STANDARDIZATION OF DEPRESSION SCREENING IN AN OUTPATIENT BURN CLINIC

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Dedication

To the many burn patients I have cared for whose lives have been shattered and rebuilt because of their injury and because mental illness weighs as heavy as physical illness.

Abstract

Burn injuries can be life altering and typically occur unexpectedly. Depression in post burn patients is a well documented as a result of the injury. The goal of this quality improvement project was to determine early identification of depression in post burn patients using the patient health questionnaire-9 (PHQ-9) tool as primary method for screening. A secondary outcome was to evaluate for staff compliance in utilizing the PHQ-9 written screening tool. The project was conducted over ten weeks in a large medical facilities' outpatient burn clinic. Each adult burn patient (≥18 years old) was administered a written PHQ-9 screening tool. The results of the PHQ-9 screen were compared to the results of the patient health questionnaire-2 (PHQ-2) that was currently being used in the clinic. The goal was to determine if the PHQ-9 provided earlier identification of depression in burn patients. Weekly audits were conducted to assess staff compliance in utilization of the PHQ-9 screening tool. One hundred and twenty out of one hundred and forty-one (85.1%) patients were screened by the staff during the implementation period. Findings from the project revealed 13 (10.8%) patients met criteria for depression diagnosis and 11 (84.6%) of these patients scored zero on the PHQ-2. From the findings, 11 (84.9%) diagnosable depressed patients who were screened for depression using the written PHQ-9 tool would not have been identified if only screened using the electronic PHQ-2. Additional research needs to be done to determine population specific depression screening tools for burn patients in the outpatient setting.

Key Words: Burn, Depression, Screening tool, Quality improvement, Outpatient clinic

Table of Contents

Chapter One: Overview of the Problem of Interest

According to the World Health Organization (2018), burn injuries are a main cause of preventable morbidity and mortality. Due to advancing medical practices, more burn patients with severe injuries survive to discharge (Goverman et al., 2016). Burn injuries are life threatening. Frequent focus on survival overshadows patients' psychological needs (Shupp, 2017). Patients who have suffered burns may face adaptation to altered appearance, decreased physical function, diminished quality of life, and low self esteem (Ahrari et al., 2012). These challenges, among others, contribute to a high prevalence of depression among burn patients (Ahrari et al., 2012). The purpose of this chapter is to provide background information and significance of depression among burn patients.

Background Information

Burn wounds range from minor injuries managed in outpatient settings to major life altering injuries that require prolonged medical support and result in long-term complications (Yoder, McFall, & Glaser, 2017). Annually, more than 1.25 million people receive medical treatment for burn injuries in the United States (Sheridan, 2018). Of this 1.25 million, approximately 63,000 are treated in the emergency department and roughly 6,000 require hospital admission. Patients who suffer complex burn injuries require hospitalization, specially trained surgeons, and specific treatment regimens to survive (Sheridan, 2018). Treatment regimens used to treat burn patients include fluid resuscitation, infection prevention, airway management, early excision, and high quality skin grafting (Sheridan, 2018). These practices typically decrease burn patients' mortality rates (Sheridan, 2018).

More burn patients are surviving to discharge and as a result mental illness, including depression, is more prevalent among burn patients now than previously (Goverman et al., 2016). Burn injuries are unique because they affect a patient's physical and psychological wellbeing (Ahari et al., 2012). Many patients are unprepared for the acute phase of the burn injury and the physical changes that will result (Gullick, Taggart, Johnston, & Ko, 2014). Specific changes that contribute to depression in burn patients include persistent pain, loss of physical function, and body image dissatisfaction.

Acute and chronic pain post burn. Throughout a long hospitalization, burn patients experience intense pain from frequent dressing changes and multiple operations and procedures (Goverman et al., 2016). The pain experienced varies over the phases of recovery and in response to specific activities or therapies (Tengvall, Wickman, & Wengstrom, 2010). This variance makes burn pain extremely difficult for medical providers to manage effectively (Tengvall et al., 2010). Patients recall fearing dressing changes because of the immense pain, and flashbacks of the pain have been reported well after the event (Guillick et al., 2014). Once the wounds begin to heal, many patients will suffer from chronic pain; about 50% of patients report pain years after the injury (Loey et al, 2018). Chronic pain correlates with day-to-day levels of negative affect and depressive symptoms (Loey et al, 2018). Mental illness, such as depression, and chronic pain are frequently concurrent because psychological vulnerability predisposes patients to chronic pain syndrome and vice versa (Loey et al, 2018).

Loss of physical function post burn. To restore mobility, burn patients attend extensive physical and occupational rehabilitation post-discharge (Sheridan, 2018). Restoring mobility is difficult because burn injuries result in scars and contractures that cause physical disfigurement

and functional deficits (Goverman et al., 2016). Despite working hard at rehabilitation, activities of daily living remain difficult for some patients due to functional mobility deficits which include the loss of ability to feed, dress, and toilet independently (Roh, Chung, Kwon, & Kim, 2012). This loss of independence contributes to feelings of helplessness which correlates with depressive symptoms (Roh et al., 2012). Additionally, some patients' injuries affect job performance and productivity, which compromises continued employment (Ahari et al., 2012). After discharge, some patients are financially challenged to pay for surgical, psychological, and rehabilitative care (Ahari et al., 2012). Struggling to regain pre-burn mobility, overcome feelings of helplessness, and minimize financial constraints contribute to depressive symptoms in post-discharge burn patients (Roh et al., 2012).

Physical dissatisfaction post burn. Post-burn disfigurement may lead to compromised societal reintegration (Gullick et al., 2014). Poor societal reintegration can lead to a perception of "otherness" and perpetuate depressive symptoms (Ahrari et al., 2012). Patients describe loss of self esteem, fear of resuming sexual intimacy, fear of workplace reentry, and fear of initiating new relationships due to physical appearance (Abdelhafiz et al., 2015).

Facial burn patients have the most difficulty reintegrating into society (Guillick et al., 2014). These patients experience higher levels of depression and substance abuse than patients without facial burns (Guillick et al., 2014). In a cross sectional descriptive study performed by Roh et al (2012), 113 patients with facial burns were studied. Of these patients with facial burns, females consistently presented with more depressive symptoms than males; this is possibly due to societal influences surrounding a woman's appearance (Roh et al., 2012). The study resulted in statistically significant correlations between patient scar assessment and positive depression

screenings as evidence by significant correlation of depression with total patient scar assessment score ($r = .356$, $p < .001$).

Another common reason for depression in post-burn patients is body image dissatisfaction when resuming sexual intimacy (Oster & Sveen, 2015). Sexual health is important to mental, social, and physical well-being, and requires a positive approach towards one's sexuality (Oster & Sveen, 2015). Residual scarring, contractures, decreased motor function, and residual weakness contribute to a burn patient's negative sexual self image (Oster & Sveen, 2015).

Significance of Depression in Post Burn Patients

Depression is well documented among post-burn patients because patients may be presented with excessive challenges throughout recovery (Andrews, Browne, Drummond, & Wood, 2010). One study reported rates of depression at one month post-burn ranging from 2.2%-54% and at one year post injury from 16%-34% (Andrews et al., 2010). Patients with depression can have poorer long term health outcomes than those without depression (Hudson et al., 2017). Depression is a predictor for decreased patient cooperation, decreased patient outcomes, difficult post-hospital placement, and increased hospital readmission rates (Hudson et al., 2017).

Mental illness and burn injuries. The relationship between mental illness and burn injuries is complex because burn injuries predispose patients to mental disorders (Palmu, Partonen, Suominen, Vuola, & Isometsa, 2016). Moreover, having a mental disorder increases the risk of burn injury (Palmu et al., 2016). Depression is the most common mental health disorder in burn patients, but any preexisting psychiatric condition contributes to worse post-burn outcomes (Hudson et al., 2017). Burn patients with mental illness typically have more severe burns and are more likely to suffer from an inhalation injury than patients without concurrent mental illness

(Hudson et al., 2017). All patients with mental health disorders are at risk for poor wound healing, difficult post discharge placement, and high readmission rates (Hudson et al., 2017). Because injuries may be more severe in patients with preexisting mental illness, they may undergo more surgeries and require more invasive procedures than burn patients without mental illness. Combination of severe injuries and increased invasive procedures leads to higher mortality among burn patients with mental illness (Hudson et al., 2017). Hudson et al. (2017) concluded that burn patients with preexisting psychiatric conditions were three times more likely to die before discharge than patients without preexisting psychiatric conditions.

Depression and recovery from burn injuries. Depression is destructive to burn patients' recovery because it decreases motivation and cooperation, which minimizes the patient's adherence to treatment regimens (Abdelhafiz et al., 2015). Depressed patients are less likely to be cooperative with treatments such as dressing changes, postoperative care, nutritional management, and physiotherapy (Abdelhafiz et al., 2015). Burn patients require intensive physical and occupational therapy to regain pre-burn physical function and cooperation with therapies is imperative to ensure future functional mobility (Jacobson, Fletchall, Dodd, & Starnes, 2017). Depression disrupts therapies which contributes to increased complications and longer hospitalizations (Abdelhafiz et al., 2015). Therefore, depressed burn patients may experience poorer outcomes due to lack of cooperation.

Research indicates that certain social factors influence occurrence of psychiatric symptoms post burn injury (Sareen et al., 2013). Low socioeconomic status and poor social support have been studied and negatively impact mental health outcomes (Sareen et al., 2013). Certain personality traits such as neuroticism and avoidant coping can increase risk of a mental

health disorder (Sareen et al., 2013). Injuries of assault result in poorer mental health outcomes of the victim (Sareen et al., 2013). Lastly, when a patient has financial constraints the risk for mental illness increases if they are unable to return to work post-injury (Sareen et al., 2013).

Post discharge depression. Upon discharge, patients with preexisting psychiatric conditions, such as depression, have placement issues; this is because they are less likely to be able to return home and more likely to be discharged to a rehabilitation facility (Hudson et al., 2017). Patients with preexisting mental illnesses are at risk for symptom exacerbations post discharge when compared to patients without pre-existing mental illness (Hudson et al., 2017). Depressive symptoms post-discharge are problematic (for healthcare providers) because depression positively correlates with hospital readmissions within thirty days (Mitchell et al., 2010). Based on a secondary analysis performed from a randomized control trial, 56 per 100 depressed patients used the hospital within thirty days post discharge compared to 30 per 100 non depressed patients (Mitchell et al., 2010). Early re-hospitalization is a marker for poor quality of care. Insurance reimbursement is dwindling for such readmissions (Horwitz et al., 2011). Some hospitals hired employees to problem solve common causes of re-hospitalization within their patient populations (Horwitz et al., 2011). Common causes for readmission among depressed patients include inability to take care of oneself, poor adherence to treatment regimen, and increased feelings of worry (Mitchell et al., 2010). Untreated post discharge depression is a preventable comorbidity that, if left untreated, contributes to increased readmissions and increased hospital costs (Mitchell et al., 2010).

Institute for Healthcare Improvement Triple Aim Initiative

The Institute for Healthcare Improvement (IHI) provides a framework for healthcare improvement referred to as the triple aims (IHI, 2018). The triple aims for healthcare improvement are to improve patient experience, improve population health, and reduce per capita healthcare costs (IHI, 2018). The early identification and treatment of depression in burn patients meets two of the three triple aims which are improvement of population health and reduction in healthcare costs.

Question Guiding Inquiry (PICO)

Population. Adult patients, older than 18 years, who speak English or Spanish as a primary language, and have suffered burn injuries are the population of focus for this project. These patients will have been discharged from a large medical facility inpatient unit, discharged from an emergency department, or referred from another provider to follow up in the burn clinic.

Intervention. Patients will be screened, at their follow up appointment in the burn outpatient clinic for depression using the Patient Health Questionnaire (PHQ), specifically the PHQ-9 screen, which is the screening tool recommended by the American Burn Association (Greenhalgh, 2016). The PHQ-9 screen is available in English and Spanish (see Appendix A and B). All patients will be screened regardless of the length of time since discharge. Patients will complete the questionnaire on paper prior to being seen by a provider. After completion of the survey, trained staff members will score the questionnaire during the patients' visit and the provider will interpret the results.

Comparison. Currently the burn center outpatient clinic screens each burn patient for depression by verbally asking them the PHQ-2 questionnaire (see Appendix C). If a patient

screens positive for depressive symptoms on the PHQ-2 screen, then the PHQ-9 screen is administered verbally.

Outcomes. Staff compliance in distributing the PHQ-9 questionnaire to all adult English and Spanish speaking burn patients that present to the clinic will be measured. Also, it will be determined if patients' completing the PHQ-9 questionnaire on paper detects higher rates of depression than the current method, which is verbally asking the patient the PHQ-2 questionnaire. Due to hospital policy, the PHQ-2 questionnaire will still be verbally administered to all patients.

Summary

More burn patients are surviving due to advancing medical practices (Goverman et al., 2016). Once stabilized, many burn patients suffer from mental illness, such as depression, or experience exacerbations of a pre-existing psychiatric condition (Andrews et al., 2010). Depression in burn patients is multi factorial and can be caused by pain, loss of physical function, body image dissatisfaction, and feelings of hopelessness (Roh et al., 2012). Also, scarring that occurs after injury leads to loss of self esteem which provokes emotional isolation that further perpetuates depressive symptoms (Guillick et al., 2014). Low self esteem can make societal reintegration difficult for some patients due to physical limitations that may prevent return to work and continuation of pre-burn way of life (Guillick et al., 2014). The many complications that can occur when a burn patient has concurrent depression can contribute to longer hospital stays and increased readmissions within thirty days (Horwitz et al., 2011).

To ensure that burn patients are screened for depression effectively, the written PHQ-9 screen will be used to screen patient attending follow up appointments. Currently a screening

system is in place, but using the written PHQ-9 screen could improve detection of depression in the burn patient population.

Chapter Two: Review of the Literature Evidence

This chapter will discuss the prevalence of depression in burn patients and the importance of screening patients for depression. Evidence supports depression among post-burn patients (Oster & Sveen, 2014). Burn patients may present with a preexisting psychiatric diagnosis, such as depression, or depression may be acquired secondary to burn injury (Oster & Sveen, 2014). Nearly half of patients who suffer from depression do not seek treatment, which leads to relapse and resistance of the disease (Ahrari et al, 2012).

Methodology

Sampling Strategies. The criteria used to select publications for review regarding depression in burn patients included being written in English, sampling adult patients older than 18 years of age, studies about depressed patients with burn injuries, published since 2010, peer-reviewed, and studies exclusively about patients who had suffered burn injuries. Searches were performed via PubMED, Joyner Library, and Google Scholar (see Appendix D). Specific search terms consisted of "depression," "burns," "prevalence," "psychiatric," and "post-discharge."

Inclusion criteria regarding depression and burn patients included being written in English, publication within the last eight years, having a primary subject of depression, regarding a patient population who have been burned or suffered a trauma, and the prevalence or causes of psychiatric symptoms in burn patients. Excluded articles were written before 2010, non English language, and lacked a focus on depression as the main psychiatric diagnosis in a burn patient (see Appendix E).

Inclusion criteria for information regarding screening tools included evidence-based methods of screening, validation by a large public organization, written in English, containing descriptions of sensitivity and specificity on patient populations. Exclusion criteria included non validated screening tools and testing of a tool not previously used on burn patients.

Evaluation Criteria. The search terms “depression in burn patients” yielded 717 results in PubMed. When adding inclusions from the date range within the past five years, free full text, and humans, the search yielded 51 results. Two articles were used from this search with most being excluded due to “burns” being the authors last name and the study not pertaining to burn injuries. Other articles were excluded for pertaining to inpatient depression and not outpatient depression. Another search was performed in PubMed using the terms “depression trauma patients burned.” This search yielded 409 results. When employing inclusions criteria that limited to the past five years and full text, the search yielded 28 results. Two articles were used from this search. Articles were excluded from the search because they pertained to a psychiatric disorder that was not depression, were studying family members of burn patients, or regarded inpatient care.

In Google Scholar the search terms "depression burn" were used and filtered to all terms in title and published since 2014. This yielded 29 results and two articles were used from this search. Articles were excluded for not pertaining to outpatients, for not regarding screening burn patients, and for being specifically focused on treatment regimens (Appendix D).

Literature Review Findings

Wiechman, Kalpakjian & Johnson (2016) conducted a systematic review of 213 articles to review depression in burn patients and determined rates of depression in post discharge burn

patients are well above the national average of 8-10% for women and 3-5% for men. According to Wiechman et al. (2016) 10-23% of post-discharge burn patients suffer from depression. Abdelhafiz et al. (2015) found that 70% of burn patients in an Indian hospital were suffering from high rates of depression. Another cross sectional study, conducted in Iran, found that in 300 patients assessed one week post-burn, 61% screened positive for depression (Ahrari et al., 2012). Most studies evaluating burn patients and depression only follow the patients for up to one year post discharge. Few studies have evaluated rates of depression in burn patients more than one year post discharge (Wiechman et al, 2016). However, the few studies which examined rates of depression in burn patients after one year found increasing levels, up to 42%, at one year post recovery (Wiechman et al, 2016).

Oster and Sveen (2014) studied psychiatric outcomes of burn patients' one year post. injury. This prospective, longitudinal study examined lifetime psychiatric morbidity of 107 patients in a Swedish burn center. The patients were reevaluated at one and two to seven years (Oster & Sveen, 2014). Approximately one third of patients evaluated at one year post injury screened positive for depression or post-traumatic stress disorder. At two to seven years, approximately one fifth of patients had depression or PTSD (Oster & Sveen, 2014).

Screening for depression. In most medical populations, including the burn population, depression is under diagnosed and under treated (Wiechman et al., 2016). Screening for depression is recommended for all patients as part of routine primary care by the United States Preventative Services Task Force (USPSTF) (Akincigil & Matthews, 2017). Akincigil & Matthews (2017) used the National Ambulatory Medical Care Survey results from 2012-2013, which revealed that only 4.2% of adults were screened for depression. The survey included

33,653 patient visits, with 63.5% females, 71% Caucasians, and 71.2% under age 65 years. The results indicated that providers screened more at-risk populations, such as those with complicated medical conditions compared to patients without complicated medical conditions. Primary care providers were less likely to comply with depression screening if the patients were African-Americans, older adults, and men. African-Americans were less than half as likely as Caucasians to be screened for depression (Akincigil & Matthews, 2017). Despite recommendations that depression screening should occur annually for all patients, results from this national survey reveals that the screening tools are used infrequently. It is estimated that only around 36% of depressed patients have been screened and are appropriately treated (Akincigil & Matthews, 2017).

By 2020, depression is projected to become the second largest cause of disability in the United States (Maurer, 2012). Annually, depression accounts for more than $43 billion in medical costs and more than $17 billion in lost productivity (Maurer, 2012). It is important to use appropriate screening tools when screening patients for depression so that the best treatment is prescribed.

The PHQ-9 screening tool. The PHQ-9 questionnaire contains nine questions and is used to screen patients for depression. It was developed by Pfizer and is available for free public use. The screen not only detects depression but also assists in ranking its severity as mild, moderate, moderately severe, or severe (Maurer, 2012). The PHQ-9 questionnaire has a specificity of 94% and a sensitivity of 61% for screening depression among adult patients (Maurer, 2012). PHQ-9 scores greater than or equal to 10 have a sensitivity and specificity of 88% when diagnosing Major Depressive Disorder (Kroenke, Spitzer, & Williams, 2001). A

PHQ-9 score of 5, 10, 15, and 20 correlated to mild, moderate, moderately severe, and severe depression.

The PHQ-9 questionnaire relies on patient self-report, therefore if a patient's score correlates with a depressive category all responses should be verified by the clinician (Kroenke et al., 2001). A definitive diagnosis is only made once the clinician ensures the patient fully understood the questionnaire. To make a diagnosis of Major Depressive Disorder or Other Depressive Disorder the patient must have dysfunction of occupational, social, or other functioning and other reason for the impairment of function must be ruled out (Kroenke et al., 2001).

Screening tool distribution. Research suggest that patients are more likely to reveal sensitive information when not asked directly (Bowling, 2005). Face to face interviews lead to patients following social norms and over-reporting desirable behaviors (Bowling, 2005). Depression screening on paper instead of verbally may allow patients to more willingly disclose sensitive information.

Limitations of the Literature Review Process

Limitations of the literature review process were lack of data about depression screening in burn patients, specifically studies involving adult burned outpatients and depression. Little evidence was found on use of a standardized depressions screening tool such as the PHQ-9 tool. The studies available about burn patients and depression had a small sample size which can increase the unreliability of data.

Discussion

Conclusion of findings. Burn patients are statistically more likely to suffer from a psychiatric illness post-injury than other patient populations (Wiechman et al., 2016).

Post discharge patients suffering from depression have an increased risk of complications and early readmission (Hudson et al., 2017). These complications and readmissions contribute to the increased mortality rate in burn patients with subsequent psychiatric illness (Hudson et al., 2017). Because nearly half of patients who suffer from depression do not seek treatment, early recognition of depressive symptoms to provide intervention is imperative (Ahrari et al, 2012). The United States Preventative Services Task Force recommends routine depression screening for all patients as a part of routine care, but research reveals providers are not screening according to recommendations (Akincigil & Matthews, 2017).

Advantages and disadvantages of findings. There are advantages to screening burn patients for depression using the written PHQ-9 screening tool. First, research has proven that patients are more likely to reveal sensitive information when not asked directly (Bowling, 2005). An approved tool, such as the PHQ-9 screen, allows patients to disclose sensitive information privately (Maurer, 2012). Patients with an untreated psychiatric diagnosis, such as depression, are more likely than the general population to develop a comorbid medical condition such as drug abuse, hypertension, and infections (Hudson et al., 2017). Early screening and identification of at risk patients can prevent comorbid conditions and decrease hospital costs (Maurer, 2012).

A disadvantage of depression screening in burn patients using the PHQ-9 is reliance on provider compliance. Historically, depression screens have not been distributed according to recommended guidelines and thus, patients have not been screened appropriately (Akincigil & Matthews, 2017). Another disadvantage is that depression is a sensitive topic of conversation and some patients are not comfortable revealing depressed feelings (Bowling, 2005). This unwilling-

ness to be honest about feelings can skew detection of illness and postpone treatment. Delayed treatment for depression can result in poorer outcomes (Akincigil & Matthews, 2017).

Utilization of findings in practice. Findings regarding depression in burn patients support that there is an increased need for effective screening in this population. Burn patients are more likely than other populations of patients to suffer from depression and to have poor outcomes as a result (Hudson et al., 2017). Because of the complex nature of burn injuries, the PHQ-9 screening tool may be a more effective screening tool for initial evaluation in burn patients compared to the PHQ-2 screening tool. The PHQ-9 screening tool asks specific questions about suicidality, sleep disturbances, and feelings of failure. These more specific questions may be more relevant to burn patients and could lead to earlier detection of depression.

Summary

Based on the literature, burn patients are considered at an increased risk of depression pre and post injury (Oster & Sveen, 2014). Patients who have depression pre-injury are more likely to have comorbid conditions and complicated hospitalizations (Hudson et al., 2017). Nearly half of patients who suffer from depression do not seek treatment, therefore it is imperative that providers diligently screen all patients (Ahrari et al, 2012). An effective screening tool for depression screening is the PHQ-9, which if used per the USPSTF guidelines, can detect depressive symptoms in outpatients. Early screening for depression is important because. depression accounts for more than $43 billion in medical costs and more than $17 billion in lost productivity annually (Maurer, 2012).

Chapter Three: Theory and Concept Model for Evidence-based Practice

Stress is a physical and biological response that typically presents in the presence of an outside stimulus (McLeod, 2010). Sometimes when a person feels they do not have the resources necessary to deal with the stimulus a stressful state is triggered (McLeod, 2010). When stress is present the incidence of depression has been shown to increase two to seven fold in the general population (Fried, Nesse, Guille, & Sen, 2015). Every person internalizes and responds to stressors differently (Petiprin, 2016). This chapter contains the theories used to guide the practice change.

Concept Analysis

Stress is defined by the American Psychological Association (2018) as an automatic response of hormones in the body in response to an outside stimulus. Typically, stress exacerbates when facing a challenge, a fear, anger, or conflict (American Psychological Association, 2018). Psychological stress and depression have a strong causal relationship because prolonged stressful situations weaken the body's ability to feel pleasure thus, contribute to depressive symptoms (Choi et al., 2014). Patients who have been burned experience prolonged stressful situations, including long hospitalizations, frequent painful dressing changes, and loss of original physical function (Goverman et al., 2016).

A burn injury is typically an unexpected, painful occurrence that requires victims to relinquish control to medical professionals while hospitalized (Goverman et al., 2016). When the injury occurs, and control is relinquished, the burn patient gives up much decision-making autonomy in an effort to achieve wellness (Goverman et al., 2016). This relinquishment of control,

lack of autonomy, and inability to take care of oneself contributes to stress and thus results in depressive symptoms associated with a burn injury (Goverman et al., 2016).

The term "depression" is used to describe a multitude of emotional states by clinicians around the world (Wiechman et al., 2016). Major Depressive Disorder is a specifically defined mood disorder in the *Diagnostic and Statistical Manual of Mental Disorders V* (DSM-V) (Wiechman et al., 2016). To accurately diagnose depression, five of the nine criteria stated within the DSM-V must be present for at least two weeks and the symptoms must be a change from the patient's normal functioning (Reynolds & Kamphaus, 2013). Out of the five criteria needed for diagnosis, at least one of them must be depressed mood or loss of interest or pleasure. The other criteria that may be observed are weight changes, sleep changes, psychomotor agitation, fatigue, feelings of worthlessness or guilt, poor concentration, and thoughts of death or suicidal ideation with observed symptoms impairing daily functioning (Reynolds & Kamphaus, 2013).

Theoretical Framework

Betty Neuman's nursing theory, Systems Model, focuses on the patient's response to actual or potential stressors (Petiprin, 2016). This model depicts every patient as being unique; with his/her own baseline defense system that regulates normal responses to stressors. When the defense system is threatened by a stressor, such as a burn, the stressor can have a negative effect on the psychological, physiological, sociocultural, spiritual, and developmental wellbeing of the patient. The patient's baseline defense system either has enough resistance to combat the stressor and maintain wellness, or the defense system is defeated and turmoil ensues (Petiprin, 2016). In burn patients with preexisting mental health diagnoses it is more likely their baseline defense system will not be able to adequately cope with the stressor (Goverman et al., 2016). It is the job

of medical professionals to promote the patient's natural defense systems to assist in adequately minimizing stressors (Petiprin, 2016).

Application to practice change. Providing medical management for depression in burn patients supports the patient's natural defense system and can eliminate a stressor, thus improving the care provided (Goverman et al., 2016). Depression diminishes coping mechanisms and can affect many aspects of care (Abdelhafiz et al., 2015). Burn patients can suffer from traumatic, painful experiences while hospitalized and are discharged with altered functional ability (Goverman et al., 2016). Trauma, pain, and altered functional abilities frequently perpetuate depressive symptoms in burn patients. Betty Neuman's nursing theory, The Systems Theory, provide a framework for early identification of potential stressors that perpetuate depressive symptoms (Petiprin, 2016). Once stressors are identified, they can be managed before impacting psychological wellbeing. Betty Neuman's Systems Theory can be used to minimize depressive symptoms in burn patients post-discharge (Petiprin, 2016).

Evidence-Based Practice Change Theory

The Iowa Model is an evidence-based practice (EBP) problem-solving approach for implementing change within an organizational setting (Carlton, 2014) (see Appendix F). The Iowa Model contains steps that are implemented to translate research findings into practice. The first step is problem identification. During this step, a problem is identified that could benefit from EBP change. Then the team decides if the problem identified is a priority for the organization. Once the problem is identified as a priority, team members are chosen based on their expertise and involvement with the problem at hand. The team is multidisciplinary which ensures the solution to the problem is beneficial to all care areas. Previous studies that have been

conducted related to the problem at hand must be evaluated and critiqued to ensure that they are reliable. At this point, the team members decide if there is enough evidence available to confirm that the change is worthwhile. If so, then the team can conduct pilot studies of the change before enacting full organization change. The goal of the Iowa Model is to improve quality of patient care and also minimize healthcare costs by integrating best evidence into patient care (Carlton, 2014).

Application to practice change. The Iowa Model of EBP is applicable to depression screenings in burn patients. Depression in burn patients is well documented as a costly consequence of poor coping skills and difficult transitions back into pre-burn life (Abdelhafiz et al., 2015). This model provides a framework for implementation of standardized PHQ-9 screening in a burn outpatient clinic. The Iowa Model outlines step by step measures to ensure quality and applicability. During implementation, if a patient was identified as depressed, the providers followed evidence-based, established guidelines for treatment and referral. Health Partners (2010) provides guidelines for depression treatment including watchful waiting, medication prescribing, and therapy referrals. EBP models, such as the Iowa Model of EBP, are the gold standards of care for patients and should be used when making changes within the healthcare system (Carlton, 2014).

Barriers to practice change. Methods for implementing a practice change must be evidence-based. Nurse's willingness to implement evidence-based practice change has been measured and may present as a barrier to change (Wallis, 2012). In one study, only 34.5% of those surveyed felt that their colleague's consistently utilized evidence-based practice when treating patients (Wallis, 2012). The two most frequent barriers to evidence-based practice were

time constraints and an organizational culture that was not supportive of the particular practice (Wallis, 2012).

Time restraints were a potential barrier for this project implementation. The PHQ-9 score consists of nine questions that the patient was asked to complete while waiting to see the provider (Maurer, 2012). Patients may not have had enough time to complete the questionnaire before the provider entered the examination room.

A culture unsupportive of the practice change was a potential barrier (Wallis, 2012). This could have presented as a barrier if the nursing staff considered their current screening process of verbally asking patients the PHQ-2 score effective. Thus, the nursing staff may not have accepted the additional PHQ-9 method for depression screening as a necessary intervention.

Utilizing the Iowa Model

The Iowa Model was utilized to implement depression screening in the burn outpatient clinic. The problem identified was that depression is prevalent in burn patients and the current screening method may be inadequate (Bowling, 2005). This quality improvement project sought to determine staff compliance in distribution of depression screens. The project also evaluated whether a written PHQ-9 screening tool was more effective in identifying depression in burn patients than the current verbal PHQ-2 screening process. The problem for potential under identification of depression in burn patients is a priority for organizations because depression post-discharge can lead to increased readmissions and higher healthcare costs for organizations (Hudson et al., 2017).

A multi-disciplinary team approach was chosen for this project. The team members included the registered nurses, licensed practical nurses, and certified medical assistants who

worked in the clinic during the implementation period. These staff members distributed the PHQ-9 form. The nurse manager of the burn clinic facilitated the project and promoted implementation and compliance. Additional team members included the physicians, physician assistants, and residents who treated the patients and managed depressive symptoms when identified.

The trans theoretical model. The five stages of change within the trans theoretical model assist in implementing a change within an organization (Prochaska, Redding, & Evers, 2002) (see Appendix G). First, the precontemplation stage is when the individuals are not yet ready to make the change. The change will be presented and explained but implementation may be too far in the future to be accepted. The project was presented to the staff at the burn clinic in an organized manner. Staff were trained on the practice change that included appropriate methods in distribution and scoring the PHQ-9. Education was provided about depression in burn patients and the reasons for the practice change. The staff were shown the PHQ-9 questionnaire and provided with a reference handout for scoring. A reference guide on the appropriate interventions was provided to the providers to assist with treatment if a depression screen was positive.

Next, the contemplation stage is when the staff is more aware of the change as the time to implement becomes nearer (Prochaska et al., 2002). This is the phase when the staff are mentally preparing to implement the change. The staff may understand why the change is necessary but still be resistant to implementing the change (Prochaska et al., 2002).

The preparation stage began the month prior to implementation (Prochaska et al., 2002). The staff in the burn clinic were made aware the change is near. The project lead gained feed-

back from the staff to determine the best method for screen distribution. The staff were preparing for implementation and considering the best methods for success (Prochaska et al., 2002).

The action stage was implemented over the ten-week period that the quality improvement project lead was gathering data (Prochaska et al., 2002). This occurred when the questionnaires were being administered and the staff was scoring them and treating the patients when indicated. During this phase, barriers to practice change were identified and necessary changes made to promote project success. Interventions, such as staff reeducation, occurred as necessary to promote compliance.

Last, the maintenance phase was when the staff were working to prevent relapse to the old way of thinking (Prochaska et al, 2002). The staff may be confident that the change was necessary and may continue to implement the change until completed. For continued compliance the medical facility may need to implement a policy change.

Summary

Burn patients are frequently exposed to intense pain and frequently lose decision-making autonomy in an attempt to achieve wellness (Goverman et al., 2016). These factors, among others, can cause intense stress in burn patients while they are admitted to the hospital (Choi et al., 2014). Stressful situations can precipitate depression because the body has a decreased ability to feel pleasure (Choi et al., 2014). Betty Neuman's Systems Model, assists in explaining the patient's response to stressors (Petiprin, 2016). This model can be used in burn patients for early identification of stressors and enhancement of coping mechanisms (Petiprin, 2016).

The Iowa Model is an evidence-based practice problem-solving approach to improve patient health outcomes (Carlton, 2014). This model utilizes four steps to implement change

effectively to improve patient quality of care (Carlton, 2014). The Iowa Model was used as a guideline for implementation of the project within the burn outpatient clinic. Early identification of barriers that may present, such as staff unwillingness and time restrictions, assisted in preventing obstacles to implementation. The trans theoretical model outlines five stages of change behavior and how to avoid resistance and facilitate progress within each stage (Prochaska et al., 2002).

Chapter Four: Pre-implementation Planning

This chapter outlines the pre-implementation process for the quality improvement project of depression screening in a burn outpatient clinic. It will address the organization's readiness for change, the interdisciplinary team members, strengths and weakness of implementation, costs, and technology.

Project Purpose

The purpose of the project was to evaluate staff compliance in the use of written PHQ-9 depression screening for all adult burn patients (≥18 years old), who speak English or Spanish as a primary language, and had appointments in the burn outpatient clinic. The secondary purpose was to evaluate if administering the written PHQ-9 screen as an initial screening tool is effective in the identification of depression in burn patients.

Project Management

Organization readiness for change. The organization has readiness for change regarding depression screening in the burn outpatient clinic. To evaluate readiness the US Department of Health and Human Services' Health Resources and Services Administration Readiness Assessment is referenced (USDHHS, n.d.). First, to assess readiness, the executive administrators must be committed to the quality improvement (USDHHS, n.d.). For the project in the burn outpatient clinic, the director of the burn clinic and the nurse manager expressed support of project implementation. Next, the financial investment the project requires must be considered (USDHHS, n.d.). This project has minimal financial concerns. Then there must be consensus that the projects initiative align with the organization's goals (USDHHS, n.d.). The organization expresses that its main focus is to care for patients and to keep them safe. Utilizing the most

effective method for depression screening focuses on caring for patients and keeping them safe. The USDHHS (n.d.) also suggests physicians must support the initiative and understand its value. The site champion was one of the providers in the burn outpatient clinic and his enthusiasm extended to the other providers who expressed willingness to make changes. Lastly, readiness requires team members who work collaboratively (USDHHS, n.d.). The staff who work in the clinic had chosen to be a part of an academic medical facilities' educational environment that requires collaboration on a daily basis in providing care to the patient population.

Inter-professional collaboration. An inter-professional team implemented the quality improvement project within the burn outpatient clinic. The team consisted of a project leader, a site champion, the director of the burn unit, a project manager for general surgery and trauma research, a nurse manager, physician assistants, residents, registered nurses, licensed practical nurses, and medical assistants. This inter professional team worked together to distribute, score, and record PHQ-9 screens in the burn outpatient clinic. Based on the screening results, the team collaborated to determine the best treatment options for patients who are identified depressed.

The project leader was a doctorate student who collaborated with the site champion and the nurse manager to design the project. Internal review board (IRB) approval was obtained within the large academic facility for the project design (see Appendix M). The project lead conducted an educational session with the clinic staff to introduce the PHQ-9 depression screening tool. Weekly, the project lead conducted audits to evaluate staff compliance and collected the PHQ-2 and PHQ-9 scores to identify depressed patients.

The director of the burn unit is a medical doctor and a professor of surgery who approved the project and facilitated communication between the project leader and other inter-professional

team members. Most importantly, the director introduced the project leader to the project manager for general surgery and trauma research within the organization who assisted with the organization IRB approval process.

The site champion was a physician assistant (PA-C) employed in the burn unit who provides patient care for both burn inpatients and outpatients. This PA guided the project lead through the IRB application process and offered suggestions with the project design. These suggestions were instrumental when determining how to most effectively implement the project. The site champion served as a liaison between the project leader and the director of the burn unit.

The project manager for general surgery and trauma research facilitated the IRB process within the organization. This team member educated the project leader about the process of internal review and provided the paperwork necessary for submission. Then the project manager ensured the IRB application was complete and accurate for submission to the IRB.

The nurse manager of the burn outpatient clinic facilitated project implementation by organizing an educational session for the staff to learn about the requirements and project expectations. A culture of change was promoted by the nurse manager along with ongoing feedback to the project leader and staff members during the implementation phase.

The providers within the burn outpatient clinic, not including the site coordinator, were two physician assistants and one second year surgical resident. These individuals evaluated the scores of the PHQ-9 screens and provided treatment accordingly.

The staff in the burn outpatient clinic consisted of registered nurses, licensed practical nurses, and certified medical assistants. These individuals distributed and scored the PHQ-9

screens and inputed the PHQ-2 screens into EPIC. Staff members were evaluated for compliance weekly in screen distribution.

Risk management assessment. The SWOT analysis was used to identify strengths and weaknesses of the project design (HealthIT, 2017) (see Appendix H). The SWOT analysis contains four categories which are strengths, weaknesses, opportunities, and threats (HealthIT, 2017).

Strengths. Project strengths for depression screening in the burn outpatient clinic were identified. One strength identified was a dedicated inter professional team. The team working on this project promoted a positive atmosphere of change and were experienced in quality improvement. The inter-disciplinary team had a wide range of experience in caring for burn patients.

Another strength is a quick and familiar project design. The intervention of PHQ-9 screening takes less than five minutes per patient which did not disrupt workflow. Also, the staff in the burn clinic had already been exposed to the PHQ-9 screening tool within the currently used electronic health record (EHR) software. This familiarity with the screen was a strength for the staff in the clinic who were distributing and scoring the screens.

Weaknesses. There were some weaknesses in the project design. The project relied on staff members to distribute the screen to patients who presented for follow up appointments. This reliance on staff members allowed room for error which could have altered results.

Another weakness was lack of current data on depression in burn patients. Compared to other patient populations, burn patients are understudied and underrepresented as evidenced by lack of a specific screening tool for evaluating depression in this population.

Lastly, a weakness was a project leader who was a novice in quality improvement implementation. The project leader did not have a background in project design and was inexperienced in project implementation.

Opportunities. An opportunity that this project presented was identifying a tool for earlier identification of depression screening in burn patients. Earlier identification can hasten treatment time, decrease readmission, and lower hospital costs. Lowering hospital costs is especially important because this outcome meets the IHI triple aim of reducing healthcare costs (IHI, 2018).

Threats. A threat to the project design was low patient census during the implementation period. The census within the burn clinic is unpredictable and could be low during implementation. The number of patients followed and thus, the number of written screening completed could have an impact on project findings.

Organizational approval process. Burn patients are a specific patient population that have wide variety of needs to achieve wellness. Identifying depression in this patient population was identified as a need at the project site. The site champion, who is a physician assistant in the outpatient clinic, expressed concerns about the mental health of the burn patients that were being treated and agreed better identification of symptoms was necessary.

Next, the idea was presented to the director of the burn clinic, who was supportive of a project being implemented within the outpatient clinic. The director's approval was vital as he signed the site agreement (see Appendix I).

The nurse manager of the burn outpatient clinic provided information about the current screening process of using the electronic PHQ-2. To assist with gaining approval, education was

provided regarding specific needs of burn patients. For example, burn patients struggle with flashbacks, nightmares, decreased energy, and feelings of worthlessness (Reynolds & Kamphaus, 2013). These needs are specifically addressed in the PHQ-9 screen, whereas the PHQ-2 screen contains broader questions. Providing education about the specific needs of burn patients was used to gain the nurse manager's support.

The inter professional team provided feedback prior to IRB submission to ensure the project design was well defined for each staff's specific role. The team collaborated in developing a project design that was best suited for the burn outpatient clinic.

Information technology. EMR software was used to compare depression screen results. The software used can only be viewed, not edited. This software contained the results of the verbal PHQ-2 screening tool. The EMR was used to collect information to compare the electronic PHQ-2 screen results to the written PHQ-9 results. The registered nurses, licensed practical nurses, and medical assistants within the clinic entered the PHQ-2 scores into the patient's EMR chart.s The project lead accessed the charts weekly to perform an audit and determine if the screen results of the PHQ-2 and PHQ-9 differ.

Apple's Numbers was used as a spreadsheet platform to organize the data. Data that was collected and recorded on the spreadsheet included the number of patients who were seen at the clinic, number of patients who received the PHQ-9 screen, PHQ-9 scores, and PHQ-2 scores. Apple's Numbers was converted to an excel spreadsheet for data analysis.

Cost Analysis of Materials Needed for Project

The main cost of this quality improvement project was printing. The PHQ-9 screening tool, both English and Spanish, the audit tools, and the staff education handouts all required

printing. Additional costs included a binder for a staff reference book to be kept at the front desk of the clinic (see Appendix J). The estimated cost for the project was approximately $100.00.

Plans for Institutional Review Board Approval

IRB approval at the project site was obtained upon completion of an application. The project was approved as a quality improvement project and received expedited approval **(**see Appendix K). Within the university, approval required the submission of a preliminary IRB application. The IRB application was reviewed and the project was deemed as nonhuman research. Therefore, the project did not qualify for further IRB review (See Appendix L).

Plan for Project Evaluation

Demographics. The burn clinic staff was evaluated for their compliance to the PHQ-9 screen distribution. The demographics of the staff varied in age. All of the medical assistants, licensed practical nurses, and registered nurses who worked in the burn outpatient clinic during the implementation period were female.

Patients who received depression screening in the burn outpatient clinic were adults who had been burned. They were males and females, greater than 18 years of age, and of varying races and ethnicities. The patients resided in many different locations and some traveled great distances to be seen in the burn clinic.

Outcome measurement. The main objective of this project was to determine staff compliance in the use of written PHQ-9 depression screening for specific patients who attended appointments in the burn outpatient clinic. A secondary objective was to evaluate if administering the written PHQ-9 screen as an initial screening tool was effective in early identification of

depression in burn patients. This was performed by comparing the written PHQ-9 scores to the verbally administered PHQ-2 scores.

Evaluation tool. The evaluation tool for this project included a weekly chart audit tool (see Appendix M). The audit tool consisted of an acknowledgement that the patient received the PHQ-9 screen, the PHQ-9 score, the PHQ-2 score, and any interventions that were performed. The audit tool allowed the project leader to evaluate if all patients received screening and view variances in the PHQ-9 scores compared to the PHQ-2 scores.

Data analysis. Descriptive statistics were employed using percentages. Data from the audit tool were used to determine staff compliance by comparing the number of patients who attended appointments to the number of patients who received written PHQ-9 screens.

A comparison of the project PHQ-9 and organization PHQ-2 screen results were analyzed and compared. A line graph was used to display the number of patients who qualified as depressed based on the results of their PHQ-9 scores.

Data management. The data regarding staff compliance, PHQ-2 scores, and PHQ-9 scores was stored on a spreadsheet within a password protected MacBook Air. No patient or staff identifying information was collected.

Summary

Using the US Department of Health and Human Services' Health Resources and Services Administration Readiness Assessment the organization was identified as ready for change (USDHHS, n.d.). Areas that were evaluated to measure readiness included: finances, leadership support, organizational goals alignment, and an understanding of the project's value (USDHHS, n.d.). The inter professional team was diverse and dedicated to improving outcomes for burn

patients. Strengths of the project design included ease of use and familiarity of the tool. The approval process required interdisciplinary communication and collaboration that led to successful organizational and IRB review and approval.

The quality improvement project evaluated staff compliance and the PHQ-9 screening tool's effectiveness. Handouts and tools were developed to assist the staff with implementation and to assist the project leader with data organization (see Appendix N). Data was analyzed and is displayed in a bar chart.

Chapter Five: Implementation Process

The project was implemented in an outpatient clinic at a large medical facility in central North Carolina. It focused on adult patients who have been burned and were seeking care. This chapter will outline the project implementation process.

Setting

The project setting was a large academic medical hospital which provides level one trauma care in an urban setting. The hospital employs 25,000 people and hosts more than 800 inpatient beds. The organization operates dozens of outpatient clinics with some located within the main hospital facility and others offsite in the surrounding region.

The outpatient burn clinic that served as the project site is American Burn Association verified. This clinic is located within the main hospital and, specifically, in an area of the building dedicated to outpatient services. The same physicians, physician assistants, and residents who work in the inpatient burn unit also work in the outpatient burn clinic.

The outpatient burn clinic is open Monday and Tuesday of each week. Providers in the clinic treat burn patients who were recently discharged from the inpatient unit, recently discharged from the emergency room, or who were referred from an outside facility. The burn clinic consists of patient exam rooms which are equipped with basic examination equipment and dressing supplies.

Participants

For this project, the participants were clinic staff who administered the depression screening tools. These staff members are medical assistants, certified nursing assistants, registered nurses, physician assistants, residents, and medical doctors. All staff are employed by the agency

associated with the burn clinic. Any staff who roomed patients for appointments or provided medical care to patients were participants in the quality improvement project. There was no exclusion criteria for participants.

Recruitment

The medical assistants, certified nursing assistants, and registered nurses who participated in the quality improvement project were recruited by the nurse manager of the outpatient burn clinic. The clinic staff were receptive to participating in the project. During recruitment, members provided constructive criticism that assisted in shaping project design. Some staff members identified depression in burn patients as a concerning problem and were enthusiastic about a project to impact change.

Implementation Process

Staff education. Clinic staff were educated on August 8th about the project and implementation plan. The session began with an overview of the importance of recognizing and treating depression in the burn patient population.

Educational handouts were utilized to explain the staff's roles in the project (See Appendix N). An overview of each individual role were discussed. This included administering the PHQ-9 screens at patient check in and scoring of screening tools as the patients were being roomed. A mock PHQ-9 screening tool was administered to practice scoring. Staff members who had difficulty accurately scoring the PHQ-9 forms received one on one training from the project leader.

Providers in the burn outpatient clinic practiced interpreting the results of mock screens. An educational handout was provided as a reference to the scoring technique. No providers had difficulty accurately scoring the screening tool.

Project implementation. Project implementation began on August 20th and ended November 6th. The PHQ-9 screening tool was administered to each patient upon rooming. Patients were instructed to answer the questionnaire while waiting to be seen by a provider. The providers evaluated the depression score and determined a treatment course if necessary. If a treatment course was needed, the provider wrote what was ordered on the screening tool. The screens were left in a designated folder for the project leader to evaluate weekly.

Weekly, the project leader collected screening tools and performed an audit using the organization's EMR software. This audit ensured that all patients were being screened, questionnaires were being scored accurately, and interventions were made as necessary. If screening tools were not being distributed to all eligible patients, if the screens were not being scored accurately, or if patients were not receiving the appropriate interventions reeducation occurred in the form of a face to face meeting.

Plan Variation

A reference binder was provided to the staff as a project resource. It contained the educational handouts and referral recommendations for the staff. During week two of implementation, the staff expressed the need for a second reference binder which ensured one binder was in the provider office and one was at the nurses desk which improved staff workflow.

Initially it was decided that the staff who room the patients would be scoring the PHQ-9 screens. However, the providers scored the screening tools more frequently throughout the im-

plementation period. This plan variation was apparent by the end of week two. Providers scoring the screens improved staff workflow because the staff who roomed the patient did not have to reenter the exam room.

Summary

The depression screening implementation phase of the quality improvement project focused on burn patients who were being seen for appointments in the burn outpatient clinic. Staff were educated by using informational handouts. The team leader completed audits weekly to ensure screening tools were being distributed correctly. One variation from project design included implementation of a second educational binder to encourage more productive staff workflow. Another variation was providers scoring of the screening tools, instead of the staff, which also coordinated better with workflow. The quality improvement project ended November 6th, the results are to follow.

Chapter Six: Evaluation of the Practice Change Initiative

The quality improvement project was conducted in a burn clinic over a ten week period. The interdiscliplinary staff employed in the burn clinic facilitated the project implementation. The specific project results and outcomes are discussed in this chapter.

Participant Demographics

Project participants included 141 burn patients who attended appointments in the burn clinic over a ten week implementation period. Of the 141 patients, 120 (85.1%) completed the written PHQ-9 depression screen. No identifying demographic data were obtained from the patient participants**.** They were all adults, greater than 18 years old, who were recently discharged from the associated medical center, discharged from an outside facility, or referred from an outside facility. Spanish speaking patients were included in the project and they received Spanish screening tools. Some of the participants may have attended an appointment in the clinic before while others were seen as a first time appointment.

The size, severity, and location of the participants burn injuries varied as did the stages of healing. Patients seen may have had unexcised burn injuries or may have been post skin grafting. Due to the varying stages of the healing process, patients had different types of wound dressings requiring specific care regimens.

Staff participants included fifteen staff members within the clinic who participated in handing out the screening tools. The providers involved consisted of one attending physician, one fellow, three general surgery residents, and two physician assistants who scored the screening tools and treated the patients.

Intended Outcomes

An intended outcome was to determine staff compliance in distributing a written screening tool in the clinic setting. Written screening tools are more likely to provide patients the comfort of revealing sensitive information when compared to electronic screening tools (Bowling, 2005). Therefore, if instead of electronic screening tools, written screening tools are implemented could depression be more effectively identified in the burn patient population?

Another intended outcome of this project was to determine if earlier identification of depression in burn patients was possible with the use of the PHQ-9 screening tool. Depression in post-burn patients can lead to harmful complications, increased hospital readmissions and thus, increased hospital costs (Mitchell et al., 2010). Using the PHQ-9, identification of depressed burn patients resulting in earlier treatment initiation could reduce healthcare costs. If earlier identification of depression in burn patients is possible with the PHQ-9 then implementation of this screening tool as a standard of practice will be beneficial long term.

Findings

One hundred and forty-one patients attended appointments in the burn clinic during the ten-week period and of those, one hundred and twenty (85.1%) received the PHQ-9 screening tool. Of the 141, 21 patients (14.9%) were not screened due to staff noncompliance with administering the screen and one patient's illiteracy.

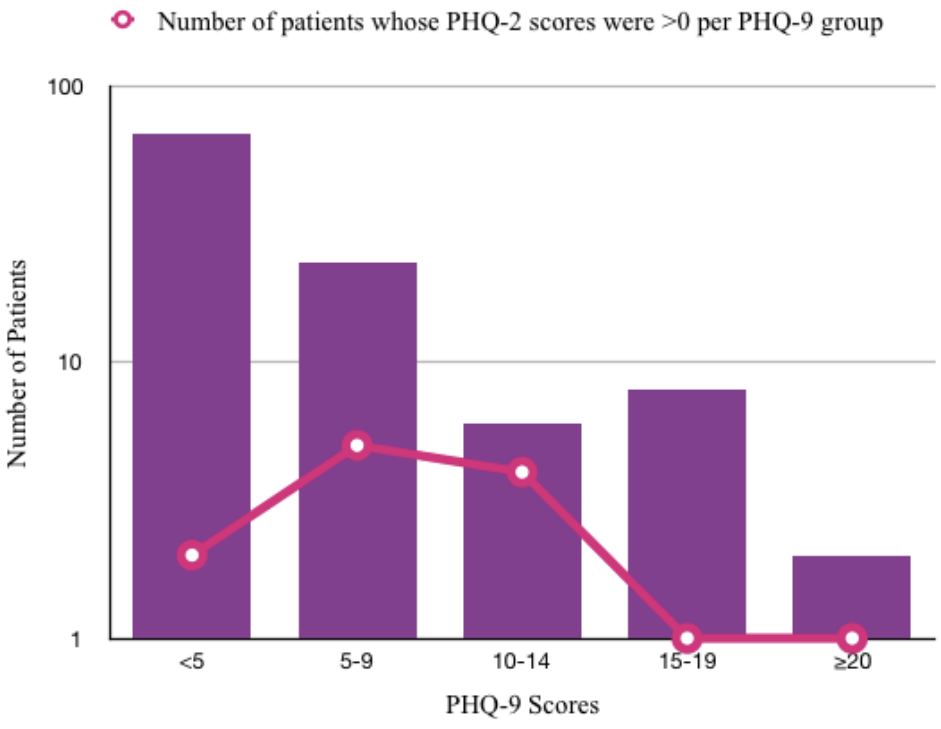
From a review of the PHQ-9 scores, 69 (56.5%) patients scored <5. A score <5 correlates with no depressive symptoms. Twenty-nine (23.7%) patients reported scores of 5-9, ten (8.2%) patients reported scores of 10-14, ten (8.2%) patients reported sores 15-19, and two (1.6%) patients reported scores of ≥20. A score of ≥10 indicates the patient may require intervention by

the clinician (Kroenke et al., 2001). Of the patients screened, 13 (10.8%) met criteria for a depression diagnosis based on the PHQ-9 guidelines. Although scores >10 may generate need for treatment based on the PHQ-9 guidelines, for this project, all of the patients who qualified for an official depression diagnosis had a PHQ-9 score of ≥14.

In using the PHQ-9 screening tool to diagnose a patient with depression, specific criteria must be met. First, the patient must indicate one of the first two questions on the screen as "more than half days" or "nearly every day" (Kroenke et al., 2001). Then, for questions 1 and 2 these responses must correlate with a score of either 2 or 3. Also, the patients must indicate at least 5 answers total in the shaded area of the questionnaire. The shaded area is a score of 2 or 3 for questions 1-8 and a score of 1, 2, or 3 for question 9. Lastly, to diagnose a patient with depression the patient must answer question 10 as "somewhat difficult," "very difficult," or "extremely difficult" (Kroenke et al., 2001) (see Appendix A).

Table 1

Frequency of PHQ scores



A review of the patient PHQ-9 scores were compared to the PHQ-2 scores in the electronic health record. Of the 22 patients screened with a PHQ-9 who scored ≥10, which may require intervention, 16 (72.7%) of these patients scored zero on the PHQ-2. This indicated that the patients who scored zero on PHQ-2 would not have been identified as potentially needing interventions. Only five (22.7%) of the 22 patients who scored ≥10 on the PHQ-9 had a PHQ-2 score of 1 or 2 which would have indicated a need for further screening.

Of the 13 (10.8%) patients screened that met criteria for depression diagnosis, 11 (84.6%) screened zero on the PHQ-2. This indicates these patients would have been potentially missed by the PHQ-2 screen as being depressed. One (7.7%) patient who scored 16 on the PHQ-9, and met criteria for depression, refused the PHQ-2 screen. It was unsure if this patient benefited from the additional screening. Of the 13 patients who met criteria for depression diagnosis, (30.7%) had a preexisting psychiatric consult, 3 (23%) received a psychiatric consult, and 6 (46.3%) patients did not receive any treatment. It was uncertain why the providers did not recommend treatment for these patients during the project implementation timeframe.

Of the patients who met criteria as diagnosable for depression using the written PHQ-9 screening, 11 (84.9%) diagnosable depressed patients who were screened for depression using the written PHQ-9 tool would not have been identified had they only been screened using the electronic PHQ-2.

Summary

In summary, the quality improvement project in the burn outpatient clinic was implemented over a ten-week period. The project goal was to screen each patient who presented for care with an electronic PHQ-2 and a written PHQ-9 depression screen. From the project findings,

120 (85.1%) of patients were appropriately screened by the interprofessional team. Based on screen results, 22 of total patients screened were identified by the PHQ-9 as possibly needing intervention or being diagnosable depressed. Of the patients who were depressed or who may need intervention, 16 (72.7%) would not have been identified using the electronic PHQ-2 screening tool. Summary of the findings indicate that depressed burn patients are being missed by only using the electronic PHQ-2 screening tool.

Chapter Seven: Implications for Nursing Practice

Findings from the quality improvement project to screen burn outpatients for depression have implications for nursing practice. Advanced practice nurses can utilize this information to develop and implement practice changes. This chapter will discuss the nursing implications using the essentials of doctoral education for advanced nursing practice.

Practice Implications

Implications for practice influence provider decision making and assist in providing well rounded, evidence-based care. The essentials of doctoral education for advanced nursing practice are used to evaluate the practice implications of this project. These essentials provide an outline for quality and advancement of nursing practice.

Essential I: Scientific underpinnings for practice. Scientific underpinnings for practice analyze and use information to develop and guide practice (AACN, 2006). The intended result is to integrate research, theory, and practice to develop new approaches toward improved care and outcomes (AACN, 2006). Research reviewed for this project indicated post burn patients have high rates of depression based on universal screening tools (Hudson et al., 2017). However, there are no evidence-based screening tools developed specifically for burn patients. Post burn patients with untreated depression have a higher rate of morbidity and mortality when compared with other patient populations (Oster & Sveen, 2014). Based on the results of this project, if a screening tool was available that addressed more specific needs of burn patients, depression in some patients may be identified earlier, reducing the risk of post discharge complications. The development of a depression screening tool for use in burn patients is a recommendation for future study.

Advanced practice nurses use evidence-based screening tools to evaluate severity of disease. This project implies that universal screening tools may not be best for all patient populations, especially marginalized populations, such as burn patients. A lesson learned from this project is for advanced practice nurses to remain attuned to specific patient needs and understand that use of screening tools may not capture all patients who necessitate intervention.

Essential II: Organization and systems leadership for quality improvement and systems thinking. Systems leadership for quality improvement includes accountability for patient safety (AACN, 2006). Within the project site, all outpatients, regardless of diagnosis, are screened with the electronic PHQ-2 screening tool. The organization policy for treatment of depression applies solely to suicidal patients. For the patients who screen moderately to severely depressed no treatment is mandated. The lack of policy poses potential patient safety issues because providers are not held accountable to following the evidence-based recommendations that apply to screening tool results. The PHQ-9 screening tool recommends psychotherapy and/or an antidepressant medication for patients scoring >10 on the screening tool. During this project, 46% of depressed patients did not receive any treatment for diagnosable depression and national rates of untreated depression are higher (Akincigil & Matthews, 2017). Patients with high scores on the PHQ-9 may benefit from additional screening such as the Columbia Suicide Severity Rating Scale (Center for Deployment Psychology, 2016). Therefore, this project implies that stricter guidelines may be needed to properly identify and treat burn patients with depression. Education and accountability using handouts and audits can assist in ensuring providers are appropriately treating patients who meet criteria for a depression diagnosis, thus minimizing adverse outcomes.

Essential III: Clinical scholarship and analytical methods for evidence-based practice. Clinical scholarship and analytical methods for evidence-based practice includes implementing an evaluation process to measure patient outcomes (AACN, 2006). The Iowa Model was translated into practice by the project leader as a guideline for implementation of the project within the burn outpatient clinic (Carlton, 2014). The Iowa Model is an evidence-based practice problem-solving approach that provides recommendations regarding how to implement change effectively to improve patient quality of care (Carlton, 2014). Using the Iowa Model, the project leader evaluated readiness for change, staff willingness for change, the change environment, and leadership capabilities before beginning implementation of the project. Also, the project leader communicated with the interdisciplinary team members to determine the best method of change. An evaluation process was implemented to measure patient outcomes and determine if organizational change was needed. Advanced practice nurses provide expertise and are leaders in initiating best practice change through quality improvement methods improve patient outcomes by using quality improvement methods.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare. Information technology is used to transform patient care and increase efficiency and accuracy of the care delivered (AACN, 2006).Within electronic medical records, screening tools are used by nurses to provide well rounded care. For example, many inpatients at the project site receive fall assessments, nutrition assessments, and skin assessments that are documented within the electronic medical record. As outpatients at the project site, patients receive a fall assessment and a depression screen. Based on the literature review conducted for this project, there was not adequate evidence to determine that administer-

ing screening questionnaires electronically was as accurate as written screening tools. More research is recommended to ensure that electronic screening tools are accurate in the outpatient clinic setting. The realization that electronic screening tools may not be as sensitive as written screening tools is important for safe, effective nursing care. Using screening tool to obtain the most specific real time information improves care provided.

Essential V: Healthcare policy for advocacy in healthcare. Healthcare policy for advocacy in healthcare provides leadership and framework for implementing health policy (AACN, 2006). Healthcare policy is developed to standardize methods of care that are deemed accurate and effective. Within the burn clinic, policy outlines how frequently patients are screened for depression and the method of screening. In this case, depression screening occurs at each outpatient visit via the PHQ-2 electronic screening tool. This quality improvement project sought to evaluate the current method of screening burn patients for depression.

The outcomes of the project determined that the current method of screening and treatment may not be effective for all burn patients. Additional policy is needed to ensure patients are being screened and treated appropriately. Advanced practice nurses are trained to identify gaps in care and advocate for improved care. The advocacy for policy changes, such as evidence-based, standardized screening tools for depression to improve patient outcomes is at the forefront of advanced nursing practice.

Essential VI: Interprofessional collaboration for improving patient and population health outcomes. Interprofessional collaboration for improving patient and population health outcomes requires communication to develop and implement policy, standards of care, practice, and scholarship (AACN, 2006). The quality improvement project in the burn outpatient clinic

relied on interprofessional teamwork and communication toward success. Team members consisted of nurses, medical assistants, certified nursing assistants, physician assistants, residents, and physicians. The project leader communicated with interprofessional team members before and during the project's implementation phase. Many team members expressed different viewpoints and provided recommendations for the project's success based on his or her expertise. This communication was important because inter professional communication ensures each specialty has a voice when creating the project implementation plan. When each team member has a voice and buy in, success of quality improvement projects improves. Each team member can evaluate and determine the impact the change may have on his/her practice and how best to adapt to meet his/her needs. Each member's ideas and opinions assisted in shaping of this project's design. During the implementation phase, the interprofessional team members worked together daily when the project lead was not present. This collaboration, especially when the project lead was absent, contributed to the project success. Advanced practice nurses are trained to foster interprofessional communication by empowering other specialties to have a voice and collaborate as a team.

Essential VII: Clinical prevention and population health for improving the nation's health. Clinical prevention and population health focuses on reducing gaps in care (AACN, 2006). Early identification and treatment of depression has been identified as a gap in healthcare. The USPSTF recommends annual screening for depression, yet it was determined that only 4.2% of adults were screened (Akincigil & Matthews, 2017). The current estimation is that only about 36% of depressed patients are being appropriately treated (Akincigil & Matthews, 2017). By 2020, depression is estimated to be the largest cause of disability in the US and will cost upwards

of $17 billion in lost productivity (Maurer, 2012). Early identification and treatment of depression in burn patients also meets a triple aim goal of improvement of population health (IHI, 2018). Nursing implications to improve population health include the awareness of depression screening as a gap in care and the promotion of earlier identification of depression can lead to decrease healthcare costs and improved patient outcomes.

Essential VIII: Advanced nursing practice. Advanced nursing practice is conducted in a variety of settings. Nurse practitioners promote quality of care, develop and maintain patient relationships, mentor and support fellow nurses, and evaluate quality outcome measures, among many other tasks (AACN, 2006). This quality improvement project supported advanced nursing practice as the project lead was a nurse preparing for doctoral advance nursing practice. The project lead formed an interprofessional team to improve depression screening for burn patients. Nursing theory, such as Betty Neuman's Systems Model, was used to guide project focus as a burn injury is a stressor (Petiprin, 2016). Stressors can have a negative effect on the psychological, physiological, sociocultural, spiritual, and developmental wellbeing of the patient (Petiprin, 2016). The nursing profession reduces stressors by focusing on patient wellbeing. Nurses advocate for patients' wellbeing by ensuring early identification of patient needs. For this project, the project lead identified a need in a marginalized patient population and designed, implemented, and evaluated interventions to promote quality of care.

Advanced practice nurses are well positioned to implement quality improvement projects in the healthcare setting. Nurses have a unique perspective and understanding of patient needs in working closely with patients on a daily basis. Advocating for patient needs is the heart of nursing. Advanced practice nurses are trained to utilize available research to translate best practice

into improvement projects. A review of project outcomes can assist in determining changes that can lead to improve patient care.

Summary

The eight essentials of DNP practice outline advanced nursing implications for patient care and healthcare improvement (AACN, 2006). These essentials provide a framework for quality improvement in the healthcare setting. Meeting each of these essentials is imperative for advanced nursing practice to excel. The project in the burn clinic was conducted by an advanced nursing practice student using the Iowa Model as a guide. Implementation required an interprofessional team to carry out the required steps towards project success. The project was scholarly, analytical, applicable, cost effective, and focused on healthcare improvement with an ultimate goal of improved outcomes and decreased healthcare spending. This quality improvement project identified a gap in care for a marginalized population.

Recommendations for future practice include standardized treatment guidelines based on screening tool outcomes. Also, depression screening and treatment policy intervention for the burn patient population. Due to this populations documented high rates of depression more in depth screening and follow up may be necessary. More research needs to be done to determine the best method of screening burn patients for depression because this project revealed that the current method may not be appropriate for all patients.

Chapter Eight: Final Conclusions

The quality improvement project in the burn outpatient center identified an unaddressed need for some burn patients. During project implementation, strengths and weaknesses of the improvement process were identified. From a retrospective evaluation of the project, design, implementation, and findings, there are implications for nursing practice. This chapter will outline the significance of the findings, projects benefits, implications, and conclusions of the quality improvement project in the burn outpatient center.

Significance of Findings

Results of the quality improvement project in the burn outpatient clinic has significant findings for practice that were noted. One significant finding was that some depressed patients were being missed by the current screening methods. The PHQ-2 is endorsed by the American Academy of Pediatrics, the American Psychological Association, and others as the recommended initial screening tool in the general population (Greenhalgh, 2016). By using the PHQ-2 screening tool, the project site is using recommended guidelines for initial screening of patients for depression. However, based on the literature review the PHQ-2 has not been adequately studied in post burn patients so its accuracy is unknown. Findings from this project showed the PHQ-2 effectively identified 2 (15.3%) patients who were depressed compared to 13 patients identified with concurrent PHQ-9 screens for depression. The significance of this finding is that the current method of screening burn patients for depression may be inadequate and a reevaluation of screening methods may be warranted.

Additionally, inaccurate identification of depression has consequences for patient health and longevity. Depressed post burn patients are more likely to suffer from discharge complica-

tions, have delayed healing, be readmitted to the hospital, and experience earlier death, among others (Hudson et al., 2017). These patients have poorer outcomes, may not function independently, and may require nursing home admission (Hudson et al., 2017). Depressed post burn patients, though small in number when considering the whole patient population, can contribute to healthcare burden. It is the responsibility of health care providers to not only treat patients' acute injuries but work in partnership with the patients to develop a life of wellness. Achieving wellness for these patients by identifying depression earlier is significant since it has the potential to decrease health complications and improve longevity.

Lastly, health care spending could be reduced with more effective identification and treatment of post burn patients. By 2020, depression is projected to become the second largest cause of disability in the United States (Maurer, 2012). Annually, depression accounts for more than $43 billion in medical costs and more than $17 billion in lost productivity (Maurer, 2012). Burn patients are a small patient population when considering all patients who present for healthcare, however, reducing costs when able and improving patient outcomes are the responsibility of all health care providers. Significant cost reduction could be possible with earlier identification and treatment of depression in burn patients using a screening tool designed specifically for burn patients.

Project Strength and Limitations

A major strength of the quality improvement project in the burn outpatient clinic was the interprofessional collaboration. The team members consisted of professionals from a wide variety of specialties. Each interprofessional team member contributed important recommendations to shape the project design based on their expertise. Throughout project implementation, team

members worked collaboratively in distributing screening tools, scoring the screening tools, and developing treatment plans based on the screening results. An example of collaboration was when a team member voiced concerns about the project design hindering work flow. After the concern was voiced, the team leader spoke with other team members and made prompt changes based on the concerns. The change consisted of creating a new resource binder which would be kept at the nurses' station. This provided a quick reference of project details for the certified medical assistants, certified nursing assistants, and registered nurses who were handing out screens on a daily basis.

Another strength for the project was the use of a familiar screening tool, the PHQ-9. The PHQ-9 screening was already incorporated into the unit's EMR. Standard protocol was to administer the PHQ-9 after the electronic PHQ-2, if the PHQ-2 score was positive (>0). For the purpose of the project, the PHQ-9 was administered to all patients via a written screening tool regardless of the PHQ-2 score. However, the staff were still previously aware of the PHQ-9 screening tool's indication for use, wording, and functionality. With the staff familiarity of the screening tool, there was less of a learning curve for staff to become familiar, confident, and compliant in use of the tool. Staff were not expected to learn a new skill in successfully utilizing the PHQ-9 tool.

Limitations in the project were also identified. One limitation was a small, group of burn patients with varying degrees of burn injuries who were screened. One hundred and forty-one patients attended appointments during the ten-week period with 120 patients receiving the written PHQ-9. These one hundred and twenty patients had various degrees of burn injuries and were at different stages of the healing process. For example, some patients were attending their first

appointment as an outpatient post-burn while others have been followed for months. Some patients were post skin grafting and others had unexcised burn injuries. Another limitation was that a few patients were seen more than once during the project implementation period, and therefore received multiple screens. These variations and limitations could have impacted the project findings. With the project's design, it was beyond the scope of the project to determine which types of patients with varying burn injuries and stages in the healing process were at higher risk for complications from depression based on their PHQ-9 screen results.

Another limitation was the lack of identified research on depression screening tools in burn patients. Based on the literature review for this project, universal screening tools have been used in the majority of studies on the topic of depression in burn patients. These tools have not been studied specifically in burn patients, so their sensitivity and reliability are unknown.

Project Benefit

The project benefited patients who have been burned by heighten the awareness of the health care team of depression in this population. This project shed light on depression's prevalence in burn patients and the providers role in diagnosing and treating this disease. Earlier identification of depression in burn patients assists providers in management of care which can lead to improved outcomes. Improved outcomes include reduced health complications and decreased hospital readmissions and thus, less unnecessary healthcare spending. Although the benefits are evident, the burn patient population needs more research performed to determine the best method to properly identify and manage depression.

Recommendations for Practice

Based on the findings of the project, there are opportunities for health care providers to improve the treatment plan for patients who met criteria for depression using the PHQ-9. Out of the 13 patients who qualified for a depression diagnosis within this project, 4 (30.7%) had a pre-existing psychiatric consult, 3 (23%) received a psychiatric consult, and 6 (46.3%) patients did not receive any treatment and nothing was documented about provider counseling during the visit. A recommendation for practice is better education and training for providers regarding evidence-based treatment options for mild, moderate, and severe depression. The development and implementation of standardized guidelines for providers when a patient is identified as depressed could assist in the coordination of care and delivery of evidence-based care. For example, a patient may meet criteria for psychotherapy, antidepressant medications, or a psychiatric referral. Once a patient is identified as depressed, further screening may be required to determine what the best course of treatment is. Depressed patients who are identified early and treated in a timely manner exhibit the best outcomes.

Policy changes may be warranted to provide a better framework for provider's management of patient's depression. The current policy in place at the project site pertains to suicidal patients only, not patients who are identified as depressed without suicidal indication. If evidence-based guidelines for depressed patients were incorporated into the policy, there would be a more standardized approach to manage this population to ensure appropriate care and treatment rendered.

A second recommendation for project expansion is to investigate which burn patients are at the highest risk for depression. Does the risk increase with size of burn, severity of burn, loca-

tion of burn, or length of hospitalization, etc.? Also, investigation into the timing of depression screening would determine if the stage in the healing process alters the risk for depression.

The effectiveness of written screening tools compared to electronic screening tools has been studied. It is shown that written screening tools are more effective for revealing sensitive information (Bowling, 2005). A recommendation for future study is to create a project that evaluates if written or electronic screening tools are more accurate for identification of depression in burn patients, or the general population.

Final Summary

In summary, more than a million individuals annually receive medical treatment for burn injuries (Sheridan, 2018). Rates of depression in post burn patients are well above the national average (Wiechman, et al, 2016). Depression in burn patients is a predictor for decreased patient cooperation, decreased patient outcomes, difficult post-hospital placement, and increased hospital readmission rates (Hudson et al., 2017). Untreated depression has costly consequences for the healthcare system and increases patient's rate of morbidity and mortality (Abdelhafiz et al., 2015). Based on the results of this quality improvement project, improved standardized screening for depression in burn patients is warranted. However, more research is needed to determine if current screening tools used for burn patients are adequate. Providers' education regarding treatment recommendation for depression in burn patients to ensure quality, timely care is important in the management of this population. Improved policies and evidence-based treatment guidelines for burn patients can assist organizations in meeting the IHI Triple Aim of improve patient care, patient experience and reducing cost. Burn patients are an underserved, marginalized popu-

lation of patients who suffer from depression at high rates. Providing top quality mental health care for these patients can improve outcomes and ultimately save lives.

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Appendix A

PHQ-9 English

Patient Name _____ Date of Visit _____

Over the past 2 weeks, how often have you been bothered by any of the following problems?	**Not At all**	**Several Days**	**More Than Half the Days**	**Nearly Every Day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself - or that you're a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or, the opposite - being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3
Column Totals	_____ +	_____ +	_____	
Add Totals Together	_____			

10. If you checked off any problems, how difficult have those problems made it for you to Do your work, take care of things at home, or get along with other people?

☐ Not difficult at all ☐ Somewhat difficult ☐ Very difficult ☐ Extremely difficult

Appendix B

PHQ-9 Spanish

NOMBRE: _____ FECHA: _____

***Durante las últimas 2 semanas*, ¿cuan qué frecuencia le han molestado los siguientes problemas?**		Nunca	Varios días	Más de la mitad de los días	Casi todos los días
1	Tener poco interés o placer en hacer las cosas	0	1	2	3
2	Sentirse desanimado/a, deprimido/a, o sin esperanza	0	1	2	3
3	Con problemas en dormirse o en mantenerse dormido/a, o en dormir demasiado	0	1	2	3
4	Sentirse cansado/a o tener poca energía	0	1	2	3
5	Tener poco apetito o comer en exceso	0	1	2	3
6	Sentir falta de amor propio – o que sea un fracaso o que decepcionara a si mismo/a su familia	0	1	2	3
7	Tener dificultad para concentrarse en cosas tales como leer el periódico o mirar la televisión	0	1	2	3
8	Se mueve o habla tan lentamente que otra gente se podria dar cuenta – o de lo contrario, esta tan agitado/a o inquieto/a que se mueve mucho más de lo acostumbrado	0	1	2	3
9	Se le han ocurrido pensamientos de que sería mejor estar muerto/a o de que haría daño de alguna manera	0	1	2	3
	add columns:		+	+	
	TOTAL:				

10	Si usted se identificó con cualquier problema en este cuestionario, ¿cuan difícil se le ha hecho cumplir con su trabajo, atender su casa, o relacionarse con otras personas debido a estos problemas?	Nada en absoluto Algo difícil Muy difícil Extremadamente difícil	_____ _____ _____ _____

Appendix C

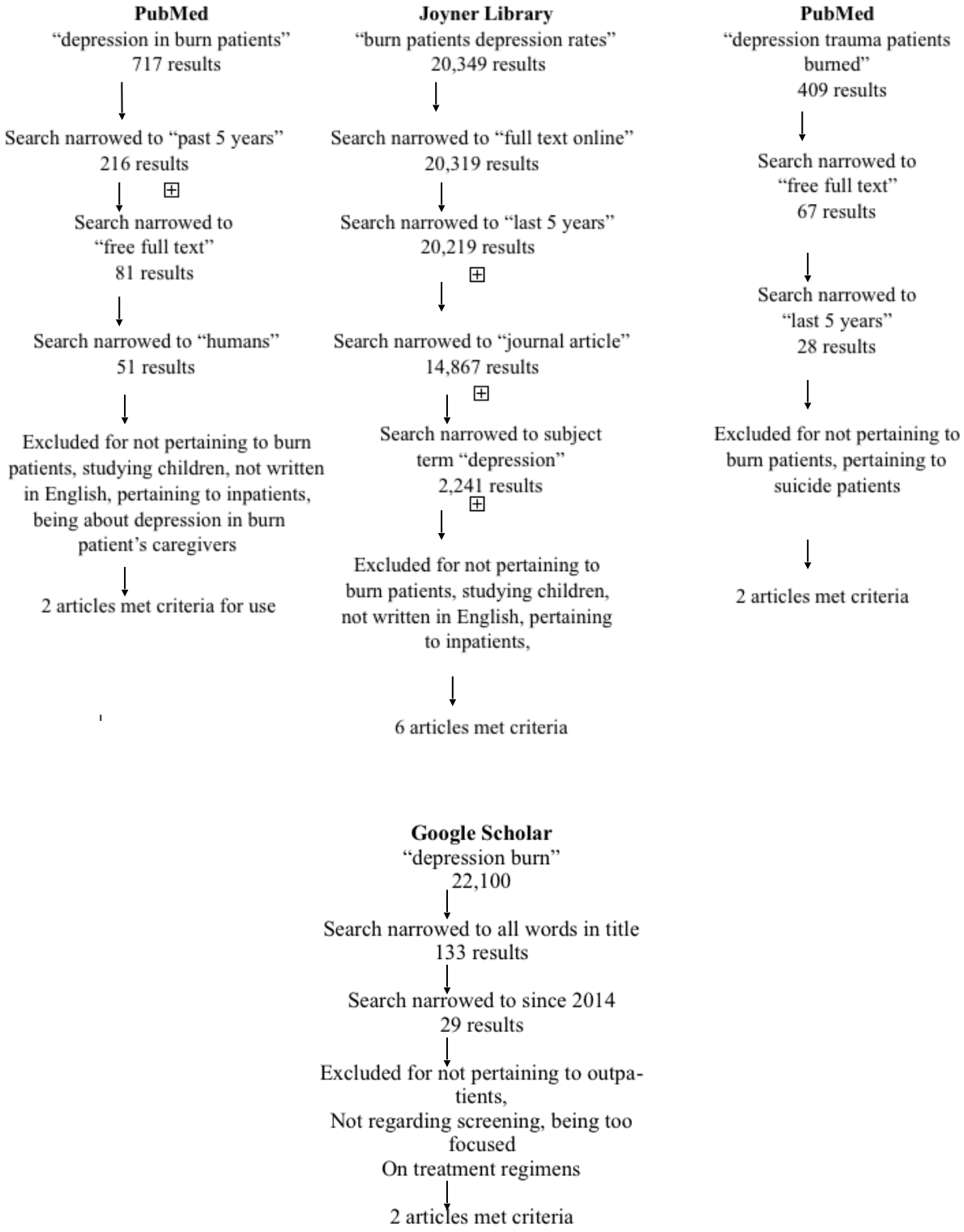
PHQ-2 screen

Patient Name _____ Date of Visit _____

Over the past 2 weeks, how often have you been bothered by any of the following problems?	**Not At all**	**Several Days**	**More Than Half the Days**	**Nearly Every Day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3

Appendix D

Search Strategy



Appendix E

Literature Matrix

Smitten, M., Graff, R., Leoy, N. (2011). Prevalence and comorbidity of psychiatric disorders 1-4 years after burn. *Burns, 37*(5), 753-761.	II	90 burn patients were evaluated at 12 months using the Composite International Diagnostic Interview to look for DSM-IV criteria for a disorder.	10% MDD, 10% GAD, 7% PTSD. 57% of disorders began within one year post injury and 21% within year 1-2.	Shows that the need for evaluating patients post injury is high, but also show that patients who have been burned may not begin to experience symptoms until between years 1-2 after injury. Patients should be screened at every appointment. Rates of depression in these patients is higher than the general population. At 2 year follow up depression screening in these patients may be warranted.
Sareen, J., Erickson, J., Medved, M., Asmundson, G., Enns, M., Stein., . . . Logsetty, S. (2013). Risk factors for post-injury mental health problems. *Depression and Anxiety, 30*(4).	V	Summarized the current literature available regarding physical, psychological, and social risk factors for patients post injury. Used the Engel's biopsychosocial framework.	Female sex, history of mental health problems, history of trauma, type of injury, and level of pain are predictors for poor mental health outcomes post-injury.	Does not specifically evaluate burn patients. However, this study does provide insight into the risk groups for mental disorders post-injury.

Roh, Y., Chung, H., Kwon, B., & Kim, G. (2012). Association between depression, patient scar assessment and burn specific health in hospitalized burn patients. *Burns, 38*(4), 506-512.	II	Using the Korean CES-D levels of depression in patients post-burn injury was evaluated.	50% of patients at 60 days post injury scored positive for depression.	Supports that patients are depressed post burn injury and need to be evaluated in the outpatient setting. This study used 113 patients in a small hospital in Korea. But, it used a scale that this study will not use.
Prochaska, J., Redding, C., & Evers, K. (2002). The trans theoretical model and stages of change. *Health education: Theory, research, and practice (3rd Ed)*. San Francisco, CA. Jossey-Bass, Inc.	V	The Iowa Model of form distribution is what will be used to implement this project. The Iowa Model consists of five steps that will be implemented. It is a model for change within institutions.	The Iowa Model has been proven to be a method of change within organizations. It will be used in the burn clinic for project implementation.	The model will be used for implementation in the burn clinic. Will be used as an outline for education and implementation of the project and as a structure for the staff to follow.

Palmu, R., Partonen, T., Suominen, K., Vuola, J., & Isometsa, E. (2016). Functioning, disability, and social adaptation six months after burn injury. *Journal of Burn Care and Research, 37*(3), 234-243.	I	The study was to determine predictors of level of functioning post burn injury. The patients were evaluated using the Social and Occupational Functioning Assessment Scale for 18 months.	Structured clinical interviewing revealed that mental disorders had the largest impact on functioning post discharge with a burn injury.	Patients who have untreated mental disorders have worse outcomes from burn injuries. Poor outcomes contribute to higher utilization of medical facilities and increased medical costs.
Loey, V., Klein-Konig, I., Jong, A., Hofland, H., Vandermeule, E., & Engelhard, I. (2018). Catastrophizing, pain and traumatic stress symptoms following burns: A prospective study. *European Journal of Pain, 0*(0).	II	There is a negative cognitive effect when a patient undergoes a burn injury. Correlates with PTSD and Depressive symptoms. Especially in patients who catastrophize events. These patients are also more likely to suffer from chronic pain.	If we are able to identify patients who catastrophize events we may be able to decrease depressive symptoms in this populations.	This study can be used to relate chronic pain, depression, and personality type to reasons we should be screening patients in the best possible way for depression. A good study with a large sample size, measured for 6 and 12 months post injury.

Gullick, J., Taggart, S., Johnston, R., & Ko, N. (2014). The trauma bubble: Patient and family experience of serious burn injury. *Journal of Burn Care & Research, 35*(6), 13-27.	V	Attempting to understand the "lived experience" of patients who had sustained burn injury. Assists in understanding stressors and barriers to wellness and positive mental health.	Emotional trauma persists during and after discharge. Patients still need care after discharge during the difficult transition back into previous roles.	This study can be used to portray what stressors and barriers burn patients have to wellness. Study is based on personal experience of pain and interviews with patients post discharge. Memories can be biased and skewed. Memories may not based in facts, just opinions.
Fried, E., Nesse, R., Guille, C., & Sen, S. (2015). The differential influence of life stress on individual symptoms of depression. *Acta Psychiatrica Scandinavica,* 133, 465-471.	II	Studied how life stress affects depressive symptoms. Fatigue, appetite problems, and sleep disturbances were most prevalent in response to life stress. All of the symptoms of depression in the DSM-V increase when a person is exposed to life stress.	Burn injuries cause life stress, this study shows that all symptoms of depression in the DSM-V increase when a person is exposed to life stress.	Strengthens nursing theory. Patients who are under stress may experience increase in depressive symptoms. Used a large sample size. Not just studying burn patients. Studied educated interns, not patients.
Choi, J., Shin, S., Lee, M., Jeon, T., Seo, Y., Kim, C., . . . Ryu, Y. (2014). Acute physical stress induces the alteration of the serotonin 1A receptor density in the hippocampus. *Synapse, 68*(8).	I	Study to determine what effects acute physical stress had on the serotonin system in the brain.	Acute physical stress changes the serotonin system and correlates with behavioral despair.	Because burn patients are under acute physical stress this can increase levels of depression. Correlates with nursing theory.

Andrews, R., Browne, A., Drummond, P., & Wood, F. (2010). The impact of personality and coping on the development of depressive symptoms in adult burns survivors. *Burns, 36*(1), 29-37.	II	Evaluated burn patients three months post injury. Looked at personality characteristics and the impact on depression symptoms. The traits avoidant coping, extraversion, and approach coping were all red flags for depression.	Patients at risk for depression may be able to be identified sooner by evaluating personality traits and coping mechanisms.	Performed on a small sample size in one institution. Not a lot of relatable data on burn patients has been published. But shows that depression is prevalent and problematic and early identification may be possible.
Abdelhafiz, A., Makboul, M., Azab, H., Khalifa, H., Mohamed, Z., Ahmed, N., & Magboul, F. (2015). The impact of antidepressant drugs on the psychological status of the hospitalized burn patients. *Indian Journal of Burns, 23*(1), 43-49.	IV	Depression and post traumatic stress disorder were found in 13-23% and 13-45% of burn patients respectively. The level of depressive symptoms improved within 3 weeks in patients who took antidepressant drug, while those in the control group were still suffering from high scores throughout hospitalization.	SSRI administration improved scores on the Beck Depression Scale in burn patients in three weeks.	Provides statistics for depression in burn patients. Provides evidence that identification and treatment of patients produces positive results. Very few studies have evaluated SSRI treatment of depression in burn patients.

Ahrari, F., Salehi, S., Fatemi, M., Soltani, M., Taghavi, S., & Samimi, R. (2013). Severity of symptoms of depression among burned patients one week after injury, using Becks Depression Inventory-II (BDI-II). *Burns, 39*(2)*,* 285-290.	IV	Included 300 patients, in Iran, 50% female and 50% male. 61.5% screened positive for depression using the Beck's Depression Scale. Evaluated single burn site in 187 patients (59.3%), 53.4% of patients with single burn site and 73% of patients with multiple burn site were depressed.	60.5% of patients in a burn center in Iran were depressed using the Beck's Depression Scale. Burn site and severity may play a role in depressive symptoms.	Provides statistics for depression in burn patients. Provides insight into why patients are depressed including gender, site, and severity. Used a specific screening tool that will not be used in this project.
Hudson, A., Youha, S., Samargandi, O., & Paletz, J. (2017). Pre-existing psychiatric disorder in the burn patient is associated with worse outcomes. *Burns, 43*(5), 973-82.	V	Patients with a psychiatric diagnosis were significantly more likely to have 6 of the 10 most prevalent post-admission complications: pneumonia, arrhythmias, septicemia, respiratory failure, urinary tract infection, and renal failure. Also, these patients are more likely to have a stroke. Patients with a psychiatric diagnosis had a significantly higher mortality rate than those without a psychiatric diagnosis.	Burn patients with psychiatric diagnosis have more complications during hospitalization and higher mortality rate.	Provides evidence to support that psychiatric condition in burn patients should be evaluated and treated early to avoid inpatient complications. This study reflects inpatient numbers instead of outpatient numbers of depression.

Oster, C., & Sveen, J. (2014). The psychiatric sequelae of burn injury. *General Hospital Psychiatry, 36*(5), 516-22.	II	At the 12 month follow up 30 out of 94 patients had symptoms of depression or PTSD. 8 out of these 30 patients had no psychiatric history prior to the injury. At 2 year follow up 6 out of 29 with no pre burn psychiatric history had symptoms of depression or PTSD.	Depression is prevalent post discharge after burn injury,	Contains a small sample size and is a limited study. Provides insight into why patients are depressed post-discharge once they return to their "normal routine." Patients do not always respond accurately due to taboos about depression.
Mitchell, S., Paasche-Orlow, M., Forsythe, S., O'Donnell, J., Greenwald, J., Culpepper, L., & Jack, B. (2010). Post-discharge hospital utilization among adult medical inpatients with depressive symptoms. *Journal of Hospital Medicine, 5*(7), 378-384.	III	Out of 738 participants 32% screened positive for depression. 56 per 100 depressed patients utilized the hospital within 30 days post discharge. 30 per 100 non depressed patients utilized the hospital post discharge.	Depression diagnosis while inpatient correlates with a higher 30 day readmission rate.	A study that provides good insight into why depression needs to be identified early to reduce hospital costs. Small amount of evidence on the subject. Not specifically about burn patients.

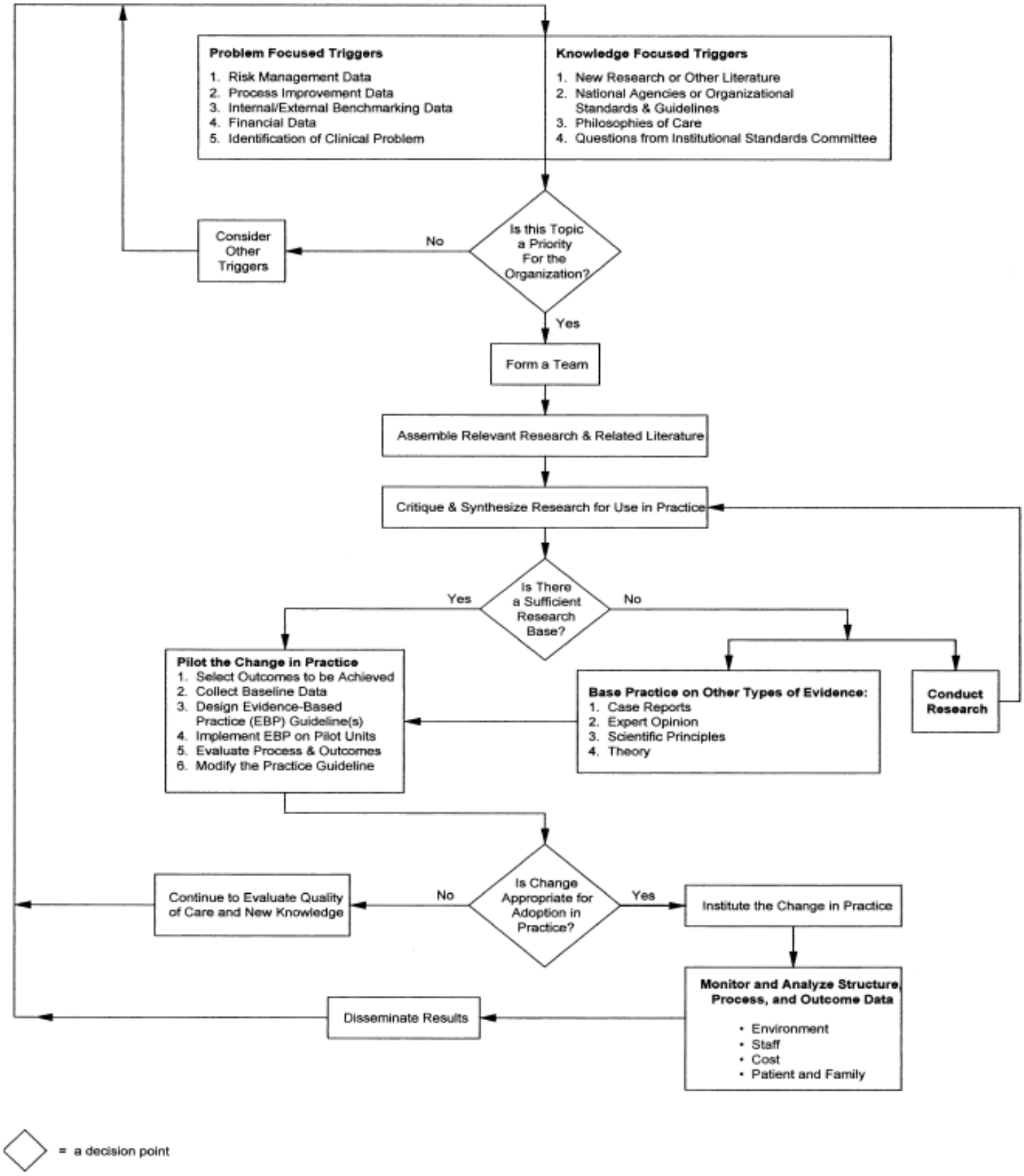
Petiprin, A. (2016). Nursing theory. Retrieved from http://www.nursing-theory.org/theories-and-models/neuman-systems-model.php	V	System's Model, by Betty Neuman, description.	Providing medical management for depression in burn patients enhances patient resistance and can eliminate a stressor, thus, improving care provided.	Nursing theory, open for interpretation and application to a wide variety of topics.
Jacobson, K., Fletchall, S., Dodd, G., & Starnes, C. (2017). Current concepts of burn rehabilitation, part I. *Clinics in Plastic Surgery, 44*(4), 703-712.	V	Burn rehabilitation programs should include elongation, splints, positioning, and edema management. Maximal independence after burn injury can be gained through early mobility, exercise, and training for activities of daily living.	Patient cooperation is imperative to healing, regaining function mobility, and decreasing complications.	Article is a large summary of burn care, not a research article. Provides excellent, evidence-based care of burn patient information.
Shupp, J. (2017). Why we must address the psychological impact of burns. Retrieved from https:/blog.medstarwashington.org/2017/01/20/burn-treatment-psychological-toll/	V	Survival rates for burn patients have improved drastically over the years thanks to advances made in burn treatment. Unfortunately, the physical needs of patients often overshadow their emotional needs.	There is a lack of focus on the emotional needs of burn patients.	Written by a physician and based on his observation. Not based off a research study.

Bowling, A. (2005). Mode of questionnaire administration can have serious effects on data quality. *Journal of Public Health, 27*(3). p. 281-291.	III	Verbal verses written screening tools and the variance in data.	Written screening is better for more sensitive info.	This study supports giving patients a handout questionnaire. A thorough review of the available data on electronic verses written screening tools, specifically regarding psychiatric care.
Akincigil, A., & Matthews, E. (2017). National rates and patterns of depression screening in primary care: Results from 2012 and 2013. *Psychiatric Services. (68)*7, p. 660-666.	II	Rates of depression screening of patients in the primary care setting is drastically less than the current recommendations at 4.2%.	Non compliance to depression screening may be contributing to why depression in the outpatient population is rising.	Supports why accurate, appropriate, and reliable depression screening is needed in the outpatient area. Potentially the current method of screening is missing patients in the burn clinic.
Goverman, J., Matthews, K., Nadler, D., Henderson, K., McMullen, K., Herndon, D., . . . Schneider, J. (2016). Satisfaction with life after burn injury. *Burns, 42*(5), 1067-1073.	III	An article that examines reasons for depression in burn patients. Relinquished control, lack of autonomy, and physical disfigurement are reasons stated that contribute to depression.	Burn patients are depressed due to effects of the injury.	Supports that there is a problem within the burn patient population of concurrent depression with a burn injury.

Horwitz, L., Partovian, C., Lin, Z., Grady, J., Conover, M., Montague, J., . . . Krumholz, H. (2011). Hospital-wide (all condition) 30-day risk-standardized readmission measure. Retrieved from https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/downloads/MMSHospital-WideAll-ConditionReadmissionRate.pdf	V	30 day readmission penalties including hospital aims to reduce unnecessary readmissions.	Readmissions within 30 days are detrimental to hospital costs.	Reducing readmissions for depression in burn patients with the most effective screening mechanism.

Appendix F

Iowa Model

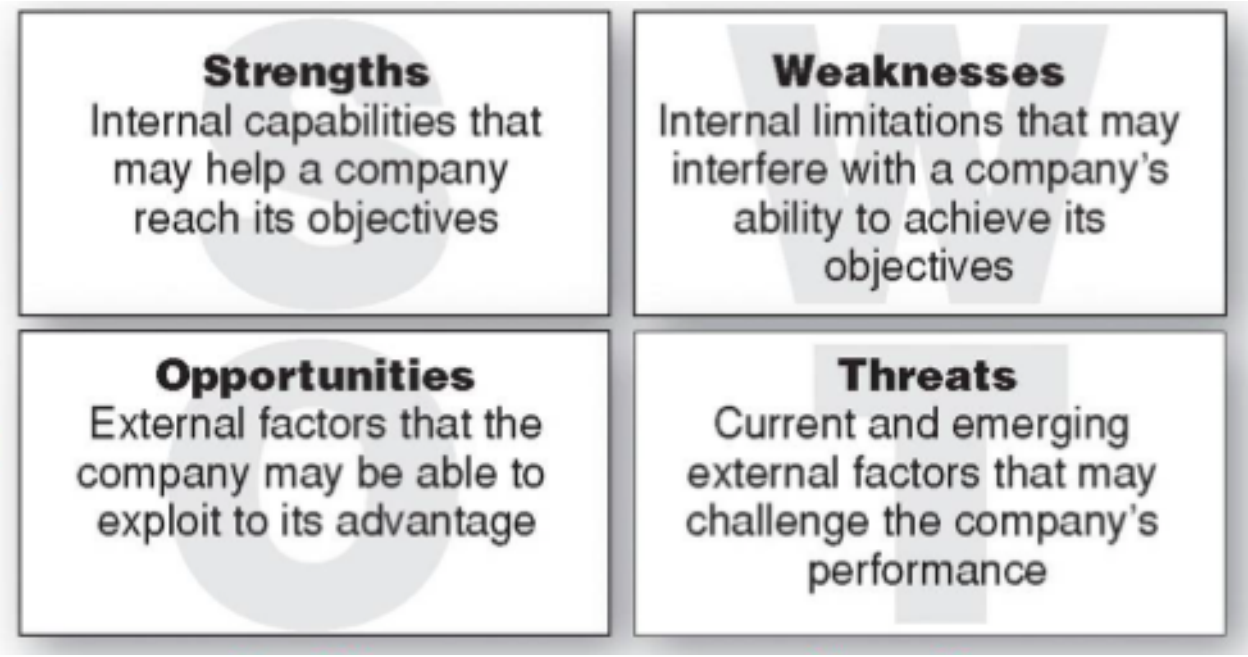


Appendix G

Trans theoretical Model

Appendix H

SWOT Analysis



Appendix J

Budget

Supplies	**Quantity**	**Cost**	
Paper 500 Sheet Pack	2 packs $7.50 each	$15.00	
Three Ring Binder	1	$5.00	
Food for staff on education day	3 dozen donuts and coffee	$40.00	
Pens	1 pack	$5.00	
Printing Color	(20 sheets) $0.15 each	$3.00	
Printing Black and White	(225 sheets) $0.08 each	$18.00	
Total		**$96.00**	

Appendix M

Audit Tool

PHQ-9 Weekly Audit Tool

Date:____________

Did pt complete screen? Y / N PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________	Did pt complete screen? Y / N PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________	Did pt complete screen? Y / N PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________
Did pt complete screen? Y / N PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________	Did pt complete screen? Y / N PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________	PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________
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Did pt complete screen? Y / N PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________	Did pt complete screen? Y / N PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________	Did pt complete screen? Y / N PHQ-9 Score (0-20) __________ PHQ-2 Score (0-6) __________ Was depression tx initiated? Y / N If so, what? __________________

Appendix N

Staff Handouts

Currently, we are using the PHQ-2 screen to detect depression in our patients...

The Patient Health Questionnaire-2 (PHQ-2)

Patient Name _____ Date of Visit _____

Over the past 2 weeks, how often have you been bothered by any of the following problems?	Not At all	Several Days	More Than Half the Days	Nearly Every Day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3

but there's a chance that using the **PHQ-9** could do a better job!

We're making a change!

From August 20 - November 2, 2018, we're trying something new:

1) **Every** burn patient (> 18 years old), who speaks English **or** Spanish as a primary language will receive a **written PHQ-9 screen** upon check in.

2) Once completed, **the nurses will score** the PHQ-9 screen and leave it in the exam room **face down** with the patient.

3) The provider is responsible for **initiating a referral** if necessary.

4) **Do not** throw away the completed form! Place **every** form in the designated collection bin!

*** Please continue to complete the PHQ-2 screens [redacted] per protocol during this time frame. Yes, the patients are being screened twice! ***

How to correctly score a PHQ-9 form:

The patient will circle the number correlating with how frequently the symptoms are occurring.
Simply add those number together!

Here is an example:

Patient Name _____ Date of Visit _____

Over the past 2 weeks, how often have you been bothered by any of the following problems?	Not At all	Several Days	More Than Half the Days	Nearly Every Day
1. Little interest or pleasure in doing things	0	(1)	2	3
2. Feeling down, depressed or hopeless	0	1	(2)	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	(2)	3
4. Feeling tired or having little energy	0	(1)	2	3
5. Poor appetite or overeating	(0)	1	2	3
6. Feeling bad about yourself - or that you're a failure or have let yourself or your family down	0	(1)	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	(0)	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or, the opposite - being so fidgety or restless that you have been moving around a lot more than usual	(0)	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	(0)	1	2	3
Column Totals		3	+ 4	+ 0
Add Totals Together			7	

10. If you checked off any problems, how difficult have those problems made it for you to Do your work, take care of things at home, or get along with other people?

☐ Not difficult at all ☒ Somewhat difficult ☐ Very difficult ☐ Extremely difficult

What to do with a PHQ-9 score:

To make a diagnosis of depression:

Questions 1 & 2:

Need one or both of these questions answered as a "2" or "3"

Questions 1-9:

Need at least 5 answers in the shaded area of the questionnaire

Question 10:

Must be answered as "somewhat difficult", "very difficult", or "extremely difficult"

To validate the need for treatment:

1. Question 1 or 2 must be positive

2. Question 10 must be endorsed as **at least** "somewhat difficult"

PHQ-9 Score	Provisional Diagnosis	Treatment Recommendation *Patient Preferences should be considered*
5-9	Minimal Symptoms*	Support, educate to call if worse, return in one month
10-14	Minor depression ++ Dysthymia* Major Depression, mild	Support, watchful waiting Antidepressant or psychotherapy Antidepressant or psychotherapy
15-19	Major depression, moderately severe	Antidepressant or psychotherapy
>20	Major Depression, severe	Antidepressant and psychotherapy (especially if not improved on monotherapy)

** If symptoms present ≥ two years, then probable chronic depression which warrants antidepressants or psychotherapy (ask "In the past 2 years have you felt depressed or sad most days, even if you felt okay sometimes?")*

++ If symptoms present ≥ one month or severe functional impairment, consider active treatment

Center for Quality Assessment and Improvement in Mental Health. (2007). Retrieved from http://www.cqaimh.org/tool_depscreen.html

Referral Recommendations

Suicide Prevention Lifeline
If having thoughts of harming yourself, please call:
1-800-273-TALK (1-(800)-273-8255)

[redacted]

Phoenix Society for Burn Survivors
phoenix-society.org
Peer support groups to speak with our survivors
Resources for help with reintegration into society
Advocacy Groups
Annual Conferences

Changing Faces
www.changingfaces.org.uk
An organization for individuals who have facial disfigurements
Advice and Support Hotline: M-F - 10a-4p - 0-(300)-012-0275

National Institute of Mental Health (NIH)
www.nimh.nih.gov
Offers generalized support and resources about mental health services