# OCCUPATIONAL THERAPY IN ACUTE CARE: PREDICTORS OF OCCUPATIONAL COMPETENCE AND HOSPITAL READMISSION

A DISSERTATION

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BY

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DEDICATION

For my late grandparents, Josh and Martha Morriss, who were both lifelong learners and champions of education in their family and community.

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ABSTRACT

MELANIE MORRISS TKACH

OCCUPATIONAL THERAPY IN ACUTE CARE: PREDICTORS OF OCCUPATIONAL COMPETENCE AND HOSPITAL READMISSION

MAY, 2020

PURPOSE: This dissertation explored predictors of occupational competence and hospital readmission for individuals with chronic health conditions in acute care. It also investigated occupational therapists' perspectives on the implementation of standardized assessments in the hospital.

METHODS: Individuals with an admitting diagnosis of chronic obstructive pulmonary disease, congestive heart failure, coronary artery bypass graft, total hip arthroplasty, total knee arthroplasty, and pneumonia ($n$ = 52) were evaluated with measures of self-care function, environmental impact, functional cognition, and occupational competence. A phone call or medical records review was conducted 30-40 days after discharge to obtain hospital readmissions data. A feasibility group was conducted with occupational therapists who work in acute care ($n$ = 3); they completed measures of assessment acceptability, appropriateness, and feasibility for the standardized assessments utilized in the study.

RESULTS: Self-care function was a significant positive predictor of occupational competence ($\beta = 0.43$, $p = 0.01$), and environmental impact was a significant negative predictor ($\beta = -0.38$, $p = 0.01$) of occupational competence. These variables accounted for 24% of the variance in occupational competence. Occupational competence was a significant negative predictor of hospital readmission (OR = 0.81, $p = 0.02$), and functional cognition was a significant positive predictor of hospital readmission (OR = 2.19, $p = 0.04$). Relationships between other predictors and outcome variables failed to reach significance. Therapists rated the Activity Measure of Post-Acute Care (AM-PAC) as the most acceptable, appropriate, and feasible measure for acute care, but results should be interpreted with caution.

CONCLUSIONS: Self-care function and environmental impact predict occupational competence in individuals with chronic health conditions, whereas occupational competence and functional cognition predict hospital readmission for this population. These variables should be considered in occupational therapy evaluations and treatments to promote optimal client outcomes. Based on therapist perceptions, the AM-PAC may be a reasonable measure to assess outcomes in acute care. Results demonstrate that occupational therapists have the knowledge, skills, and tools needed to promote positive outcomes for individuals with chronic health conditions in acute care. Further research is needed to improve the generalizability of results and examine the efficacy of standardized measures in this setting.

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# CHAPTER I

# INTRODUCTION

## Statement of the Problem

Occupational therapy services in acute care promote early mobilization, restore function, prevent functional decline, and coordinate care for clients with critical medical conditions (American Occupational Therapy Association [AOTA], 2018). Occupational therapists in this setting use a quick, informal assessment approach to design short-term treatment plans and make discharge recommendations. They rely on deductive reasoning, chart reviews, and prior experiences with similar diagnoses to determine where to focus and what information to gather (Blaga & Robertson, 2008; Craig, Robertson, & Milligan, 2004; Robertson & Blaga, 2013; Tsai & Peterson, 2019). Therapists supplement those assumptions with clinical observations of functional status including impairment-based tests, such as range of motion screens, to improve accuracy in clinical decision making. However, client interview and clinical observation alone may not identify how functional limitations impact complex activities of daily living nor provide an adequate picture of client's treatment and discharge needs (AOTA, 2017; Baum & Wolf, 2013; Blaga & Robertson, 2008; Kielhofner & Forsyth, 2008; Taylor, 2017). Occupation-focused standardized measures that examine underlying impairments in the context of occupational performance may help occupational therapists predict client outcomes and therapy needs more objectively (Kielhofner & Forsyth, 2008; Tsai & Peterson, 2019).

While occupation-focused standardized measures exist in the field of occupational therapy, their acceptability, appropriateness, and feasibility have not been established in the acute care setting but should be considered for successful implementation (Proctor et al., 2010).

## Statement of the Purpose

This dissertation explores predictors of occupational competence and hospital readmission for individuals with chronic medical conditions in the acute care setting. It also investigates occupational therapists' perceptions on the implementation of specific standardized measures in acute care. The ultimate goal is to identify significant predictors of occupational competence and hospital readmission so that occupational therapists can evaluate them objectively and make effective discharge recommendations that help clients transition home successfully without frequent readmissions.

## Theoretical Framework

The following section highlights theoretical models that frame the dissertation study and relates those models and key theoretical constructs to specific research questions. Figures are included to illustrate key theoretical constructs as they relate to the dissertation study.

### Predictors of Occupational Competence and Hospital Readmission

The model of human occupation (MOHO) was used to structure Research Questions One and Two of the dissertation. The MOHO describes how an individual is motivated to engage in meaningful occupations (volition) as well as their patterns of occupational performance (habituation) and ability to perform occupations in relevant

contexts (performance capacity; Taylor, 2017). At the most basic level, performance capacity, a concept that is closely related to the mainstream term functional status, is required for occupational participation. When an individual uses their performance capacity, or functional status, to participate in occupation over time, occupational adaptation, or a pattern of ongoing positive occupational behavior that promotes health and well-being, occurs (Taylor, 2017). Occupational adaptation is a combination of occupational identity, occupational competence, and environmental impact. See Figure 1 for an illustration of these constructs.

**Predictors of occupational competence**. Research Question One explores the predictors of occupational competence, a key element of occupational adaptation within the MOHO. Occupational competence is the ability to use one's performance capacity, or functional status, to enact an ongoing pattern of occupational participation consistent with one's interests and values (Baron, Kielhofner, Iyenger, Goldhammer, & Wolenski, 2006; Taylor, 2017). Occupational competence progresses from the ability to meet basic personal responsibilities and role expectations to the capacity to achieve a satisfying life (Taylor, 2017).

Chronic illness can negatively impact occupational competence and occupational adaptation. Either the disease process or environmental constraints may limit occupational participation and reduce the satisfaction or enjoyment that an individual experiences during daily activities (Taylor et al., 2010; Taylor, 2017). Chronic illness may also cloud an individual's occupational identity, or sense of self, when they are unable to participate in occupations of interest or value to them (Taylor, 2017). Over

time, these limitations jeopardize quality of life. For example, individuals with chronic fatigue syndrome exhibit lower perceived competency and worse health-related quality of life (HRQoL) than those who display symptoms but never develop the disease (Taylor et al., 2010). Similarly, individuals with more severe cases of systemic lupus erythematosus report lower levels of competence and perceived quality of life (Wu, Pan, Hsu, Chung, & Chen, 2016). See Figure 2 for a graphic representation of the impact chronic illness has on occupational adaptation. While limited to no evidence exists on occupational competence in cardiovascular disease (CVD), congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or osteoarthritis (OA), the same relationship is expected due to similarities in the chronicity of the diagnoses and the impact they have on participation in daily life.

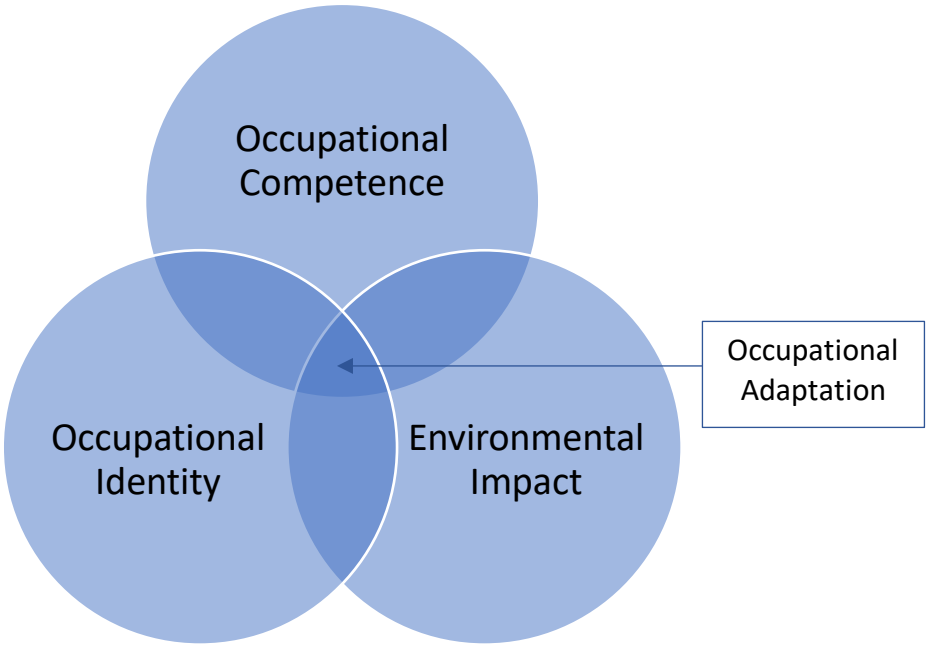


*Figure 1.* Occupational Adaptation. This figure displays the three elements of occupational adaptation as defined by the MOHO: occupational identity, occupational competence, and environmental impact. Occupational identity is an individual's sense of

self developed through participation. Occupational competence is the ability to enact a pattern of occupational participation that represents one's interests and values. Environmental impact refers to the support or constraint the environment imposes on an individual when they participate in meaningful occupation. Occupational adaptation is a pattern of ongoing positive occupational behavior that promotes health and well-being. See Taylor (2017).

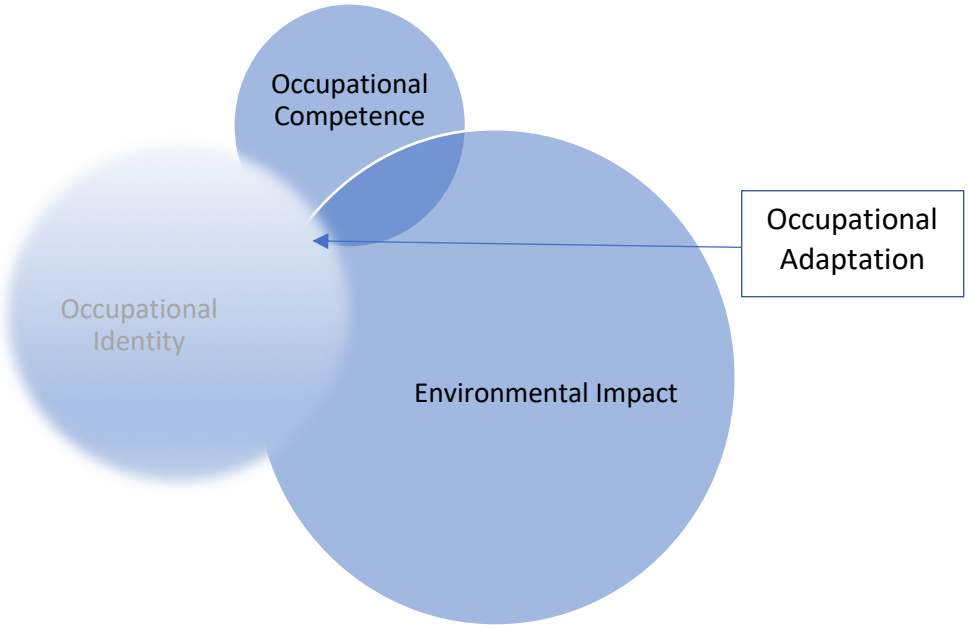


*Figure 2.* Chronic Illness and Occupational Adaptation. This figure shows how chronic illness influences the elements of occupational adaptation: (1) it clouds the individual's occupational identity, or sense of self, (2) it reduces occupational competence, and (3) it changes the environmental impact that the person experiences in daily life (e.g. the environment exerts a greater demand).

Occupational therapy services can positively influence occupational competence and, as a result, occupational adaptation or HRQoL. In general, occupational therapists implement a combination of therapeutic strategies, specific interventions, and, in some cases, MOHO-based protocols to promote occupational engagement (i.e., doing, thinking, and feeling), which results in positive behavioral changes for overall health and well-being (Taylor, 2017). More specifically, for individuals with chronic health conditions,

occupational therapists use client education and self-management training to improve occupational participation and performance, feelings of self-efficacy, and overall quality of life (Berger, Escher, Mengle, & Sullivan, 2018; Garvey, Connolly, Boland, & Smith, 2015; Hand, Law, & McColl, 2011; O'Toole, Connolly, & Smith, 2013). These client outcomes directly link to occupational competence, occupational identity, and occupational adaptation respectively. The overall efficacy of occupational therapy for individuals with chronic health conditions may be attributed to the opportunities clients have to trial and error self-management strategies during meaningful activities that are performed as treatment (Kralik, Koch, Price, & Howard, 2004; Rogers, Bai, Lavin, & Anderson, 2016). See Figure 3 to visualize how occupational therapy impacts clients with chronic health conditions.

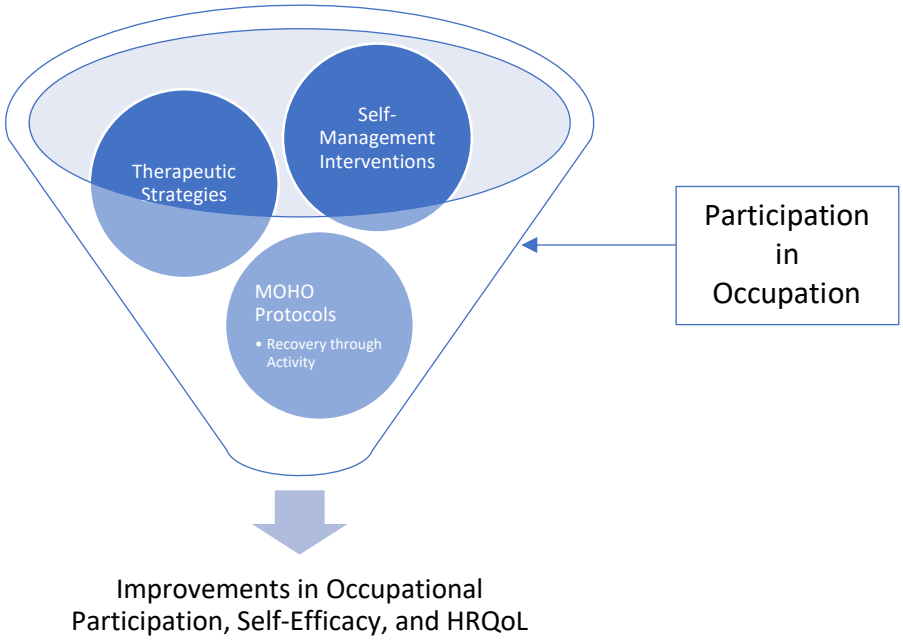


*Figure 3.* Occupational Therapy Treatment for Individuals with Chronic Health Conditions. The figure depicts the three primary methods occupational therapists use to promote occupational adaptation in clients with chronic health conditions and the specific outcomes supported by research. These treatment methods are implemented when the client participates in meaningful activities.

**Predictors of hospital readmission.** Research Question Two explores the predictors of hospital readmission. Occupational competence is included as a possible predictor due to its relationship with HRQoL, a known predictor of hospital readmission (Boult et al., 1993; Hasan et al., 2010; Rodriguez-Artalejo et al., 2005). Functional status, self-care function, functional cognition, and environmental impact are also considered because they encompass each of the MOHO domains to comprehensively capture information about individuals with chronic health conditions and their occupational lives. Thus, the standardized assessment battery used in this dissertation includes measures that examine all MOHO domains with special emphasis on domains that are related to hospital readmissions (i.e., performance capacity, environment; see Figure 4).

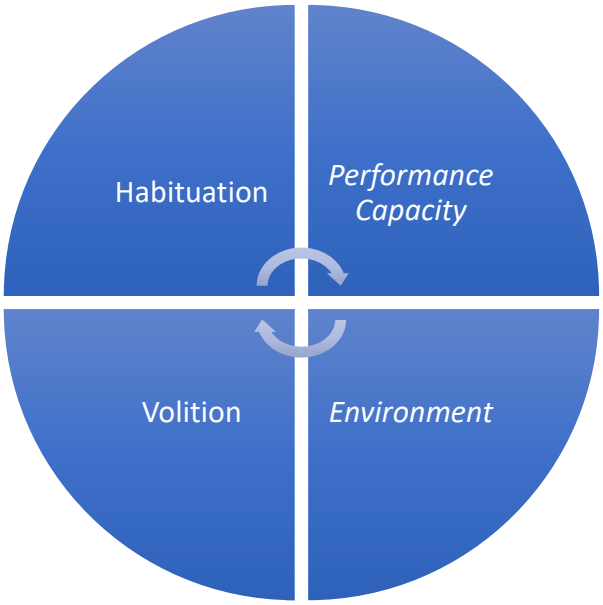


*Figure 4.* Model of Human Occupation Domains and Risk Factors for Hospital Readmission. Italics reflect Model of Human Occupation domains that relate to risk factors for hospital readmission.

**Therapist Perceptions on the Implementation of Standardized Measures**

A model of outcomes for implementation research proposed by Proctor et al. (2010) was used to frame Research Question Three. Implementation outcomes are the results of intentional attempts to incorporate new treatments or services into practice. They are a vital precursor for the achievement of optimal service or client outcomes because a treatment or service will not have a positive impact on client well-being if it is not implemented properly (Proctor et al., 2010). The model identifies nine different implementation outcomes that occur pre-, during, and post- implementation: acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability. For the purposes of the dissertation study, *implementation*

refers to the use of standardized measures in the acute care setting instead of a specific treatment; the implementation outcomes of interest are acceptability, appropriateness, and feasibility because they are measured at the level of the individual provider (i.e., occupational therapist) and correspond to the early stages of implementation (i.e., prior to or during initial phases of use). *Acceptability* refers to the provider's general reaction to the treatment or service (Bowen et al., 2009; Weiner et al., 2017). For example, do they like and welcome the treatment or service? *Appropriateness* is whether or not the treatment or services fits the clientele and setting. *Feasibility* is how well the treatment or service can be administered in the given setting (Bowen et al., 2009; Weiner et al., 2017).

**Operational Definitions**

**Acceptability.** The perception that standardized measures are agreeable or welcomed in practice (Bowen et al., 2009; Proctor et al., 2010; Weiner et al., 2017).

**Appropriateness.** The perception that standardized measures are relevant or fit well with clients in the acute care setting (Bowen et al., 2009; Proctor et al., 2010; Weiner et al., 2017).

**Chronic medical conditions.** For the current study, chronic medical conditions refers to a diagnosis of COPD, CHF, CVD as evidenced by an admitting diagnosis of coronary artery bypass graft (CABG) or myocardial infarction (MI), and OA as evidenced by an admitting diagnosis of elective total knee arthroplasty (TKA) or elective total hip arthroplasty (THA). The presence of a chronic disease process (i.e., CVD or OA) was confirmed via chart review of past medical history for individuals with an admitting diagnosis of CABG, MI, TKA, or THA.

**Environmental impact.** The influence that the physical and sociocultural context exerts on an individual. The environment provides opportunities, support, demand, or constraint to an individual as they participate in occupation (Taylor, 2017). In the current study, this environmental impact is measured at immediate, local, and global levels (Craig Hospital Research Department, 2001; Taylor, 2017).

**Feasibility.** The perception that standardized measures can be implemented successfully in the acute care setting given time constraints and productivity requirements (Bowen et al., 2009; Proctor et al., 2010; Weiner et al., 2017).

**Functional cognition.** The integration of thinking and processing skills to perform daily activities (AOTA, 2017; Giles & Wolf, 2017). Functional cognition is chosen over basic cognition to emphasize performance-based cognitive impairments that limit a client's ability to perform everyday tasks for independent living. Measures of functional cognition identify the level of environmental support that an individual needs to care for themselves and transition back into the community successfully (AOTA, 2017; Giles & Wolf, 2017). Measures of functional cognition may provide more valuable information to occupational therapists in acute care as they make discharge recommendations compared to traditional neuropsychological tests that emphasize specific cognitive abilities (e.g., memory, attention) alone.

**Functional status.** An overall estimation of an individual's readiness to discharge home. More specifically, functional status refers to the ability to manage self and home at discharge (Blaga & Robertson, 2008). For the purposes of this study, the measure of functional status is the occupational therapist's discharge recommendation at the time of

initial evaluation, and it is obtained from the electronic medical record. Responses represent a hierarchy of functional status that progresses from high to low function. Functional status is indicated as follows: no services needed (high function), outpatient therapy, home health therapy, inpatient rehabilitation, or skilled nursing facility (low function).

**Hospital readmission.** A hospitalization occurring within 30 days of discharge. Hospitalization includes readmission to any hospital not just the facility where the original stay occurred (Boccuti & Casillas, 2015; Renda, Lee, Keglovits, & Somerville, 2016).

**Implementation outcomes.** The results of intentional attempts to incorporate standardized measures into clinical practice (Proctor et al., 2010).

**Occupational competence.** The ability to use one's performance capacity, or functional status, to enact a pattern of occupational participation that represents one's interests and values (Taylor, 2017).

**Self-care function.** How well an individual performs self-care activities including lower body dressing, bathing, toileting, upper body dressing, grooming, and self-feeding.

**Standardized measures.** Structured means through which occupational therapists gather information about a client. These measures will provide information about occupational competence, volition, habituation, performance capacity, and the environment to provide a comprehensive understanding of the client's needs at discharge (Kielhofner & Forsyth, 2008).

## Specific Aims

This dissertation specifically explored how functional status, self-care function, functional cognition, and environmental impact influence occupational competence and hospital readmissions for individuals with chronic medical conditions in the acute care setting. The final aim of this dissertation identified therapists' perceptions on the implementation of standardized measures in the hospital setting.

### Research Questions

1. How do functional status, self-care function, functional cognition, and environmental impact affect occupational competence for individuals with chronic medical conditions in the acute care setting?
2. How do occupational competence, functional status, self-care function, functional cognition, and environmental impact influence hospital readmissions for individuals with chronic medical conditions in the acute care setting?
3. What are occupational therapists' perceptions on the acceptability, appropriateness, and feasibility of implementing standardized measures in acute care?

### Hypotheses

1. Self-care function will have a positive relationship with occupational competence.
2. Functional status, functional cognition, and environmental impact will have a negative relationship with occupational competence.
3. Functional status, functional cognition, and environmental impact will have a positive relationship with hospital readmissions.

4. Occupational competence and self-care function will have a negative relationship with hospital readmissions.
5. Standardized measures will be acceptable and appropriate for the acute care setting.

# CHAPTER II

# BACKGROUND AND SIGNIFICANCE

## Hospital Readmissions

Hospital systems emphasize high quality, cost-efficient services due to healthcare changes spurred by the Patient Protection and Affordable Care Act of 2010. Hospital reimbursement and quality of care are linked through a value-based purchasing program called the Medicare Hospital Readmissions Reduction Program (HRRP), which involves Medicare recipients who have the following target diagnoses: AMI, COPD, CHF, PNA, THA, TKA, and CABG (Centers for Medicare and Medicaid Services [CMS], 2019). In the Medicare HRRP, hospitals receive incentives for positive behaviors (e.g., efficient use of resources, positive patient outcomes) and financial penalties for negative behavior (e.g., readmissions; Fisher & Friesema, 2013; Hoyer et al., 2014; Kansagara et al., 2011; Leppin et al., 2014; Rau, 2014; Renda et al., 2016). Hospitals may be fined between 0.1% and 3% of their total revenue if readmission ratios surpass the national average (CMS, 2019; Renda et al., 2016). Hospitals have different penalty thresholds according to the proportion of Medicare-Medicaid dual eligible patients treated in their facility based on legislation contained in the 21st Century Cares Act, which aims to reduce unfair application of penalties to hospitals that serve patients regardless of insurance or ability to pay (Bernheim & Dorsey, 2017). However, hospitals may only see a small adjustment to their penalties when social risk factors are considered.

Due to Medicare HRRP penalties, hospital readmissions are a target area for improvement in medical facilities across the country. Hospital readmission is defined as a repeat hospitalization at any acute care facility within 30 days of discharge (Rau, 2014; Renda et al., 2016). Episodes of readmission cost the Centers for Medicare and Medicaid services an estimated $26 billion annually with approximately $17 billion identified as preventable (Renda et al., 2016). Preventable hospital readmissions can be attributed to subpar care in both acute and post-discharge settings (Benbassat & Taragin, 2000).

## Risks for Hospital Readmission

Multiple factors influence hospital readmission for individuals with chronic medical conditions. Insurance status, marital status, established relationships with primary care physicians, number of admissions within the year, and a length of stay greater than two midnights are significant predictors of hospital readmission (Hasan et al., 2010). Gender, race, motor function, and cognitive function are also associated with readmission rates (Ottenbacher, et al., 2014). Other factors such as comorbidities and utilization of healthcare services are widely studied, but they demonstrate poor predictive validity when applied to readmission rates (Kansagara et al., 2011). Broader social, environmental, and medical factors (e.g., social support, functional status) as well as hospital and health-system factors (e.g., coordination of care) improve the predictive function of current models.

Existing literature establishes a link between patient outcomes and hospital readmissions. For example, worse scores on measures of HRQoL are associated with higher rates of hospital readmission across a variety of diagnoses (Boult et al., 1993;

Hasan et al., 2010). Similarly, individuals with heart failure who rate the physical functioning component of HRQoL experience higher rates of hospital readmission (Rodriguez-Artalejo et al., 2005). These studies suggest that systematic evaluation of HRQoL and initiation of treatments to improve it may positively impact hospital readmission rates.

Relationships between other patient outcomes and hospital readmission are supported in the literature. Lower levels of functional performance at the time of hospital discharge are associated with higher rates of hospital readmission, especially for individuals with chronic medical conditions (Hoyer et al., 2014). Thus, functional status is a modifiable risk factor that can be addressed early in the hospital stay to improve patient outcomes. For example, assessments of functional status may identify those at higher risk of readmission, and treatments such as early mobility may improve patient outcomes including hospital readmission rates (Hoyer et al., 2014).

Mixed information exists regarding the relationship between cognitive function and hospital readmission. One study found that individuals with mild cognitive impairment are more likely to be hospitalized for health-related problems, especially those who live with a proxy (Callahan, Lovato, Miller, Easterling, & Williamson, 2015). However, mild cognitive impairment did not increase the likelihood of hospital readmission. Another study found that higher ratings of cognitive performance on the Functional Independence Measure (i.e., expression, comprehension, social interaction, problem solving, and memory) were associated with lower hospital readmission rates across neurologic, orthopedic, and general medical diagnoses (Ottenbacher et al., 2014).

Both studies emphasize the importance of understanding cognition as a potential risk factor for readmission to ensure more positive patient outcomes (Callahan et al., 2015; Ottenbacher et al., 2014).

## Medicare HRRP Diagnoses

### Cardiopulmonary Conditions

Cardiopulmonary diagnoses are a focus of the Medicare HRRP; their prevalence is pronounced and on the rise. Coronary artery disease (CAD) impacts 18.2 million adults age 20 and older and costs the United States $219 billion annually in healthcare, medication, and lost productivity expenses (Centers for Disease Control and Prevention [CDC], 2019). COPD affects 16 million Americans, and its incidence increased 44.25% between the years 1990 and 2015 (CDC, 2018; Thomas, 2018). Occupational therapists should understand these chronic cardiopulmonary diagnoses and their medical treatment to promote active participation in daily live despite illness and reduce hospital readmissions.

**Etiology and medical treatment of cardiac conditions.** CAD causes cardiac ischemia and may lead to MI or CHF over time. CAD damages artery walls and increases the likelihood that plaque or platelets collect inside the artery reducing blood flow to the heart (Matthews, 2018). CAD leads to MI, or heart attack, when blood flow is disrupted and heart tissue dies (Huntley, 2014; Matthews, 2018). MI symptoms include chest pain that radiates to the teeth, jaw, ear, arm, or mid-back, diaphoresis, shortness of breath, nausea, vomiting, or fatigue and should be treated as a medical emergency (Huntley, 2014). CAD also results in CHF, a progressive condition where the heart cannot pump

blood effectively or efficiently enough to meet the body's oxygen demands (Huntley, 2014; Matthews, 2018). CHF typically causes fluid backup in the lungs, arms, or legs as well as shortness of breath, fatigue, weight gain, and a dry hacking cough (Huntley, 2014).

Medical treatment for MI begins with emergent care and transitions to long-term management of underlying CAD. When MI is suspected, patients receive aspirin, nitroglycerin, oxygen, and other chest pain treatments (Matthews, 2018). Once stable, they are monitored for complications (e.g., arrhythmia, heart failure, blood clots, aneurysms, cardiac rupture, pericarditis, and death) and physiological responses to activity for up to one week in the hospital (Huntley, 2014; Matthews, 2018). In some cases, CABG surgery is needed to address underlying blood flow problems. CABG circumvents diseased arteries with blood vessels taken from other parts of the body, typically the lower extremities (Huntley, 2014; Matthews, 2018). It requires a sternotomy and results in sternal precautions, which limit movement during daily activities, for up to 8 weeks post-surgery. The average length of stay following CABG is 3-7 days (Huntley, 2014).

For CHF, the medical team addresses acute fluid retention and provides supportive care for disease management in the community. The team adjusts heart-related medications as needed, implements a diuretic regimen, and monitors fluid intake and output (Huntley, 2014; Yu, Thompson, & Lee, 2006). The medical team also provides education and resources for self-care management (e.g., daily weight monitoring) to improve discharge outcomes (Yu et al., 2006).

**Etiology and medical management of pulmonary conditions.** COPD is most commonly caused by long-term exposure to cigarette smoke and workplace irritants or pollutants. It is made up of two specific diseases: emphysema and bronchitis (Huntley, 2014; Matthews, 2018). Emphysema reduces the elasticity of the lungs and causes air entrapment in the lungs (Huntley, 2014). Chronic bronchitis produces sputum and mucus that may clog the airways (Matthews, 2018). Both disease processes result in shortness of breath, wheezing, and a cough, which increase in severity over time and limit an individual's ability to perform desired occupations (Huntley, 2014; Matthews, 2018). Individuals with COPD may experience an exacerbation of symptoms characterized by more pronounced disease symptoms. These exacerbations accelerate the progression of COPD, lead to hospitalizations, and negatively impact quality of life, function, and prognosis for this population (Ban et al., 2012).

COPD is typically treated on an outpatient basis; however, acute exacerbations may require hospitalization. COPD management is initiated by a primary care physician and involves daily medications (e.g., anti-inflammatory agents, bronchodilators, and expectorants) to reduce inflammation, open the airway, and reduce or eliminate mucus caused by chronic bronchitis (Matthews, 2018). Supplemental oxygen may be prescribed to increase the amount of oxygen processed by the body during daily activities (Huntley, 2014; Matthews, 2018). Acute COPD exacerbations are managed in the hospital with medication adjustments, a fluid regimen, supplemental oxygen, therapy services, patient education, and antibiotic treatment when indicated (Ban et al., 2012). In extreme cases, mechanical ventilation may be needed (Matthews, 2018).

## Elective Joint Replacements

Elective joint replacements are common surgical procedures performed in the United States, and their incidence continues to grow. In 2014, approximately 370,000 THA procedures and 680,150 TKA procedures were performed in the United States (Sloan, Premkumar, & Sheth., 2018). Those numbers are expected to increase to 635,000 THA and 1.28 million TKA by the year 2030. Since elective joint replacements are followed by the Medicare HRRP, occupational therapists should understand these procedures, the underlying conditions that cause them, and the healthcare needs of those who receive them to provide optimal rehabilitation services and reduce hospital readmissions.

**Etiology and medical treatment of elective joint replacements.** Chronic disease processes are a common cause for elective joint replacement. Clinical conditions such as OA, degenerative joint disease, or rheumatoid arthritis cause pain and loss of function that prompt clients to seek medical attention (Murphy & Lawson, 2018). When the symptoms are not controlled by conservative measures, such as pain medication, cortisone injections, and activity modifications, elective joint replacement is indicated (Maher, 2014; Murphy & Lawson, 2018).

Elective joint replacements modify existing joint anatomy to improve an individual's ability to participate in daily life. However, joint replacements impose movement restrictions that make daily activities a challenge to complete in the short-term. An elective THA replaces the femoral head and neck with a ceramic prosthesis and fits a high-density polyethylene socket to the acetabulum (Maher, 2014; Murphy &

Lawson, 2018). The procedure requires the surgeon to move musculature that supports the hip joint for prosthetic placement and, as a result, weakens the joint during the initial stages of recovery. Thus, individuals who undergo elective THA must follow movement restrictions for 6-8 weeks after surgery to avoid dislocation (Maher, 2014; Murphy & Lawson, 2018). In an elective TKA, damaged bone is removed and prosthetic components are placed to the distal femur and end of the tibia. Individuals who undergo elective TKA should not excessively rotate at the knee for 12 weeks following surgery (Murphy & Lawson, 2018).

Medical treatment pre- and post-elective joint replacements occurs based on a clinical pathway that streamlines medical care and reduces inpatient lengths of stay. Pre-surgery education sessions on surgical procedures, surgical precautions, common adaptive equipment, the therapy process, and the recovery period as well as standardized nursing care and mobilization on the day of surgery or post-op day one are implemented based on clinical guidelines and pathway protocols. The average length of hospital stay for elective THAs or TKAs is between one and four days (Murphy & Lawson, 2018; Wolford, Palso, & Bercovitz, 2015).

**The chronicity of elective joint replacements**. Elective joint replacements have both acute and chronic considerations. Elective THA and TKA require acute medical treatment and rehabilitation to facilitate successful recovery and return to daily life post-surgery. Medical treatment promotes healing through specialized post-surgical care for the incision, pain management, post-anesthesia care, anti-thrombosis care, and monitoring for post-surgical complications (Gooch et al., 2009; Murphy & Lawson,

2018). The rehabilitation program improves joint motion, strength of the musculature surrounding the surgical implant, and participation in daily activities while observing prescribed movement precautions (Maher, 2014; Murphy & Lawson, 2018). Elective THA and TKA also involve chronic considerations as clients recover and live with their implants. Clients may experience the following complications post-surgery and require subsequent hospitalizations for antibiotic treatment or surgical revision: degeneration of surgical components, fractures near the surgical implant, loosening of the implant, infection, and hip dislocation for THAs (Murphy & Lawson, 2018). Additionally, since the age of elective joint replacements is decreasing (e.g., 66.3 to 64.9 years of age for hip replacements and 68 to 65.9 years of age for knee replacements), individuals will likely outlive the prosthesis (e.g., 20 years) and require a revision (American Academy of Orthopaedic Surgeons, 2018; Murphy & Lawson, 2018; Shmerling, 2018).

## Clinical Pathways for Medicare HRRP Diagnoses

Clinical pathways are often used to provide medical care for Medicare HRRP diagnoses in the hospital setting. Clinical pathways are multidisciplinary plans of care that clearly identify medical and non-pharmacological interventions as well as delivery timelines for specific diagnostic groups in line with accepted standards of practice (Barbieri et al., 2009; Gooch et al., 2012; Hauck, Adler, & Mulla, 2004; Lee & Anderson, 2006; Lodewijckx et al., 2011). The purpose of clinical pathways is to ensure patients receive high quality care in a timely, cost-effective manner. Clinical pathways face ongoing debate about their utility because evidence surrounding their efficacy is largely inconsistent (Barbieri et al., 2009; Marrie et al., 2000).

Existing research on the efficacy of clinical pathways primarily focuses on administrative outcomes. While results vary across studies, clinical pathways generally reduce hospital lengths of stay and healthcare costs for CABG, COPD, MI, THA, and TKA (Ban et al., 2012; Barbieri et al., 2009; Dawsey, Kilgour, & Santamaria, 1999; El Baz, Middel, van Dijk, Boonstra, & Reijneveld, 2009; Hauck et al., 2004; Lee & Anderson, 2006; Lodewijckx et al., 2011; Marrie et al., 2000; McAlister et al., 2004; Van Der Kolk et al., 2019). They are linked with fewer hospital readmissions for CHF, COPD, THA, and TKA (Dawsey et al., 1999; Lodewijckx et al., 2011; McAlister et al., 2004). Literature on clinical pathways explores clinical outcomes as well. Clinical pathways are associated with lower mortality rates for CABG, CHF, and COPD and fewer hospital complications for CABG, COPD, THA, and TKA (Ban et al., 2012; Barbieri et al., 2009; Hauck et al., 2004; Lodewijckx et al., 2011; McAlister et al., 2004; Van Der Kolk et al., 2019; Yu et al., 2006).

Select studies explore how clinical pathways impact patient outcomes including HRQoL and anxiety. Gooch et al. (2012) compared the effects of a clinical pathway for THA and TKA to standard care, and the clinical pathway improved HRQoL for participants up to 12 months post-surgery. In contrast, studies that examine how clinical pathways impact HRQoL in PNA and CABG report more neutral results. For example, Marrie et al. (2000) found that a clinical pathway for PNA had no effect on participants' quality of life, and El Baz et al. (2009) reported that a clinical pathway improved quality of life for individuals after CABG but improvements were less than those achieved by the participants who received standard care. Lack of significance between variables may be

attributed to the fact that the clinical pathways primarily focused on the effects of medications or surgical procedures and involved limited to no follow-up care.

One study reported significant findings related to participant anxiety. Santamaria, Conners, Osteraas, and Boodram (2004) implemented a clinical pathway for individuals with COPD that included a combination of medical and nonpharmacological interventions such as discharge planning, medication management, nutritional status, skin integrity, mobility, hygiene, and patient education. The clinical pathway group demonstrated significantly reduced anxiety levels compared to the standard of care group. Santamaria et al. (2004) hypothesized that these results may be related to patient education on self-management of disease symptoms and stress that improved participants' feelings of control in the midst of dyspnea.

Research on clinical pathways rarely reports occupational therapy involvement but highlights interventions and outcomes relevant to the discipline. Many clinical pathways focus on pharmacological or surgical interventions and are directed by a physician or nurse even when a non-pharmacological intervention is utilized. However, two studies on COPD pathways included occupational therapists as members of the multidisciplinary team (Lodewijckx, et al., 2011; Santamaria et al., 2004).

Multiple studies on clinical pathways across diagnoses detailed non-pharmacological interventions or patient outcomes consistent with the domain and process of occupational therapy. For example, Yu et al. (2006) completed a review of randomized-controlled trials on clinical pathways for CHF and recommend intensive self-management education and training for individuals with this diagnosis. Specific self-

management strategies of value included self-monitoring for daily body weight and sodium intake, self-care handouts, and medication management. Similarly, McAlister et al. (2004) recommended self-management and medication management interventions to reduce all cause and heart failure hospitalizations. Finally, Santamaria et al. (2004) highlighted the importance of self-management education and techniques related to nutrition, exercise, symptom management, and stress management to modulate the psychosocial effects of COPD.

## Occupational Therapy: A Valuable Intervention for Medicare HRRP Diagnoses and Hospital Readmissions

Occupational therapy, as a profession, is uniquely equipped to meet the needs of individuals admitted to the hospital for cardiopulmonary conditions or elective joint replacements. *The Occupational Therapy Practice Framework, Domain and Process, 3rd Edition* details key knowledge and skills that occupational therapists use to address acute and chronic challenges to daily living as well as important predictors of hospital readmission (e.g., functional status, cognition; AOTA, 2014). Therapists evaluate and treat client factors, performance skills and patterns, and the environment as well as the ways in which those domains influence engagement in desired occupations to promote overall health and quality of life (AOTA, 2014).

### Cardiopulmonary Conditions

Occupational therapists evaluate and treat clients with cardiopulmonary conditions to facilitate safe participation in daily activities and improve self-management skills as well as quality of life. Occupational therapists are trained to ask questions about

angina pain, MI pain, and activities that exacerbate cardiac symptoms during the initial evaluation to provide safe and effective treatment (Matthews, 2018). They are also qualified to observe client behaviors and monitor vitals (e.g., heart rate, blood pressure, O2 Saturations) to identify signs of cardiac and respiratory distress during functional activities (AOTA, 2014; Matthews, 2018).

Occupational therapists provide skilled intervention that facilitates participation in daily activities and encourage clients to implement lifestyle changes to improve their health. Occupational therapists use knowledge about the energy costs of daily activities to safely progress clients with cardiopulmonary conditions through desired occupations with increasing energy demands (Huntley, 2014; Matthews, 2018). For example, a therapist who is working on a bathing goal with a client who has COPD would note the client's physiological response to a seated shower. If the client's vitals remained stable and appropriate during the seated shower, the therapist may encourage standing to bathe for the next treatment session since standing requires more oxygen consumption and more closely resembles the client's prior level of function (Matthews, 2018). Occupational therapists may also recommend energy conservation strategies such as alternating low demand activities with high demand activities to preserve energy throughout the day (Huntley, 2014; Matthews, 2018).

Occupational therapists reinforce multidisciplinary techniques to improve self-management of disease symptoms. Occupational therapists encourage clients to use pulmonary rehabilitation strategies such as pursed lip breathing, dyspnea control postures, and relaxation techniques during activity performance to promote carryover to

daily life (Matthews, 2018). Occupational therapists also influence lifestyle modifications such as exercise programs or dietary changes through multidisciplinary communication and treatment. For example, the occupational therapist can provide the physical therapy team with information on functional exercises or activities that the client finds meaningful to increase exercise compliance and facilitate a successful lifestyle change (Huntley, 2014; Matthews, 2018). The therapist may also implement dietician-recommended dietary modifications during meal preparation activities. Finally, occupational therapists can refer clients to specialists, counselors, or support groups to address other lifestyle modifications that improve health such as alcohol or smoking cessation (Matthews, 2018).

**Elective Joint Replacements**

Occupational therapists evaluate and treat individuals after elective joint replacements to promote safe occupational performance post-surgery. During the initial evaluation, occupational therapists identify musculoskeletal limitations, both related and unrelated to surgery, that will impact a client's participation in daily activities. They also determine whether there are any psychosocial barriers (e.g., fear of falling) that may impede the rehabilitation process (Murphy & Lawson, 2018). The therapist uses this information to design a treatment plan of progressive activities that helps clients resume their daily lives in spite of new movement restrictions imposed by surgery.

Occupational therapists use an in depth knowledge of surgical procedures, surgical precautions, and activity modifications to intervene in the case of elective joint replacements. Occupational therapists provide education and training on the equipment

and activity modifications needed post-surgery. For example, an occupational therapist may provide opportunities for clients to use long-handled tools for lower body dressing or implement modified tub transfer techniques after hip replacement so that the client can complete daily activities safely and avoid hip dislocation (Maher, 2014; Murphy & Lawson, 2018). In the case of a knee replacement, the occupational therapist may teach the client how to get dressed without excessive rotation of the operated knee (Murphy & Lawson, 2018). Finally, the occupational therapist reinforces physical therapy techniques during functional mobility, functional transfers, and functional activities performed during their treatment sessions (Murphy & Lawson, 2018).

**Hospital Readmissions**

Occupational therapy has distinct value in hospital readmissions as reported in a recent research study conducted by health policy experts at Johns Hopkins University. Specifically, additional spending on occupational therapy is significantly associated with lower rates of readmission for individuals with heart failure, pneumonia, and acute myocardial infarction (Rogers et al., 2016). Occupational therapy's focus on the functional and social needs of the client as well as key occupational therapy interventions (e.g., caregiver training; evaluation of client abilities, cognition, and the environment; cognitive and functional training, especially medication management; and interdisciplinary collaboration) may explain this relationship.

Occupational therapists in acute care provide vital services that may directly impact hospital readmission rates. They evaluate clients' abilities and needs to establish appropriate discharge plans. The ultimate goal is a safe and timely transition back into the

community where clients can fully participate in meaningful roles and activities (Blaga & Robertson, 2008; Britton, Rosenwax, & McNamara, 2015; Craig et al., 2004). Occupational therapists in acute care also provide intervention in falls prevention, home modifications, medication management, and assistive technology, all evidence-based strategies shown to reduce hospital readmission rates (Renda et al., 2016).

Similarly, occupational therapists across the continuum of care provide clients with self-management interventions that may influence hospital readmissions. Occupational therapy self-management programs that include goal setting, coping with fatigue/stress/pain, problem solving, communication with health care providers, and opportunities for skill mastery for individuals with arthritis, COPD, and heart disease improve frequency of occupational participation, feelings of self-efficacy, and overall quality of life (Berger et al., 2018; Garvey et al., 2015; Hand et al., 2011; O'Toole et al., 2013). These outcomes are directly linked to occupational competence, a hypothesized predictor of hospital readmission, and HRQoL, a known predictor of hospital readmission.

**Occupational Therapy Assessments: A Tool to Reduce Hospital Readmissions?**

While occupational therapists have distinct value in the acute care setting, the quick, impairment-focused approach to evaluations that is currently utilized may not adequately capture information on clients' discharge needs and risk for hospital readmission. Occupation-focused, standardized measures may enhance the current evaluation approach and address this concern. Occupation-focused standardized measures consider, through self-report, clinical observation, or task performance, how an individual interacts with his

or her environment to complete daily activities. An occupation-focused approach is in contrast to bedside testing (e.g., manual muscle testing, range of motion), which isolates problem areas but fails to consider how those impairments impact a person while they perform real world tasks (AOTA, 2017; Baum & Wolf, 2013; Giles & Wolf, 2017; Kielhofner & Forsyth, 2008). Use of more occupation-focused, standardized measures in acute care would highlight clients' strengths and weaknesses for treatment and discharge planning purposes and establish a baseline for occupational performance that can be followed across the continuum of care (Tsai & Peterson, 2019).

Occupation-focused standardized measures structure the information gathering process to yield a more objective and comprehensive understanding of the client for clinical decisions (Kielhofner & Forsyth, 2008; Tsai & Peterson, 2019). Results may help therapists tailor treatment and make more supportive recommendations for follow-up care as clients transition back into the community. For example, a physical therapy study by Wennie Huang, Perera, VanSwearingen, & Studenski (2010) detail standardized measures that predict the onset of activities of daily living difficulty in community-dwelling older adults. These assessments reportedly help therapists identify those at risk for functional decline so that appropriate referrals for follow-up care can be made.

Occupation-focused, standardized measures that capture information on known predictors of hospital readmission exist in occupational therapy. However, little is known about their acceptability, appropriateness, and feasibility in acute care. For example, standardized measures of activities of daily living provide insight into an individuals' level of functional performance, a known predictor of hospital readmission, but existing

literature merely reports infrequent use of these measures in acute care and fails to provide insight into therapists' rationale for their current assessment approach (Blaga & Robertson, 2008; Robertson & Blaga, 2013). Scholars hypothesize that infrequent use of standardized measures may be related to individual factors such as lack of knowledge, confidence or skill; between clinician factors such as inconsistent use of measures between providers; and systems level factors such as lack of time and support (Tsai & Peterson, 2019).

Therapists' opinions related to assessment acceptability, appropriateness, and feasibility are crucial for successful implementation of occupation-focused, standardized measures in acute care. Provider reports of perceived usefulness and ease of use strongly influence the success of new technologies or interventions in practice (Davis, 1993; Proctor et al., 2010). Similarly, provider perceptions on the relationship between a new technology or intervention and an organization's mission or provider's skills set and job responsibilities are indicative of provider acceptance or pushback in clinical practice (Proctor et al., 2010).

If occupation-focused, standardized measures are found to add value to the occupational therapy evaluation process in acute care and deemed acceptable, appropriate and feasible in this setting, therapists will be able to identify areas of concern more effectively and make post-acute referrals so that clients transition home successfully without frequent readmissions.

## Clinical Significance and Implications

This dissertation impacts occupational therapy and the larger healthcare system. Research outcomes provide occupational therapy with insight into the best evaluation approach for individuals with chronic medical conditions so that they receive optimal care and transition home successfully (Fisher & Friesema, 2013; Wennie Huang et al., 2010). Special emphasis on functional performance and standardized measures draws in hospital administrators, policymakers, and reimbursement strategists due to the connection between patient outcomes and reimbursement in the healthcare system (Fisher & Friesema, 2013; Leppin et al., 2014). The ultimate goal of this dissertation is to demonstrate that occupational therapists in acute care provide efficient, quality care that has meaningful implications for long-term client outcomes so that they are considered key personnel in the hospital and related value-based purchasing initiatives (Fisher & Friesema, 2013; Renda et al., 2016). This dissertation incorporates occupation-focused, standardized assessments that facilitate clear communication with key healthcare personnel and are quick and easy to administer to achieve this goal (Tsai & Peterson, 2019).

# CHAPTER III

# METHODOLOGY

## Study Design

This dissertation was developed under the direction of the Centers for Research Design and Analysis at Texas Woman's University. The CHRISTUS Health and Texas Woman's University-Houston IRBs approved the research study (see Appendices A-D for initial study and amendment approvals). The CHRISTUS Health IRB is the IRB of record as designated in an Institutional Authorization Agreement between the two institutions (see Appendix E). The research study included three components: (1) a single assessment session during hospital admission, (2) a follow-up phone call 30-40 days post discharge, and (3) a feasibility group with occupational therapists that staff CHRISTUS St. Michael Hospital in Texarkana, Texas. This study employs consecutive sampling for a convenience sample of individuals with CVD as evidenced by an admitting diagnosis of CABG or AMI, CHF, COPD, OA as evidenced by an admitting diagnosis of THA or TKA, and PNA treated at CHRISTUS St. Michael Hospital in Texarkana, Texas.

The first aim of the research study was to determine the impact of functional status, self-care function, functional cognition, and environmental impact on occupational competence for individuals with chronic medical conditions in the acute care setting. The dependent variable was occupational competence. The independent variables were functional status, self-care function, functional cognition, and environmental impact.

Occupational competence was measured by the Occupational Self-Assessment Short-Form (OSA-SF; Baron et al., 2006; Popova, Ostrowski, Wescott, & Taylor, 2019); functional status was measured with the occupational therapist's discharge recommendation gathered from facility-specific documentation; self-care function was measured by the Boston University Activity Measure for Post-Acute Care "6 Clicks" Inpatient Daily Activities Short Form (AM-PAC; Jette, Haley, Coster, & Ni, 2013); functional cognition was measured by the bill pay subtest of the Executive Function Performance Test (EFPT; Baum & Wolf, 2013); and environmental impact was measured by the Craig Hospital Inventory of Environmental Factors Short-Form (CHIEF-SF; Craig Hospital Research Department, 2001).

The second aim of the research study was to determine how occupational competence, self-care function, functional cognition, and environmental impact influence hospital readmissions for individuals with chronic medical conditions in the acute care setting. The dependent variable was hospital readmission. The independent variables were functional status, self-care function, functional cognition, environmental impact, and occupational competence.

The third aim of the research study was to identify occupational therapists' perceptions on the implementation of standardized measures in acute care. Areas of focus were the acceptability, appropriateness, and feasibility of standardized measures in the acute care setting. Time to complete the standardized assessment battery as a whole was compared to the amount of time designated for evaluations in acute care for a secondary measure of feasibility. Number and type of interruptions are also reported.

## Power Analysis

An *a priori* power analysis was conducted with a power of 0.8, an alpha level of 0.05, and a moderate to high effect size of 1.5 (odds ratio) with manual distribution design to determine the minimum sample size needed for the dissertation study. In order to conduct a logistic regression for research question two, at least 50 participants were required.

## Participants

All individuals admitted to CHRISTUS St. Michael Hospital and referred for occupational therapy services were screened for eligibility with a review of documentation in the electronic medical record (e.g., age, diagnosis, cognitive status). Individuals that met the inclusion criteria were invited to participate in the study. Eligibility criteria are as follows:

Inclusion Criteria: (1) 18 years of age or older, (2), admitting diagnosis of CABG, CHF, COPD, AMI, PNA, THA, or TKA, (3) and willingness to participate in the research study.

Exclusion Criteria: individuals (1) admitted from a long-term care facility or nursing home, (2) admitted to the intensive care unit, (3) with current hospice care, or (4) with moderate to severe cognitive impairment identified by the Montreal Cognitive Assessment (Nasreddine et al., 2005). Individuals who scored <23 were excluded from the study (Luis, Keegan, & Mullan, 2009).

Since the dissertation focused on predictors of occupational competence and hospital readmissions for individuals with chronic health conditions, medical records were reviewed to identify chronic disease processes that prompted more acute or elective admitting diagnoses such as CABG, THA, TKA, and AMI. Therefore, individuals admitted to the hospital for a CABG or AMI were only included when a chart review revealed a past medical history of CVD, a chronic disease process. Individuals who underwent a CABG were attempted once they transitioned out of intensive care to increase the likelihood of medical stability (approximately post-op day three).

Similarly, individuals with an admitting diagnosis of THA or TKA were included if a chart review reported a past medical history of OA or end stage arthritis, a chronic disease process. Individuals admitted for THA or TKA were attempted post-operative day one or later to allow time for the effects of anesthesia to dissipate.

## Measurement Instruments

### Initial Occupational Therapy Evaluation

The CHRISTUS St. Michael Hospital occupational therapy team performed an initial evaluation for all participants according to facility-specific documentation requirements. The initial evaluation collects information about the client via chart review, client or caregiver interview, bedside testing, and clinical observation. The initial evaluation informs the occupational therapists' discharge recommendation, which was utilized as a measure of functional status in the current study. Discharge destination was documented as follows: no further services needed, outpatient therapy, home health therapy, inpatient rehabilitation, or skilled nursing facility. In this classification system, the overall

estimation of functional status progresses from high to low as follows: no further services needed, outpatient therapy, home health therapy, inpatient rehabilitation, and skilled nursing facility.

## Cognitive Screen

**Montreal Cognitive Assessment Version 7.1 (MoCA).** The MoCA is a 30-point tool that screens individuals for mild cognitive impairment. Items explore cognitive function in the following domains: visuospatial and executive function (5 points), naming (3 points), memory (5 points), attention (6 points), language (3 points), abstraction (2 points), and orientation (6 points). Points are assigned based on subtest performance. One point is added to the overall score if an individual has less than or equal to 12 years of education to modulate the influence that the level of education has on assessment results. Overall scores range from 0 to 30 where higher scores represent better cognitive function. Initial research suggests a cutoff score of 26 or below to determine the presence of cognitive impairment (Nasreddine et al., 2005). However, subsequent studies demonstrate that a lower cutoff score (i.e., < 23) improves the specificity (95%) and sensitivity (96%) of the MoCA (Luis et al., 2009). Therefore, a cutoff score of 23 or below was used in the current study to determine the presence of cognitive impairment.

The MoCA demonstrates high levels of test-retest reliability for a one month time frame with both patient and control groups ($r = 0.92$, $p < 0.001$) and good internal consistency ($r = 0.83$; Nasreddine et al., 2005). All test items successfully discriminate between at least two of the following groups: mild cognitive impairment, Alzheimer's dementia, and no cognitive impairment (Luis et al., 2009; Nasreddine et al., 2005). As

aforementioned, sensitivity and specificity are optimal when a cutoff score of 23 or below is utilized (Luis et al., 2009). See Appendix F for a copy of the MoCA.

**Standardized, Occupational Therapy Measures**

The following tools were used to systematically evaluate self-care function, functional cognition, occupational competence, and environmental impact for individuals with chronic medical conditions in the hospital setting. The standardized assessments correspond to MOHO domains to gain a holistic view of participants and their occupational lives (see Figure 5). Appendix G includes a copy of each of the following measures included in the standardized occupational therapy assessment battery.

**Boston University Activity Measure for Post-Acute Care "6 clicks" inpatient daily activities short form (AM-PAC).** The AM-PAC "6 Clicks" Inpatient Daily Activities Short Form evaluates six areas of self-care performance: self-feeding, grooming, upper body dressing, toileting, bathing, and lower body dressing. The AM-PAC is widely used in hospitals across the country because it is a quick to administer and supports G-Code scores assigned for Medicare recipients. Research also suggests that the AM-PAC "6 Clicks" can predict hospital discharge destination (Jette et al., 2013).

Clinicians assign each self-care task a difficulty score based on the level of challenge a client experiences during activity performance: 1- *unable to complete*, 2 - *a lot of difficulty*, 3 - *a little difficulty*, 4 - *no difficulty*. Clinicians determine scores based on clinical observation or judgment. Overall scores range from 6 to 24 where lower scores represent greater activity limitations. Raw scores can be translated to standardized scores and percent of functional limitation (0-100%) with appropriate conversion tables.

The AM-PAC "6 Clicks" Inpatient Daily Activities form has high internal consistency (Cronbach's alpha = 0.91) and interrater reliability (ICC = 0.783, 95% CI = [0.796, 0.847]). Its construct validity is supported in two ways. First, the "6-Clicks" Daily Activities form differs across age, preadmission living situation, and number of therapy visits. Second, AM-PAC "6-Clicks" Daily Activity discharge scores from the acute care setting are correlated with Functional Independence Measure admission scores in inpatient rehabilitation ($r$ = 0.65, 95% CI = [0.57, 0.72]). The AM-PAC can effectively predict discharge destination in an acute care setting (Jette et al., 2014; Jette et al., 2015).

**Craig hospital inventory of environmental factors short form (CHIEF-SF).** The CHIEF-SF consists of 12 items that examine how the environment influences participation in daily life. The following environmental dimensions are considered: accessibility, accommodation, availability of resources, social support, and equality. Accessibility refers to physical and architectural aspects of the environment; accommodation refers to equipment and services in a given location; resource availability references the opportunity to access services and resources needed for participation; social support refers to the attitudes and potential prejudices of others; and equality is how well policies and regulations support equality of those with disabilities.

Participants rate each item based on the frequency that it has been a barrier to daily activity participation in the last 12 months: 0 - *never*, 1 - *less than monthly*, 2 - *monthly*, 3 - *weekly*, 4 - *daily*. Then, they rate the magnitude or significance of the barrier: 1 - *little problem*, 2 - *big problem*. This tool can be administered as a self-report measure or an interview.

CHIEF-SF impact scores are calculated by multiplying frequency and magnitude ratings for each item; impact scores range from 0-8 per item. For an overall CHIEF-SF score, impact scores are averaged across all twelve items. For individual sub-scale scores, impact scores for each item in the subscale are averaged. Larger scores represent more frequent and significant environmental barriers to participation. In the dissertation study, work or school items rated *not applicable* were re-coded as zero for both frequency and magnitude to indicate no environmental barrier.

The CHIEF demonstrates content validity through factor analysis, which identified distinct subscales of 3-7 questions each that accounted for 48% of the cumulate variance (Craig Hospital Research Department, 2001). It also demonstrates acceptable test-retest reliability over a two-week time frame for individuals with a range of disabilities (Overall ICC > 0.90, Subscale ICCs 0.77-0.89). The CHIEF differentiates scores amongst different disability groups including spinal cord injury, traumatic brain injury, and other significant disabilities (Craig Hospital Research Department, 2001).

**Executive Function Performance Test (EFPT).** The EFPT is a performance-based measure of executive function, or the cognitive processes involved in goal-directed activity. It is made up of four instrumental activities of daily living: light meal preparation, telephone use, medication management, and bill payment. Individual subtests can be performed for both clinical and research purposes (Baum & Wolf, 2013). The following components of executive function are examined within each subtest: initiation, execution, organization, sequencing, judgment and safety, and completion. Initiation is motor activity that starts a task; execution is the ability to complete each step

in an organized sequence with safety and judgment; organization is the ability to arrange the environment to facilitate task performance in an efficient and effective manner; sequencing is executing the proper order of steps in a task; judgment and safety is the use of reason and decision making to avoid harm; and completion refers to the knowledge that a task is finished and the resultant termination of motor performance (Baum & Wolf, 2013).

Participants perform each subtest with provided supplies, and the administrator cues participants throughout the task. The administrator starts with general verbal cues and progresses through more specific cues and physical assistance with the task as needed. The administrator gives two cues per category before proceeding to the next level of cueing.

The level of assistance an individual needs for each component of executive function is rated on a 6-point ordinal scale: 0 - *independent*, 1 - *verbal guidance*, 2 - *gestural guidance*, 3 - *verbal direct instruction*, 4 - *physical assistance*, 5 - *do for participant*. Subtest scores range from 0-25, and overall scores range from 0-100. Larger scores represent a greater impairment in executive function.

The EFPT helps therapists determine whether clients can live independently and what support is needed from their social support network (Baum et al., 2008). Psychometric testing establishes that the EFPT is reliably and validly used with a variety of populations including schizophrenia, Multiple Sclerosis, and stroke (Baum et al., 2008; Goverover, et al., 2005; Katz, Tadmor, Felzen, & Hartman-Maeir, 2007). Only the bill payment subtest was used in the current study to meet the temporal demands of the hospital environment.

**Occupational self-assessment short form (OSA-SF).** The OSA-SF is a 12-item, self-report measure that measures occupational competence. Occupational competence is the ability to sustain a pattern of occupational behavior that is both productive and satisfying (Baron et al., 2006; Taylor, 2017). The OSA-SF also captures an individual's values and satisfaction with performance, or the match between values and competence.

Individuals rate each item with a 4-point ordinal scale that indicates how well they perform the task (i.e., competence) and a 3-point ordinal scale that indicates how important the task is to them (i.e., value). Then, the individual prioritizes up to four areas to focus on during occupational therapy treatment.

Responses for each construct can be converted to numerical values for statistical analysis. Item values are summed for subtest scores: competence 0-48, value 0-36. Higher scores represent greater competence and greater value.

The OSA 2.2 has good internal validity, is used reliably by the majority of people, and distinguishes constructs between people (Kielhofner, Forsyth, Kramer, & Iyenger, 2009). It can be used to monitor client progress over time and facilitates collaboration between the therapist and client throughout the rehabilitation process. The OSA 2.2 and OSA-SF have high concurrent validity for competence ($r = 0.95$, $p < 0.001$) and value ($r = 0.93$, $p < 0.001$) scales. The OSA-SF exhibits strong construct validity, low floor and ceiling effects, and the ability to separate participants (competence scale) or items (value scale) into three groups with good reliability (Popova et al., 2019). However, statistical analysis for item targeting shows that individuals can receive high scores easily on the

OSA-SF competence scale, which limits distinctions between varying degrees of competence.

**Measures of Implementation Outcomes**

The following tools will be used to determine the acceptability, appropriateness, and feasibility of standardized measures in the acute care setting. Each measure was adapted from a series of intervention feasibility tools (i.e., The Acceptability of Intervention Measure, Intervention Appropriateness Measure, and the Feasibility of Intervention Measure; Weiner et al., 2017). Minor alterations shift the focus of the measures from a specific intervention to the use of standardized occupational therapy assessments (see Appendix H for the modified implementation outcome measures).

The intervention feasibility tools demonstrate acceptable psychometric properties. Cronbach alphas for structural validity are as follows: acceptability-0.85, appropriateness-0.91, feasibility-0.89. Pearson correlation coefficients for test-retest reliability are as follows: acceptability-0.80, appropriateness-0.73, and feasibility-0.88. The intervention feasibility tools can differentiate between groups, and they are sensitive to change from high to low and low to high (Weiner et al., 2017).

**Acceptability of assessment measure**. The Acceptability of Assessment Measure includes four items that explore occupational therapists' reactions to standardized measures for individuals with chronic medical conditions in the acute care setting. Items are rated on a 5-point ordinal scale from 1 - *completely disagree* to 5 - *completely agree*. Higher scores represent greater acceptability.

**Assessment appropriateness measure.** The Assessment Appropriateness Measure includes four items that examine the fit of standardized measures for individuals with chronic medical conditions in the acute care setting. Items are rated on a 5-point ordinal scale from 1 - *completely disagree* to 5 - *completely agree*. Higher scores represent greater appropriateness.

**Feasibility of assessment measure.** The Feasibility of Assessment Measure includes four items that explore how well the standardized measures can be given within current time and productivity constraints imposed by the acute care setting. Items are rated on a 5-point ordinal scale from 1 - *completely disagree* to 5 - *completely agree*. Higher scores represent greater feasibility.

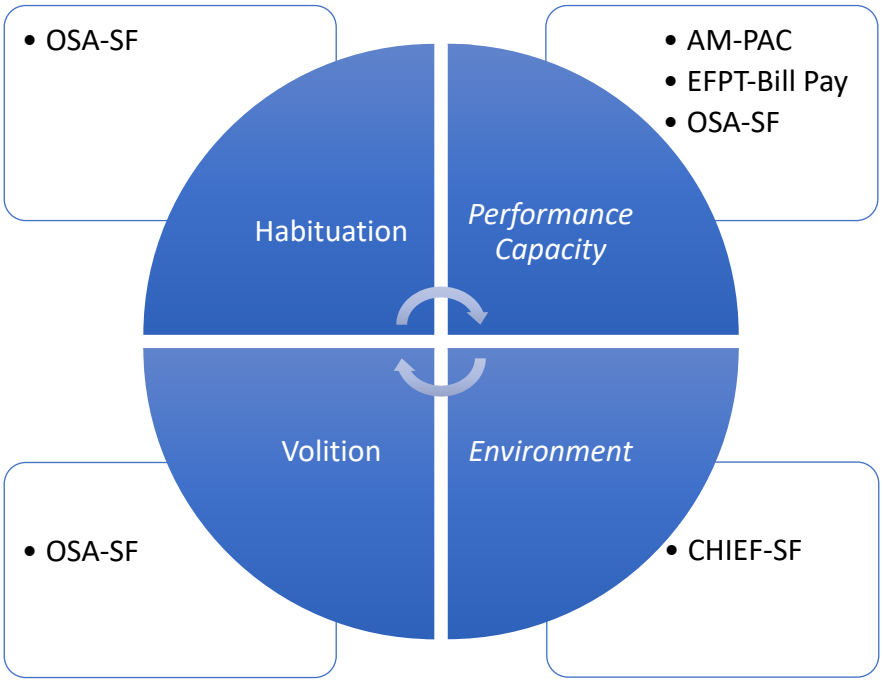


*Figure 5.* Measurement instruments as they relate to the MOHO domains.

## Procedures

The following section details procedures for the research study. See Figure 6 for a visual depiction of the sequence and timeline of study procedures.

### Screening

Consecutive acute care admissions with chronic medical conditions and an occupational therapy order were reviewed for eligibility by the CHRISTUS St. Michael occupational therapy team. Clients who met study criteria were identified, and their information was shared with the student researcher. The occupational therapists conducted a typical, unstructured evaluation according to site procedures.

### Consent and Assessment

The student researcher confirmed eligibility with the MoCA. She consented all individuals who qualified after the cognitive screen (see Appendix I for the hospital participant informed consent form). The student researcher then administered the standardized occupational therapy assessment battery in a single session.

After obtaining written informed consent, the student researcher accessed the electronic medical record for precautions and activity orders before testing to ensure client safety. The student researcher collected the following information via chart review: age, gender, race, diagnosis, and comorbidities.

**Standardized, occupation-focused assessment battery**. Paper-and-pencil and performance-based based tests were alternated in an attempt to preserve participant energy for the entire assessment battery (e.g., EFPT-Bill Pay, CHIEF-SF, AM-PAC, OSA-SF). Eight combinations with the aforementioned alternation were implemented to

reduce the impact of an order effect. The student researcher administered assessments to participants based on the order combinations listed in Appendix J and completed order combinations in sequence until the study sample was complete. Testing was performed at bedside with the participant in bed with the head of bed elevated or seated in a bedside chair. Paper-and-pencil tests were conducted via interview to alleviate the effects of potentially low reading levels among some participants.

**Follow-Up Phone Call and Chart Review**

The student researcher conducted a follow-up phone call 30-40 days post hospital discharge. Participants were asked the following questions: Have you been readmitted to the hospital? If so, were you re-admitted for similar symptoms? What community-based services do you currently receive? The student researcher also reviewed the participant's electronic medical record in the same time frame to confirm readmission information.

**Feasibility Group**

The student researcher examined feasibility with occupational therapists that staff the acute care hospital at CHRISTUS St. Michael. Full-time, part-time, and PRN staff members were invited to participate, and the feasibility group was scheduled by email. See Appendix K for the participant recruitment flyer. The student researcher consented three occupational therapist participants in a one-time, face-to-face group session. See Appendix L for the occupational therapist informed consent form. The student researcher provided copies of each standardized occupational therapy measure used in the research study as well as an overview of the purpose, target population, estimated completion time, and the administration mode of each measure. Participants completed Acceptability

of Assessment Measure, Assessment Appropriateness Measure, and Feasibility of Assessment Measure forms for each standardized occupational therapy measure. The feasibility group occurred over the lunch hour during non-productive time with the approval of the rehabilitation director and lasted approximately 44 minutes.

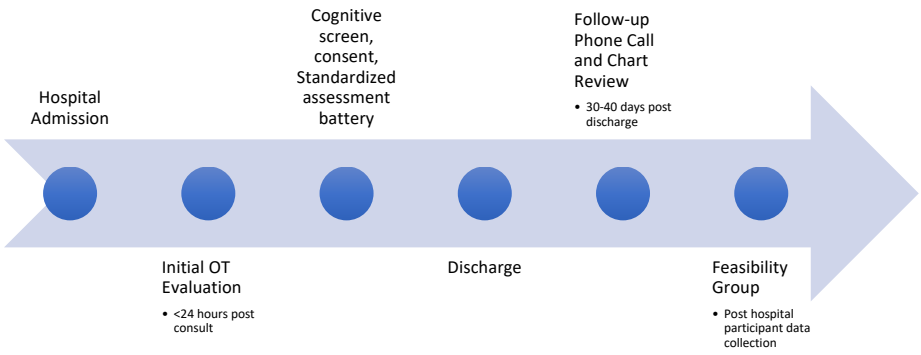


*Figure 6.* Data collection procedures. This figure illustrates the sequence and timeline for data collection procedures.

**Data Collection**

The standardized occupational therapy assessment battery was administered by the student researcher. Testing occurred in the participant's room with the door closed for privacy. The participant completed the standardized occupational therapy assessment battery in a seated position. The student researcher completed follow-up phone calls in a quiet office space at the hospital with doors closed to ensure privacy. All documentation reviews (i.e., demographic data collection and readmissions data confirmation) were completed on-site to ensure confidentiality and protection of personal health information.

The feasibility group was conducted in the rehabilitation office at the hospital with the door closed for privacy.

**Potential Bias**

The student researcher acknowledges the potential for rater bias (i.e., bias as the rater assigns assessment scores based on performance) in the dissertation study. The investigator incorporated the following strategies to reduce the likelihood of bias (Kielhofner, 2006; Portney & Watkins, 2009):

- The student researcher did NOT perform both the initial evaluation and research assessments on potential participants.
- The student researcher was blinded to participants' prior level of function and home setup information before conducting the standardized occupational therapy assessment battery. However, the student researcher did have information on precautions and level of assistance to ensure patient safety.
- The student researcher completed the appropriate training requirements for all standardized measures used in the research study.
- The student researcher used scripts to provide directions and answered clarification questions related to the meaning of the question or the measurement scale only.

**Data Preparation**

The data were imported to IBM SPSS v25 and prepared for analysis. Discharge recommendation, the measure of functional status, was recoded to a 5-point ordinal scale for statistical analysis. Data were reviewed for duplicate cases and impossible values;

neither were found. A missing value analysis revealed only 1.76% incomplete data, and the missing data involved demographic information only. The distribution of categorical variables was reviewed and deemed acceptable for analysis. Finally, continuous variables were checked for normality assumptions. The majority of variables fell within acceptable parameters for skewness and kurtosis (-1 to 1). However, environmental impact demonstrated positive skew (1.99) and kurtosis (4.80). One significant outlier was removed from the environmental impact variable to ensure normal distribution. Following outlier removal, skewness and kurtosis for environmental impact were as follows: 1.38 and 1.32. Functional cognition also demonstrated positive skew (1.34) and kurtosis (2.72). One extreme outlier was removed from the functional cognition variable to ensure normal distribution. Skewness and kurtosis improved to 1.01 and 1.92 respectively.

**Data Analysis**

Descriptive statistics were used to describe each variable: functional status, functional status, functional cognition, environment, and occupational competence. The frequency and percentage of hospital readmission within 30 days of discharge was calculated for the sample and each diagnosis. A multiple regression model was used to determine how functional status, self-care function, functional cognition, and environmental impact affect occupational competence. A logistic regression model was used to determine how functional status, self-care function, functional cognition, environmental impact, and occupational competence influence hospital readmission. The omnibus test using a chi-square was examined first for overall model significance. The

effect size for the overall model is expressed as Nagelkerke $R^2$. The significance of each individual predictor was tested. The effect size for each individual predictor is expressed as an odds ratio (Exp[B]). When the odds ratio is higher than 1, increasing values of the predictor could increase the risk of impaired hospital readmission. Feasibility responses were averaged to create scales for the Acceptability of Assessment Measure, the Assessment Appropriateness Measure, and the Feasibility of Assessment Measure. Ratios of eligible versus ineligible participants and eligible versus those who agreed to participate were calculated to indicate feasibility of the proposed study. All analyses were conducted with IBM SPSS v25. Significance is set at $p < .05$.

# CHAPTER IV

# RESULTS

The student researcher identified 113 individuals who met study inclusion criteria. Pain, fatigue, or pending discharge were the primary reasons that 18 individuals declined participation in the research study. Discharge prior to the research attempt and medical holds for unstable vitals, an acute need for increased oxygen support, or blood transfusions left 42 individuals unable to participate in the research study. A total of 53 participants were enrolled in the research study from June to December 2019. Inability to complete the EFPT Bill Pay Subtest due to a lack of experience with checkbooks led to the exclusion of one participant. Expiration during the follow-up period resulted in the exclusion of one participant from the follow-up analysis on hospital readmission. See Tables 1 and 2 for specific sample demographics. The sample includes a fairly even number of males and females. The majority of participants were white and were admitted to the hospital for a TKA. The average age of the sample was 63.8 years (SD = 11.9); the average level of education was 13.3 years (SD = 2.65); and the average number of comorbidities was 8.73 diagnoses (SD = 4.79).

The student researcher identified six occupational therapists met study inclusion criteria. Only three therapists agreed to participate and completed the feasibility group in January 2020. See Table 3 for demographic information. All participants were females between the ages of 25 and 34. All participants are employed as full-time occupational

therapists in the acute care setting and reported use of standardized measures including Bell's Test, the Borg Rating Scale of Perceived Exertion, the Five Times Sit to Stand Test, and the Functional Independence Measure. There were two participants who identified as white and one participate who identified as both white and Hispanic. There were two participants with a master's degree in occupational therapy and one participant with a clinical doctorate in occupational therapy. There were two participants with 0-5 years of clinical experience and one participant with 6-10 years of clinical experience.

Table 1

*Categorical Demographics for Participants with Chronic Medical Conditions*

| Characteristic | Respondents<br>n (%) |
|---|---|
| Gender | |
| Female | 28 (53.8) |
| Male | 24 (46.2) |
| Race | |
| African American | 7 (13.5) |
| White | 45 (86.5) |
| Admitting Diagnosis | |
| CABG | 3 (5.8) |
| CHF | 8 (15.4) |
| COPD | 3 (5.8) |
| TKA | 22 (42.3) |
| THA | 6 (11.5) |
| PNA | 7 (13.5) |
| COPD, CHF | 1 (1.9) |
| CHF, PNA | 2 (3.8) |

*Note*. $n = 52$. CABG = coronary artery bypass graft; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; TKA = total knee arthroplasty; THA = total hip arthroplasty; PNA = pneumonia.

Table 2

*Descriptive Demographics for Participants with Chronic Medical Conditions*

| Characteristic | Mean ± SD |
|---|---|
| Age (years) | 63.8 ± 11.9 |
| Education (years) | 13.4 ± 2.65 |
| Number of Comorbidities | 8.73 ± 4.79 |

*Note.* $n = 52$ for age and number of comorbidities. $n = 50$ for education due to missing data. SD = standard deviation.

Table 3

*Demographics of Participating Occupational Therapists*

| Characteristic | Respondents n (%) |
|---|---|
| Gender | |
| Female | 3 (100) |
| Male | 0 (0) |
| Ethnicity | |
| Hispanic, White | 1 (33.3) |
| White | 2 (66.7) |
| Education | |
| Master's | 2 (66.7) |
| Clinical Doctorate | 1 (33.3) |
| Practice Experience | |
| 0-5 years | 2 (66.7) |
| 6-10 years | 1 (33.3) |

*Note.* $n = 3$.

### Aim 1: Predictors of Occupational Competence

A multiple regression model was used to predict occupational competence with functional status, self-care function, functional cognition, and environmental impact. See Table 4 for specific results. The overall model was significant, $F$ (4,45) = 3.52, $p$ = 0.01. Of the individual predictors, self-care function was a significant positive predictor (β = 0.43, $p$ = 0.01) and environmental impact was a significant negative predictor (β = -0.38, $p$ = 0.01). Therefore, higher scores for self-care function were associated with higher levels of occupational competence, and lower environmental impact scores were associated with higher levels of occupational competence. Self-care function and environmental impact accounted for 24% of the variance in occupational competence ($r^2$ = 0.24).

Table 4

*Summary of Multiple Linear Regression Predicting Occupational Competence*

| | Unstandardized | | Standardized | | | 95% CI | |
|---|---|---|---|---|---|---|---|
| Predictor | b | *SE* | β | *t* | *p* | *LL* | *UL* |
| Functional Status | 1.97 | 1.38 | 0.22 | 1.43 | 0.16 | -0.81 | 4.75 |
| Self-Care Function | 1.15 | 0.44 | 0.43 | 2.64 | 0.01** | 0.27 | 2.03 |
| Functional Cognition | 0.64 | 0.69 | 0.13 | 0.92 | 0.37 | -0.76 | 2.03 |
| Environmental Impact | -4.00 | 1.39 | -0.38 | -2.87 | 0.01** | -6.81 | -1.19 |

*Note*. $n$ = 50. $R^2$ = 0.24, adjusted $R^2$ = 0.17. SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit. *$p$ < 0.01

### Aim 2: Predictors of Hospital Readmissions

The hospital readmission rate for the dissertation sample was 13.7%, and hospital readmission rates for individual diagnoses ranged from 0% (CABG) to 42.9% (CHF). The hospital readmission rates for CHRISTUS St. Michael from July 2015 to June 2018 were tabulated with readmission data obtained from the Medicare HRRP database to determine whether or not the dissertation sample was representative of the overall hospital population. Data for AMI were removed from the calculations for the purpose of comparison since the dissertation sample did not include any participants with AMI. The overall hospital readmission rate was 14.6%, and the readmission rates for individual diagnoses ranged from 4.4% (TKA/THA) to 20.7% (CHF). See Table 5 for all values.

Table 5

*Hospital Readmission Rates for the Sample and By Diagnosis*

| | Hospital Readmission Rate | |
|---|---|---|
| Diagnosis | Dissertation Sample | CHRISTUS St. Michael 2015-2018 |
| CHF | 42.9% | 20.7% |
| COPD | 33.3% | 16.1% |
| CABG | 0% | 13.8% |
| TKA/THA | 3.6% | 4.4% |
| PNA | 14.3% | 12.7% |
| Overall | 13.7% | 14.6% |

*Note.* $n$ = 51 for the dissertation sample. $n$ = 3056 for CHRISTUS St. Michael. CHF = congestive heart failure; COPD = congestive heart failure; CABG = coronary artery bypass graft; TKA = total knee arthroplasty; THA = total hip arthroplasty; PNA = pneumonia.

A logistic regression was used to predict hospital readmission with occupational competence, functional status, self-care function, functional cognition, and environmental impact. See Table 6 for specific results. The overall model was significant, $\chi^2(5) = 13.9$, $p = 0.02$, with an acceptable effect size (Nagelkerke $R^2 = 0.44$). Of the individual predictors, occupational competence was a significant negative predictor (OR = 0.81, $p = 0.02$), and functional cognition was a significant positive predictor (OR = 2.19, $p = 0.04$). Based on the odds ratio, higher scores for occupational competence decrease the likelihood of hospital readmission, whereas higher scores on measures of functional cognition (i.e., greater impairments in functional cognition) increase the likelihood of hospital readmission.

Table 6

*Summary of Logistic Regression Predicting Hospital Readmission*

| | | | | | 95% CI | |
|---|---|---|---|---|---|---|
| Predictor | β | SE | *p* | OR | LL | UL |
| Occupational Competence | -0.21 | 0.09 | 0.02* | 0.81 | 0.68 | 0.97 |
| Functional Status | 1.63 | 1.11 | 0.14 | 5.10 | 0.58 | 45.2 |
| Self-Care Function | 0.32 | 0.27 | 0.25 | 1.37 | 0.81 | 2.34 |
| Functional Cognition | 0.78 | 0.38 | 0.04* | 2.19 | 1.05 | 4.58 |
| Environmental Impact | -1.48 | 0.97 | 0.13 | 0.23 | 0.03 | 1.52 |

*Note*. $n = 49$. Nagelkerke $R^2 = 0.45$. SE = standard error; OR = odds ratio; CI = confidence interval; LL = lower limit; UL = upper limit. The reference category is hospital readmission. $*p < .05$

## Aim 3: Acceptability, Appropriateness, and Feasibility of Standardized Measures

### Feasibility Calculations for the Research Study

Ratios of eligible to ineligible participants and eligible participants to those who agreed to participate were calculated to determine overall study feasibility. The ratio of eligible to ineligible participants is 2.26, and the ratio of eligible participants to those who agreed to participate is 2.13.

### Administration of Standardized Assessments

Altogether, the standardized assessment battery took an average of 38.8 (SD = 9.30) minutes to administer with an average of 1.44 (SD = 1.43) interruptions across participants. Average administration time falls within the 15 to 60 minute time frame allowed for face-to-face client encounter in the hospital setting. The most common interruptions were personal phone calls, which occurred 19 times, and direct nursing care such as medication passes, which occurred 15 times. Other frequent interruptions included visitors, vitals checks, and therapy attempts.

### Feasibility Group

Scales were created for the acceptability, appropriateness, and feasibility of each standardized measure by averaging the responses within each category. See Table 7 for specific results. Reliability and structural validity were not calculated with this data set due to a small sample size.

**Acceptability of assessment measure.** Acceptability scales range from 2.42 (SD = 0.52) to 4.00 (SD = 0.00) for measures included in the standardized assessment battery where higher scores represent greater acceptability. The AM-PAC was considered most acceptable for the acute care setting and the CHIEF-SF was considered least acceptable.

**Intervention appropriateness measure.** Composite appropriateness scores range from 2.25 (SD = 0.43) to 4.00 (SD = 0.00) for the standardized measures included in the research study. Higher scores mean the measure is more appropriate for the setting. The AM-PAC was considered most appropriate for the acute care setting, and the EFPT was considered least appropriate. Qualitative comments reveal that therapists thought some assessments may be more appropriate for other disciplines or settings. For example, one therapist wrote that the CHIEF-SF may be more beneficial for case management. Another therapist wrote that the EFPT would be better suited for clients in inpatient rehabilitation.

**Feasibility of assessment measure.** Feasibility scales range from 2.58 (SD = 0.52) to 3.83 (SD = 0.29) for the standardized measures. Higher scores represent greater feasibility. The AM-PAC and MoCA were considered most feasible for the acute care setting, and the EFPT was considered least feasible. Qualitative feedback on response forms indicates that, in some cases, lower feasibility scores were assigned to assessments with extensive training or fees for clinical use.

Table 7

*Acceptability, Appropriateness, and Feasibility of Standardized Assessments*

| | Mean ± SD | | |
|---|---|---|---|
| Assessment | Acceptability | Appropriateness | Feasibility |
| AM-PAC | 4.00 ± 0.00 | 4.00 ± 0.00 | 3.83 ± 0.29 |
| CHIEF-SF | 2.42 ± 0.52 | 2.33 ± 0.58 | 3.00 ± 1.00 |
| EFPT | 2.75 ± 0.90 | 2.25 ± 0.43 | 2.58 ± 0.52 |
| MoCA | 3.58 ± 0.38 | 3.67 ± 0.58 | 3.83 ± 0.29 |
| OSA-SF | 3.17 ± 1.04 | 3.00 ± 0.87 | 3.75 ± 0.43 |

*Note.* $n = 3$. SD = standard deviation; AM-PAC = Activity Measure for Post-Acute Care; CHIEF-SF = Craig Hospital Inventory of Environmental Factors Short Form; EFPT = Executive Function Performance Test; MoCA = Montreal Cognitive Assessment; OSA-SF = Occupational Self Assessment Short Form.

# CHAPTER V

# DISCUSSION AND CONCLUSION

## Discussion

This dissertation study explored the predictors of occupational competence and hospital readmission for individuals with chronic medical conditions in the acute care setting. It also explored occupational therapists' perceptions on the implementation of occupation-focused standardized measures in this setting. This chapter discusses study results as they relate to research questions and existing literature, the implications they have for occupational therapy, study limitations, and future research directions.

### Predictors of Occupational Competence

Dissertation results indicate that self-care function and environmental impact are significant predictors of occupational competence. These findings support Hypothesis One (i.e., Self-care function will have a positive relationship with occupational competence) and partially support Hypothesis Two (i.e., Functional status, functional cognition, and environmental impact will have a negative relationship with occupational competence). The significant positive relationship between self-care function and occupational competence suggests that clients who are more independent with self-care activities have higher levels of occupational competence, whereas those who require more assistance with self-care activities have lower levels of occupational competence. This finding is consistent with MOHO literature that states chronic illness can limit

participation in desired occupations (e.g., self-care activities) and negatively impact competency or poor quality of life (Taylor et al., 2010; Taylor, 2017; Wu et al., 2016). It adds to existing literature by quantifying the relationship between actual self-care performance and occupational competence. The significant positive relationship between self-care function and occupational competence also shows that participants had appropriate insight into their self-care abilities, as performance on the AM-PAC corroborated self-reported competence on the OSA-SF.

The significant negative relationship between environmental impact and occupational competence indicates that individuals who perceive more environmental barriers in daily life have lower levels of self-competence. Specific items on the measure of environmental impact (i.e., CHIEF-SF) ask how community resources, comprehension of medical information, and access to medical care influence daily life. Based on the results, participants believe that these items provide either meaningful support or constraints as they manage chronic health conditions in the community. This finding loosely corresponds to efficacy literature on occupational therapy self-management programs that shows specific interventions that target health literacy, communication with health providers, and skill mastery improve occupational participation, self-efficacy, and quality of life (Berger et al., 2018; Garvey et al., 2015; Hand et al., 2011; O'Toole et al., 2013; Rogers et al., 2016).

Functional status and functional cognition were not significant predictors of occupational competence. This finding refutes Hypothesis Two: functional status, functional cognition, and environmental impact will have a negative relationship with

occupational competence. The non-significant relationship between functional status and occupational competence may be related to the fact that occupational therapists in acute care typically assess potential deficits or components of an activity in isolation to make a determination of overall function or readiness to discharge home. A client may demonstrate good strength during manual muscle testing or balance when donning and doffing socks edge of bed but struggle to translate those performance capacities into more complex self-care routines. However, neither the occupational therapist nor the client will be aware that a potential problem exists if the client is not given the opportunity to perform the self-care routine in the hospital. This argument is supported by literature on functional cognition that states performance is essential for understanding how a deficit impacts complex activities of daily living (AOTA, 2017; Baum & Wolf, 2013). It is also reinforced by MOHO literature that recommends evaluating individual factors like volition, habituation, and performance capacity as well as components of occupational adaptation to capture the most comprehensive information about a client for optimal outcomes (Kielhofner & Forsyth, 2008; Taylor, 2017).

A couple of primary factors may have contributed to the non-significant relationship between functional cognition and occupational competence. First, participants with greater impairments in functional cognition may lack insight into their deficits causing them to overestimate occupational competence on the OSA-SF. Dissertation data lends support to this claim, as participants who scored five or more on the EFPT-Bill Pay Subtest ($n = 4$), scores that reflect greater impairments in functional cognition, reported that they would be able to complete the activity without assistance on

a pre-test insight question. Second, the sample includes a significant number of participants with THA or TKA. These individuals are typically cognitively intact and, as a result, may have placed more emphasis on physical limitations or inadequate resources when rating occupational competence.

**Predictors of Hospital Readmission**

Dissertation results show that functional cognition and occupational competence are significant predictors of hospital readmission. These findings partially support Hypotheses Three (i.e., Functional status, functional cognition, and environmental impact will have a positive relationship with hospital readmissions) and Four (i.e., Occupational competence and self-care function will have a negative relationship with hospital readmissions). Functional cognition is a significant positive predictor of hospital readmission, so individuals with greater impairments in functional cognition are more likely to be readmitted to the hospital. These individuals may struggle to execute appropriate organization, sequencing, or judgment and safety skills when they manage their chronic health conditions in the community. Additionally, they may have difficulty problem solving through an appropriate course of action when acute symptoms arise resulting in frequent trips to the emergency room or hospital for medical attention.

This dissertation result, related to functional cognition, lends support to the inconsistent relationship between cognition and hospital readmission reported in existing literature. It aligns with the outcomes of a study on functional status and rehospitalization that found higher rates of readmission for individuals with lower cognitive status (Hoyer et al., 2014). However, they contradict a study by Callahan et al. (2015) that denies a

relationship between cognition and hospital readmissions. Differences in dissertation results and existing literature may be attributed to the fact that Callahan et al. (2015) used neuropsychological testing (i.e., paper-and-pencil based testing) as the measure of cognitive function, whereas the dissertation study utilized a performance-based test of cognition.

Dissertation findings also reveal a significant negative relationship between occupational competence and hospital readmission, which suggests that individuals with higher levels of occupational competence are less likely to be readmitted to the hospital. This finding can be explained by theoretical literature on occupational competence. Individuals with high levels of occupational competence actively participate in meaningful occupations that reflect their interests and values and, as a result, experience feelings of self-efficacy and life satisfaction (Taylor, 2017). Thus, individuals with chronic health conditions that exhibit high competence feel confident in their ability to manage those conditions in the community and do so successfully, whereas individuals with chronic health conditions and low competence feel less certain about their self-management skills and may seek the assistance of a credentialed provider in the emergency department to navigate acute symptoms. These results build upon prior research surrounding occupational competence and chronic health conditions (i.e., Taylor et al, 2010; Wu et al, 2016) by establishing a significant link between occupational competence and hospital readmissions for this population.

The non-significant relationship between self-care function and hospital readmissions was unexpected, as lower levels of function are typically associated with higher rates of

readmission in existing literature (e.g., Hoyer et al., 2014; Rogers et al., 2016). This discrepancy suggests that, in the case of the dissertation sample, hospital readmission may have been driven by acute symptoms and the psychosocial ramifications of those symptoms more than self-care impairments. For example, in the dissertation study, one individual was readmitted after TKA due to an infection at the surgical site not functional limitations or decline. Literature on cardiopulmonary conditions also supports this claim. Individuals with cardiopulmonary conditions often experience shortness of breath and, as a result, anxiety in response to daily activity performance (Matthews, 2018). Anxiety may further exacerbate feelings of breathlessness and prompt the individual to seek emergency medical treatment (Huntley, 2014; Santamaria et al., 2004).

One alternative explanation is that a large number of individuals with elective joint replacements in the sample influenced the results. Individuals who are admitted to the hospital for THA or TKA typically maintain a high level of function prior to admission and resume that high level of function quickly after surgery (Maher, 2014; Murphy & Lawson, 2018). Additionally, they exhibit low rates of readmission (e.g., $n = 1$ for the dissertation sample and 4.4% for CHRISTUS St. Michael between 2015 and 2018). Changes in functional status as a result of surgery are typically modulated by caregiver assistance and remediated with short-term rehabilitation (Maher, 2014; Murphy & Lawson, 2018).

Neither functional status nor environmental impact were significant predictors of hospital readmission. These results partially refutes Hypothesis Four: Functional status, functional cognition, and environmental impact will have a positive relationship with

hospital readmissions. The lack of significance between functional status, as measured by the occupational therapists' discharge recommendation, and hospital readmission suggests that the current evaluation approach in acute care may not accurately measure key factors that predict a client's likelihood of readmission at discharge (Kielhofner & Forsyth, 2008). However, compliance with the occupational therapists' discharge recommendation should be considered. In some cases, clients may discharge to a different destination (e.g., home versus a sub-acute rehabilitation facility) or with a different level of follow-up care (e.g., no services versus home health) than the therapist recommended. Non-compliance with the therapists' recommendation may be due to a lack of communication amongst the medical team, insurance denial, or client choice. Regardless, these clients may not receive the level of support they need to transition home successfully even when it is recommended by the occupational therapy team.

The non-significant relationship between environmental impact and hospital readmission may be related to the content of the measurement tool. The CHIEF-SF quantifies environmental impact in the following domains: physical, policies, work, attitudes, services. Items that assess the physical (i.e., impact of terrain, climate, lighting, crowds) and the services (e.g., accessibility of healthcare information, access to healthcare, help in the home) domains may have more bearing on hospital readmission than the attitudes (e.g., impact of attitudes at home) or policies (e.g., impact of rules of businesses) domains. This argument is partially supported by literature that identifies access and utilization of healthcare services as well as attributes of the social environment as risk factors for readmission (Hasan et al., 2010; Kansagara et al., 2011).

Additionally, the majority of participants with THA or TKA reported limited to no environmental barriers to daily life, which may have influenced results.

**Hospital Readmission Rates**

The readmission rates for the dissertation sample are comparable to Medicare HRRP data for CHRISTUS St. Michael between the years of 2015 and 2018. The largest differences between dissertation results and 2015-2018 Medicare HRRP data occurred for individuals with CHF (22.2% difference) and COPD (17.2% difference). One explanation for these disparities is that occupational therapy is only consulted for individuals with CHF or COPD when self-care impairments are detected on initial nursing screens or when the individual is readmitted within 30 days of previous discharge. In contrast, dissertation results for TKA/THA are within 1% of the 2015-2018 Medicare HRRP data for TKA/THA, and occupational therapy is consulted for every elective TKA/THA at this facility.

Dissertation results are also consistent with readmission rates reported in prior studies. The overall hospital readmission rate for the dissertation sample (13.7%) falls within the 11.8-17.5% range found in existing literature (Hasan et al., 2009; Ottenbacher et al., 2014). However, it is important to note that diagnostic groupings in prior studies extend beyond Medicare HRRP diagnoses. For example, Ottenbacher et al. (2014) included stroke, lower extremity fractures, joint replacements, debility, neurologic disorders, and brain dysfunction in their study.

**Therapist Perceptions on Implementation of Standardized Measures**

Occupational therapists included in the dissertation study rated the AM-PAC as the most acceptable, appropriate, and feasible standardized occupational therapy measure for the acute care setting; they ranked the MoCA and the OSA-SF in second and third place respectively. This finding partially supports Hypothesis Five: Standardized measures will be acceptable and appropriate for this population. Individual assessments will be feasible in light of acute care time constraints.

Ratings for acceptability and appropriateness of the measures were lower than expected, whereas perceived feasibility of the measures was slightly higher than expected. Acceptability scores may have been low because the outcome was assessed based on prior knowledge and a brief educational session versus implementation in practice (Proctor et al., 2010). Low appropriateness scores may be related to role delineation and expectations in the hospital setting. For example, therapists felt that some measures were more appropriate for case managers who are more directly involved in care coordination, whereas they believed others were more appropriate for rehabilitation settings where therapists spend more time with their clients. These responses are consistent with literature on appropriateness that suggests providers may push back against new treatments, services, or practices that are different from current role or job expectations (Proctor et al., 2010).

As previously mentioned, feasibility scores were higher than expected across assessments. Therapists considered the AM-PAC and MoCA most implementable, possible, doable, and easy to use. The fact that the occupational therapists in the

dissertation study evaluate all six AM-PAC self-care activities for all clients on their caseload as part of the site-specific initial evaluation may explain these high feasibility ratings. The therapists' overall affinity for the MoCA corresponds to prior studies on occupational therapy in acute care that report standardized cognitive measures are most commonly and frequently used by occupational therapists in this setting (Blaga & Robertson, 2008; Robertson & Blaga, 2013).

Low feasibility scores for the other standardized measures (i.e., CHIEF-SF, EFPT-Bill Pay Subtest, OSA-SF) may be explained by lack of time and lack of assessment availability. Therapists' qualitative feedback emphasized assessment training requirements and the challenges of documenting standardized assessments in the electronic medical record, which both require a time commitment that may not be possible in the confines of productivity expectations. The therapists also discussed potentially steep fees and clinical licenses for assessment use in practice, both factors that can limit the availability of standardized assessments in a clinical setting.

**Implications**

Dissertation findings have implications for occupational therapy at the provider and systems levels. First, occupational therapists in acute care should consider incorporating standardized measures to objectively quantify self-care function, environmental impact, functional cognition, and occupational competence for individuals with chronic health conditions since they are significant predictors of either occupational competence or hospital readmission. These measures may complement the current evaluation approach by providing a comprehensive picture of underlying impairments as

well as specific elements of occupational adaptation for effective treatment and discharge planning purposes (Kielhofner & Forsyth, 2008; Taylor, 2017). Additionally, the use of standardized measures would enable therapists to demonstrate therapy needs, communicate with the multidisciplinary team, and quantify the outcomes of therapy services no matter how short-term (Fisher & Friesema, 2013; Leppin et al., 2014; Robertson & Blaga, 2013).

Second, occupational therapists in acute care should ensure that clients understand occupational therapy interventions and can implement learned techniques during functional activities before they discharge home. Specific techniques like the teach back method improve adherence to medication and diet, self-efficacy, and readmission rates for individuals with chronic disease (Dinh, Bonner, Clark, Ramsbotham, & Hines, 2016). Other techniques that may improve comprehension of occupational therapy interventions and are supported in the literature include repetition of the treatment message, summaries of relevant treatment points, and personally relevant interventions (Borelli et al., 2005). Additionally, occupational therapist should provide ample opportunities for clients to implement learned techniques in order to facilitate an active process of self-management that improves understanding of interventions, skill mastery, and feelings of self-efficacy (Borelli et al., 2005; Kralik et al., 2004; Rogers et al., 2016).

Furthermore, occupational therapists should refer appropriate clients for continued therapy services to improve self-management skills, self-efficacy, and occupational competence and support a successful discharge home. Literature on the efficacy of occupational therapy and community-based self-management programs

administered by occupational therapists supports these positive client outcomes (Berger et al., 2018; Garvey et al., 2015; Hand et al., 2011; O'Toole et al., 2013; Rogers et al., 2016).

Finally, at the systems level, supervisors and rehabilitation directors should consider obtaining clinical licenses for standardized measures such as the AM-PAC so that occupational therapists have access to these measurement tools in practice. Standardized measures answer the call for measurement of client outcomes in value-based purchasing initiatives (Fisher & Friesema, 2013; Leppin et al., 2014) and provide useful information for discharge planning (Jette et al., 2014). Additionally, the therapists in the study find these tools, especially the AM-PAC, acceptable, appropriate, and feasible for the setting and population.

**Limitations**

This dissertation has several limitations. First, the research study includes small samples of hospital participants and occupational therapists, which limits the generalizability of findings. While the number of hospital participants ($n$ = 50) is small compared to other studies on hospital readmission ($n$ = up to 736,536), the dissertation sample meets the minimum requirements for statistical analysis based on *a priori* power analysis, and it achieves significance as well as an acceptable effect size during analysis. The limited number of occupational therapists included in the study ($n$ = 3) is related to a small full-time staff at the research facility. Results are preliminary and should be interpreted with caution.

Next, the research study involves self-report measures for variables of interest including occupational competence (i.e., OSA-SF) and environmental impact (i.e., CHIEF-SF). Self-report measures increase the likelihood of socially preferred responses versus a true representation of participant perceptions or performance. Participants were given the option to complete assessments by interview or independently to reduce this effect. Participants were also encouraged to give personal responses if they looked to loved ones for assistance. Additionally, the dissertation employed performance-based measures, including the AM-PAC and EFPT-Bill Pay Subtest, that corroborated some self-report responses.

Additionally, the sample includes a large majority of participants with THA and TKA ($n$ = 28) that demonstrate distinct differences, which may have influenced research outcomes, when compared to other Medicare HRRP diagnoses. Individuals who are admitted to the hospital for THA and TKA elect to have surgery, whereas individuals with CABG, CHF, COPD, and PNA are admitted to the hospital for an acute exacerbation of symptoms or more emergent medical care. Individuals status post THA or TKA are typically healthier, more physically active, and more cognitively intact when compared to those with CHF, COPD, and PNA. These differences may have contributed to the lack of significant findings between functional cognition and occupational competence and self-care function and hospital readmission as indicated above.

Finally, the sample included an uneven distribution of hospital readmissions outcomes. Only seven participants were readmitted to the hospital following discharge, whereas 43 participants were not readmitted. Since logistic regression does not require an

even number of participants in each category of the dependent variable, the dissertation model does not violate logistic regression assumptions (King & Zeng, 2001). Uneven groups may increase the challenge of finding significant results and the likelihood of a Type 2 error (King & Zeng, 2001). However, in the dissertation, the model for predictors of hospital readmission reached significance in spite of an uneven distribution.

**Future Research**

Future research should incorporate larger samples of hospital participants with a more even representation of diagnoses to increase generalizability of results. Studies with larger samples of occupational therapists would improve the interpretability and generalizability of research findings on the implementation outcomes of standardized measures. Future research should expand the sample of hospital participants to include additional medical-surgical, neurologic, and orthopedic diagnoses so that the sample is more representative of the patients admitted to acute care hospitals across the country. Additionally, studies should gather data on types of insurance to examine how socioeconomic factors influence occupational competence and hospital readmission. Research on implementation outcomes should incorporate opportunities for therapists to use the standardized measures of interest in practice to capture acceptability, appropriateness, and feasibility during multiple stages of implementation. Future studies should examine how psychosocial factors such as anxiety and depression experienced as a result of chronic health conditions impact occupational competence and hospital readmission. Studies that incorporate alternative occupation-focused measures related to the variables of interest may identify tools that are acceptable, appropriate, or feasible for

the acute care setting. Finally, scholars should evaluate how well an enhanced occupational therapy evaluation approach in acute care that combines current assessments with measures of functional cognition and occupational competence predicts discharge needs and hospital readmission.

## Conclusions

This study explored the predictors of occupational competence and hospital readmission for individuals with chronic medical conditions in acute care. It also investigated occupational therapists' perceptions on the implementation of standardized measures in this setting. Results identified self-care function and environmental impact as significant predictors of occupational competence and indicate that functional cognition and occupational competence are significant predictors of hospital readmission. Findings also suggest that the AM-PAC is an acceptable, appropriate, and feasible measure for individuals with chronic health conditions the acute care setting. These dissertation results have direct implications for occupational therapy evaluations and treatment in acute care. Overall, this dissertation demonstrates that occupational therapists have the assessment tools and skills needed to measure significant predictors of occupational competence and hospital readmission for individuals with chronic health conditions in the acute care setting. When combined with existing literature on occupational therapy in acute care, these results reinforce that occupational therapy has a distinct role in evaluating, treating, and reducing hospital readmissions for this population and should be included in clinical pathways for all Medicare HRRP diagnoses to promote optimal client outcomes.

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# APPENDIX A

## CHRISTUS Health IRB Approval

October 04, 2018

Melanie Morriss Tkach
7 Hickory Ridge
Texarkana, TX 75503

**Re:** **Protocol # 2018-103 –** Occupational Therapy in Acute Care: Predictors of Occupational Competence and Hospital Readmission

Dear Dr. Tkach,

This letter is to inform you that on October 4, 2018, the CHRISTUS Health IRB reviewed and approved the above titled Protocol (Version #2, dated 10/4/2018) by expedited review under the provisions of 45 CFR 46.110, specifically **Category 4 and 7.**

4. **Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves. Where medical devices are employed, they must be cleared/approved for marketing. (Studies intended to evaluate the safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications.) Examples:**
    a. **physical sensors that are applied either to the surface of the body or at a distance and do not involve input of significant amounts of energy into the subject or an invasion of the subject=s privacy;**
    b. **weighing or testing sensory acuity;**
    c. **magnetic resonance imaging;**
    d. **electrocardiography, electroencephalography, thermography, detection of naturally occurring radioactivity, electroretinography, ultrasound, diagnostic infrared imaging, doppler blood flow, and echocardiography;**
    e. **moderate exercise, muscular strength testing, body composition assessment, and flexibility testing where appropriate given the age, weight, and health of the individual.**
7. **Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.)**

This approval includes receipt and review of the following document(s) by the CHRISTUS Health IRB:

**Protocol (Version 2, dated 10/4/2018)**
**Informed Consent Patient (Version 2, dated 10/4/2018)**
**Informed Consent Therapist (Version 1, dated 10/4/2018)**
**Therapist Interviews: Occupational Therapist Demographic Questionnaire**
**Therapist Interviews: Assessment Feasibility Measures**

**Cognitive Screen: Montreal Cognitive Assessment (Version 7.1)**
**Self-Care Measure: AM-PAC Inpatient Daily Activity Short Form**
**Environment Measure: Craig Hospital Inventory of Environmental Factors Short Form**
**Functional Cognition: Executive Function Performance Test-Bill Pay Subtest (Form D)**
**Occupational Competence Measure: Occupational Self-Assessment Short Form**
**Patient Recruitment Script**
**Patient Recruitment Flier: Occupational Therapists Needed for Research Study**

The following was (were) reviewed and acknowledged by the CHRISTUS Health IRB:

**OTR Data Collection Form**
**Patient Data Collection Form**

**Approval Period:** ***October 4, 2018 – October 3, 2019***

**Reminders:**

All protocol amendments and changes to approved research must be submitted to the IRB and may not be implemented until approved by the IRB except where necessary to eliminate apparent immediate hazard to the study subjects.

Significant changes to the study site and significant deviations from the research protocol and unanticipated problems that may involve risks or affect the safety or welfare of subjects or others or that may affect the integrity of the research must be promptly reported to the IRB.

In the event there are unforeseeable side effects or injury to any person undergoing, or participating in these investigational studies, it is incumbent upon you to make a written report to the IRB and the Regional CMO immediately following such events. Failure to comply with the above requirements may result in termination of the study covered by the CHRISTUS Health IRB.

This study may not be initiated until all approvals have been obtained from the relevant CHRISTUS Research Institute System Offices: Office of Research Support, Office of Sponsored Programs, and Office of Human Subject Research Protection Program.

In addition, it is very important that you closeout your project when it is complete or if you plan to leave the institution.

If you have any questions, please feel free to contact the Office of Human Subject Research Protection Program at **469-282-2686** or via email at christus.irb@christushealth.org.

Sincerely,

CHRISTUS Health IRB Chair

Signature applied by Brian Gladue on 10/13/2018 03:50:32 PM CDT

Appendix B

CHRISTUS Continuing Review Letter

September 6, 2019

Melanie Morriss Tkach
7 Hickory Ridge
Texarkana, TX 75503

**Re:** **2018-103** – Occupational Therapy in Acute Care: Predictors of Occupational Competence and Hospital Readmission ***- Submission Reference 005320***

Dear Dr. Tkach,

This letter is to inform you that on September 6, 2019, the CHRISTUS Health IRB reviewed and approved, by expedited review procedures, the continuation of the above-listed study. This approval includes the following document(s):

**Protocol (Version 2, dated 10/4/2018)**
**Informed Consent Patient (Version 2, dated 10/4/2018)**
**Informed Consent Therapist (Version 1, dated 10/4/2018)**
**Therapist Interviews: Occupational Therapist Demographic Questionnaire**
**Therapist Interviews: Assessment Feasibility Measures**
**Cognitive Screen: Montreal Cognitive Assessment (Version 7.1)**
**Self-Care Measure: AM-PAC Inpatient Daily Activity Short Form**
**Environment Measure: Craig Hospital Inventory of Environmental Factors Short Form**
**Functional Cognition: Executive Function Performance Test-Bill Pay Subtest (Form D)**
**Occupational Competence Measure: Occupational Self-Assessment Short Form**
**Patient Recruitment Script**
**Patient Recruitment Flier: Occupational Therapists Needed for Research Study**
**OTR Data Collection Form**
**Patient Data Collection Form**

**The following was (were) reviewed and acknowledged by the CHRISTUS Health IRB:**

**Literature Review**
**Report of Unanticipated Problem**

Approval Period: **September 6, 2019 – Septemeber 5, 2020**

**Reminders:**

All protocol amendments and changes to approved research must be submitted to the CHRISTUS Health IRB and may not be implemented until approved by the CHRISTUS Health IRB except where necessary to eliminate an apparent immediate hazard to the study subjects.

Significant changes to the study site and significant deviations from the research protocol and unanticipated problems that may involve risks or affect the safety or welfare of subjects or others, or that may affect the integrity of the research must be promptly reported to the CHRISTUS

Health IRB.

In the event there are unforeseeable side effects or injury to any person undergoing, or participating in these investigational studies, it is incumbent upon you to make a written report to the CHRISTUS Health IRB and the Regional CMO immediately following such events. Failure to comply with the above requirements may result in termination of the study covered by the CHRISTUS Health IRB.

If you have any questions, please feel free to contact the CHRISTUS Health IRB at **469-282-2686** or via email at christus.irb@christushealth.org.

Sincerely,

CHRISTUS Health IRB Chair

Signature applied by Brian Gladue on 09/07/2019 09:35:47 AM CDT

APPENDIX C

CHRISTUS Health IRB Protocol Amendment Approval (09/23/2019)

September 25, 2019

Melanie Morriss Tkach
7 Hickory Ridge
Texarkana, TX 75503

**Re:** **2018-103** – Occupational Therapy in Acute Care: Predictors of Occupational Competence and Hospital Readmission - ***Submission Reference 005539***

Dear Dr. Tkach,

This letter is to inform you that the CHRISTUS Health IRB has approved, by expedited review, the Protocol amendment (Version # 4.1, dated 09/23/2019) for the above listed study on September 25, 2019.

The following document(s) was (were) reviewed and approved by the CHRISTUS Health IRB:

**Occupational Therapy in Acute Care Protocol (Version 4.1, dated 9/23/2019)**
**Informed Consent (Version 2.3, dated 9/23/2019)**

Continued approval is conditional upon your compliance with the following requirements:

Significant changes to the study and/or significant deviations from the research protocol and all unanticipated problems that may involve risks or affect the safety or welfare of subjects or others, or that may affect the integrity of the research must be promptly reported to the CHRISTUS Health IRB.

If you have any questions regarding this review, please contact the Office of Human Subject Research Protection Program at 469-282-2686 or via email at christus.irb@christushealth.org.

Sincerely,

CHRISTUS Health IRB Chair

Signature applied by Brian Gladue on 09/28/2019 12:08:57 PM CDT

APPENDIX D

CHRISTUS Health IRB Protocol Amendment Approval (01/13/2020)

January 09, 2020

Melanie Morriss Tkach
7 Hickory Ridge
Texarkana, TX 75503

**Re:** **2018-103** – Occupational Therapy in Acute Care: Predictors of Occupational Competence and Hospital Readmission - ***Submission Reference 006134***

Dear Ms. Tkach,

This letter is to inform you that the CHRISTUS Health IRB has approved, by expedited review, the Protocol Amendment (Version 2, dated 1/9/2020) and Informed Consent Amendment (Version 1.1, dated 1/9/2020 for the above listed study on January 9, 2020.

The following document(s) was (were) reviewed and approved by the CHRISTUS Health IRB:

- **Recruitment Flyer (dated 1.1, dated 1/9/2020)**

Continued approval is conditional upon your compliance with the following requirements:

Significant changes to the study and/or significant deviations from the research protocol and all unanticipated problems that may involve risks or affect the safety or welfare of subjects or others, or that may affect the integrity of the research must be promptly reported to the CHRISTUS Health IRB.

If you have any questions regarding this review, please contact the Office of Human Subject Research Protection Program at 469-282-2686 or via email at christus.irb@christushealth.org.

Sincerely,

CHRISTUS Health IRB Chair

Signature applied by Brian Gladue on 01/11/2020 09:06:37 AM CST

# APPENDIX E

Institutional Authorization Agreement

**Institutional Review Board**
Office of Research
6700 Fannin, Houston, TX 77030
713-794-2480
irb-houston@twu.edu
https://www.twu.edu/institutional-review-board-irb/

DATE: October 2, 2019

TO: Ms. Melanie Tkach
Occupational Therapy - Houston

FROM: Ms. Tracy Lindsay, Director of Operations
Office of Research & Sponsored Programs

*Re: Institutional Authorization Agreement (IAA) Updated for Occupational Therapy in Acute Care: Predictors of Occupational Competence and Hospital Readmission (Protocol #: 20312)*

An IAA for the above referenced study between Texas Woman's University and Christus Health IRB was processed as an expedited study. The Christus Health IRB IRB is the designated IRB providing the review for this study. According to our records, this protocol was originally approved by the Christus Health IRB IRB on 10/4/2018. The TWU IRB has received an updated approval letter and has revised our records to indicate that the most recent approval date is 9/6/2019.

A current protocol file with all correspondence between the researcher and the Christus Health IRB IRB must be maintained at TWU. Therefore, you are required to place on file any documentation regarding this study including modifications, extensions, notifications of adverse events, etc.

If you have any questions, please contact the TWU IRB.

cc. Dr. Cynthia Evetts, Occupational Therapy - Houston
Dr. Patricia Bowyer, Occupational Therapy - Houston

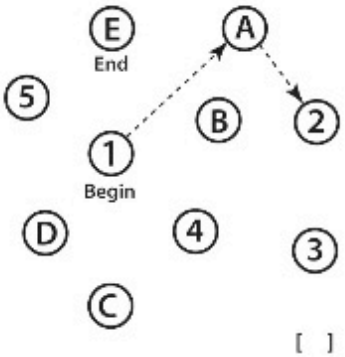
# APPENDIX F

Cognitive Screen: The Montreal Cognitive Assessment (MoCA)

**MONTREAL COGNITIVE ASSESSMENT (MOCA)**
Version 7.1 Original Version

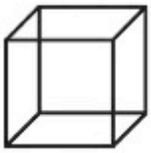
NAME :
Education : Date of birth :
Sex : DATE :

## VISUOSPATIAL / EXECUTIVE




[ ] [ ]

Copy cube



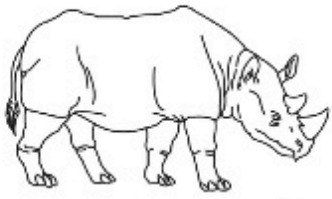
Draw CLOCK (Ten past eleven)
( 3 points )

[ ] Contour [ ] Numbers [ ] Hands

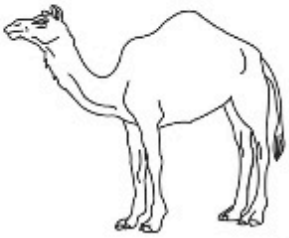
POINTS __/5

## NAMING

[ ]



[ ]



[ ]

__/3

## MEMORY

Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.

| | FACE | VELVET | CHURCH | DAISY | RED |
|---|---|---|---|---|---|
| 1st trial | | | | | |
| 2nd trial | | | | | |

No points

## ATTENTION

Read list of digits (1 digit/ sec.). Subject has to repeat them in the forward order [ ] 2 1 8 5 4

Subject has to repeat them in the backward order [ ] 7 4 2

__/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors

[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B

__/1

Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65

4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt**

__/3

## LANGUAGE

Repeat : I only know that John is the one to help today. [ ]

The cat always hid under the couch when dogs were in the room. [ ]

__/2

Fluency / Name maximum number of words in one minute that begin with the letter F [ ] _____ (N ≥ 11 words)

__/1

## ABSTRACTION

Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler

__/2

## DELAYED RECALL

| | Has to recall words WITH NO CUE | FACE [ ] | VELVET [ ] | CHURCH [ ] | DAISY [ ] | RED [ ] | Points for UNCUED recall only |
|---|---|---|---|---|---|---|---|
| **Optional** | Category cue | | | | | | |
| | Multiple choice cue | | | | | | |

__/5

## ORIENTATION

[ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City

__/6



www.mocatest.org

Normal ≥ 26 / 30

TOTAL __/30

Add 1 point if ≤ 12 yr edu

Administered by: _____

# APPENDIX G

Standardized Assessment Battery

*AM-PAC Inpatient Daily Activity Short Form*

**Boston University AM-PAC™**

**Daily Activity Inpatient Short Form '6 Clicks'**

Please check the box that reflects your (the patient's) best answer to each question.

| How much help from another person does the patient currently need… | Total | A lot | A Little | None |
|---|---|---|---|---|
| 1. Putting on and taking off regular lower body clothing? | ☐1 | ☐2 | ☐3 | ☐4 |
| 2. Bathing (including washing, rinsing, drying)? | ☐1 | ☐2 | ☐3 | ☐4 |
| 3. Toileting, which includes using toilet, bedpan or urinal? | ☐1 | ☐2 | ☐3 | ☐4 |
| 4. Putting on and taking off regular upper body clothing? | ☐1 | ☐2 | ☐3 | ☐4 |
| 5. Taking care of personal grooming such as brushing teeth? | ☐1 | ☐2 | ☐3 | ☐4 |
| 6. Eating meals? | ☐1 | ☐2 | ☐3 | ☐4 |

Raw Score: _____ CMS 0-100% Score: _____

Standardized Score: _____ CMS Modifier: _____

Note: Use the AM-PAC Daily Activity Inpatient Short Form Conversion Table to convert raw scores.

# Craig Hospital Inventory of Environmental Factors
## Short Form



Being an active, productive member of society includes participating in such things as working, going to school, taking care of your home, and being involved with family and friends in social, recreational and civic activities in the community. Many factors can help or improve a person's participation in these activities while other factors can act as barriers and limit participation.

First, please tell me how often each of the following has been a barrier to your own participation in the activities that matter to you. Think about the past year, and tell me whether each item on the list below has been a problem **daily, weekly, monthly, less than monthly, or never.** If the item occurs, then answer the question as to how big a problem the item is with regard to your participation in the activities that matter to you.

(Note: if a question asks specifically about **school or work** and you neither work nor attend school, check not applicable)

| | Daily | Weekly | Monthly | Less than monthly | Never | Not applicable | Big problem | Little problem |
|---|---|---|---|---|---|---|---|---|
| 1. In the past 12 months, how often has the availability of transportation been a problem for you? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 2. In the past 12 months, how often has the natural environment – temperature, terrain, climate – made it difficult to do what you want or need to do? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 3. In the past 12 months, how often have other aspects of your surroundings – lighting, noise, crowds, etc – made it difficult to do what you want or need to do? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 4. In the past 12 months, how often has the information you wanted or needed not been available in a format you can use or understand? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 5. In the past 12 months, how often has the availability of health care services and medical care been a problem for you? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 6. In the past 12 months, how often did you need someone else's help in your home and could not get it easily? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 7. In the past 12 months, how often did you need someone else's help at school or work and could not get it easily? | O | O | O | O | O | O | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |

| | Daily | Weekly | Monthly | Less than monthly | Never | Not applicable | Big problem | Little problem |
|---|---|---|---|---|---|---|---|---|
| 8. In the past 12 months, how often have other people's attitudes toward you been a problem at home? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 9. In the past 12 months, how often have other people's attitudes toward you been a problem at school or work? | O | O | O | O | O | O | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 10. In the past 12 months, how often did you experience prejudice or discrimination? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 11. In the past 12 months, how often did the policies and rules of businesses and organizations make problems for you? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |
| 12. In the past 12 months, how often did government programs and policies make it difficult to do what you want or need to do? | O | O | O | O | O | | | |
| When this problem occurs has it been a big problem or a little problem? | | | | | | | O | O |

**Executive Function Performance Test (EFPT): Form D**

| TASK: Paying Two Bills | Independent 0 | Verbal Guidance 1 | Gestural Guidance 2 | Verbal Direct Instruction 3 | Physical Assistance 4 | Do For Participant 5 | Score |
|---|---|---|---|---|---|---|---|
| INITIATION: *beginning the task.* | | | | | | | |
| Upon your request to start, participant moves to table to gather tools/materials for paying two bills. | | | | | | | ____ |
| EXECUTION: *carrying out the actions of the task through the use of organization, sequencing, and judgment.* | | | | | | | |
| **Organization**: *arrangement of the tools/materials to complete the task.* Participant retrieves the items needed (pen, checkbook, bills, envelope, stamp). | | | | | | | ____ |
| **Sequencing**: *execution of steps in appropriate order.* Participant performs steps in appropriate sequence, e.g., locates the bill due immediately, checks the balance, writes the check for the correct amount, puts check into envelope , seals it. Participant does not confuse steps, e.g., writes check before checking the balance, seals envelope before putting check in, puts check into envelope before signing it, etc. | | | | | | | ____ |
| **Judgment & Safety**: *avoidance of dangerous situation.* Participant prevents or avoids danger, e.g., makes check out in the correct amount and signs it, writes correct address, subtracts check amount from the balance, doesnit write second check (or indicates in some way that there are insufficient funds in the account to write the second check), etc. | | | | | | | ____ |
| COMPLETION: *termination of task.* | | | | | | | |
| Participant knows he/she is finished, e.g., puts down the checkbook, doesn't continue writing checks or fussing with the bills or checkbook, etc. | | | | | | | ____ |

## Occupational Self Assessment - Short Form (OSA-SF)

Name: Date:

| **Step 1:** Below are statements about things you may do in everyday life. If an item does not apply to you, select N/A. For each item that does apply, select how well you do that activity. | | | | | | **Step 2:** Next, for each statement, select how important that activity is to you. | | | **Step 3:** Choose up to 4 priority areas which you would like to target for improvement. |
|---|---|---|---|---|---|---|---|---|---|
| | Does not apply | A lot of difficulty | Some difficulty | Well | Extremely well | Important | More important | Most important | I would like to prioritize |
| 1. Taking care of myself | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 2. Getting where I need to go | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 3. Managing my finances | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 4. Managing my basic needs (food, medicine) | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 5. Identifying and solving problems | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 6. Getting done what I need to do | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 7. Having a satisfying routine | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 8. Handling my responsibilities | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 9. Being involved as a student, worker, volunteer, and/or family member | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 10. Working towards my goals | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 11. Making decisions based on what I think is important | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |
| 12. Effectively using my abilities | ☐ N/A | ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 1 | ☐ 2 | ☐ 3 | |

| **Competence total** (Range 0-48) | 0 | **Value total:** (Range 0-36) | 0 |
|---|---|---|---|

APPENDIX H

Feasibility Measures

**Acceptability of Assessment Measure**

| | Completely disagree | Disagree | Neither agree nor disagree | Agree | Completely agree |
|---|---|---|---|---|---|
| 1. (INSERT ASSESSMENT) meets my approval. | ① | ② | ③ | ④ | ⑤ |
| 2. (INSERT ASSESSMENT) is appealing to me. | ① | ② | ③ | ④ | ⑤ |
| 3. I like (INSERT ASSESSMENT). | ① | ② | ③ | ④ | ⑤ |
| 4. I welcome (INSERT ASSESSMENT). | ① | ② | ③ | ④ | ⑤ |

**Assessment Appropriateness Measure**

| | Completely disagree | Disagree | Neither agree nor disagree | Agree | Completely agree |
|---|---|---|---|---|---|
| 1. (INSERT ASSESSMENT) seems fitting. | ① | ② | ③ | ④ | ⑤ |
| 2. (INSERT ASSESSMENT) seems suitable. | ① | ② | ③ | ④ | ⑤ |
| 3. (INSERT ASSESSMENT) seems applicable. | ① | ② | ③ | ④ | ⑤ |
| 4. (INSERT ASSESSMENT) seems like a good match. | ① | ② | ③ | ④ | ⑤ |

**Feasibility of Assessment Measure**

| | Completely disagree | Disagree | Neither agree nor disagree | Agree | Completely agree |
|---|---|---|---|---|---|
| 1. (INSERT ASSESSMENT) seems implementable. | ① | ② | ③ | ④ | ⑤ |
| 2. (INSERT ASSESSMENT) seems possible. | ① | ② | ③ | ④ | ⑤ |
| 3. (INSERT ASSESSMENT) seems doable. | ① | ② | ③ | ④ | ⑤ |
| 4. (INSERT ASSESSMENT) seems easy to use. | ① | ② | ③ | ④ | ⑤ |

# APPENDIX I

## Hospital Participant Informed Consent Form

**INFORMED CONSENT &**
**AUTHORIZATION FOR PARTICIPATION IN RESEARCH**

Title of Protocol: Occupational Therapy in Acute Care: Predictors of Occupational Competence and Hospital Readmissions

You are being asked to take part in this research study at **Christus St. Michael Hospital.** This consent form explains why this research study is being done and what your role will be if you choose to take part. This form also describes the possible risks connected with being this study. After reviewing this information with the person responsible for your enrollment, you should know enough to be able to make an informed decision about whether you want to take part in the study.

You are being asked to take part in this study because you are currently hospitalized for a diagnosis of Bypass Surgery, Chronic Obstructive Pulmonary Disorder, Congestive Heart Failure, Elective Joint Replacement, Heart Attack, or Pneumonia.

## DESCRIPTION OF RESEARCH STUDY

### 1. PURPOSE OF STUDY

The goal of this research study is to explore how your ability to perform daily activities, your ability to think about and process daily activities, and your environment impact

(1) how skillfully and easily you care for yourself, and
(2) the number of hospital stays you have in a given month.

### 2. DESCRIPTION OF STUDY

As a participant in this study, you will be asked to spend one hour and ten minutes of your time in a face-to-face evaluation session with the researcher. The researcher will administer paper-and-pencil questionnaires and performance-based tests to identify your ability to perform daily activities, your ability to think through and process daily activities, your environment, and how skillfully and easily you care for yourself.

Approximately 30-40 days after your hospital discharge, you will be asked to participate in a 15 minute phone call with the researcher. The researcher will ask whether you have had additional hospitalizations since the initial face-to-face evaluation session and what community resources you are using.

This is an observational study for the student researcher's dissertation work at Texas Woman's University.

The face-to-face evaluation session and the follow-up phone call are free of cost to you.

Approximately 50 participants will be enrolled in the study at Christus St. Michael Hospital.

### 3. RISKS, SIDE EFFECTS, AND DISCOMFORTS TO PARTICIPANTS

While on this study, you may experience potential risks. These risks will vary from person to person. During the face-to-face evaluation session, you will be asked about your experience with potential risks. The most anticipated risks are listed in this form. You should discuss these with the researcher.

The researcher will ask you to perform basic activities of daily living and answer questions about your health condition and how it affects your daily life. A possible risk in this study is *physical and mental fatigue*. The researcher will alternate paper-and-pencil and performance-based tests to provide natural rest breaks. If you become tired, you may take additional rest breaks as needed. You may stop activities or answering questions at any time and end the testing session.

Another risk is *emotional discomfort* when answering questions about your medical condition and how it affects your daily life. If you become upset, you may take breaks as needed. You may stop answering questions at any time and end the testing session. If you feel that you need to talk to a professional about your discomfort, the researcher has provided you with a list of resources.

A third risk of participation is *embarrassment* when performing self-care tasks for the researcher. Your door will remain closed for privacy, and the researcher will ensure all private areas are covered to the greatest extent possible while you perform these tasks.

Another risk of participation is the potential *spread of infection* if the researcher comes in contact with more than one participant per day. The researcher will follow hand hygiene procedures and isolation precautions. The researcher will clean all shared materials according to hospital guidelines.

*Loss of confidentiality* is another risk of this study. Confidentiality will be protected to the extent that is allowed by law. All testing will occur in your hospital room with the door closed for privacy. The follow-up phone call will be conducted in a hospital office with the door closed for privacy. Your information will be marked with a unique code specific to the research study so that there will be no way to link your performance or responses back to you. Only the researcher will handle written test responses. All written test forms will be stored in a locked cabinet in a rehabilitation office at the hospital. All written information will be shredded within 5 years of study completion. The results of the study may be reported in scientific magazines or journals, but your name will not be included. There is a potential risk of loss of confidentiality in all email, downloading, electronic meetings, and internet transactions.

You may experience a *temporary change in vital signs* when you participate in the research study assessments. The researcher will monitor your oxygen and heart rate during testing to ensure that it is safe to continue. If your oxygen saturations are below 92% or your heart rate is over 120 beats per minute, the researcher will discontinue the session and notify your nurse for medical attention. The researcher will monitor your oxygen and heart rate after testing to identify any changes as a result of your participation in the research study. This information will be reported to your medical team.

The researcher will try to prevent any problem that could happen because of this research. You should let the researcher know at once if there is a problem, and they will help you. They will notify hospital personnel (e.g. nurse, physician) for medical attention if needed.

This study may involve unpredictable risks to the participant.

**4. POTENTIAL BENEFITS**

There are no direct benefits to you as a participant. If your assessment results show that you may benefit from occupational therapy services after you discharge from the hospital, the student researcher will contact

your physician to make that recommendation. Your involvement in this research study is completely voluntary, and you may withdraw from the study at any time. If you would like to know the results of this study, we will send them to you by mail or email.

**5. ALTERNATE TREATMENTS OR PROCEDURES**

You may choose to not take part in this study. You have received an occupational therapy evaluation by a Christus St. Michael occupational therapist and may receive continued therapy after your hospitalization based on their recommendations. You may choose not to be treated at all.

**ADDITIONAL INFORMATION**

**6.** You may ask the Principal Investigator any questions you have about this study. You may contact the Principal Investigator, **Melanie Tkach, at 903-293-7555,** or her supervisor, **Patricia Bowyer, at 713-794-2128.** You may also contact the Chair of the **CHRISTUS Health Institutional Review Board (IRB) at 469-282-2686** with any questions that have to do with this study or with your rights as a study participant. The IRB is a committee that reviews research studies to ensure that you are as safe as possible.

**7.** Your participation in this research study is strictly voluntary. You may choose not to take part in this study without any penalty or loss of benefits to which you are otherwise entitled. You may also withdraw from participation in this study at any time without any penalty or loss of benefits. If you withdraw from the study, data collected about you up to the time you withdrew may have to remain in the study database for inclusion in data analysis. If you decide you want to stop taking part in the study, for your safety, it is recommended that you talk to your doctor first. If you withdraw from this study, you can still choose to be treated at CHRISTUS.

**8.** This study or your participation in it may be changed or stopped at any time by the Principal Investigator, Texas Woman's University, the Office for Human Research Protections (OHRP – a regulatory agency that oversees research in humans) or the IRB of CHRISTUS Health.

**9.** You will be informed of any new findings that might affect your willingness to continue taking part in the study.

**10.** CHRISTUS Health will take appropriate steps to keep your personal health information private. However, there is no guarantee of absolute privacy. Federal agencies (such as the FDA and the OHRP), and the IRB of CHRISTUS Health might review your record to collect data or to check that the research is being done safely and correctly. In some situations, any of these regulatory agencies could be required to reveal the names of participants.

**11.** CHRISTUS Health may benefit from your participation and/or what is learned in this study.

**12.** This study is under the supervision of Dr. Patricia Bowyer at Texas Woman's University, Houston.

**13.** In a medical emergency, you may be cared for by someone who has a financial interest with the study sponsor(s). If you have questions about this, you may call the CHRISTUS Health IRB at **469-282-2686**.

**CONFLICT OF INTEREST**

The researcher has no conflicts of interest to disclose.

**STUDY COSTS AND COMPENSATION**

If you suffer injury as a direct result of taking part in this study, CHRISTUS Health providers will provide medical care. However, this medical care will be billed to your insurance provider or you in the ordinary manner. You will not be reimbursed for expenses or compensated financially by CHRISTUS or Texas Woman's University for this injury. You may also contact the Chair of the CHRISTUS IRB at **469-282-2686** with questions about study-related injuries. By signing this consent form, you are not giving up any of your legal rights.

Certain tests, procedures, and/or drugs that you may receive as part of this study may be without cost to you because they are for research purposes only. However, your insurance provider and/or your may be financially responsible for the costs of care and treatment of any complications resulting from the research tests, procedures, and/or drugs. Standard medical care that you receiving under this research study will be billed to your insurance provider and/or you in the ordinary manner. Before taking part in this study, you may ask about which parts of the research-related care may be provided without charge, which costs your insurance provider may pay for, and which costs may be your responsibility.

There are no plans to compensate you for any patents or discoveries that may result from your participation in this research.

You may receive up to **$15.00** in the form of **Wal-Mart Gift Card** for study participation. You will only receive compensation if you are found eligible for study participation and complete both the in-hospital evaluation and follow-up phone calls. No compensation will be provided if you withdraw from the study early. Your gift card will be sent by mail 1-3 business days after you complete the follow-up phone call.

**AUTHORIZATION TO USE AND DISCLOSE INFORMATION FOR RESEARCH PURPOSES**

Federal regulations give you certain rights related to your health information. These include the right to know who will be able to get the information and why they may be able to get it. The student researcher must get your authorization (permission) to use or give out any health information that might identify you.

**What information may be used and given to others?**

If you choose to be in this study, the student researcher will get personal information about you. This may include information that might identify you. The student researcher may also get information about your health including:

- Medical and research records
- Records about your study visits
- Information about other reportable infectious diseases
- Records of physical exams
- Laboratory, x-ray, and other test results
- Records of hospital visits that occur within 30-40 days of hospital discharge

* Will not be disclosed without additional authorization from you.

**Who may use and give out information about you?**

Information about your health may be used by the student researcher and staff. They might see the research information during and after the study.

**Who might get this information?**

Information about you and your health, which might identify you, may be given to:

- Department of Health and Human Services (DHHS) agencies
- CHRISTUS Health Institutional Review Board

**Why will this information be used and/or given to others**?

Information about you and your health that might identify you may be given to others to carry out the research study. The researcher will analyze and evaluate the results of the study.

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

The CHRISTUS Health IRB may review the information. The IRB is a group of people who perform independent review of research as required by regulations.

**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 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?**

This permission will be good until February 28, 2020.

You may withdraw or take your permission to use and disclose your health information at any time. 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, which 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.

**QUESTIONS**

If you have any questions concerning your participation in this study or if at any time you feel you have experienced a research-related injury or a reaction to a study drug, contact:

Mrs. Melanie Tkach or Dr. Patricia Bowyer at Texas Woman's University

Address: 6700 Fannin Street, Houston, TX 77030

Phone: 713-794-2128

If you have any questions about your rights as a research subject, you may contact:

CHRISTUS Health Institutional Review Board
Dr. Brian Gladue, PhD
919 Hidden Ridge Avenue
Irving, Texas, 75038
469-282-2686

CHRISTUS Health IRB is a group of people who perform independent review of research. The study sponsor and the PI are independently practicing occupational therapists and not agents or employees of CHRISTUS Health System or the CHRISTUS Health Institutional Review Board.

Do not sign this consent form unless 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.

**VOLUNTARY PARTICPATION AND WITHDRAWAL**

Participation in this study is voluntary. You may decide not to participate in this study or you may withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled at this site. You will be informed of any significant new findings that develop during the investigation that may affect your willingness to continue in the study.

You should tell your study doctor about all of your past and present health conditions and allergies of which you are aware, and all drugs and medications which you are presently using.

Your participation in this study may be stopped at any time by the student researcher or the sponsor without your consent because:

- the student researcher thinks it is necessary for your health or safety;
- you have not followed study instructions;
- the sponsor has stopped the study; or
- Administrative reasons require your withdrawal.

**CONSENT**

I have read the information in this consent form (or it has been read to me). All my questions about the study and my participation have been answered. I freely consent to participate in the research study. I authorize the use and disclosure of my health information to the parties listed in the authorization section of this consent for the purposes described above. By signing this consent form I have not waived any of the legal rights which I otherwise would have as a subject in a research study.

**CONSENT SIGNATURE:**

| Patient Signature | Printed Name | Date |
|---|---|---|

| Signature of Legally Authorized Representative *(When applicable)* | Printed Name | Date |
|---|---|---|

**Authority of Subject's Legally Authorized Representative or Relationship to Subject**

**Person Obtaining Consent**
I have discussed this clinical research study with the participant and/or his or her authorized representative, using language that is understandable and appropriate. I believe that I have fully informed this participant of the nature of this study and its possible benefits and risks and that the participant understood this explanation.

| Signature of Principal Investigator | Printed Name | Date |
|---|---|---|

**Witness to Consent***

I was present during the explanation of the research to be performed under Protocol (INSERT PROTOCOL NUMBER HERE). **A witness signature is only required for vulnerable adult participants. If witnessing the assent of a pediatric participant, leave this line blank and sign on the witness to assent page instead.*

| Witness Signature | Printed Name | Date |
|---|---|---|

**----------Use the following only if applicable----------**

If this consent form is read to the subject because the subject (or legally authorized representative) is unable to read the form, an impartial witness must be present for the consent and sign the following statement:

I confirm that the information in the consent form and any other written information was explained, and the subject was given the opportunity to ask questions (or the subject's legally authorized representative). The subject (or the subject's legally authorized representative) freely consented to participate in the research study.

| Signature of Impartial Witness | Printed Name | Date |
|---|---|---|

Note: This signature block cannot be used for translations into another language. A translated consent form, with the translation approved by the IRB, is necessary for enrolling subjects who do not speak English.

# APPENDIX J

## Occupational Therapy Assessment Order Combinations

1. EFPT-Bill Pay, CHIEF-SF, AM-PAC, OSA-SF
2. CHIEF-SF, EFPT-Bill Pay, OSA-SF, AM-PAC
3. AM-PAC, CHIEF-SF, EFPT-Bill Pay, OSA-SF
4. OSA-SF, EFPT-Bill Pay, CHIEF-SF, AM-PAC
5. EFPT-Bill Pay, OSA-SF, AM-PAC, CHIEF-SF
6. CHIEF-SF, AM-PAC, OSA-SF, EFPT-Bill Pay
7. AM-PAC, OSA-SF, EFPT-Bill Pay, CHIEF-SF
8. OSA-SF, AM-PAC, CHIEF-SF, EFPT-Bill Pay

APPENDIX K

Occupational Therapist Recruitment Flyer

CHRISTUS Health IRB Approved
IRB NUMBER: 2018-103
IRB APPROVAL DATE: 01/09/2020

# Occupational Therapists Needed for Research Study!

## WHO:

- Occupational therapists with acute care experience
- National Certification
- Active TX State Licensure

## WHAT:

A one-time group meeting where you will learn about standardized occupational therapy assessments that can be used in acute care. You will provide feedback on the feasibility of these assessments in the hospital setting. Time commitment is approximately 60 minutes.

When you complete the group session, you will receive a $15 Gift Card to Wal-Mart!

## WHERE:

Christus St. Michael Rehabilitation Office

## STUDY OBJECTIVE:

To identify the feasibility of standardized occupational therapy assessments in the acute care setting. This is the final component in a three-part study entitled *Occupational Therapy in Acute Care: Predictors of Occupational Competence and Hospital Readmission.*

## CONTACT:

If interested, please contact one of the following individuals by **Friday, 1/24/20**:

Melanie Tkach 903-293-7555 or mtkach@twu.edu
Patricia Bowyer 713-794-2128 or pbowyer@twu.edu

## CONFIDENTIALITY STATEMENT

There is a potential risk of loss of confidentiality in all email, downloading, and internet transactions. This study is voluntary and you may discontinue participation at any time.

APPENDIX L

Occupational Therapist Consent Form

**INFORMED CONSENT &**
**AUTHORIZATION FOR PARTICIPATION IN RESEARCH**

Title of Protocol: Occupational Therapy in Acute Care: Predictors of Occupational Competence and Hospital Readmissions

You are being asked to take part in this clinical research study at **Christus St. Michael.** This consent form explains why this research study is being done and what your role will be if you choose to take part. This form also describes the possible risks connected with being this study. After reviewing this information with the person responsible for your enrollment, you should know enough to be able to make an informed decision about whether you want to take part in the study.

You are being asked to take part in this study because you are an occupational therapist with acute care experience.

**DESCRIPTION OF RESEARCH STUDY**

**1. PURPOSE OF STUDY**

The goal of this research study is to identify the feasibility of using standardized occupational therapy measures in the hospital setting. This is the final component in a three-part study that explores general function, functional status, functional cognition, the environment, occupational competence, and hospital readmission in individuals with chronic medical conditions.

**2. DESCRIPTION OF STUDY**

As a participant in this study, you will be asked to spend one hour of your time in a face-to-face group session with the researcher. The researcher will introduce you to occupational therapy assessments that evaluate functional status, functional cognition, the environment, and occupational competence. You will be asked to provide feedback on the feasibility of using these assessments in the hospital session.

In order to participate in this study, you must be an occupational therapist with national certification and state licensure.

This is part of an **observational** study for the student researcher's dissertation work at Texas Woman's University.

The face-to-face group meeting is free of cost to you.

Approximately 5 occupational therapists will be enrolled in the study at Christus St. Michael Hospital.

**3. RISKS, SIDE EFFECTS, AND DISCOMFORTS TO PARTICIPANTS**

While on this study, you may experience potential risks. These risks will vary from person to person. During the face-to-face evaluation session, you will be asked about your experience with potential risks. The most anticipated risks are listed in this form. You should discuss these with the researcher.

The researcher will ask you to actively learn about occupational therapy assessments and rate their feasibility. A possible risk in this study is mental fatigue. If you become tired, you may take rest breaks as needed. You may discontinue participation at any time and end the testing session.

Loss of confidentiality is another risk of this study. Confidentiality will be protected to the extent that is allowed by law. The research team will encourage all group members to maintain and protect confidentiality of other group members. All testing will occur in a quiet rehabilitation office at the hospital with the door closed for privacy. Your information will be marked with a unique code specific to the research study so that there will be no way to link your responses back to you. Only the researcher will handle written responses. All written responses will be stored in a locked cabinet in a rehabilitation office at the hospital. All written information will be shredded within 5 years of study completion. The results of the study may be reported in scientific magazines or journals, but your name will not be included. There is a potential risk of loss of confidentiality in all email, downloading, electronic meetings, and internet transactions.

The researchers will try to prevent any problem that could happen because of this research. You should let the researchers know at once if there is a problem, and they will help you.

This study may involve unpredictable risks to the participant.

**4. POTENTIAL BENEFITS**

There are no direct benefits to you as a participant. Your involvement in this research study is completely voluntary, and you may withdraw from the study at any time. If you would like to know the results of this study, we will send them to you by mail or email.

**5. ALTERNATE TREATMENTS OR PROCEDURES**

You may choose to not take part in this study. Information related to the standardized assessments included in the research study are readily available on the World Wide Web and through occupational therapy resources such as the American Occupational Therapy Association. You may choose not to learn about theses assessments at all.

**ADDITIONAL INFORMATION**

**6.** You may ask the Principal Investigator any questions you have about this study. You may contact the Principal Investigator, **Melanie Tkach, at 903-293-7555,** or her supervisor, **Patricia Bowyer, at 713-794-2128.** You may also contact the Chair of the **CHRISTUS Health Institutional Review Board (IRB) at 469-282-2686** with any questions that have to do with this study or with your rights as a study participant. The IRB is a committee that reviews research studies to ensure that you are as safe as possible.

7. Your participation in this research study is strictly voluntary. You may choose not to take part in this study without any penalty or loss of benefits to which you are otherwise entitled. You may also withdraw from participation in this study at any time without any penalty or loss of benefits. If you withdraw from the study, data collected about you up to the time you withdrew may have to remain in the study database for inclusion in data analysis. If you decide you want to stop taking part in the study, for your safety, it is recommended that you talk to your doctor first. If you withdraw from this study, you can still choose to be treated at CHRISTUS.

8. This study or your participation in it may be changed or stopped at any time by the Principal Investigator, Texas Woman's University, the Office for Human Research Protections (OHRP – a regulatory agency that oversees research in humans) or the IRB of CHRISTUS Health.

9. You will be informed of any new findings that might affect your willingness to continue taking part in the study.

10. CHRISTUS Health will take appropriate steps to keep your personal health information private. However, there is no guarantee of absolute privacy. Federal agencies (such as the FDA and the OHRP),) and the IRB of CHRISTUS Health might review your record to collect data or to check that the research is being done safely and correctly. In some situations, the FDA or any of these regulatory agencies could be required to reveal the names of participants.

11. CHRISTUS Health may benefit from your participation and/or what is learned in this study.

12. This study is under the supervision of Dr. Patricia Bowyer at Texas Woman's University, Houston.

13. In a medical emergency, you may be cared for by someone who has a financial interest with the study sponsor(s). If you have questions about this, you may call the CHRISTUS Health IRB at **469-282-2686**.

**CONFLICT OF INTEREST**

The student researcher has no conflicts of interest to disclose.

**STUDY COSTS AND COMPENSATION**

If you suffer injury as a direct result of taking part in this study, CHRISTUS Health providers will provide medical care. However, this medical care will be billed to your insurance provider or you in the ordinary manner. You **will not** be reimbursed for expenses or compensated financially by CHRISTUS or Texas Woman's University for this injury. You may also contact the Chair of the CHRISTUS IRB at **469-282-2686** with questions about study-related injuries. By signing this consent form, you are not giving up any of your legal rights.

There are no plans to compensate you for any patents or discoveries that may result from your participation in this research.

You may receive up to **$15.00** in the form of **Wal-Mart Gift Card** for study participation. You will only receive compensation if you are found eligible for study participation and complete the 60 minute feasibility group session. No compensation will be provided if you withdraw from the study early. Your gift card will be issued at the end of the feasibility group session.

**QUESTIONS**

If you have any questions concerning your participation in this study or if at any time you feel you have experienced a research-related injury or a reaction to a study drug, contact:

Mrs. Melanie Tkach or Dr. Patricia Bowyer at Texas Woman's University

Address: 6700 Fannin Street, Houston, TX 77030

Phone: 713-794-2128

If you have any questions about your rights as a research subject, you may contact:

CHRISTUS Health Institutional Review Board
Dr. Brian Gladue, PhD
919 Hidden Ridge Avenue
Irving, Texas, 75038
469-282-2686

CHRISTUS Health IRB is a group of people who perform independent review of research. The study sponsor and the PI are independently practicing occupational therapists and not agents or employees of CHRISTUS Health System or the CHRISTUS Health Institutional Review Board.

Do not sign this consent form unless 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.

## VOLUNTARY PARTICPATION AND WITHDRAWAL

Participation in this study is voluntary. You may decide not to participate in this study or you may withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled at this site. You will be informed of any significant new findings that develop during the investigation that may affect your willingness to continue in the study.

Your participation in this study may be stopped at any time by the student researcher or the sponsor without your consent because:

- the sponsor has stopped the study; or
- Administrative reasons require your withdrawal.

## CONSENT

I have read the information in this consent form (or it has been read to me). All my questions about the study and my participation have been answered. I freely consent to participate in the research study. I authorize the use and disclosure of my health information to the parties listed in the authorization section of this consent for the purposes described above. By signing this consent form I have not waived any of the legal rights which I otherwise would have as a subject in a research study.

## VOLUNTARY PARTICPATION AND WITHDRAWAL

Participation in this study is voluntary. You may decide not to participate in this study or you may withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled at this site. You will be informed of any significant new findings that develop during the investigation that may affect your willingness to continue in the study.

Your participation in this study may be stopped at any time by the student researcher or the sponsor without your consent because:

- the sponsor has stopped the study; or
- Administrative reasons require your withdrawal.

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I have read the information in this consent form (or it has been read to me). All my questions about the study and my participation have been answered. I freely consent to participate in the research study. I authorize the use and disclosure of my health information to the parties listed in the authorization section of this consent for the purposes described above. By signing this consent form I have not waived any of the legal rights which I otherwise would have as a subject in a research study.

**CONSENT SIGNATURE:**

| **Patient Signature** | **Printed Name** | **Date** |
|---|---|---|

| **Signature of Legally Authorized Representative** *(When applicable)* | **Printed Name** | **Date** |
|---|---|---|

**Authority of Subject's Legally Authorized Representative or Relationship to Subject**

**Person Obtaining Consent**
I have discussed this clinical research study with the participant and/or his or her authorized representative, using language that is understandable and appropriate. I believe that I have fully informed this participant of the nature of this study and its possible benefits and risks and that the participant understood this explanation.

| **Signature of Principal Investigator** | **Printed Name** | **Date** |
|---|---|---|

**Witness to Consent***

I was present during the explanation of the research to be performed under Protocol (INSERT PROTOCOL NUMBER HERE). **A witness signature is only required for vulnerable adult participants. If witnessing the assent of a pediatric participant, leave this line blank and sign on the witness to assent page instead.*

| **Witness Signature** | **Printed Name** | **Date** |
|---|---|---|

**----------Use the following only if applicable----------**

If this consent form is read to the subject because the subject (or legally authorized representative) is unable to read the form, an impartial witness must be present for the consent and sign the following statement:

I confirm that the information in the consent form and any other written information was explained, and the subject was given the opportunity to ask questions (or the subject's legally authorized representative). The subject (or the subject's legally authorized representative) freely consented to participate in the research study.

| **Signature of Impartial Witness** | **Printed Name** | **Date** |
|---|---|---|

Note: This signature block cannot be used for translations into another language. A translated consent form, with the translation approved by the IRB, is necessary for enrolling subjects who do not speak English.