical appointments, when the initial caregiver departed.

Engineering Care at Home Is Complex

The Merriam Webster dictionary (2013) defines the transitive verb "to engineer" as "to contrive or plan out; to guide the course of". The action of "engineering" effectively conceptualizes the complexity of the personal, family, extended support, supply, and community resource integration that is necessary for an effective hospital-to-home transition. While hospital personnel may provide recommendations and referrals for care resources, it is ultimately the

elder and individuals in his or her support system that operationalize the post-discharge care experience.

Responses revealed that the hospitalization of an older adult presented a family crisis that affected multiple individuals within the elder's social network. Older adults and their family members frequently solicited help from a variety of sources in order to operationalize a safe discharge into the home environment. Often, family members rearranged their personal lives in order to maintain the elder at home. Respondents reported that family caregivers had traveled great distances in order to provide post-discharge assistance. Alternately, some elders had relocated to the care provider's home during the early post-hospitalization transition. In one extreme circumstance, a caregiver had left employment in order to care for his mother. Some families provided daily visitation and supervision to a recently-discharged elder and described an obligation to provide ongoing support late into the home recovery transition. Recruitment of support from extended family members such as siblings, nieces, grandchildren, and daughters-in-law was common.

Approximately half of the respondents reported that they had been referred to home care following discharge. While the assistance with care was appreciated, caregivers stated that scheduling of these resources was often challenging and limited the ability of the caregiver to leave the home to meet personal and family needs such as banking, medical appointments, and grocery shopping. Elders who were discharged with complex care needs typically received home care services from multiple disciplines. The inclusion of more than one discipline in care at home was particularly problematic for caregivers as they attempted to plan their daily schedules.

The hospitalization of an established family caregiver inflicted a tremendous stress on the recovering older adult and the family system. Participants who were required to resume the care

of a dependent family member immediately after discharge reported high stress levels that impacted the perceived ability of the recently-hospitalized elder to recover.

Meeting the competing and, at times, conflicting demands of self and the care recipient was particularly difficult when the primary caregiver had personal health problems. Several of these caregivers reported the need for future surgical procedures and the presence of pre-existing orthopedic conditions such as chronic back problems and arthritis that affected their ability to serve as an effective physical care provider.

Multigenerational caregiving emerged as an extreme source of post-discharge strain in several families. In addition to having full care responsibility for the recently-discharge elder, several caregivers also had care obligations for another dependent individual. The term "sandwich generation" has been used to describe the competing demands exerted by work, childrearing, and care of elderly parents that are encountered by many middle-aged adults (Quadagno, 2008). The concept of "sandwich generation" was much broader for the respondents in this study and applied exclusively to female care providers. Several caregivers had dual accountability for grandchildren and an ill-spouse, while others carried the burden of concurrent responsibility for a husband and an old-old parent. At least two women experienced simultaneous admission of a spouse and parent during the data collection period.

Living alone presented unique challenges to elders following a hospitalization and necessitated the coordination of community and social resources. During recruitment activities, the principal investigator anecdotally noted that older adults who lacked a caregiver and experienced moderate to complex post-discharge care needs were typically transferred to short-term rehabilitation facilities. Ten participants in the parent study reported living alone with no formal caregiver at the time of enrollment. Two of these participants were discharged to a

rehabilitation setting after it was determined by physical therapy on the day of discharge that they were unsafe for relocation to an unsupervised environment. Another five of the participants who lived alone were lost-to-follow-up during the post-discharge period. Statements provided by participants who were navigating the post-discharge transition independently were limited but provide important insight into the experience of "doing it alone." These respondents utilized creative approaches in eliciting support during their home recovery transitions and were typically reliant on social networks and community resources to meet their needs. Several felt that they were not physically ready for discharge and retrospectively stated they should have sought a short-term rehabilitation placement following discharge.

Care recipients were keenly aware of the sacrifices that care providers made in order to support them during their post-hospitalization transitions. They were conscious of the burden of care that their illness imposed on a loved one and expressed worry about their caregivers' physical and mental health.

Life is Stressful

In addition to the innate stressors associated with post-hospitalization transitions, elders returned home to unique sets of external family stressors that had the potential to exert substantial impact on their recoveries. Respondents reported marital stress, worries about children, and financial concerns and intimated that these stressors were precluding them from focusing on their health. Acute and latent grief reactions were experienced by at least five respondents during the data collection period.

Mental health and coping problems were reported by at least one-fourth of participants. Depression and anxiety were particularly prevalent later in the home recovery transition.

Frustration with self-perceived delays in recovery was common. New and existing health problems that developed or decompensated following discharge generated anxiety later in the transition process. Several participants were awaiting diagnostic results for conditions such as kidney and cardiovascular disease. A few respondents were scheduled for future surgeries after they recovered from the condition that led to hospitalization.

Managing Multiple Complex Health Problems is Difficult

The impact of multimorbidity on the home recovery transition was pervasive and was captured in the overarching theme of "managing multiple complex health problems is difficult". Participants regularly confronted difficulties in managing health problems that were not directly related to the index condition that precipitated the hospitalization. Respondents described concomitant problems with mobility, transportation secondary to medical restrictions, the emotional and physical demands of caregiving, maintenance of glycemic control, integrating treatment plans for multiple chronic conditions, the exacerbation of pre-existing health problems, and the complexity of medication regimens. Participants encountered more difficulty managing chronic health problems later in the post-discharge transition.

Three recurring subthemes that specifically portrayed the complexity of self-managing chronic health conditions were identified as having a potential direct relationship to events of recidivism. These subthemes included difficulty controlling or managing diabetes, difficulty managing chronic health problems other than diabetes, and difficulty managing medications in the post-discharge period. Discrete data variables that described the presence of absence of each of these problems were transposed into nominal level variables and subjected to statistical testing in the quantitative core component of the study.

Unmet system-level needs, particularly inadequate discharge preparation, were reported by multiple participants. Anecdotally, the principal investigator noted that had many participants could not articulate post-discharge care requirements at the time of study enrollment, which was typically within several hours of discharge. Participants would commonly provide statements such as, “I am sure they will tell me what to do before I go home.” Additionally, respondents routinely voiced that they would rely on prior experience in managing a chronic health condition when operationalizing care at home. Review of case management notes revealed that the older adult was often the sole individual providing information on post-hospitalization care needs. Statements such as “My wife will manage it” or “My daughter takes care of things” were common.

Implications

This supplementary analysis of free-response data provided enlightening descriptions of problems encountered by elders affected by a pre-existing chronic illness during the immediate and intermediate periods of the home recovery transition.

Clinical Practice

Responses illustrated that elders and family care providers often encountered difficulties as they attempted to implement care in the home environment. The etiologies of problems confronted during the early and intermediate phases of the post-discharge transition varied. The findings of this analysis suggest that there is a need to appreciate the evolving care requirements of recently hospitalized elders as they progress through the post-hospitalization transition process. Systems to support recently elders and caregivers at multiple points of the home recovery transition are needed. The findings of this analysis support transitional care models that

support older adults and their family care givers beyond the 30-day readmission threshold (Naylor et al., 2004; Transitional Care Model, 2009; Watkins, Hall, & Kring, 2012).

Input on discharge disposition recommendations for study participants was typically sought from nursing, rehabilitation, medical, and social service professionals. Review of discharge planning records in this study revealed that no uniform, measureable criteria were used in formulating recommendations to guide families in selection of an appropriate post-discharge care setting. There is a great need for development of instruments that assist in risk-stratifying patients based upon a structured set of predictors for successful and unsuccessful post-hospitalization transition outcomes.

Because family care providers are so integral to a successful home recovery transition, there is a need to better appreciate the post-discharge transition experience from the caregiver perspective. Expanded participation of family care providers in determination of discharge plans is required. Study respondents indicated that health and external stressors potentially impacted the experience of caregiving and recovery of the recently-discharged older adult. Pre-discharge assessment of family stress may be helpful in identifying elders and family caregiver who are at higher risk for post-discharge coping difficulty. Early identification of stress, anxiety, and depression in older adults and caregivers during follow-up provider visits may facilitate opportunities to discuss effective coping strategies and initiate mental health referrals as needed.

Research

The post-discharge needs of individuals with combined disease states are poorly understood. All participants in this study were affected by diabetes, and most had been diagnosed with several additional chronic health conditions. A number of participants experienced

difficulty in integrating the care demands of multiple chronic conditions. None of the participants was admitted with diabetes, but changes in glycemic control that presented during the course of illness and recovery often resulted in changes in established diabetes treatment plans. The ADA has indicated that there is a need to better understand the specific discharge needs of individuals with diabetes (American Diabetes Association, 2013b). The findings of this research further suggest that there is a need to better understand the post-hospitalization needs of elders with multimorbidity.

Initiatives to improve medication reconciliation and information transfer practices have been a national trend in response to patient safety concerns (The Joint Commission, 2013). Because participants in this study were experiencing difficulty managing changing, complex medication regimens during both data collection periods, there is a need for further research on best practices for medication reconciliation within ambulatory care settings.

Responses provided by the limited number of participants who lived alone suggested that a solo living situation significantly increased the risk for post-discharge coping difficulties. During study recruitment, many elders who lived alone were transferred to a short-term rehabilitation facility following hospitalization. Most of these elders will eventually return home, many with residual care needs that may mirror those of respondents in this analysis. Discharge preparation resources in short-term rehabilitation facilities may be more limited than those available in hospitals. Thus, there is an opportunity to study the post-discharge needs of recently hospitalized older adults as they transition from hospital to home, hospital to rehabilitation facility, and rehabilitation facility back to home.

Health Policy

The current national focus on outcome-based reimbursement for acute care services, which includes penalties for 30-day readmission for several diagnoses, has incentivized hospitals to implement disease-specific transitional care programs (Medicare Payment Advisory Committee, 2007; Naylor et al., 2012). Emphasis on condition-specific interventions, however, may not adequately identify the heightened discharge risk of older adults who are affected by multimorbidity but unaffected by the targeted conditions. Furthermore, the risk for post-discharge difficulties may be underestimated in elders with multiple complex health problems who are admitted for seemingly, unrelated elective surgical procedures. Current metrics that evaluate institutional performance on discharge outcomes should be expanded beyond events of recidivism to include measures that assess the transition quality from the perspective of patients and family caregivers.

Limitations

The opportunity to provide free response comments to items on the PDCDS was optional in this study. It was noted that participants who reported no post-discharge coping difficulties provided few free response comments, leaving no ability to compare the situational experiences of those who did and did not experience transition problems. Additionally, descriptions of post-discharge coping difficulties of individuals who were lost-to-follow-up were not available. It is possible that these participants, particularly those who lived alone or were readmitted, deferred follow-up because they did not want to report difficulties. Free response comments used in this analysis were obtained from both participants and proxy care providers. At times responses by one respondent may have reflected an opinion on how the other party was adjusting or coping

with the transition. Responses were typically brief and the nature of the telephone interview precluded further probing on significant issues.

The demographic of survey respondents was unable to fully capture variations in transition experiences secondary to cultural or ethnic background and living situation. Due to the demographic profile of the community in which the study was conducted, there were few ethnic or cultural differences between study participants. Cultural mores and associated family expectations on elder care may potentially affect transitional care decision making. Finally, few respondents who provided responses in this study lived alone. The experience of "doing it alone" may be inadequately represented by participant responses in this study.

Conclusion

Hospitalization commonly precipitates a period of heightened vulnerability for older adults and individuals within their family networks. Respondents in this study provided comments that described difficulties encountered by older adults with a pre-existing chronic health problem as well as their family care providers during the early and intermediate transition from the hospital to home. Analysis of comments provided during the two data collection periods revealed that the transition from hospital to home is complex and potentially fraught with problems, particularly when elders are afflicted with multiple medical conditions, live alone, or are subjected to external family stressors such as serving as a caregiver for another.

The home recovery transition is dynamic, and the difficulties experienced by participants vary temporally. The study included participants with a variety of medical diagnoses, most of who were affected by multimorbidity. Emerging care models that target individuals with pre-determined health conditions may inadequately identify elders who are not affected by an index

condition but still have extensive needs. While hospital discharge planning processes typically address immediate transition needs, the changes in health status that emerged during in the first month following discharge suggest that there is a need for improved support of elders and family caregivers during the later phases of the home recovery transition.

Tables

Table 22. Summary of Themes and Subthemes by Frequency and Response Period

Thematic Category	7-day Follow-up *n* = 67		30-day Follow-up *n* = 55	
	%	*n*	%	*n*
"The daily stuff is difficult."	56.7	38	56.3	31
• Personal care and household tasks	44.3	29	41.8	23
• Walking and mobility	17.9	12	18.2	10
• Transportation	4.5	3	12.7	7
• Getting supplies and medicines	4.5	3	0	0
Engineering care at home is complex	52.2	35	43.6	24
• "I come last"	20.9	14	25.5	14
• "Doing it alone is difficult."	3.0	2	7.3	4
• Mobilizing family and support resources	14.9	10	20.0	11
• "This is rough on my family."	34.3	23	18.2	10
"Life is stressful."	22.4	15	29.1	16
• "Too many outside influences."	6.0	4	9.1	5
• Grief and depression	3.0	2	12.7	7
• Anxiety and frustration	16.4	11	12.7	7
Managing multiple complex health problems is difficult	52.2	35	78.2	43
• "My diabetes has been hard to control."	17.9	12	29.1	16
• Managing other chronic health problems	31.3	21	47.3	26
	16.4	11	10.9	6

Thematic Category	7-day Follow-up *n* = 67		30-day Follow-up *n* = 55	
	%	*n*	%	*n*
• "So many medicines." • "I needed more information."	13.4	9	1.8	1

**Participants frequently provided multiple comments representing different thematic categories

Table 23. General Demographic and Health-Illness Characteristics of 7-day and 30-day Respondents

	7-day Respondents	30-day Respondents
Age	*n* = 67	*n* = 55
Mean (*SD*) years	75.22 (6.112)	75.65 (5.901)
Median years	75.00	76.00
64-74 years (%, *n*)	47.8, 32	41.8, 23
≥ 75 years (%, *n*)	52.2, 35	58.2, 32
Gender	*n* = 67	*n* = 55
Female (%, *n*)	49.3, 33	50.9
Male (%, *n*)	50.7, 34	49.1
Ethnicity	*n* = 67	*n* = 55
Asian (%, *n*)	1.5, 1	1.8, 1
Black (%, *n*)	9.0, 6	12.7, 7
Caucasian (%, *n*)	88.1, 59	83.6, 46
Latino (%, *n*)	1.5, 1	1.8, 1
Admitting Diagnosis	*n* = 67	*n* = 55
Cardiovascular condition (%, *n*)	25.4, 17	30.9, 17
Non-cardiovascular medical condition (%, *n*)	47.8, 32	45.5, 25
General surgical (%, *n*)	26.9, 18	23.6, 13
Comorbidity Profile	*n* = 67	*n* = 55
Coronary artery disease (%, *n*)	59.7, 40	60.0, 33
Chronic kidney disease (%, *n*)	41.8, 28	43.6, 24
Chronic obstructive pulmonary disease (%, *n*)	22.4, 15	21.8, 12
Cerebrovascular disease (%, *n*)	22.4, 15	21.8, 12
Diabetes chronic complication (%, *n*)	85.1, 57	87.3, 48
Foot problems (%, *n*)	9.0, 6	9.1, 5
Heart failure (%, *n*)	35.8, 24	36.4, 20
Neuropathy (%, *n*)	55.2, 37	61.8, 34
Peripheral vascular disease (%, *n*)	31.3, 21	36.4, 20
Diabetes Status		
A1c (%)	*n* = 60	*n* = 50
Mean (*SD*)	6.82 (1.06)	6.78 (.913)
Median	6.7	6.75
A1c ≥ 8 (%, *n*)	10.1, 7	8.0,
Insulin at discharge? (%, *n*)	32.8, 23	40.0, 22
Change in diabetes treatment at discharge? (%, *n*)	41.8, 25	47.3, 26
Length-of-stay (days)	*n* = 67	*n* = 55
Mean (*SD*)	5.87 (3.393)	5.78 (3.337)
Median	5.0	5.0
Hospitalist (%, *n*)	28.4, 19	23.6, 13
Caregiver in home at discharge (%, *n*)	85.1, 57	89.1, 49
Homecare at discharge (%, *n*)	52.2, 35	50.9, 28

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APPENDIX A: IRB APPROVAL

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Jacqueline M Lamanna**

Date: **January 06, 2012**

Dear Researcher:

On January 6, 2012, the IRB approved the following human participant research until 1/5/2013 inclusive:

Type of Review:	UCF Initial Review Submission Form Expedited Review Category #7
Project Title:	Transitional Outcomes of Hospitalized Older Adults with Diabetes
Investigator:	Jacqueline M Lamanna
IRB Number:	SBE-11-08050
Funding Agency:	None

The Continuing Review Application must be submitted 30days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at https://iris.research.ucf.edu .

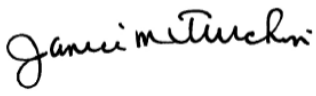
If continuing review approval is not granted before the expiration date of 1/5/2013, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a signed and dated copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., CF IRB Chair, this letter is signed by:

Signature applied by Janice Turchin on 01/06/2012 02:16:39 PM EST



IRB Coordinator

Institutional Review Board (IRB)Authorization Agreement

Institution Providing IRB Review ("Reviewing Institution"):	University of Central Florida IRB #1
Providing Institution IRB Registration No.:	IRB00001138
Providing Institution Federalwide Assurance (FWA) No.:	FWA00000351
Institution Relying on Providing Institution IRB ("Relying Institution"):	
Relying Institution FWA No.:	FWA00005314

The Officials signing below agree that the Relying Institution's IRB may depend upon the Reviewing Institution's IRB for review and continuing oversight of its human subjects research described below:

This agreement is limited to the following specific protocol(s):

> **SBE-11-08050 - Transitional Outcomes of Hospitalized Older Adults with Diabetes; Jacqueline Lamanna, Principal Investigator**

The Parties agree that Reviewing Institution's IRB shall:

> 1) providea copy of theprotocolto Relying Institution's IRB for a comment period lasting no longer than thirty (30) days,
>
> 2) receiveRelying Institution IRB's comments to be considered in good faith, and
>
> 3) provide a copy of the final approved protocol.

The parties shall mutually agree upon the final review protocol. Relying Institution's IRB shall have the final approval authority regarding whether to proceed with the human subject research described above. Reviewing Institution's IRB shall follow written procedures for reporting its findings and actions to appropriate officials at Relying Institution's IRB. Relevant minutes of Reviewing Institution IRB meetings shall be made available to Relying Institution upon request. Reviewing Institution's IRB shall use all reasonable efforts toconform with the human subject protection requirements and policies of Relying Institution's Office for Human Research Protections ("OHRP") approved FWA.Relying Institution's IRB remains responsible for ensuring compliance with Reviewing Institution'sIRB determinations and with the terms of its OHRP-approved FWA. This document must be kept on file by both parties and provided to OHRP upon request.

Providing Institution has full accreditation from the Association for the Accreditationof Human Research Protection Programs, Inc. ("AAHRPP") for its human research protection programs and warrants that it will maintain its full accreditation with AAHRPP in good standing and report immediately to Relying Institution any change in its accreditation status. Providing Institution shall also promptly report the results of any OHRP or Federal Food and Drug Administration investigations into research at Providing Institution to Relying Institution.

(Signature Page immediately follows this Page.)

SIGNATURES OF SIGNATORY OFFICIALS OF THE PARTIES

Reviewing Institution
University of Central Florida IRB #1

By: _____
Title: Associate Vice President for Research
Print Full Name: Thomas O'Neal

Relying Institution:

By: _____
Title: CMO, VP Quality and Protection of Human Subjects in Research
Print Full Name: James V. Palermo, M. D.

(The Remainder of this Page Intentionally Left Blank.)

APPENDIX B: INFORMED CONSENT FORM

University of Central Florida

Transitional Outcomes of Hospitalized Older Adults with Diabetes

Informed Consent

Principal Investigator(s): Jacqueline M. LaManna, MSN, ARNP-BC, ADM, CDE

Faculty Supervisor: Karen Dennis, PhD, RN, FAAN

Investigational Site(s):

Introduction: Researchers at the University of Central Florida (UCF) study many topics. To do this we need the help of people who agree to take part in a research study. You are being invited to take part in a research study which will include about 156 people in east Central Florida. You have been asked to take part in this research study because you are an adult age 65 or older with a history of diabetes and because you are being discharged to home after at least a 2 day stay in the hospital.

Jacqueline LaManna, the person doing this research, is a doctoral student at the University of Central Florida, College of Nursing.

Because the researcher is a graduate student, she is being guided by Dr. Karen Dennis, a UCF faculty supervisor in the College of Nursing.

What you should know about a research study:

- Someone will explain this research study to you.
- A research study is something you volunteer for.
- Whether or not you take part is up to you.
- You should take part in this study only because you want to.
- You can choose not to take part in the research study.

Initials

- You can agree to take part now and later change your mind.
- Whatever you decide it will not be held against you.
- Feel free to ask all the questions you want before you decide.

Purpose of the research study: The purpose of this study is find out what factors affect your adjustment to home and how you care for your diabetes after you are discharged from the hospital.

What you will be asked to do in the study:

- You will be asked to give permission for the researcher to review your hospital record. The researcher will gather information on your hospitalization, health history, diabetes history, diabetes treatment plan, and general discharge instructions.

- You will meet with the researcher on the day you are scheduled to leave the hospital. You will be asked questions about your health and your diabetes. You will be asked to complete a short memory screening test. You also will be asked to complete one survey on your readiness for discharge and another on how you perceive the quality of your hospital discharge teaching. This procedure will take no more than 30 minutes.

- Seven days after you return home, the researcher or a research assistant will contact you by telephone. You will be asked 15 questions about the quality of your hospital discharge. You also will be asked 10 questions to see if you have experienced any problems since returning home from the hospital.. This telephone interview should take no more than 15 minutes.

- Thirty days after you return home, you will be contacted by telephone and asked the same ten questions about after-discharge problems. You also will be asked 15 questions about how you have managed your diabetes since returning home. This telephone interview should take no more than 15 minutes.

Location:

- The face-to-face interview will be held in your hospital room. The remainder of the study will be conducted on the telephone.

Time required: We expect that you will be in this research study for 30 days.

Risks:

- It is possible that you could become tired during interviews.

Initials

- People who have completed the surveys in this study have not reported emotional distress. However, it is possible that you could experience anxiety or emotional concerns during the interviews.

- All attempts will be made to protect your confidential information, but there is a small risk that there could be a breach in confidentiality.

Benefits:

You will not get any personal benefit from taking part in this study. Your willingness to take part, however, may help hospital staff to better understand and/or treat others who have diabetes in the future.

.

Compensation or payment:

There is no compensation or other payment to you for taking part in this study.

Confidentiality:

We will limit your personal data collected in this study to people who have a need to review this information. While all attempts will be made to protect your privacy, we cannot promise complete secrecy.

Your information will be combined with the information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. For example, your name will be kept separate from the information you give, and these two files will be stored in different places under lock and key. The information provided will be coded with a number assigned to you alone. Only the researcher will have access to this number. All information will be stored on a computer that is password protected in a file that is also password provided. Data will be backed up on a password protected USB device.

All interviews will be conducted in a private environment. Follow-up telephone interviews will be conducted on a cell phone that is dedicated only to this project. The researcher or research assistant will be in a private environment when conducting these interviews.

Initials

We will limit your personal data collected in this study to people who have a need to review this information. Organizations that may inspect and copy your information include the UCF Institutional Review Board, other representatives of UCF, and personnel from Holmes Regional Medical Center and Health First, Inc.

Study contact for questions about the study or to report a problem:

If you have questions, concerns, or complaints, or think the research has hurt you, talk to Jacqueline LaManna, Graduate Student, College of Nursing, (321) 433-7855 or Dr. Karen Dennis, Faculty Supervisor, College of Nursing, (407) 832-1832 or by email at karen.dennis@ucf.edu.

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IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901. You may also talk to them for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.

Withdrawing from the study:

If you decide to take part in the study at this time, you still have the right to decide at any time that you no longer want to continue. If you decide to leave the study, contact the investigator so that the investigator can remove your from the follow-up phone call list. You will not be treated differently if you decide to stop taking part in the study.

The individuals conducting the study may need to withdraw you from the study without your approval. This may occur if you are not able to follow the directions they give you or if there are significant communication problems on the telephone. Also, if the researcher cannot reach you within 7 days of each telephone follow-up appointment, you will be withdrawn from the study.

HIPAA AUTHORIZATION TO RELEASE INFORMATION FOR RESEARCH

Privacy laws, including the Health Insurance Portability & Accountability Act (HIPAA) and other federal and state laws, rules, and regulations, protect your individually identifiable health information (also called Protected Health Information or PHI). The privacy laws require you to sign an Authorization that describes your rights and explains how your Protected Health Information (PHI) will be used and disclosed for this research study.

Initials

By signing this informed consent, you are authorizing the principal investigator, his/her research staff, and the sponsor to use and disclose your PHI for the purposes described below. You also authorize your doctors, , and individuals who provide health care services at to disclose your PHI for the purposes described below.

This Authorization does not have an expiration date.
This study includes personnel from and the University of Central Florida. They may use your health information and share it with others. We want you to know who may use this information and how they may use it.

We also want to tell you about your rights concerning the use of your personal information before you agree to take part in the study.

Who may use and give out information about you?
The Investigator and research staff will have information about your health that tells us your identity. They may give this information to others during and after the study.

Who may see this information?
The following people, agencies and businesses may get information from us that show who you are.

- The researcher conducting the study
- The research assistant who will contact you after discharge
-
- UCF College of Nursing supervisory personnel
- UCF Institutional Review Board
- Accreditation organizations

What information may be used and shared?
If you volunteer to take part in this research study you have the right to know that others may know your identity. In addition, medical information that identifies you and relates to your participation will be created. Study information may identify you in the following ways:

- Name

- Telephone number

- Information obtained from the procedures used to find out whether you are eligible to take part in this study. This may include physical examinations, blood and urine tests, x-rays and other procedures or tests, and any other information that you may release to us, including information about your health history.

- Information obtained in the course of the study including information about your response to any study treatments you receive, information related to study visits and phone calls, physical

Initials

examinations, blood and urine tests, x-rays and other tests or procedures that may be performed, and other medical information relating to your participation in this study.

Why will this information be used and/or shared?
Information about you and your health, that might identify you, may be given to others to carry out the research study. The sponsor will analyze and evaluate the results of the study

The results of this research may be published in scientific journals or presented at medical meetings, but your identity will not be disclosed.

representatives may review this research in their oversight and auditing roles.

What if I decide not to give permission to use and give out my health information?
By signing this consent form, you are giving permission to use and give out the health information listed above for the purposes described above. If you refuse to give permission, you will not be able to be in this research.

May I review or copy the information obtained from me or created about me?
You have the right to review and copy your health information. However, if you decide to be in this study and sign this permission form, you will not be allowed to look at or copy your information until after the research is completed.

May I withdraw or revoke (cancel) my permission?
Yes, but this authorization (permission) will never expire (end) unless you revoke (cancel) it in writing.

You may withdraw or take away your permission to use and disclose your health information at any time. You do this by sending written notice to the principal investigator. If you withdraw your permission, you will not be able to continue being in this study.

When you withdraw your permission, no new health information that might identify you will be gathered after that date. Information that has already been gathered may still be used and given to others. This would be done if it were necessary for the research to be reliable.

Is my health information protected after it has been given to others?
If you give permission to give your identifiable health information to a person or business, the information may no longer be protected. There is a risk that your information will be released to others without your permission.

Your personal information may be disclosed if required by law.

How long is my information kept?

Initials

Files related to a research study are stored for at least seven (7) years after the research study has been closed.

Whether or not you choose to sign this authorization and participate in the research study, may not condition (withhold or refuse) treating you.

Do not sign this consent form unless a member of the research team has reviewed the study and this informed consent with you and until you have had a chance to ask questions and have received satisfactory answers to all of your questions.

If you agree to participate in this study, you will receive a signed and dated copy of this consent form for your records.

DO NOT SIGN THIS FORM AFTER THE IRB EXPIRATION DATE BELOW

Your signature below indicates your permission to take part in this research and to the use and disclosure of your protected health information:

Name of participant	
Signature of participant	Date
Signature of person obtaining consent	Date
Printed name of person obtaining consent	

Initials

APPENDIX C: HUMAN SUBJECTS PROTECTION TRAINING

CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report
Printed on 5/20/2013

Learner: Jacqueline LaManna (username: jlamanna2)
Institution: University of Central Florida
Contact Information

Group 1.Biomedical Research Investigators and Key Personnel:

Stage 4. Refresher Course Passed on 03/30/11 (Ref # 5540086)

Required Modules	Date Completed	Score
Biomed Refresher 2 – History and Ethical Principles	03/30/11	no quiz
Biomed Refresher 2 – Regulations and Process	03/30/11	1/1 (100%)
Biomed Refresher 2 – Regulations and Process	03/30/11	1/1 (100%)
Biomed Refresher 2 – Informed Consent	03/30/11	1/1 (100%)
Biomed Refresher 2 – SBR Methodologies in Biomedical Research	03/30/11	2/2 (100%)
Biomed Refresher 2 – Genetics Research	03/30/11	1/1 (100%)
Biomed Refresher 2 – Genetics Research	03/30/11	1/1 (100%)
Biomed Refresher 2 – Records-Based Research	03/30/11	1/1 (100%)
Biomed Refresher 2 – Records-Based Research	03/30/11	1/1 (100%)
Biomed Refresher 2 – Records-Based Research	03/30/11	1/1 (100%)
Biomed Refresher 2 – Research Involving Vulnerable Subjects	03/30/11	1/1 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Prisoners	03/30/11	1/1 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Prisoners	03/30/11	1/1 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Children	03/30/11	1/1 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Children	03/30/11	1/1 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Children	03/30/11	1/1 (100%)
Biomed Refresher 2 – Vulnerable Subjects – Pregnant Women, Human Fetuses, Neonates	03/30/11	0/1 (0%)
Biomed Refresher 2 – Vulnerable Subjects – Pregnant Women, Human Fetuses, Neonates	03/30/11	1/1 (100%)
Biomed Refresher 2 – Conflicts of Interest in Research Involving Human Subjects	03/30/11	3/3 (100%)
Biomed Refresher 2 – FDA-Regulated Research	03/30/11	1/1 (100%)
Biomed Refresher 2 – FDA-Regulated Research	03/30/11	2/2 (100%)
Biomed Refresher 2 – HIPAA and Human Subjects Research	03/30/11	2/2 (100%)

Completion Report

Biomed Refresher 2 – Conflicts of Interest in Research Involving Human Subjects	03/30/11	1/2 (50%)
How to Complete the CITI Refresher Course and Receive a Completion Report	03/30/11	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

Return

Version Date: 10/25/2007

Commitment Statement of an Individual Investigator, Not Covered by an Institutional Federalwide Assurance, to UCF Institutional Human Subject Protection Policies and IRB Oversight

UCF IRB Individual Investigator Agreement

Name of Institution with the Federalwide Assurance (FWA): University of Central Florida

Applicable FWA #: 00000351

Individual Investigator's Name (Non-UCF): Marilyn Burton

Specify Research Covered by this Agreement: Research Assistant in dissertation of Jacqueline LaManna entitled "Transition Outcomes of Hospitalized Older Adults with Diabetes"

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(1) The above-named Individual Investigator has reviewed: 1) *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research* [or other internationally recognized equivalent; see section B.1. of the Terms of the Federalwide Assurance (FWA) for International (Non-U.S.) Institutions]; 2) the U.S. Department of Health and Human Services (HHS) regulations for the protection of human subjects at 45 CFR part 46 [or other procedural standards; see section B.3. of the Terms of the FWA for International (Non-U.S.) Institutions]; 3) the FWA and applicable Terms of the FWA for the institution referenced above; and 4) the relevant institutional policies and procedures for the protection of human subjects.

(2) The Investigator understands and hereby accepts the responsibility to comply with the standards and requirements stipulated in the above documents and to protect the rights and welfare of human subjects involved in research conducted under this Agreement.

(3) The Investigator will comply with all other applicable federal, international, state, and local laws, regulations, and policies that may provide additional protection for human subjects participating in research conducted under this agreement.

(4) The Investigator will abide by all determinations of the University of Central Florida Institutional Review Board (UCF IRB) designated under the above FWA and will accept the final authority and decisions of the UCF IRB, including but not limited to directives to terminate participation in designated research activities.

(5) The Investigator will complete any educational training required by the UCF IRB prior to initiating research covered under this Agreement.

(6) The Investigator will report promptly to the UCF IRB any proposed changes in the research conducted under this Agreement. The investigator will not initiate changes in the research without prior UCF IRB review and approval, except where necessary to eliminate apparent immediate hazards to subjects.

(7) The Investigator will report immediately to the UCF IRB any unanticipated problems involving risks to subjects or others in research covered under this Agreement.

(8) The Investigator, when responsible for enrolling subjects, will obtain, document, and maintain records of informed consent for each such subject or each subject's legally authorized representative as required under HHS regulations at 45 CFR part 46 and stipulated by the UCF IRB.

(9) The Investigator acknowledges and agrees to cooperate in the UCF IRB's responsibility for initial and continuing review, record keeping, reporting, and certification for the research referenced above. The Investigator will provide all information requested by the IRB in a timely fashion.

(10) The Investigator will not enroll subjects in research under this Agreement prior to its review and approval by the UCF IRB.

(11) Emergency medical care may be delivered without UCF IRB review and approval to the extent permitted under applicable federal regulations and state law, but the Investigator shall notify the UCF IRB within 5 working days of the administration of such care.

(12) This Agreement does not preclude the Investigator from taking part in research not covered by this Agreement.

(13) The Investigator acknowledges that he/she is primarily responsible for safeguarding the rights and welfare of each research subject, and that the subject's rights and welfare must take precedence over the goals and requirements of the research.

Investigator Signature: Marilyn A Burton Date 10/8/2011

Name: BURTON MARILYN A. Degree(s): Diploma R.N.
(*Last*) (*First*) (*Middle Initial*)

Company: _____

Address: _____ phone #: _____

_____
(*City*) (*State/Province*) (*Zip/Country*)

UCF FWA Official (or Designee) Signature: _____ Date _____

Name: O'Neal Thomas P. Institutional Title: Associate Vice-President for Research
(*Last*) (*First*) (*M.I.*)

Address: UCF, Office of Research & Commercialization, 12201 Research Parkway, Suite 501
phone #: 407-823-2901

Orlando FL USA

CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report
Printed on 10/7/2011

Learner: Marilyn Burton (username: mburton41)
Institution: University of Central Florida
Contact Information Department: Nursing

Group 2.Social / Behavioral Research Investigators and Key Personnel:

Stage 1. Basic Course Passed on 10/07/11 (Ref # 6828766)

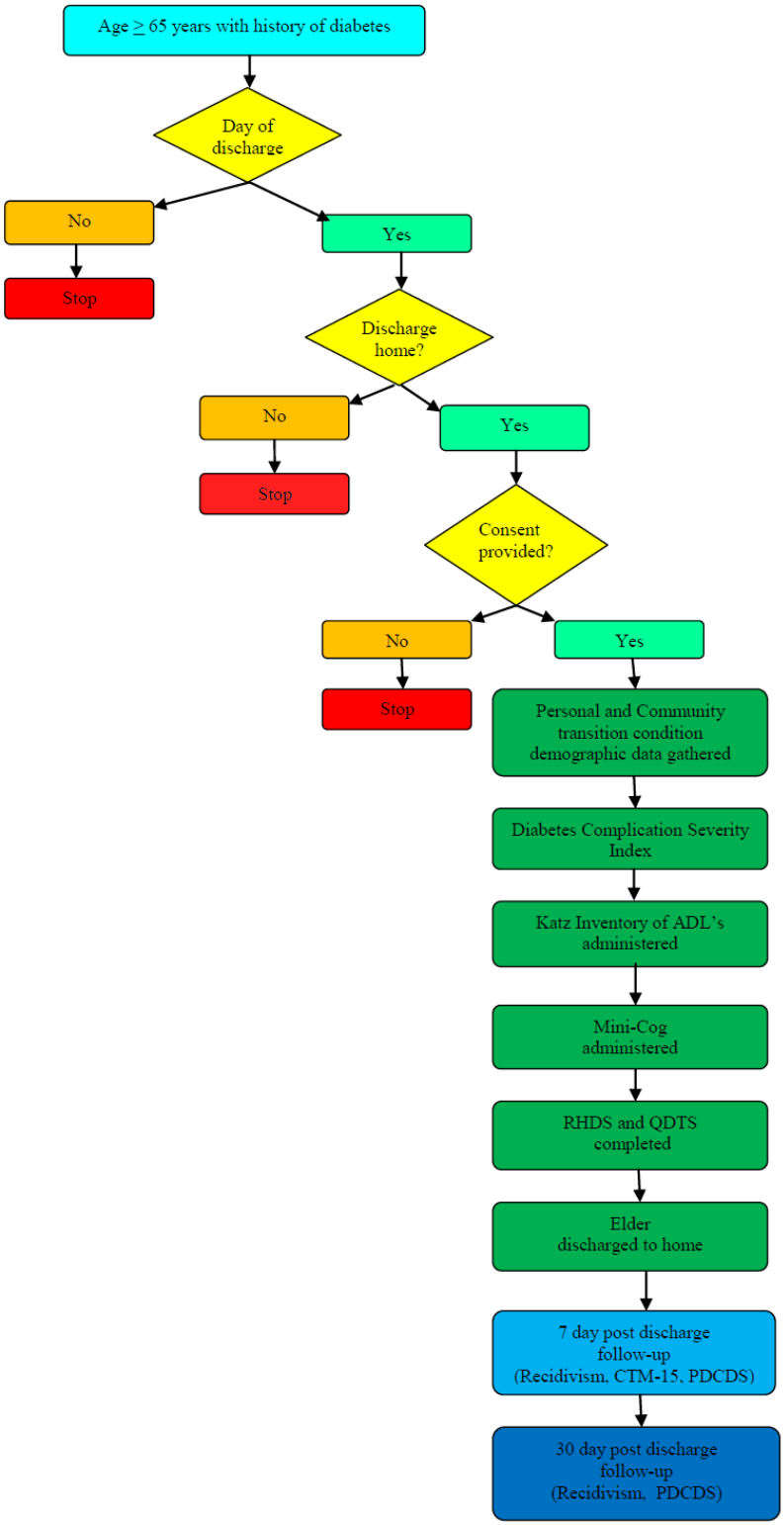
Required Modules	Date Completed	Score
Introduction	10/05/11	no quiz
History and Ethical Principles - SBR	10/07/11	3/4 (75%)
Defining Research with Human Subjects - SBR	10/07/11	5/5 (100%)
The Regulations and The Social and Behavioral Sciences - SBR	10/07/11	5/5 (100%)
Assessing Risk in Social and Behavioral Sciences - SBR	10/07/11	4/5 (80%)
Informed Consent - SBR	10/07/11	5/5 (100%)
Privacy and Confidentiality - SBR	10/07/11	5/5 (100%)
Research with Prisoners - SBR	10/07/11	4/4 (100%)
Research with Children - SBR	10/07/11	4/4 (100%)
Research in Public Elementary and Secondary Schools - SBR	10/07/11	4/4 (100%)
International Research - SBR	10/07/11	3/3 (100%)
Internet Research - SBR	10/07/11	4/4 (100%)
Research and HIPAA Privacy Protections	10/07/11	5/5 (100%)
Conflicts of Interest in Research Involving Human Subjects	10/07/11	4/5 (80%)
UCF	10/07/11	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

Return

APPENDIX D: DATA COLLECTION FLOW



APPENDIX E: DATA COLLECTION FORMS

Transition Experiences of Older Adults with Diabetes Data Collection Form

Intake/Enrollment Information

ID # _____ **Date** _____ **Source of information:** elder (0) proxy (1) relationship: _____

Age: _____ Admitting Dx: _____ LOS: _____

Unit: _____ Hospitalist? No (0) _____ Yes (1)_____

Duration of diabetes _____ A1c _____ Insulin@dc? No (0) _____ Yes (1) _____

New to insulin? No (0) _____ Yes (1) _____ Change in dm tx? No (0) _____ Yes (1) _____

Oral antihyperglycemic? No (0) _____ Yes (1)_____

Chronic Illness Burden (Charlson Comorbidity Index)
Chart data

Weight	Condition
1	COPD Rheumatologic disease Renal disease Diabetes with chronic complications
2	CHF Dementia Mild liver disease Hemiplegia or paraplegia Any malignancy including lymphoma/leukemia
4	Moderate/severe liver disease HIV/AIDS
6	Metastatic solid tumor
	Total Charlson Score_____ (24 possible)

Mini-Cog Score
Administer following described protocol

Word recall _____ points (1 point per recalled word/3 possible)

Clock draw _____ points (0 points abnormal; 2 points normal)

Total Mini-Cog _____points (0 to 5 points; 0 to 2 high likelihood dementia)

Katz Independence with ADLs Score
Interview patient

Katz Score_____ points (range 0 to 6)

Diabetes Complication Index

Interview participant - see form

CAD	Yes (1)	No (0) (includes CAD, angina and/or MI)
Cerebrovascular Dis	Yes (1)	No (0) (includes stoke and/or TIA)
PVD	Yes (1)	No (0) (includes dx PVD or calf pain with walking)
Neuropathy	Yes (1)	No (0) (includes peripheral and/or autonomic)
Foot problems	Yes (1)	No (0) (includes ulcers, hx gangrene or amputation)
Eye problems	Yes (1)	No (0) (includes cataracts, retinopathy)

Total DCI score _____ (Range 0 to 6)

Readiness for Hospital Discharge Scale Scores

Administer to participant – may assist if needed

Personal Status Subscale score	_____ (range 0 to 60)
Knowledge Subscale score	_____ (range 0 to 90)
Coping Ability Score	_____ (range 0 to 30)
Expected Support Score	_____ (range 0 to 40)
Total Score All RDHS Subscales	_____ (range 0 to 220)

Quality of Discharge Teaching Scale Scores

Administer to participant – may assist if needed

- Content needed: Items 1a, 2a, 3a, 4a, 5a, 6a _____
- Content received: Items 1b, 2b, 3b, 4b, 5b, 6b _____
- Delivery: Items 7,8,9,10,11,12,13,14,15,16,17,18. _____
- Total Score: (Add scores content needed and delivery) _____

Caregiver at Discharge?

No (0) Yes (1)

If yes, relationship:_____

If yes, present in home? _____

Homecare at Discharge?

No (0) Yes (1)

Transition Experiences of Older Adults with Diabetes Data Collection Form

Follow Up 1 - Day 7 (Week 1)

Participant ID_____ **Date** _____

Recidivism: Total events of recidivism _____

Since leaving the hospital, have you (or the person to whom you provide care) been admitted back to the hospital?

Yes (1) No (0) Date: _____ Reason: _____

Since leaving the hospital, have you (or the person to whom you provide care) been seen in the emergency department?

Yes (1) No (0) Date: _____ Reason: _____

Since leaving the hospital, have you (or the person to whom you provide care) required an unscheduled visit to a doctor or care provider?

Yes (1) No (0) Date:_____ Reason:_____

Do you currently have a family member, friend, or other individual assisting with your care?

Yes (1) No (0) If yes, relationship: _____

If yes, is the care provider currently staying in the home? _____

Are you (or the person to whom you provide care) currently receiving home health care services?

Yes (1) No (0)

Perceived Discharge Quality Score

Administer Care Transition Measure -15 telephonically to elder or caregiver following directions and scoring rubrics

CTM-15 calculated score: _____

Post-Discharge Coping Difficulty Scale Score

Administer Post-Discharge Coping Difficulty Scale telephonically to elder or caregiver

PDCD Scale calculated score: _____

Transition Experiences of Older Adults with Diabetes Data Collection Form

Follow Up 2 - Day 30 (Week 2 to 4)

Participant ID_____

Recidivism: Total Events of Recidivism _____

During the past 3 weeks, have you (or the person to whom you provide care) been admitted back to the hospital?

Yes (1) No (0) Date: _____ Reason: _____

During the past 3 weeks, have you (or the person to whom you provide care) been seen in the emergency department?

Yes (1) No (0) Date: _____ Reason: _____

During the past 3 weeks, have you (or the person to whom you provide care) required an unscheduled visit to a doctor or care provider?

Yes (1) No (0) Date:_____ Reason:_____

Do you currently have a family member, friend, or other individual assisting with your care?

Yes (1) No (0) If yes, relationship: _____

If yes, is the care provider currently staying in the home? _____

Are you (or the person to whom you provide care) currently receiving home health care services?

Yes (1) No (0)

Post-Discharge Coping Difficulty Scale Score

Administer Post-Discharge Coping Difficulty Scale telephonically to elder or caregiver

PDCD Scale calculated score: _____

Diabetes Self-Management Behaviors

Administer Self-Care Inventory-Revised to elder or caregiver limiting to past 1 month as time frame

Average of items: 1, 2, 5, 6, 7, 8, & 13

SCI-R calculated score: _____

APPENDIX F: DIABETES COMPLICATION INDEX AND PERMISSION TO USE

CORONARY ARTERY DISEASE

Scoring of coronary artery disease (CAD): 1 on CAD and/or angina pectoris and/or myocardial infarction = 1; 0 on all three = 0

Coronary artery disease

a. Has a doctor ever told you that you have a blockage in the blood flow to your heart, also called CAD? Such blockage can lead to chest pain, also called angina.

Scoring of CAD: yes = 1; no = 0

Angina pectoris

a. In the past 6 months have you had chest pain or pressure?
b. Was the chest pain or pressure brought on by physical activity or stress?
c. Was the chest pain or pressure relieved by rest or nitroglycerine?

Scoring of angina: yes to all = 1; no to *a* or *b* or *c* = 0

Myocardial infarction

a. Has a doctor ever told you that you had a heart attack?

Scoring of myocardial infarction: yes = 1; no = 0

CEREBROVASCULAR DISEASE

Scoring of cerebrovascular disease: 1 on stroke and/or transient ischemic attack = 1; 0 on both = 0

Stroke

a. Have you ever been told by a doctor that you have had a stroke?

Scoring of stroke: yes = 1; no = 0

Transient ischemic attack

a. Has a doctor ever told you that you have had a TIA? This is also called "Transient Ischemic Attack" or "warning stroke."
b. Have you ever developed sudden, stroke-like symptoms, for example, weakness on one side of your body, difficulty speaking, drooping of one side of your mouth, drooling, or trouble seeing, which completely returned to normal within a day?

Scoring of transient ischemic attack: yes on *a* and/or *b* = 1

PERIPHERAL VASCULAR DISEASE

Scoring of peripheral vascular disease: yes on *a* and/or *b* = 1; no on both = 0

a. Has a doctor ever told you that you have blockages in the blood vessels, arteries to your legs, also called peripheral vascular disease?
b. During the past 6 months, have you had leg cramps or pain in your calf while walking, which was relieved by rest?

NEUROPATHY

Scoring of neuropathy: 1 on peripheral and/or autonomic neuropathy = 1; 0 on both = 0

Peripheral neuropathy

a. During the past 6 months, have you had no feeling or numbness in your feet?

Scoring of peripheral neuropathy: yes = 1, no = 0

Autonomic neuropathy

a. During the past 4 weeks, how often have you had loss of bowel control or diarrhea

while sleeping? Never, 1 or 2 times, about once a week, 2 or 3 times a week, most of the time.

Scoring of autonomic neuropathy: *>never = 1; never = 0*

FOOT PROBLEMS

Scoring of foot problems: yes on *a* and/or *b* and/or *c* = 1; no on all three = 0

a. During the past 6 months, have you had ulcers on your toes, feet, or lower legs?
b. Have you ever had gangrene on any of your toes?
c. Have you ever had any part of your toes or feet amputated because of diabetes?

EYE PROBLEMS

Scoring of eye problems: yes on *a* and/or *b* = 1; no on both = 0

a. Do you now have cataracts?
b. Has a doctor ever told you that you have retinopathy or diabetic eye disease?

Missing values

Subjects with missing values are included only if the missing values prevent determination of whether 1 of the 6 complications is present or absent. For example, a "yes" answer to either of the 2 eye questions makes it possible to determine that an eye problem is present, even if the answer to the other question is missing. Therefore, this subject would be included. On the other hand, if the answer to that question were "no" and the answer to the other question were missing, it would not be possible to determine whether an eye problem is present or absent and the subject would be excluded. In practice, this means that subjects with missing values are included when it is still possible to calculate the DCI score, but excluded when it is not.

From: Graeme Fincke
To: Jacqueline Lamanna
Subject: Re: Request to Use Diabetes Complication Index Instrument
Date: Monday, September 12, 2011 8:11:24 PM

Jacqueline,

Yes, please feel free to use the Diabetes Complications Index.

Good luck with your study and congratulations in advance on your doctorate.

(Benjamin) Graeme Fincke

On Sep 12, 2011, at 7:24 PM, Jacqueline Lamanna wrote:

Dr. Fincke,

I am currently a doctoral student at the University of Central Florida College of Nursing. I am in the dissertation phase of the program and will be defending my proposal shortly. My dissertation research will examine hospital-to-home transition experiences of older adults with pre-existing diabetes. I believe that the Diabetes Complications Index will provide a excellent means of understanding the diabetes-specific disease burden of the study sample. With your permission, I would like to use this tool in my research study.

Thank you for your consideration.

Sincerely,

Jacqueline LaManna

Jacqueline LaManna, MSN, ARNP-BC, ADM, CDE
Instructor, Campus Coordinator
UCF College of Nursing
Brevard Campus

APPENDIX G: PERMISSION TO USE INSTRUMENTS

Hi Jacqueline - glad to hear you are progressing.

I have resent all instruments - see the psychometrics documents on the RHDs for the only change we are recommending based on a recent study of 1500 patients.

I am just writing the psychometrics paper that updates the QDTS and RHDS but the psychometrics are essentially the same. I think we include new alphas in the following references. We have a paper in revision right now that is the final report of the study that is referred to in the following 2 papers. I think I reported some psychometrics in those as well. We also know that others are finding similar results from use. Watch for a paper by Alice Coffey from Ireland - she just defended and she used the RHDS with elderly - psychometrics were fine and p value for relationship to readmission was .07. I also know there was a paper submitted in Thailand - I will see if I can find it.

I have also attached the permission form. I would appreciate it if you would complete it if you choose to use the instruments - You certainly have permission to use them, I'm just trying to track who is using and the patient populations. I get a lot of requests and the requestors often ask if I know anyone else doing work in the area.

References for our 2 most recent papers are:
2010 Weiss, M.E., Yakusheva, O, & Bobay, K.L. Nurse and patient perceptions of discharge readiness in relation to post-discharge utilization. Medical Care, 48(5), 482-486.

2010 Bobay, K., Jerofke, T, Weiss, M., & Yakusheva, O. Age-related differences in perception of quality of discharge teaching and readiness for hospital discharge. Geriatric Nursing, 31(3), 178-187.

Good luck with your work. I look forward to hearing about it.

Marianne Weiss, DNSc, RN
Associate Professor and
Wheaton Franciscan Healthcare, St. Joseph / Sister Rosalie Klein Professor of Women's Health
Marquette University College of Nursing
PO Box 1881

From: Jacqueline Lamanna [jlamanna@mail.ucf.edu]
Sent: Friday, February 18, 2011 1:45 PM
To: Weiss, Marianne
Cc: jlamanna@knights.ucf.edu; Karen Dennis
Subject: Permission to Use Quality of Discharge Teaching Scale

Dr. Weiss,

I am a PhD student at the University of Central Florida College of Nursing. I am currently in the proposal stage of dissertation. My dissertation will explore transitional outcomes of older adults with diabetes who are hospitalized for an acute medical problem. Dr. Karen Dennis is my chair. I have been following your

research over the past 2 years as I have moved from the course work to the dissertation phase of my program.

I wrote to you about 2 years ago to request (and you granted) permission to use the Readiness for Hospital Discharge Scale and Post-Discharge Coping Difficulty Scale in my psychometrics paper. I would also like to use both of these instruments and the Quality of Discharge Teaching Scale in my dissertation if you are agreeable.

If you could provide me with the most recent copy of each instrument and any updated data on psychometrics of the measures I would be most appreciative. I believe you asked for submission of a permission document in your last email. I had not submitted one at that time because I was still completing course work and was not sure of the direction of my dissertation at the time.

Thank you for your consideration and time.

Jacqueline LaManna

PERMISSION FOR USE AGREEMENT

READINESS FOR HOSPITAL DISCHARGE SCALE (RHDS)
QUALITY OF DISCHARGE TEACHING SCALE (QDTS)
POST-DISCHARGE COPING DIFFICULTY SCALE (PDCDS)
Marianne Weiss, DNSC, RN, author

You may use the RHDS/QDTS/PDCDS for clinical practice or research purposes under the following conditions: You agree to provide me with

1. a brief description of the study and/or clinical population for which it is used

2. a summary of any results from use of the instrument; for example, reliability coefficients, differences among groups, correlations, predictors, and/or outcomes

3.. where possible, a copy of RHDS/QDTS AND/OR PDCDS data for inclusion in an instrument database for further analysis of psychometric properties (not required for permission to use)

Please complete the following questions:

1. Your name: Jacqueline LaManna, MSN, ARNP-BC

2. Your organization: University of Central Florida College of Nursing

3. Your address:

4. Your telephone number: 321-XXX-XXXX

5. Your e-mail address:

6. Purposes(s) for using the instrument(s):
[ ] clinical practice
x research, If yes, will you use the instrument(s)for [ ]master's thesis
x PhD dissertation

7. Which Iinstrument(s) do you plan to use in your research?
x RHDS x QDTS x PDCDS

Which version of the instrument(s) do you plan to use?
[ ] New mothers form(s) x Adult medical-surgical form(s) [ ] Parent of hospitalized child form(s)

8. Describe how you plan to use the instrument? (If research, please briefly describe the Research questions and methods)

Dissertation research entitled "Hospital-to-Home Transition Experiences of Older Adults with Diabetes.

Study objectives are:

- To determine whether personal (health-illness factors, diabetes-related factors, and discharge readiness) and community (hospital-related transition factors, family caregiver involvement, family caregiver involvement, and use of home care resources) transition conditions impact short-term (perceived discharge quality and post-discharge coping difficulties) and intermediate hospital-to-home transition outcomes (post-discharge coping difficulties and disease-specific self-management skills) in hospitalized older adults with diabetes.
- To ascertain whether personal and community transition conditions impact older adults' participation in diabetes self-management activities following hospital discharge.

Will be using with convenience sample of 150 older adults with diabetes on day of discharge with planned home discharge disposition. Participants will be hospitalized on medical/surgical and progressive care units. Site is 550 bed community medical center in east central Florida.

RHDS and QDTS will be administered prior to discharge and the PDCDS will be administered 7 and 30 days after discharge – participants will be mailed survey and then survey will be reviewed by phone

9. Describe the patients who will complete the instrument(s).

Inclusion criteria are: age 65 and older, diagnosis of diabetes pre-dating hospital admission, hospitalized at least 2 days for any diagnosis, planned home discharge disposition, within 4 hours of expected discharge

Exclusion criteria: discharge to hospice, diagnosis of dementia or cognitive impairment, visual or hearing impairment, lack of access to telephonic communication.

Signature: *Jacqueline LaManna, MSN, ARNP* (electronic) Date: 1/5/12

Please e-mail this form to Dr. Marianne Weiss.

APPENDIX H: READINESS FOR HOSPITAL DISCHARGE SURVEY AND SCORING INFORMATION

ID# ☐☐☐

READINESS FOR HOSPITAL DISCHARGE -- ADULT FORM

Please check or circle your answer. Most of the responses are on a scale from 0 to 10. The words below the number indicate what the 0 or the 10 means. Pick the number between 0 and 10 that best describes how you feel. For example, circling number 7 means you feel more like the description of number 10 than number 0 but not completely.

1. As you think about your discharge from the hospital, do you believe you are **ready** to go home as planned?	[ ] No [ ] Yes
2. How physically **ready** are you to go home?	0 1 2 3 4 5 6 7 8 9 10 Not ready — Totally ready
3. How would you describe your **pain** or **discomfort** today?	0 1 2 3 4 5 6 7 8 9 10 No pain/ discomfort — Severe pain/ discomfort
4. How would you describe your **strength** today?	0 1 2 3 4 5 6 7 8 9 10 Weak — Strong
5. How would you describe your **energy** today?	0 1 2 3 4 5 6 7 8 9 10 Low energy — High energy
6. How much **stress** do you feel today?	0 1 2 3 4 5 6 7 8 9 10 None — A great deal
7. How **emotionally** ready are you to go home today?	0 1 2 3 4 5 6 7 8 9 10 Not ready — Totally ready
8. How would you describe your **physical ability** to care for yourself today (for example, hygiene, walking, toileting)?	0 1 2 3 4 5 6 7 8 9 10 Not able — Totally able
9. How much do you **know about caring for yourself** after you go home?	0 1 2 3 4 5 6 7 8 9 10 Know nothing at all — Know all

ID# ☐☐☐

10. How much do you **know about** taking care of your **personal needs** (for example, hygiene, bathing, toileting, eating) after you go home?	0	1	2	3	4	5	6	7	8	9	10
	Know nothing at all										Know all
11. How much do you **know about** taking care of your **medical needs** (treatments, medications) after you go home?	0	1	2	3	4	5	6	7	8	9	10
	Know nothing at all										Know all
12. How much do you **know about problems to watch for** after you go home?	0	1	2	3	4	5	6	7	8	9	10
	Know nothing at all										Know all
13. How much do you **know about who and when to call** if you have problems after you go home?	0	1	2	3	4	5	6	7	8	9	10
	Know nothing at all										Know all
14. How much do you **know about restrictions** (what you are allowed and not allowed to do) after you go home?	0	1	2	3	4	5	6	7	8	9	10
	Know nothing at all										Know all
15. How much do you **know about what happens next** in your follow-up medical treatment plan after you go home?	0	1	2	3	4	5	6	7	8	9	10
	Know nothing at all										Know all
16. How much do you **know about services and information** available to you in your community after you go home?	0	1	2	3	4	5	6	7	8	9	10
	Know nothing at all										Know all
17. How well will you be able to **handle the demands** of life at home?	0	1	2	3	4	5	6	7	8	9	10
	Not at all										Extremely well
18. How well will you be able to **perform your personal care** (for example, hygiene, bathing, toileting, eating) at home?	0	1	2	3	4	5	6	7	8	9	10
	Not at all										Extremely well
19. How well will you be able to **perform your medical treatments** (for example, caring for a surgical incision, respiratory treatments, exercise, rehabilitation, taking your medications in the correct amounts and at the correct times) at home?	0	1	2	3	4	5	6	7	8	9	10
	Not at all										Extremely well

RHDS Scoring Sheet – Original Version

Participant ID Number: _____

Question	Item Score	Calculated Scale Score
1 Ready to go home		Not Calculated
2 Description physical readiness		
3 Description of comfort	(reverse code)	
4 Description of strength		
5 Description of energy		
6 Description of stress	Exclude	Exclude
7 Description emotional readiness		
Personal Status Subscale Score	**Total Scores Items 2-7**	
8 Physical ability for self-care		
9 Knowledge of care needs		
10 Knowledge personal needs		
11 Knowledge medical needs		
12 Knowledge problems to watch		
13 Knowledge of who to call		
14 Knowledge of restriction		
15 Knowledge of follow-up		
16 Knowledge of services		
Knowledge Subscale Score	**Total Score Items 8-16**	
17 Ability to handle demands		
18 Ability to perform personal care		
19 Ability to perform medical tx		
Coping Ability Score	**Total Score Items 17-19**	
20 Amount of emotional support		
21 Help with personal care		
22 Help with household activities		
23 Help with medical care needs		
Expected Support Score	**Total Score Items 20-23**	
	Total Score All Subscales	

APPENDIX I: QUALITY OF DISCHARGE TEACHING SCALE AND SCORING INFORMATION

ID# ☐☐☐

QUALITY OF DISCHARGE TEACHING SCALE - ADULT FORM

Please check or circle your answer. Most of the responses are on a scale from 0 to 10. The words below the number indicate what the 0 or the 10 means. Pick the number between 0 and 10 that best describes how you feel. For example, circling number 7 means you feel more like the description of number 10 than number 0 but not completely.

1a. How much information did you need from your nurses about **taking care of yourself** after you go home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
1b. How much information did you receive from your nurses about **taking care of yourself** after you go home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
2a. How much information did you need from your nurses about your **emotions** after you go home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
2b. How much information did you receive from your nurses about your **emotions** after you go home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
3a. How much information did you need from your nurses about your **medical needs or treatments** (for example, caring for a surgical incision, respiratory treatments, exercise, rehabilitation, or taking mediations in the correct amounts and at the correct times) after you go home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
3b. How much information did you receive from your nurses about your **medical needs or treatments** after you go home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
4a. How much **practice** did you need with your **medical treatments or medications** before going home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
4b. How much **practice** did you receive with your **medical treatments or medications** before going home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal

ID# ☐☐☐

5a. How much information <u>did you need</u> from your nurses about **who and when to call** if you have problems after you go home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
5b. How much information <u>did you receive</u> from your nurses about **who and when to call** if you have problems after you go home?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
6a. How much information <u>did your family member(s) or others need about your care</u> after you go home from the hospital?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
6b. How much information <u>did your family member(s) or others receive about your care</u> after you go home from the hospital?	0 None	1	2	3	4	5	6	7	8	9	10 A great deal
7. How much did the information provided by your nurses answer your **specific concerns and questions?**	0 Not at all	1	2	3	4	5	6	7	8	9	10 A great deal
8. How much did your nurses **listen** to your concerns?	0 Not at all	1	2	3	4	5	6	7	8	9	10 A great deal
9. Were your nurses **sensitive** to your personal beliefs and values?	0 Not at all	1	2	3	4	5	6	7	8	9	10 A great deal
10. Did you like the way nurses **taught** you about how to care for yourself at home?	0 Not at all	1	2	3	4	5	6	7	8	9	10 A great deal
11. Was the information your nurses provided about caring for yourself presented to you in a way you could understand?	0 Not at all	1	2	3	4	5	6	7	8	9	10 Always
12. Did your nurses **check** to make sure you understood the information and instructions?	0 Not at all	1	2	3	4	5	6	7	8	9	10 A great deal
13. Did you receive **consistent** (the same) information from your nurses, doctors, and other health workers?	0 Not at all	1	2	3	4	5	6	7	8	9	10 Always

ID# ☐☐☐

14. Was the information about caring for yourself given to you **at times that were good for you?**	0 1 2 3 4 5 6 7 8 9 10 Not at all Always
15. Was the information you received from your nurses provided at **times when your family member(s) or others could attend?**	0 1 2 3 4 5 6 7 8 9 10 Not at all Always
16. Did your nurses help you to feel **confident** in your ability to care for yourself at home?	0 1 2 3 4 5 6 7 8 9 10 Not at all A great deal
17. How confident do you feel that you would **know what to do in an emergency?**	0 1 2 3 4 5 6 7 8 9 10 Not at all A great deal
18. Did the information your nurses provided about your care at home **decrease your anxiety** about going home?	0 1 2 3 4 5 6 7 8 9 10 Not at all A great deal

Thank you for responding to our survey.

Quality of Discharge Teaching Scale Description and Scoring (Weiss, M., 2012)

The Quality of Discharge Teaching Scale (QDTS) was developed to measure patients' perceptions of the discharge teaching received from nursing staff in preparation for discharge. Discharge teaching was conceptualized as the composite of teaching provided by nurses over the course of hospitalization to prepare the patient for managing their own care and recovery in the post-hospitalization period. The QDTS is a measure of the receiver characteristics of the nursing process of discharge teaching. Three formats of the tool have been developed for use in 3 separate populations: adult medical-surgical, new mother, and parents of hospitalized children. The QDTS consists of 24 items that are common across the 3 formats of the QDTS.

Administration Instructions:

- The QDTS is designed to be self-administered but can be read to a patient if visual or motor impairments preclude independent completion by the patient.
- The instrument is completed on the day of discharge after the decision to discharge is made and within 4 hours of the patient's projected discharge time.
- The instrument takes approximately 10 minutes to complete.

Scoring Instructions:

- The instrument consists of 3 subscales:
  - Content needed: Items 1a, 2a, 3a, 4a, 5a, 6a
  - Content received: Items 1b, 2b, 3b, 4b, 5b, 6b
  - Delivery: Items 7,8,9,10,11,12,13,14,15,16,17,18.
  -
- Subscale scores are created by summing the item scores

- Total scale score is calculated by adding the 'content received' and 'delivery' subscale scores (the total scale score contains 18 items)
- A 'content difference' subscale score can be computed by creating a difference score for each content item (for example 1diff= 1b-1a) then summing the 6 difference scores.
- Based on a study of 1800 patients completed in 2009 (manuscript in process), we are recommending the use of subscale scores rather than total scores in analyses. The scales perform differently in predictive analyses.

Weiss, M.E., et al., (2007). Perceived readiness for hospital discharge in adult medical-surgical patients. Clinical Nurse Specialist, 21 (1), 1-12.

Maloney, L.R. & Weiss, M.E. (2008)Patients' perception of hospital discharge informational needs. *Clinical Nursing Research*, 17. 200-219.

APPENDIX J: POST-DISCHARGE COPING DIFFICULTY SCALE AND SCORING INFORMATION

Study ID_____ Post-Discharge Coping Difficulty Scale Adult

Since you have been home from the hospital:	
1. How stressful has your life been?	0 1 2 3 4 5 6 7 8 9 10 Not at all Extremely What has been stressful?
2. How much difficulty have you had with your recovery?	0 1 2 3 4 5 6 7 8 9 10 None at all A great deal What has been difficult?
3. How much difficulty have you had with caring for yourself?	0 1 2 3 4 5 6 7 8 9 10 None at all A great deal What has been difficult?
4. How much difficulty have you had with managing your medical condition?	0 1 2 3 4 5 6 7 8 9 10 None at all A great deal What has been difficult?
5. How difficult has the time been for your family members or other close persons?	0 1 2 3 4 5 6 7 8 9 10 Not at all Extremely What has been difficult?
6. How much help have you needed with caring for yourself?	0 1 2 3 4 5 6 7 8 9 10 Not at all A great deal
7. How much emotional support have you needed?	0 1 2 3 4 5 6 7 8 9 10 Not at all Extremely

8. How confident have you felt in your ability to care for your own needs?	0	1	2	3	4	5	6	7	8	9	10
	Not at all										Completely
9. Have you been able to take care of your medical needs such as medications or treatments?	0	1	2	3	4	5	6	7	8	9	10
	Not at all										Extremely well
10. How well have you adjusted to being at home since your hospitalization?	0	1	2	3	4	5	6	7	8	9	10
	Not at all										Extremely well

Thank you for participating in our study.

PDCDS scoring instructions(M. Weiss, 2011)

The PDCDS is a 10 item instrument that measures the concept of coping difficulty following hospital discharge.

To score the instrument:

a. Reverse code items 8, 9, 10

b. Sum the responses to items 1,2,3,4,5,6,7 and the reverse coded items 8, 9, and 10

Higher scores represent greater coping difficulty.

APPENDIX K: CARE TRANSITION MEASURE AND SCORING INFORMATION

CARE TRANSITIONS MEASURE (CTM-15)

Patient Name: _____ Date: _____

Who completed interview? θ Patient θ Caregiver

The first few statements are about the time you were in the hospital . . .

1. Before I left the hospital, the staff and I agreed about clear health goals for me and how these would be reached.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

2. The hospital staff took my preferences and those of my family or caregiver into account in deciding ***what*** my health care needs would be when I left the hospital.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

3. The hospital staff took my preferences and those of my family or caregiver into account in deciding ***where*** my health care needs would be met when I left the hospital.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

The next set of statements is about when you were preparing to leave the hospital . . .

4. When I left the hospital, I had all the information I needed to be able to take care of myself.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

5. When I left the hospital, I clearly understood how to manage my health.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

6. When I left the hospital, I clearly understood the warning signs and symptoms I should watch for to monitor my health condition.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

7. When I left the hospital, I had a readable and easily understood written plan that described how all of my health care needs were going to be met.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

8. When I left the hospital, I had a good understanding of my health condition and what makes it better or worse.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

9. When I left the hospital, I had a good understanding of the things I was responsible for in managing my health.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

10. When I left the hospital, I was confident that I knew what to do to manage my health.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

11. When I left the hospital, I was confident I could actually do the things I needed to do to take care of my health.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

The next statement is about your follow-up doctors' appointments . . .

12. When I left the hospital, I had a readable and easily understood written list of the appointments or tests I needed to complete within the next several weeks.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

The next set of statements is about your medications…

13. When I left the hospital, I clearly understood the ***purpose*** for taking each of my medications.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

14. When I left the hospital, I clearly understood ***how*** to take each of my medications, including how much I should take and when.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

15. When I left the hospital, I clearly understood the possible ***side effects*** of each of my medications.

Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ Don't Remember/ Not Applicable

Scoring the CTM-15

Overall Quality of Care Transition Score: This score reflects the overall quality of the care transition, with lower scores indicating a poorer quality transition, and higher scores indicating a better transition.

Scoring Protocol

Step 1: Code responses as Strongly Disagree =1; Disagree =2; Agree =3; Strongly Agree =4.

Step 2: Assign code (e.g., 9) to missing responses, and a different code (e.g., 99) to Don't Know/Don't Remember/Not Applicable. These will not be counted as answered questions for Step 3a, as the 9 and 99 codes are not included in the 4 point Likert scale and therefore will not contribute to the CTM score. You can, however, get a count of 99's in order to calculate a percentage of these responses relative to questions answered (step 3a.)

Step 3: Compute a mean score for each respondent based only on the questions answered. To do this:

- Step 3a: For each respondent count the number of questions answered. (In SPSS, Step 3a is accomplished with the Count command in the Transform menu and Step 3b by a Compute command).
- Step 3b: For each respondent obtain a summated score by adding Step 1 values across answered questions.
- Step 3c: Obtain **mean** for each respondent by dividing Step 3b result by Step 3a result. The name of this value is **mean**.

Step 4: Perform a linear transformation of the result of Step 3c to obtain a user-friendly 0-100 score. Use the following formula:

- 0-100 CTM Score for each respondent = [(Step 3c result-1)/3]*100 .
- In SPSS Syntax this computation is:

```
COMPUTE CTM15_0_100 = (((ctm15)-(1))/(3))*100 .
EXECUTE .
```

APPENDIX L: CURRICULUM VITAE

Jacqueline LaManna, MSN, ANP, BC-ADM, CDE

University of Central Florida College of Nursing
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Cocoa, FL 32922
(321) 433-7855—Office
(321) 433-7863—Fax
jacqueline.lamanna@ucf.edu

EDUCATION

Year	Degree	Institution	Clinical Major	Role Preparation
In progress	PhD(c)	University of Central Florida, Orlando, FL	Nursing	Research
1991	MSN	University of Florida, Gainesville, FL	Adult Health	Nurse Practitioner
1985	BSN	Purdue University, West Lafayette, IN	Nursing	
1983	ADN	Purdue University, West Lafayette, IN	Nursing	

LICENSURE/CERTIFICATION

ARNP	Florida, 1636342
Adult NP	ANCC, Expires December, 2016
Advanced Diabetes Management NP	NCBDE, Expires February, 2015
Certified Diabetes Educator	NCBDE, Expires, September, 2013

EMPLOYMENT

***ACADEMIC APPOINTMENTS*:**

2007-present	**Brevard Regional Campus Manager**, University of Central Florida College of Nursing, Southern Regional Campus, Cocoa
2005-present	**Instructor and Lab Coordinator,** University of Central Florida School of Nursing Southern Regional Campus, Cocoa
Fall, 2004; Fall 2003; Fall, 2001	**Clinical Preceptor,** University of Central Florida, RN to BSN Program
Spring, 1998	**Clinical Preceptor,** University of Florida, MSN/Adult Nurse Practitioner Program
Fall, 1991; Fall, 1993; Fall 1996	**Adjunct Faculty** – Health Assessment/School of Nursing, University of Central Florida, School of Nursing, Cocoa , FL
1983-1984	**RN Nursing Skills Lab Assistant**, Purdue University, West Lafayette, IN

CLINICAL APPOINTMENTS:

1998-2005	**Diabetes Nurse Practitioner/Manager**, Health First Diabetes Center, Health First, Inc., Melbourne, FL
1997-1998	**Adult Nurse Practitioner**, HOPE Clinical Services, Health First, Inc., Melbourne, FL
1992-1997	**Clinical Nurse Specialist, Medicine**, Holmes Regional Medical Center, Health First, Inc., Melbourne, FL
1990-1992	**Education Coordinator**, Holmes Regional Medical Center, Melbourne, FL
1990	**Staff Nurse Post Anesthesia Care Unit** (per diem) – Holmes Regional Medical Center, Melbourne, FL
1986-1990	**Staff Nurse/Nurse Clinician Progressive Care Unit** – Holmes Regional Medical Center, Melbourne, FL

1985-1986 **Home Care Nurse** – Trico Home Health Services, Melbourne, FL
1984-1985 **Staff Nurse Labor and Delivery**, Home Hospital, Lafayette, IN

PUBLICATIONS

NON-REFEREED JOURNALS OR PUBLICATIONS: (* Data-based articles)

LaManna, J. (2003-2005). *Health First Health Plans Diabetes Newsletter,* Quarterly Publication
LaManna, J. (2005). *Fine tuning your diabetes: Beginning Symlin therapy* [Patient Learning Module]. Melbourne, FL: Health First, Inc.
LaManna, J. (2005). *Fine tuning your diabetes:Beginning Byetta therapy* [Patient Learning Module]. Melbourne, FL: Health First, Inc.
LaManna, J. (2005). *Fine tuning your diabetes medicines*. (2nd ed.) [Patient Learning Module]. Melbourne, FL: Health First, Inc.
LaManna, J. (2005). *Fine tuning your diabetes: Intensifying your insulin regime* (3rd ed.) [Patient Learning Module] Melbourne, FL: Health First, Inc.
LaManna, J. (2005). *Fine tuning your insulin* (4th ed.) [Patient Learning Module]. Melbourne, FL Health First, Inc.
LaManna, J. (2005). *Staying well with diabetes* (7th ed.) [Patient Learning Module]. Melbourne, FL: Health First, Inc.
LaManna, J (2005). *Staying well with diabetes: Comprehensive ADA program curriculum* (7th ed.). Melbourne, FL: Health First, Inc.
LaManna, J. (2004). *Fine tuning your exercise program.* [Patient Learning Module]. Melbourne, FL: Health First, Inc.
LaManna, J. (2003). *Fine tuning your diabetes monitoring* [Patient Learning Module]. Melbourne, FL: Health First, Inc.
LaManna, J. (2000.). *Nursing exemplar: When no one cares*. Melbourne, FL: Health First, Inc.
LaManna, J. (1993). *Care of the hospitalized elder.* [SLM}. Melbourne, FL: Holmes Regional Medical Center.
LaManna, J. (1993). *Patient education resource guide.* Melbourne, FL: Holmes Regional Medical Center.
LaManna, J. (1992). *Stepped skill instruction manual for patients and caregivers* .Melbourne, FL: Holmes Regional Medical Center.
LaManna,, J. (1992). *Preventing medication errors.* (SLM) Melbourne, FL: Health First, Inc.
LaManna, J. (1991). *Factors associated with the development of femoral artery cannulation complications.* Gainesville, FL: University of Florida (master's thesis).

***BOOK CHAPTERS*:**

LaManna, J. & Amidei, C. (2013). Endocrine alterations. In M. L. Sole, D. G. Klein & M. J. Moseley (Eds.). *Introduction to critical care nursing* (6th ed.). St. Louis: Elsevier.
LaManna, J. (2013). QSEN best practice exemplars. In M. L. Sole, D. G. Klein & M. J. Moseley (Eds.). *Introduction to critical care nursing* (6th ed.). St. Louis: Elsevier.
LaManna, J. (2013). Endocrine alterations. In M. L. Sole, D. G. Klein & M. J. Moseley (Eds.). *Instructor manual to accompany introduction to critical care nursing* (6th ed.). St. Louis: Elsevier.
LaManna, J. (2009). End-of-life in the critical care unit. In M. L. Sole, D. G. Klein & M. J. Moseley (Eds.). *Instructor manual to accompany introduction to critical care nursing* (5th ed.). St. Louis: Elsevier.
LaManna, J. (2009). Endocrine alterations. In M. L. Sole, D. G. Klein & M. J. Moseley (Eds.). *Instructor manual to accompany introduction to critical care nursing* (5th ed.). St. Louis: Elsevier.

RESEARCH and GRANTS

Date	Role	Title	Agency	Type	Amount
In process	PI	Hospital-to-Home Transition Experiences of Older Adults with Diabetes	University of Central Florida College of Nursing	Dissertation	Not funded
2007	Co-investigator	College of Nursing Predictive Admission Criteria	University of Central Florida College of Nursing	Intramural	Not funded
2004	Co-PI	An Analysis of Pregnancy Outcomes for Women with the Diagnosis of Gestational Diabetes Who Participate in a Coordinated Community Gestational Diabetes Program	Health First	Intramural	Not funded
1997	Site coordinator	Project Thunder	American Association of Critical Care Nurses	Extramural	Not funded
1992	PI	Effect of Hands on Caregiver Education on Home Care Outcomes of High Risk Elders	Holmes Regional Medical Center; Florida Institute of Technology	Joint grant	$2000
1991	PI	Factors Associated with the Development of Femoral Artery Cannulation Complications	University of Florida	Thesis	Not funded

PRESENTATIONS—NATIONAL/INTERNATIONAL

Date	Type	Title	Conference Title, City/State	Refereed/ Invited
02/12/2009	Poster	An Examination of Insulin Usage Patterns in Older Adults	Southern Nursing Research Society annual conference, Baltimore, MD	Refereed
02/22/2008	Poster	Transitions in Older Adulthood	Southern Nursing Research Society annual conference, Birmingham, AL	Refereed
05/31/1998	Poster	Interdisciplinary High Risk Geriatric Team and Critical Pathway	American Association of Critical Care Nurses National Teaching Institute, Los Angeles, CA	Refereed

PRESENTATIONS—LOCAL/REGIONAL/STATE

04/11/13 **Hospital to Home Transition Needs of Older Adults;** Health First Clinical Nurse Educators

10/08/11 **Hospital to Home Transition Experiences of Older Adults with Diabetes;** UCF Southern Regional Campus Brown Bag, Cocoa, FL

01/04/11 **Quality and Safety in Nursing Education: An Overview;** co-presented with Leslee D'Amato-Kubiet, UCF College of Nursing Lunch and Learn, Orlando, FL

07/10/10 **Nursing Care of the Hospitalized Patient with Diabetes**; Wuesthoff Hospital GN Program, Rockledge, FL

4/2008 **Transitions in Older Adulthood,** poster presented at Sigma Theta Tau Research Day, Orlando Florida

4/2007 **Technological Competence as Caring: A Middle Range Theory**, poster presented at UCF

	College of Nursing Research Day, Orlando, FL
01/27/07	**Diabetes Medications,** Health First Rehabilitation Update; Cocoa Beach, FL
10/14/06	**Diabetes and Heart Disease**, Concerned Hearts Support Group; Melbourne, FL
05/10/06	**The Changing Face of Childhood Diabetes,** University of Central Florida/Winter Park Health Foundation, Orlando, FL
09/06/05	**Promoting Exercise Safety in People with Diabetes**, Pro Health and Fitness Center, Palm Bay, FL
08/31/05	**Milestones in Life: Diabetes Through the Lifespan,** Health First, Inc., Melbourne, FL Repeated 3 times per year
08/29/05	**School Management of Diabetes,** Brevard Public School Wellness Conference, Satellite Beach, Florida
06/21/05	**Intensifying Insulin: Taking Insulin to the Next Level**, Health First Home Care, Palm Bay, FL
06/16/05	**Critical Care Management of Endocrine Disturbances**, Health First, Inc, Melbourne, FL; Repeated annually
04/12/05	**Fine Tuning Your Diabetes Exercise Program**, Pro Health and Fitness Center, Melbourne, FL
11/10/04	**Diabetes in Children** (guest lecturer), Keiser College, Melbourne, FL
10/27/04	**What's New in Diabetes?** Health First Home Care, Merritt Island, FL
10/15/04	**Management of Acute Diabetes Complications** (guest lecturer), Keiser College, Melbourne, FL
08/18/04	**Fitting the Pieces of the Puzzle: Medication Management in Type 2 Diabetes**, Health First, Inc, Melbourne, FL (repeated quarterly)
12/13/03	**Management of the Surgical Patient with Diabetes**, Health First, Inc., Melbourne, FL
10/24/03	**The Numbers Game: Lab Implication of Diabetes**, Florida East Coast Point of Care Conference, Cape Canaveral, FL
12/16/02	**Medications that Affect Diabetes Control,** American Diabetes Association Central Florida Chapter Diabetes Expo, Satellite Beach, FL
10/20/02	**Diabetes in African American Women,** Greater Faith Temple COGIC, Cocoa Beach, FL
09/04/02	**Medication Management of Type 2 Diabetes** , HOPE Clinical Services, Melbourne, FL
06/29/02	**Management of Diabetes Medications: What is New on the Horizon**, American Diabetes Association Central Florida Region Expo, Melbourne, FL
06/27/02	**Metabolic Crisis in Diabetes,** Cape Canaveral Hospital, Cocoa Beach, FL
05/08/02	**The Pathway to Higher Education**, Nursing Professional Development Fair, Melbourne, FL
09/28/01	**Gestational Diabetes**, Health First Women and Children's Center, Melbourne, FL
09/12/01	**Diabetes Clinical Update,** Health First, Inc. Melbourne, FL
11/18/00	**New Diabetes Equipment and Devices,** American Diabetes Association Expo Central Florida Affiliate, Melbourne, FL
10/12/00	**Nurses Who Make a Difference Exemplar Presentation**, Health First, Melbourne, FL
1992-2000	Numerous continuing education program for professional and community continuing education programs on disease/case management, physical assessment, fluid/electrolyte management, cardiovascular care, respiratory care, long term mechanical ventilation, medical-surgical graduate nurse preparation and geriatric care issues

HONORS/AWARDS

Date	Award	Organization/Group
2012	Knightengale Schloar	University of Central Florida, College of Nursing
2010	University of Central Florida College of Nursing Undergraduate Teaching Excellence Award	University of Central Florida, College of Nursing
2008	Merit Award, Poster	Sigma Theta Tau Research Day, Orlando, FL
2003	Team Award, Diabetes Evidenced Based	Health First, Inc, Melbourne, FL

Date	Award	Organization/Group
	Practice	
2003	Team Award, NCQA Preparation	Health First, Inc, Melbourne, FL
2003	Nominee, Golden Eagle Award	Health First, Inc, Melbourne, FL
2000	Clinical Excellence Award	Health First, Inc, Melbourne, FL
1995	Baxter Award for Quality Innovation in Health Care, (Subject: Partners in Quality: A Nursing Home Quality Action Team – authored paper for organization)	American Association of Nurse Executives
1985	University Top Woman Scholar Award	Purdue University, West Lafayette, IN

PROFESSIONAL ACTIVITIES & COMMUNITY SERVICE

PROFESSIONAL ORGANIZATIONS:

Date	Organization	Role
2011, 2012	National Certification Board for Diabetes Educators	Item writer for revised advanced diabetes management exam
2009-present	American Association of Diabetes Educators	Program reviewer
2005-2010	American Nurses' Credentialing Center	Expert Panel, Advanced Diabetes Management Exam
1996-2008	Health First Institutional Review Board	Affiliated then transitioned to non-affiliated member
1984-present	Sigma Theta Tau, Theta Epsilon Chapter	Member
1993-present	American Association of Diabetes Educators	Member
1993-present	American Diabetes Association	Member
1990-1998	American Association of Critical Care Nurses	Member
1991-1995	Space Coast Association of Critical Care Nurses	Member
1991-1995	American Nurses' Association	Member
1991-1995	Florida Nurses' Association, District 31	District Board Member, Vice-President, and Newsletter Editor

COMMUNITY SERVICE:

Date	Organization	Role
2009-2011	Brevard Healthcare Forum, Behavioral Health Subcommittee	College representative
2007-present	Astronaut High School Health Advisory Committee	College representative
2005-2007	Ascension Catholic Church Health/Parish Nursing Advisory Board	Member
1997-2008	Girl Scouts of Citrus Council	Co-Leader Girl Scout Troop 257
2006-present	Central Florida Boy Scouts of America	Merit badge counselor
Fall, 2004	Brevard County Emergency Management	Volunteer, Bayside Special Needs Shelter – Hurricane Frances and Jeanne
1998-2005	Adults with Diabetes Support Group	Facilitator
1998-2005	Young Adults with Diabetes/Insulin Pump Support Group	Facilitator

Date	Organization	Role
2004	Central Florida Affiliate, American Diabetes Association	Planning Committee, Brevard Walk
2003	Partners in Quality Nursing Home Community Action Team	Member

CONSULTATION:

Date	Consulting Organization/Individuals	Consultation Role
August, 2009	Hibiscus OB-GYN	Gestational diabetes program development
July, 2006	Sebastian River Medical Center	Establishment of ADA Recognized Diabetes Self-Management Program
February, 2006	Ascension Catholic School	School management of diabetes
Spring, 2002	City of Melbourne Fire Rescue	Diabetes management in the field

UNIVERSITY ACTIVITIES

UNIVERSITY SERVICE: (Cummulative)

Date	Level	Committee	Role
2011-2012	College	Undergraduate Annual Evaluation, Standards and Procedures Task Force (ad hoc)	Member
2011	College	Undergraduate Search Committee	Member
2007-present	College	Basic BSN Cocoa Campus	Program Manager
2006-present	College	Basic BSN Cocoa Campus	Lab Coordinator
2006-present	College	Brevard Campus Advisory Committee	Chairperson (2007-present)
2007-present	College	Undergraduate Admission, Progression and Graduation Committee	Member
2006, 2009-2011	College	Undergraduate Curriculum Committee	Member
2009-2010	College	Strategic Planning Committee (ad hoc)	Member

DISSERTATION / THESIS / RESEARCH PROJECT ADVISING:

Dates	Student	Title	Level	Role
2012-2013	Samuel Foarde	Support Systems in Adolescents with Type 1 Diabetes Mellitus and the Relationship to Diabetes-Related Stress, Conflict, and Metabolic Control	Honors in the Major	Chair
2011-2012	Samantha Bainbridge	Hospital Experiences of Older Adults with Dementia	Honors in the Major	Chair
2010	Cindy Houser	Impact of Personal Opinions and Attitudes of Health Care Providers on the Quality of Care Provided to the Homeless Population	Honors in the Major	Chair
2010	Barbara Green	An Analysis of the Effectiveness of Common Nursing Interventions in the Prevention of Pressure Ulcer Development	Honors in the Major	Chair
2009-2010	Kelly Sullivan	Improving Nursing Care of Women Who Suffer Miscarriage	Honors in the Major	Chair

Dates	Student	Title	Level	Role
2009-2010	Jennifer Watts	A Comparative Analysis of the Effect of Critical Care Nursing Interventions on Acute Outcomes in Patients with Traumatic Brain Injury	Honors in the Major	Chair
2009-2010	Jessie Cameron	Family Presence During Resuscitation of Adult Patients	Honors in the Major	Chair

COURSES TAUGHT:

Semester	Course	Course Name	Enrollment	Role
Spring, 2013	NUR 4227 0070	Nursing Care of the Adult II	26	Co-instructor
Spring 2013	NUR 3634L 0070	Community Health Nursing Clinical	12	Co-instructor
Spring 2013	NUR 3755L 0073	Essentials of Nursing Clinical	9	Co-instructor
Spring 2013	NUR 3028L 0071	Essentials of Nursing Lab	19	Instructor
Spring 2013	NUR 3028L 0070	Essentials of Nursing Lab	20	Instructor
Spring 2013	NUR 3028 0070	Essentials of Nursing	40	Instructor
Fall, 2012	NGR 62012L 0011	Adult II Primary Care Clinical	5	Instructor
Fall, 2012	NGR 6342L 0012	Gender Health for APN's Clinical	4	Instructor
Fall, 2012	NUR 3225 0070	Nursing Care of the Adult II	25	Instructor
Fall, 2012	NUR 3145 0070	Pharmacology for Nursing Practice	25	Instructor
Summer 2012	NUR 3125 C070	Pathophysiology for Nursing Practice	35	Instructor
Summer 2012	NUR 4227L C071	Nursing Practicum	11	Instructor
Summer 2012	NUR 4227L C072	Nursing Practicum	7	Instructor
Spring 2012	NUR 3028 0070	Essentials of Nursing Practice	36	Instructor
Spring 2012	NUR 4227 0M70	Nursing Care of the Adult II	33	Co-instructor
Spring 2012	NUR 3634L 0072	Community Health Nursing Clinical	12	Instructor
Fall 2011	NGR 6242L 0014	Adult II Clinical for APNs	4	Instructor
Fall 2011	NGR 6941 0014	Advance Practice Practicum	7	Instructor
Fall 2011	NUR 3145 0070	Pharmacology for Nursing Practice	34	Instructor
Fall 2011	NUR 3225 0070	Nursing Care of the Adult I	35	Co-instructor
Fall 2011	NUR 3905 0070	Independent Study	1	Instructor
Summer 2011	NUR 3125 C070	Pathophysiology for Nursing Practice	38	Instructor
Summer 2011	NUR 4945L C071	Nursing Practicum	9	Instructor
Summer 2011	NUR 4945L C072	Nursing Practicum	9	Instructor
Spring 2011	NUR 3028L 0070	Essentials of Nursing Practice	37	Instructor
Spring 2011	NUR 4227 0M70	Nursing Care of the Adult II	30	Co-instructor
Spring 2011	NUR 3145 0001	Pharmacology for Nursing Practice	117	Instructor
Spring 2011	NUR 3634L 0071	Community Health Nursing Clinical	12	Instructor
Spring 2011	NUR 3028L 0072	Essentials of Nursing Clinical	13	Co-instructor
Spring 2011	NUR 3905 0070	Independent Study	1	Instructor
Fall 2010	NGR 6941 0014	Advance Practice Practicum	5	Instructor
Fall 2010	NGR 6941 0043	Advance Practice Practicum	2	Instructor
Fall 2010	NUR 3145 0070	Pharmacology for Nursing Practice	28	Instructor
Fall 2010	NUR 3225 0070	Nursing Care of the Adult I	29	Co-instructor
Summer 2010	NUR 3125 C070	Pathophysiology for Nursing Practice	37	Instructor
Summer 2010	NUR 4945L C071	Nursing Practicum	12	Instructor
Summer 2010	NUR 4945L C072	Nursing Practicum	10	Instructor
Spring 2010	NUR 3028 0070	Essentials of Nursing Practice	41	Instructor
Spring 2010	NUR 3028L 0071	Essentials of Nursing Practice Lab	21	Instructor
Spring 2010	NUR 3634L 0071	Community Health Nursing Clinical	14	Instructor
Spring 2010	NUR 4227 0070	Nursing Care of the Adult II	37	Co-Instructor

Semester	Course	Course Name	Enrollment	Role
Fall 2009	NGR 6240L 0011	Adult I Clinical (NP)	10	Instructor
Fall 2009	NUR 3145 0070	Pharmacology for Nursing Practice	33	Instructor
Fall 2009	NUR 3225 0070	Nursing Care of the Adult I	36	Co-Instructor
Fall 2009	NUR 3905 0070	Independent Study	3	Instructor
Summer 2009	NUR 3125 C071	Pathophysiology for Nursing Practice	35	Instructor
Summer 2009	NUR 4945L C072	Nursing Practicum	10	Instructor
Summer 2009	NUR 4945L C073	Nursing Practicum	7	Instructor
Spring 2009	NUR 3028 0070	Essentials of Nursing Practice	38	Instructor
Spring 2009	NUR 3028L 0071	Essentials of Nursing Practice Lab	19	Instructor
Spring 2009	NUR 3755L 0072	Essentials of Nursing Practice Clinical	13	Instructor
Spring 2009	NUR 3634L 0074	Community Health Nursing Clinical	12	Co-Instructor
Spring 2009	NUR 4227 0T70	Nursing Care of the Adult II	26 (ITV)	Co-Instructor
Fall 2008	NUR 3145 0070	Pharmacology in Nursing Practice	33	Instructor
Fall 2008	NUR 3225 0T70	Nursing Care of the Adult I	34 (ITV)	Co-Instructor
Summer 2008	NUR 3125 C071	Pathophysiology in Nursing Practice	34	Instructor
Summer 2008	NUR 4945L C072	Nursing Practicum	11	Instructor
Summer 2008	NUR 4945L C072	Nursing Practicum	6	Instructor
Spring 2008	NUR 3028 0070	Essentials of Nursing Practice	37	Instructor
Spring 2008	NUR 3028L 0070	Essentials of Nursing Practice Lab	17	Instructor
Spring 2008	NUR 4227 0070	Nursing Care of the Adult II	27	Co-Instructor
Fall 2007	NUR 3125 0070	Pathophysiology for Nursing Practice	33	Instructor
Fall 2007	NUR 3145 0070	Pharmacology for Nursing Practice	33	Instructor
Fall 2007	NUR 3225L 0072	Nursing Care of the Adult I Clinical	8	Co-instructor
Fall 2007	NUR 3225L 0072	Nursing Care of the Adult I Clinical	9	Co-Instructor
Summer 2007	NUR 6482L C012	Women's Health Clinical (NP)	7	Instructor
Summer 2007	NUR 3940 C072	Nursing Internship	7	Instructor
Summer 2007	NUR 4835 C071	Role Transition	40	Instructor
Summer 2007	NUR 4945L C071	Nursing Practicum	10	Instructor
Summer 2007	NUR 4945L C072	Nursing Practicum	10	Instructor
Spring 2007	NGR 6242L OM13	Adult II Clinical (NP)	7	Instructor
Spring 2007	NUR 3028 0070	Essentials of Nursing	34	Instructor
Spring 2007	NUR 3028L 0072	Essentials of Nursing Lab	17	Instructor
Spring 2007	NUR 3028L 0073	Essentials of Nursing Lab	17	Instructor
Fall 2006	NUR 3235 0T70	Promoting Physical and Mental Health	38 (ITV)	Co-Instructor
Fall 2006	NUR 3235L 0070	Promoting Physical and Mental Health Clinical	12	Instructor
Summer 2006	NUR 3940 C072	Internship	3	Instructor
Summer 2006	NUR 4945L C072	Nursing Practicum	14	Instructor
Summer 2006	NUR 4945L C073	Nursing Practicum	11	Instructor
Spring 2006	NUR 3825 0070	Role of the Professional Nurse	37	Instructor
Spring 2006	NUR 3026L 0071	Therapeutic Interventions	19	Instructor