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## **A Quality Improvement Project Implementing a Depression Screening Protocol for Post-Myocardial Patients in the Cardiology Clinic**

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Running Head: IMPLEMENTING A DEPRESSION SCREENING

A Quality Improvement Project Implementing a Depression Screening Protocol  
for Post-Myocardial Patients in the Cardiology Clinic

DNP Project  
Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Nursing Practice

St. Catherine University  
St. Paul, Minnesota

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ST. PAUL, MINNESOTA

This is to certify that I have examined this  
Doctor of Nursing Practice DNP project manuscript  
written by

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and have found that it is complete and satisfactory in all respects,  
and that any and all revisions required by  
the final examining committee have been made.



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May 4, 2018

Date

DEPARTMENT OF NURSING

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### Abstract

**Problem Statement:** Depression post-myocardial infarction (MI) is a risk factor for worse cardiac outcomes and all-cause mortality (Gan et al., 2014; Lane et al., 2002; Lichtman et al., 2008; Lichtman et al., 2014; May et al., 2017; Wu & Kling, 2016).

**Purpose:** The purpose of the quality improvement (QI) project was to determine if implementing a depression screening protocol in cardiology clinics would increase depression screening in patients who have had an MI in the last year.

**Methods:** A QI project utilizing a quasi-experimental, two-group design was used to compare rates of depression screening in post-MI patients before and after implementing a depression screening protocol. A convenience sample was selected from two cardiology clinics – one metropolitan hospital-affiliated and the other suburban. The pre-screening group included 116 post-MI patients, 75 of whom met inclusion criteria for screening, seen in February and March 2017. The post-screening group included 85 post-MI patients, 65 of whom met inclusion criteria for screening, seen in October and November 2017. Depression screening was done using the patient health questionnaire two-item (PHQ-2) screening tool, and if either question was answered positively, then the nine-item (PHQ-9) questionnaire was used.

**Results:** With the implementation of the depression screening protocol there was an increase in depression screening for those who met criteria for screening from 0 (0%) out of the 75 candidates in the pre-implementation group to 23 (35%) out of the 65 candidates in the post-implementation group. Of the 23 who were screened in the cardiology clinic, 11 (48%) went on to complete the PHQ-9 with eight of them having scores that indicated moderate to major symptoms of depression.

**Conclusion:** Implementing a depression screening protocol in the cardiology clinic did increase depression screening in post-MI patients.

**Keywords:** Myocardial Infarction, Depression Screening, PHQ-2, PHQ-9 and Depression Management

A Quality Improvement Project Implementing a Depression Screening Protocol  
for Post-Myocardial Patients in the Cardiology Clinic

Cardiovascular disease is the leading cause of death in the United States, accounting for nearly 836,546 deaths in 2015 (Benjamin et al., 2018). In 2013, heart attacks accounted for one of the highest hospital expenses in the U.S. at \$12.1 billion dollars (Benjamin et al., 2018). In 2014, there were 7.6 million persons with myocardial infarctions (MIs) with an overall 30-day readmission rate of 17.8% at an estimated additional cost of 693 million dollars (Betancourt, Tan-McGory, & Kenst, 2015). The American Heart Association (AHA) recognizes depression as a risk factor for worse cardiac outcomes and all-cause mortality post-MI (Lichtman et al., 2014). Depression is three times higher in post-MI patients than the general population (Kronish et al., 2006; Lichtman et al., 2008; Martin, 2010; Meijer et al., 2011)

Depression is associated with unhealthy behaviors that include inactivity, poor dietary choices, alcohol, drug and tobacco abuse, and poor medication adherence and healthcare follow-up (American Psychological Association [APA], 2014; Kronish et al., 2006; Kronish, Rieckmann, Burg, Alcantara, & Davidson, 2013; Lichtman et al., 2008; Martin, 2010). All these behaviors are known risk factors for heart disease. In a national survey of 796 randomly selected cardiologists in the U.S., 79% reported they did not use a standard depression screening to diagnose depression, and only 49.9% thought depression was an independent risk factor for coronary heart disease (Feinstein, Blumenfield, Orłowski, Frishman, & Ovanessian, 2006). The Minnesota Department of Health [MDH] (2014) reported that the leading causes of premature death in people with mental illness are heart disease, lung disease, diabetes, and cancer. Depression needs to be recognized as a risk factor along with other known risk factors for heart disease by all who care for post-MI patients, especially cardiology healthcare providers.

In response to the impact depression has on cardiac disease, in 2008 the American Heart Association (AHA) Science Advisory Panel recommended depression screening in post-MI patients (Lichtman et al., 2008). Since then, there has been controversy over who should screen for depression, cardiology or primary care (Thombs et al., 2008; Thombs et al., 2013; Whooley, 2009). This controversy has contributed to many in cardiology believing that depression is best addressed by primary providers and a lack of depression screening protocols in cardiology, with little to no literature on cardiology clinics using standard screening protocols. Other studies support screening for depression in the cardiology setting with the use of the right screening tool and management plan in this high-risk population (Sowden, Mastromauro, Januzzi, Fricchione, & Huffman, 2010; Tesio et al., 2017). Cardiology has a responsibility to provide best-practice when caring for post-MI patients, which includes screening for depression.

### **Background**

Depression is described as a condition in which a person feels discouraged, sad, hopeless, unmotivated, or disinterested in life in general, for more than two weeks (Anxiety and Depression Association of America [ADAA], 2016a). Executive Director for Professional Practice with the American Psychological Association (APA), Katherine C. Nordal, Ph.D. (n.d.), reported that depression can affect physical well-being and thought processes, with symptoms of change in sleep patterns and appetite, decreased libido, anxiety, loss of control, hopelessness, trouble concentrating or paying attention, reduced motivation, and difficulty at work or in relationships. Martin (2010) explained how ongoing depression can “lead to a vicious cycle of non-engagement in rehabilitation, poorer outcomes, and worsening depression” (p. 60). The MDH (2014) reported that people with “serious and persistent mental illness are dying, on average 25 years younger than the general population” (p. 76). Overall, people with depression are less motivated to engage in healthy behaviors, including health care follow-up leading to worse health outcomes.

Several studies have contributed significantly to the understanding of the impact of stress and depression on heart disease. In the INTERHEART case-control study with 24,767 people from 52 countries Rosengren and colleagues (2004) reported that psychological stress accounted for a 32% increased risk for heart disease. These psychological stressors included general stress (work &/or home), financial stress, or a major life event in the last year. Similarly, in a prospective study of 288 post-MI patients, Lane, Carroll, Ring, Beevers, and Lip (2002) found a 30.9% rate of depression at the time of the acute MI, 37.7% rate at four months, and 37.2% rate of at 12 months post-MI (p. 11). On the other hand, a study by Kala et al. (2016), looked at 79 consecutive patients with their first ST-elevation MI and found a relatively low prevalence of depression of 9.2% before hospital discharge, but over a period of a year, the prevalence of depression gradually increased. At three, six, and 12 months post-MI rates of depression were 10.4%, 15.4% and 13.8% respectively (Kala et al., 2016). In comparison, the general population 18 years and older has a major depression rate of 6.7% (ADAA, 2016b; National Institute of Mental Health, 2017). Although studies show different rates of depression after an MI, they consistently show increased rates of depression for at least 12 months post-MI.

Depression as a risk factor for coronary disease is likely multifactorial including factors such as increased stress hormones, inflammatory markers, and autonomic dysregulation with decreased heart rate variability. People with depression have increased inflammatory markers such as c-reactive proteins, interleukin-1, and interleukin -6, as well as disrupted biological mechanisms including platelet reactivity, autonomic dysregulation, sleep disruption, and anabolic/catabolic hormone imbalance, all factors associated with increased risk for coronary disease (Lichtman et al., 2008; Wu & Kling, 2016). Depression affects a person mentally, emotionally, and physically in ways that put them at increased risk of unhealthy behaviors, heart disease, and death.

Numerous studies have found an association between patients with depression post-MI and increased risk for worse cardiac outcomes and all-cause mortality (Gan et al., 2014; Lane et al., 2002; Lichtman et al., 2014; Wu & Kling, 2016). In a review of 30 prospective cohort studies and 40 independent reports, Gan et al. (2014) found that people with depression experience a 30% increase in recurrent coronary events after an MI. In a retrospective study by May and colleagues (2017), charts of 24,137 patients with coronary disease were reviewed over a ten-year period; 3,646 (15%) were found to have depression at follow-up after their cardiac event. Patients who had depression post-cardiac event had a two-fold increase in death over ten years compared to those without depression (May et al., 2017). There is a plethora of literature endorsing depression as a risk factor for worse cardiac outcomes post-MI.

### **Problem Statement**

As already outlined, the need for and significance of depression screening for people who have experienced an MI has been well established. There is a national awareness of the prevalence of depression and heart disease, as reported in the Washington Post on February 18, 2017, which stated: "cardiovascular disease and mental illness are among the top contributors to death and disability in the United States" (Morris, 2017, para 1). Despite the evidence showing a need for depression screening post-MI and national awareness on the impact of depression and heart disease on our nation's health, there is little in the literature reporting what, if any steps have been taken by Cardiology to address depression in the cardiology setting. The Institute for Healthcare Improvement (IHI) Triple Aim initiative (IHI, 2018) aims to improve population health, provide better care and improve outcomes cost effectively; addressing depression post-MI would aim to meet all three of the IHI initiatives. Nursing, registered nurses (RNs) and Advanced Practice RNs (APRNs) are in an ideal position to partner with physicians and other members of the healthcare team to promote a change in cardiology by providing holistic, patient-centered care

for post-MI patients, which includes screening for depression and using evidence-based management strategies when depression is identified.

### **Purpose of the Project**

The purpose of this quality improvement (QI) project was to increase depression screening in patients who have had an MI in the last year by implementing a depression screening protocol in two cardiology clinics. The protocol included using the patient health questionnaire two-item (PHQ-2) depression screening tool, and if either question was answered positively, then administering the nine-item (PHQ-9) questionnaire. Based on PHQ patient scores, evidence-based strategies were available for cardiology providers to implement according to their discretion and patient preferences.

### **The Clinical Question**

For cardiology patients who have had an MI in the past 12 months, what effect will implementing a depression screening protocol in the cardiology clinic have on the rate of depression screening compared to current practice?

### **Theoretical Framework**

#### **Wagner's Chronic Care Model**

The underlying theoretical framework used for this QI project was Wagner's Chronic Care Model (CCM) developed by Wagner and colleagues from the MacColl Institute for Health Care Innovation in the mid-1990's and updated in 2002 to incorporate community involvement (Lovel, Meyers, Forbes, Dresser, & Weiss, 2011). The CCM focuses on the need for patient-centered care of chronic illnesses and prevention (Wagner, Austin, & Van Korf, 1996). Glasgow, Orleans, Wagner, Curry, and Solberg (2001, p. 579) quoted McGinnis and Foege from 25 years earlier who stressed that "...50 percent of mortality from the 10 leading causes of death is attributable to lifestyle behaviors that cause or complicate chronic illness. Finding effective strategies for preventing and managing chronic disease will be a major challenge for healthcare in the 21<sup>st</sup>

century.” Lifestyle behaviors were considered a major contributor to chronic illness and cause of death 25 years ago and continue to be a major determinant of health today, accounting for 30% of health determinants (MDH, 2014). The CCM aims to promote care integrating preventive measures with a focus on health behaviors in caring for chronically ill patients, including those with heart disease.

The CCM has been studied in people with multiple comorbidities and found to be effective in decreasing cardiovascular risk factors and improving patient health outcomes (Lovell et al., 2011; Struckmann et al., 2018; Vargas, 2007). Lovell et al. (2011) stated: “To change reactive acute-care-oriented practice to accommodate the proactive, planned, patient-oriented longitudinal care required for both prevention and chronic care is mandatory” (p. 151). The goal of using the CCM as a framework for this QI project is to change from an acute-care-orientation to providing patient-centered, preventive care looking at the whole person.

### **Applying the Six Main Components of the CCM**

There are six main components of the CCM which help both the provider and the patient transition from curative medicine to the delivery of preventive, chronic care medicine. These six components are: organizational support, clinical information, delivery systems, decision support, self-management, and community resources. The following paragraphs will provide a brief overview of how these six components were applied to the QI project.

First is *organizational support*, where leadership helps support and create an environment of patient-centered care and preventive care. Second, *clinical information systems* allowed monitoring of systems, tracking progress, and information being accessible to the collaborative healthcare team. In this project, cardiology was very supportive of promoting a care model change that would be patient-centered and prevention-focused and used patient electronic health records (EHRs) that are easily accessible to numerous care providers in the state.

Once organizational support and plans on how the EHR was to be used were established, the next step was designing the *delivery system*. This involved looking at follow-ups, including face-to-face, electronically, or by telephone, and working to integrate all healthcare providers involved in the patients' care, as well as pulling in resources to help with education and treatments as needed. Providing *decision support* that included an outline of evidence-based (EB) guidelines for managing symptoms of depression was essential in providing consistent care and increasing providers' level of comfort in screening for depression. Helping the patient with *self-management* is the key element in the CCM and is done by identifying and responding to individual needs and priorities of the patient. Last, *community resources* involved collaborating with other healthcare resources and supporting the patient in utilizing community resources as well. Together, these six components of the CCM helped expand the acute-focused care to a more holistic, patient-centered health care.

### **Search Strategy**

In developing an evidence-based depression screening protocol in the cardiology clinic, a literature search was done January 2017 through April 2017 utilizing EBSCO-CINAHL, Medline, PubMed, and PsycINFO databases, as well as Google Scholar. Major search Medical Subject Headings (MeSH) terms included MI, heart attack, depression screening tools, and depression management, including complementary and alternative therapies. An additional search was done using the major terms, patient health questionnaire two-item (PHQ-2) and nine-item (PHQ-9) depression screening tool validity and reliability. In addition to the database searches, relevant articles were mined from secondary sources.

The following search limits were applied: dates from 2000 to 2017, English, Human, 18 and older, and scholarly journals, which provided a total of 209 results. After a review of titles and abstracts from the results found, articles that included cognitive therapy, psychological

testing, psychotherapy, anxiety, counseling, cancer, migraines, multiple sclerosis, CABG, and inpatients were excluded leaving 52 articles for further review. Forty articles were eliminated after full article review based on the quality of the research or content not being relevant to the project, leaving a total of 12 articles used in the evaluation of depression screening tools and evidence-based depression management strategies.

### **Appraisal**

The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) evidence level and quality guide was used in appraising the literature (Johns Hopkins Hospital/Johns Hopkins University, n.d.). Three articles reviewed had Level I evidence with high-quality, including a random controlled trial (RCT) and two systematic reviews of RCTs. A Level II, good-quality quasi-experiment on the sensitivity and specificity of the PHQ-9 was reviewed. Five Level III, high-quality articles were used: two cohort studies, one non-experimental psychometric assessment, and two systematic reviews using RCTs and non-experimental studies. Last, there were three Level IV articles with high-quality that included clinical practice guidelines and expert panel reports by officially sponsored professional organizations.

### **Synthesis of the Literature**

The PHQ-2 and PHQ-9 depression assessment tools were found to be highly reliable with strong to excellent validity (Cameron, Crawford, Lawton, & Reid, 2008; Kroenke, Spitzer, & Williams, 2003; Kroenke, Spitzer, & Williams, 2001; Liu & Wang, 2015; Thombs et al., 2008; Titov et al., 2011; Whooley & Wong, 2013). Kroenke, Spitzer, and Williams (2001) studied the validity of the PHQ-9 in a cohort study of 6000 patients from 15 different primary care and Ob-gyn clinics. The PHQ-9 validity was evaluated in combination with the outcomes study short-form general health survey (SF-20), and patient reports of the number of MD visits and disability days during the last three months. Kroenke and colleagues (2001) found excellent PHQ-9 internal

reliability with a Cronbach's alpha of 0.89 and 0.86 respectively, and strong construct validity, as PHQ-9 scores went up indicating depression, the SF-20 scores went down indicating decreased quality of life (Kroenke et al., 2001). Analysis of a sample selected from the study also found the PHQ-2 to have strong validity compared to mental health interviews, and strong construct validity associated with functional status, disability days, and symptoms related to difficulties (Kroenke et al., 2003). Due to the sample size, the large number of geographically dispersed clinics, and similar findings, the results of both the PHQ-2 and the PHQ-9 validity can be considered generalizable.

### **Comparing the PHQ-9 Screening Tool to other Screening Tools**

Studies comparing the PHQ-9 to the Beck Depression Inventory-II (BDI-II) and the Hospital Anxiety and Depression Scale (HADS-D), all had similar findings regarding internal consistency, responsiveness to change, validity, and reliability (Cameron et al., 2008; Thombs et al., 2008; Titov et al., 2011). Cameron, Crawford, Lawton, and Reid (2008) found that both the PHQ-9 and HADS-D had robust reliability, convergent/discriminant validity, and responsiveness to change. However, there was a difference in their measurement of severity of depressive symptoms indicating further assessment is needed to assess the validity of both scales' severity cut-off bands (Cameron et al., 2008, p. 35). Titov et al. (2011) found that both the PHQ-9 and the BDI-II had good internal consistency and convergent/discriminant validity, and were responsive to change in symptoms, but criteria for detecting a clinically significant change was met more on the PHQ-9 than the BDI-II. Both the PHQ-2 and the PHQ-9 have strong to excellent reliability and validity have been determined to be appropriate to use for depression screening in post-MI patients.

**Additional Considerations in Using the PHQ-2/PHQ-9 Screening Tool**

Additional reasons for choosing the PHQ-2 and PHQ-9 screening tools over other self-administered screening tools is that they are shorter, freely available, and already exists in the patient's electronic health record. The PHQ-9 is also consistent with the Diagnostic Statistical Manual of Mental Disorders (DSM-IV) nine depressive symptoms. Kroenke et al. (2001) found that a full PHQ three-page questionnaire took less than 3 minutes to review. The time to review the PHQ-9 was not measured, but it is only a third of the questions taken from the full PHQ, therefore would take one-third of the time to review. Whooley and Wong (2013) found that the "yes/no" version of the PHQ-2, had excellent sensitivity in identifying depression symptoms in patients with coronary disease and took less than one minute to perform, again making it an ideal tool to use as an initial screening tool in the cardiology clinic. The PHQ-2 screening tool used in this protocol included the same two-item questions, except with a Likert scale response of 0-3 instead of just "yes/no" answer. Responding with a "0" is equivalent to answering "no." Whereas, answering anything greater than 0 is equivalent to "yes" and would prompt the administration for the PHQ-9 questionnaire. The first two questions in the PHQ-9 are the same two questions from the PHQ-2, which are always answered according to a Likert scale (0-3). Last, a study by Thombs et al. (2008), found the use of self-administered depression screening tools to be reasonably accurate in patients with cardiovascular disease. In summary, the PHQ-2 and PHQ-9 are readily available in the EHR, take less than three minutes to administer, and have excellent validity and reliability in screening for depression in cardiac patients.

## **Theoretical Framework for Change**

### **Rogers' Diffusion of Innovations Change Theory**

Rogers' diffusion of innovations change theory was used as the framework guiding the change process. Rogers' change theory addresses processes of change and adoption of changes using complex social channels within an organization in the design of implementation of a new idea or practice (Campling, Ray & Lopez-Devine, 2011). Innovation, communication, time, and social systems are all important factors to consider in the process. Starting with an idea, practice, or object that is perceived as new begins the innovation change process (Rogers, 2003). The innovation for this project was recognizing the need for addressing depression in post-MI patients, where prevalence is high. Communicating with all the stakeholders involved was significant in helping reach a mutual understanding and gain the support needed to screen for depression in the MHI cardiology clinic.

The time needed to implement the change was the next factor to consider when beginning the planning. Rogers (2003) cautioned that the time needed to implement a change can vary greatly and could take years to reach the phase of adoption of the innovation (p. 21). For this project, the focus was on the time to get from innovation to trial of the implementation, which took approximately 11 months. Gathering and analyzing data, then communicating results and recommendations to the stakeholders and the public took another three to four months. It is anticipated that it will take another one to two years to reach the stage of adoption of depression screening in the cardiology clinic as a standard, with expected revisions along the way.

Throughout the process, keeping in touch with the multiple social systems within the health system, including clinics, individuals, patients and other services such as Mental Health and Integrative Medicine was essential in developing and implementing the depression screening protocol in the cardiology clinics. Communication and collaboration with stakeholders will

continue to be important going forward to promote continued acceptance and support of the change long term. Rogers' change theory outlines five steps to help with the change process: awareness, interest, evaluation, trial, and adoption (Goodroad, Webb, & Bredow, 2017). How these five steps were used in the QI project will be discussed in the next section.

### **Five Steps in the Process of Diffusion of Innovations**

In the cardiology clinic, depression post-MI is the elephant in the room that nobody wants to deal with, mainly due to feelings of inadequacy in dealing with depression and concern of time constraints. Using literature to raise *awareness* of the prevalence of depression post-MI, its impact on cardiac outcomes, and the need for depression screening helped gain the *interest* and support of stakeholders, including administration. At the same time, information was gathered from stakeholders and *evaluated* as the plan for implementation was developed. This process included many individual and group meetings, as well as education for clinic assistants (CAs), RNs, and cardiology providers (APRNs, PAs, and MDs) on the protocol and implementation process. Then, a pilot of the innovation was conducted on two patients from each clinic site a week before the trial was to start. Once the pilot was completed and evaluated, the two-month *trial* of implementing a depression screening protocol was conducted in October and November 2017. Data were gathered from this two-month trial period, analyzed in relation to the pre-intervention data, and dispersed to stakeholders and the public. Throughout the process, evaluation, modifications, and planning for the next stage, *adoption*, were done. The anticipated time it will take to reach the stage of adoption of a standard depression screening protocol in the cardiology setting will likely take another one to two years.

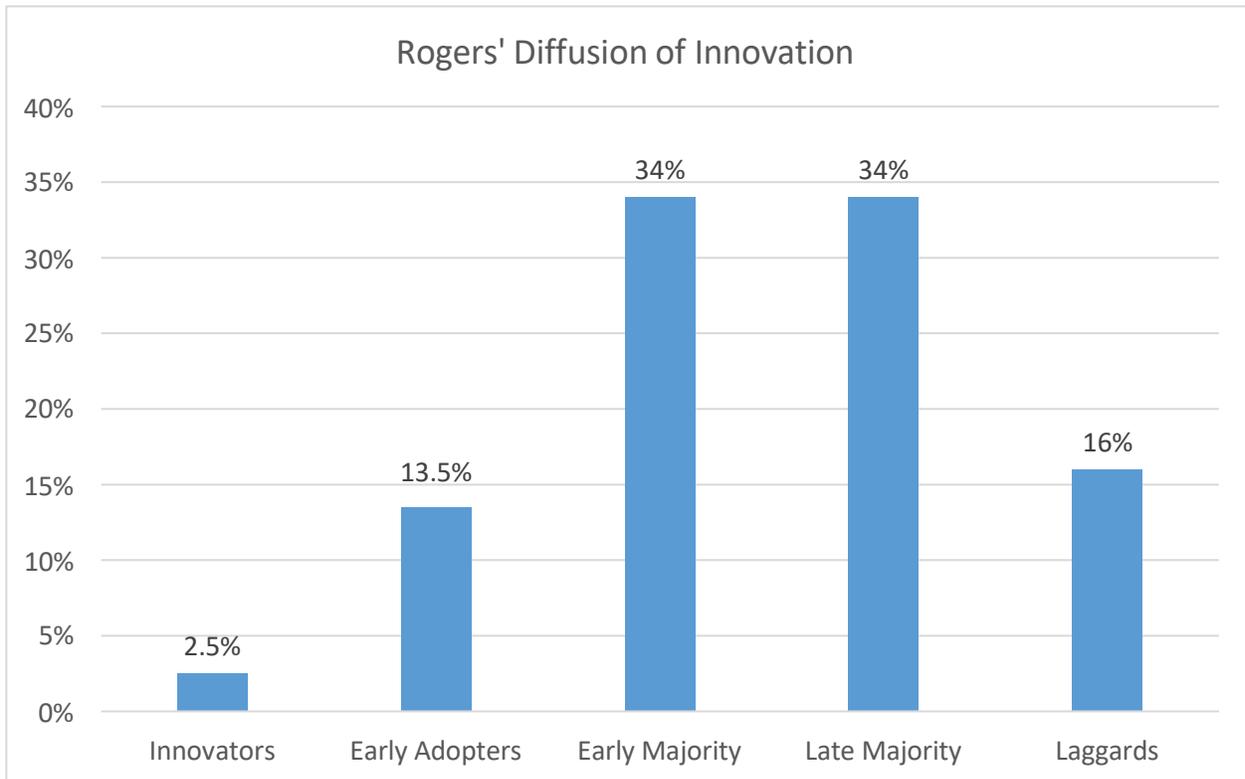
### **Individual Rate of Adoption**

Rogers' change theory explains how individual responses influence the adoption of an innovation, which is an important factor to be prepared for when implementing a change. Melnyk,

and Fineout-Overholt (2015) explain that individual responses include a small percentage who will be highly motivated innovators, followed by another slightly larger group of early adopters who help influence the early majority, followed by a late majority, and finally a small group of laggards who may never get on board with the innovation (See Figure 1).

The innovators were quick to get on board and help with the planning and implementation of the QI project, which included the clinic manager, nurse managers, and a couple of RNs from each clinic site. Of the early adopter group, CA and RN champions were recruited to be a resource and help positively influence others in the clinic. These first two groups were essential in getting the early majority to accept and help with implementing the innovation.

The late majority were more challenging and had to be persuaded the project would not be burdensome to their work flow and would provide a benefit to the patient. For the most part, even the late majority were willing to do the project if they were encouraged by the CA and RN champions. Unfortunately, if the champions were not in the clinic because of floating to other areas or being off that day, those in the late majority were less inclined to follow through with implementing the protocol. Last, the laggards were those who avoided the protocol altogether. This group involved CAs, a couple of RNs, and providers who did little to promote or follow the protocol. Overall, more time is needed to garnish consistent support of the early and late adopters before successfully getting the laggards on board for adoption of the practice to occur. Dealing with the various individual responses can be challenging and requires persistence and ongoing education with evidence the change in practice will benefit the patient.



**Figure 1:** Individual Rate of Adoption (Melnik & Fineout-Overholt, 2015)

**Project Design**

A QI project using a quasi-experimental, two-group design was used to compare rates of depression screening in patients within a year after having an MI before and after implementing a depression screening protocol. Patient data were reviewed during a two-month period in February-March 2017, and again in October-November 2017, from two cardiology clinics—one metropolitan hospital-affiliated, and the other a suburban clinic. Inclusion criteria included having an MI within a year of their office visit, and not having had a PHQ-2 or PHQ-9 since their MI. Exclusion criteria included being less than 18 years of age, pregnancy, spontaneous coronary artery dissection, or Takotsubo (stress cardiomyopathy). Primary care providers within the health system have a depression screening protocol for 18-65-year-olds when seen for an annual health maintenance visit. However, many post-MI patients seen in the cardiology clinics do not follow with a primary provider on a regular basis, follow outside of the health system, or simply have not

been screened since their MI. Therefore, screening in the cardiology clinic helps to address those who would not be screened otherwise and stresses the importance of addressing depression post-MI.

### **Project Methodology**

The Plan-Do-Study-Act (PDSA) rapid cycle model was used to implement the QI pilot. Over a period of two months, prior to the implementation of the depression protocol, education was provided for the clinic staff (CAs, RNs, and cardiology providers) on the significance of depression post-MI and implementation of the depression screening protocol in the clinic using the PHQ-2 and PHQ-9 screening tools, and evidence-based management strategies to consider based on PHQ scores. Education was provided during six different staff meetings between both clinic sites, at an Advanced Practice Provider Education Series, and at a morning cardiology grand rounds symposium. A week before implementation, an email was sent out to all cardiology providers reminding them of the protocol being implemented with an attachment of the screening tool, evidence-based management strategies, and a colored workflow chart to illustrate the implementation process. All this material was also provided at both clinic sites for reference. Once the project was implemented, it was important to check in with the clinic sites frequently either by personal visits or emails, to address any questions or issues. Once the protocol was well established, the frequency of checking in decreased to once a week for the remainder of the two-month period.

### **Participants**

Participants of the post-implementation group included patients who had an MI within a year of their office visit at either the two participating clinics during October and November 2017. The process was piloted on two post-MI patients at both clinic sites to assess for any concerns the week before the project was to be implemented; there were no concerns or changes made.

As charts were being prepped for patients' scheduled cardiology follow-up visit, the CA looked for post-MI patients who would be candidates for the screening protocol. Post-MI patients included those with a diagnosis of MI, ST-elevation MI (STEMI), non-ST elevation (NSTEMI), heart attack, or elevated troponin with percutaneous coronary intervention (PCI) within the last twelve months. Once the patient was identified as a candidate for the project, a further review of their chart was done to determine whether a PHQ-2 or PHQ-9 had been done since their MI. If a PHQ had been done, depression screening would not be repeated. If a PHQ had not been done, the patient chart was tagged as being a candidate for the depression screening protocol.

### **The Setting**

Data were collected from both clinics sites during the two-month period post-implementation. The hospital campus clinic has five different work rooms where patients are seen by different cardiac specialty groups, general and interventional cardiology, advanced heart failure, vascular and cardiovascular surgery, structural heart disease, and electrophysiology. For purposes of this QI project, the protocol was implemented in two work rooms where most of the general and interventional patients are seen. The suburban clinic schedules post-MI patients on days the general cardiology providers are scheduled. The patients were all seen and treated for their MI by clinic cardiologists.

## **Tools**

### **Review of Depression Screening Tools**

Determining what screening tool to use as part of the protocol in the cardiology clinics involved first exploring what was currently available for use in the EHR and consulting with Mental Health Services. This exploration revealed a depression screening tool that was readily available in the EHR, the PHQ-2 and PHQ-9 self-administered depression screening tools. Once a screening tool was identified, a literature search was done to determine the validity and reliability of the tool. The PHQ-2 and PHQ-9 were both found to have strong to excellent validity and

reliability in screening for depression symptoms in cardiology patients (Cameron et al., 2008; Kroenke et al., 2001; Kroenke et al., 2003; Liu & Wang, 2015; Thombs et al., 2008; Titove et al., 2011; Whooley & Wang, 2013). The screening tools are easy to use, readily accessible, have strong to excellent validity and reliability, and the PHQ-9 is consistent with the DSM-IV nine depressive symptoms. Therefore, the PHQ-2 and PHQ-9 depression screening tools were chosen to be the screening tools used in the screening protocol.

### **Review of Depression Management Strategies**

Once a depression screening tool was decided, the next step was to develop EB management strategies based on screening scores and provider discretion. The first step was to explore what was currently being used in the healthcare system, which revealed a lengthy algorithm as a reference for primary and mental health providers. The depression management algorithm was not specific for use in the cardiology setting. A review of EB management strategies was conducted looking at scientific advisory reports, literature reviews, and guidelines for depression screening and management by the American Heart Association (AHA), the American Academy of Family Physicians (AAFP), and the American Psychiatric Association (APA). Complementary and Alternative Medicine (CAM) in depression treatment was also reviewed by the APA task force. All the literature was consistent in concluding that depression screening should be done on all post-MI patients when there is a collaborative healthcare team available that includes primary care and mental health professionals (Green et al., 2009; Lichtman et al., 2008; Whooley & Wong, 2013). Cardiology providers who want to provide the best care for their post-MI patients are responsible for depression screening and should not rely solely on primary care to do this, but work collaboratively with primary care.

Literature supports using a depression screening tool to help determine patients' degree of depression symptoms: none, mild, moderate, major, or severe. For mild to moderate symptoms of

depression, there is a consensus that providing education, considering Integrative Medicine or CAM with resiliency training, and reevaluating in a month is appropriate (Freeman et al., 2010; Lichtman et al., 2008; Whooley & Wong, 2013). For major and severe depressive symptoms, further assessment by a mental health professional is recommended and starting a Selective Serotonin Reuptake Inhibitor (SSRI) could be considered at time of the assessment (Green et al., 2009; Lichtman et al., 2008; Whooley & Wong, 2013). As part of depression management, the primary care provider is to be apprised of any depression screening outcomes and management plans initiated on their patients. After analysis of best-practice, it was decided to use the established management algorithms available with some modifications appropriate for the cardiology clinic setting.

### **IRB and Ethical Considerations in Depression Screening**

#### **Potential Harm in Depression Screening**

Consideration was given to the potential harm of screening for depression in the cardiology clinic; little information on this topic was found in the literature. Potential harms that were mentioned in the literature included false positives with misdiagnosis and unnecessary treatment, false negatives with missed or delayed treatment, and the cost of treatment. To avoid both false positives and negatives, Liu and Wang (2015) stressed the importance of using an optimal PHQ-9 cutoff point of 10, which provides a low sensitivity of 51.58%, but a high specificity of 92.56% for current major depression disorder. See Appendix A for PHQ-9 items and scoring. These results provide a high negative predictive value and low positive predictive value. Using the receiver operation characteristic (ROC) statistics provided further data that supported a cutoff of 10 as having a relatively high level of discrimination, whereas, using a cutoff of <5, led to a low specificity of only 75.56%, which could lead to a higher number of false positives (Liu & Wang, 2015). A cut-off point of 10 as an indication of major to severe symptoms

of depression was determined to be most appropriate for use in the cardiology clinic and to trigger further evaluation by the primary provider, and possible mental health consultation for additional testing. The cardiology providers were also encouraged to use their assessment to prevent delayed treatment in the case of a possible false negative score.

Potential increased cost of depression treatment in patients' post-acute coronary syndrome did not bear out in the literature although there was limited information on this subject. Davidson and colleagues (2013) conducted a study comparing the total cost of mental health treatment to usual care—the Comparison of Depression Interventions after Acute Coronary Syndrome (CODIACS) Vanguard trial. In the CODIACS study, 150 post-acute coronary syndrome patients were randomized to six months of centralized depression care (problem-solving treatment via telephone or the Internet, pharmacotherapy, both, or neither) according to patient preference ( $n=73$ ), or usual depression care determined after physician notification about the patient's depressive symptoms ( $n=77$ ) (Davidson et al., 2013). Depressive symptoms decreased significantly in the active treatment group (cognitive therapy and medication versus those receiving the usual care). Although the active treatment group had higher mental health treatment costs, the between-group costs were not significantly different once lower hospital costs for the active treatment group were added to the equation (Davidson et al., 2013). Overall, the potential harm of depression screening can be avoided with using an appropriate PHQ-9 cut-off point, provider assessment, and additional depression testing as appropriate. The benefits of depression screening and treatment far outweigh any potential harm.

### **Benefits of Depression Screening**

There is abundant information in the literature about the benefits of screening and treating depression post-MI. These benefits include increased patient satisfaction and improved quality of life. A systematic review of randomized controlled trials, scholarly articles, and books revealed

that those who received depression treatment post-MI, including cognitive behavior therapy and medication were more satisfied with their care, had higher rates of depression remission, and a higher quality of life (Mavrides & Nemeroff, 2013, p. 336). Screening for and addressing depression post-MI is the right thing to do; it improves quality of life and satisfaction with care. Additionally, it is cost neutral or cost-effective when accounting for long-term savings of reduced use of healthcare resources (Davidson et al., 2013).

### **Institutional Review Board**

An Institutional Review Board (IRB) application for Human Subjects Research Determination was sent to the health system IRB before implementing the QI project and analyzing any data. The health system deemed the project to be a quality improvement project and “Not Human Subject Research.” Permission was granted by the health system to proceed without a full IRB on July 30, 2017. An IRB application was then submitted to the University to request approval for the use of human subjects in research and the project was determined not to meet the definition of research. Approval was given to proceed with the QI project on August 17, 2017.

### **Ethical and Social Justice Considerations of the Project**

The Minnesota Department of Health [MDH] (2014), reported that health determinants are 40% social and economic factors, 30% health behaviors, 10% physical environment, 10% genes and biology, and 10% clinic care. That means that 80% of what we know determines our health is due to social and economic factors, health behaviors, and physical environment, yet our current healthcare model focuses on the 20% determinants, genes and clinic care. Data consistently report that people of lower socioeconomic status have higher rates of depression; exhibit unhealthy behaviors that include unhealthy diets, tobacco and drug use, and lack of exercise; and have decreased access to health care and increased stress both at work and home (Betancourt, Tan-

McGrory, & Kenst, 2015; MDH, 2014). People with depression have a difficult time changing their situation by themselves, which perpetuates the cycle of ongoing social and economic stress, unhealthy behaviors, and inability to change an unhealthy physical environment—all factors that contribute to progressive heart disease. People of lower socioeconomic status who are depressed are often getting by day by day and are not focused on the future. Screening for depression and providing EB treatment strategies is the right thing to do in post-MI patients who are at higher risk for worse cardiac outcomes if they have depression. Healthcare providers need to start looking up-stream at health determinants to make a difference in a person's overall health and wellness.

People with depression are subject to social injustices in a culture that doesn't understand mental illness and its association with unhealthy behaviors and lack of medical compliance and medical follow-up (Agency for Health Care Research and Quality, 2014). People with depression tend to have high out-of-pocket expenses and lack of affordable treatment resources. Immigrants are further subject to health disparities as they often forgo mental health treatment because of culturally incongruent care and lack of written information in their native language (AHRQ, 2014). Cardiology clinics traditionally provide focused acute cardiology care, with little understanding of how depression affects a person's quality of life and cardiac outcomes. Utilizing RNs and APRN's to design and implement an EB practice of screening for depression in the cardiology clinic is a step towards educating both the patient and healthcare providers to address these ethical considerations.

## **Evaluation**

### **Evidence-Based Depression Screening Protocol for Post-MI Patients**

After a thorough review of the literature, evidence supported the use of the tools and algorithms currently available within the health system and the electronic health records. The

initial depression screening tool used was the PHQ-2, a simple two-item questionnaire with a 0-3 Likert scale response. If either question had a positive response of 1-3, then the full PHQ-9 was provided to the patient in paper form for self-administration. The PHQ-9 measures frequency of each of the nine DSM-IV depressive symptoms over the last two weeks. These symptoms include (1) sleep (insomnia or hypersomnia), (2) psychomotor (agitation or retardation), (3) appetite (increased or decreased, weight loss or gain), (4) concentration (diminished ability), (5) energy (fatigue or loss of energy), (6) depressed mood (feeling sad or empty), (7) interest (diminished interest or pleasure in almost all activities), (8) guilt (feeling of worthlessness), (9) suicidal ideation (recurrent thoughts of death or suicide) (Whooley & Wong, 2013).

Management strategies were based on the PHQ scores. If both PHQ-2 questions were answered “0”, then the screening was considered complete with a referral to the primary provider for annual depression screening. If a PHQ-9 score was less than 10, patient depression education was provided with consideration for an Integrative Medicine consult for alternative therapies, such as resiliency training, meditation, guided imagery, bio-feedback, and follow-up with their primary provider in a month. A PHQ-9 score of 10 or higher indicated major depression symptoms that required further consideration and management. Management strategies included patient education, consideration for a Mental Health consult and initiation of an SSRI, and follow-up with their primary provider in two to four weeks. Closer follow-up with cardiology was also recommended due to increased risk for recurrent cardiac symptoms and events in those with depression.

The last, very critical question in the PHQ-9 is number nine, related to suicidal ideation. If there is any positive answer to this question, further assessment needs to occur determining if the patient is a suicide risk (Lichtman et al., 2008; Whooley & Wong, 2013). If the patient denied plans to harm them self, follow-up with their primary care or mental health provider within a

week was recommended. On the other hand, if the patient did have plans to harm them self and would not agree to not harming them self, it was considered an emergency and they would be sent to the Emergency Room for further evaluation. It is important for the provider to review each of the nine question responses in the PHQ-9 to help them in their assessment of the patient's degree of depression symptoms.

As with every other situation in health care, an alternative diagnosis for depression should be considered, such as hypothyroidism, substance abuse, medication toxicity, or other mental health disorder. Of note, beta-blocker therapy, a commonly prescribed medicine in heart disease, has not been found to cause symptoms of major depression and should not be considered as the possible cause of major depression symptoms (Whooley & Wong, 2013). Addressing symptoms of depression should be no different than addressing other health issues when providing cardiology care; ignoring it is not an option.

### **Implementing the Depression Screening Protocol**

Once patients were identified as candidates for the depression screening protocol, on the day of the office visit the CA roomed the patient as usual with the addition of asking the patient the two questions from the PHQ-2, entering their responses in the EHR. If the patient answered positively (1-3) to either question, then the paper form of the PHQ-9 was given to them to complete. After 3-5 minutes, the RN saw the patient, provided depression education and entered the PHQ-9 patient responses into their EHR. The RN also scored the PHQ-9 and provided the form to the provider to address when seeing the patient.

Next, the cardiology provider saw the patient, reviewed the PHQ responses and determined a management strategy based on the PHQ score and patient preference. In all cases, using a collaborative healthcare team approach was the expectation. The provider then communicated the plan with the appropriate healthcare professionals using the EHR.

At the end of the office visit, the RN provided the patient with an after-visit summary that included any recommended depression treatments or consultations. A scheduler was also available to assist with scheduling any Integrative Medicine or Mental Health consults, as well as the next cardiology visit.

### **Data Collection**

Analyzing the impact of this quality improvement (QI) project involved comparing screening prevalence rates before and after the depression screening protocol was implemented. Data were gathered from the two different groups, the pre-implementation group who were seen February and March 2017, and the post-implementation group who were seen October and November 2017. Patients who were seen more than once during either of the two-month periods were screened, and only their first visit was used in the data analysis to prevent skewing of data.

Data were collected with the assistance of a Data Analyst and chart reviews. Data gathered included sample demographics, age, gender, race, marital status, whether they had a diagnosis of depression, and whether they had a PHQ-2 or PHQ-9 in the last year along with the results. Medical record numbers (MRNs) were collected to allow further chart review on the second group to look at whether depression management recommendations were provided or followed when a PHQ-9 was administered and to further determine why some screening candidates were not screened for depression during their cardiology office visit.

Identifying data, such as MRNs, were secured using encryption on the health system network. MRNs were recoded for data analysis, and the two records were then kept separate in secured areas. Once the data were analyzed, all records with potential identifying data were deleted or shredded.

Additional information was gathered through field notes and emails from the clinic CAs, RNs, and cardiology providers to capture insights on how they viewed the implementation

process. The overwhelming response was that screening for depression in the cardiology clinic was important and needed. Although, when it came to depression management, this was mainly deferred to the primary care provider once the screening was completed.

At the hospital connected clinic, a majority of the CAs who were trained on the project from the two study work rooms were frequently reassigned to other work rooms due to sick calls or vacation, which led to an inconsistent following of the protocol. This also led to times other CAs who had less training and weren't sure of the protocol had to float into study work rooms; therefore, screenings were missed. Last, there were a few CAs who were less interested or accepting of the new protocol, and thus were less diligent about screening on days they were busy or understaffed. Unfortunately, the cardiology providers mainly relied on the RNs to remind them of the protocol; therefore, if they weren't reminded, it didn't happen.

All the personal communications with staff provided valuable insight into what was working and what wasn't when evaluating the change process. For the most part, this was consistent with Rogers' diffusion of innovation theory of change, and highlighted the importance of communication, education, and understanding individual responses and that there will be late responders and laggards who will need more education and time to see evidence that it is worth making the change.

## **Data Analysis**

### **Analysis methods**

Statistical software used was the 'R' program. Data were extracted on the number of post-MI patients seen in the two cardiology clinic sites, how many of those patients qualified for depression screening according to the screening protocol, and how many of those were screened during their cardiology office visit. Categorical data included patient characteristics and PHQ-scores of those screened. A Chi-square analysis was done on the number of PHQ depression screenings done any time post-MI, history of depression, gender, and clinic sites from the post-

implementation group looking at whether there was a significant association found between variables, with a significance level of 0.05.

### **Interpretation of results**

#### **Characteristics**

A two-group comparison was done on post-MI patient visits from both cardiology clinics. Group one, pre-implementation included 116 post-MI patients seen in February and March 2017. Group two, post-implementation included 85 post-MI patients seen in October and November 2017. The baseline demographics of the two groups are summarized in Table 1. Group one had 26% ( $n=30$ ) females and 74% ( $n=86$ ) males, similar to group two, which had 28% ( $n=24$ ) females and 72% ( $n=61$ ) males. The majority of both groups were white, 89% ( $n=103$ ) in group one and 85% ( $n=72$ ) in group two. The next majority ethnic group was Black, 6% ( $n=7$ ) in group one and 11% ( $n=9$ ) in group two. Other ethnicities included American Indian, Asian, and one Pacific Islander. The majority were married, 57% ( $n=66$ ) in group one and 62% ( $n=53$ ) in group two. The two largest age groups were 60-79 years old and 40-59 years old, with 47% ( $n=54$ ) and 36% ( $n=42$ ) respectively in group one, and 49% ( $n=42$ ) and 29% ( $n=25$ ) in group two.

**Table 1** Patient Demographics

Category	Feb-Mar (n=116)		v	
	Counts	%	Counts	%
<b>Gender</b>				
Female	30	26%	24	28%
Male	86	74%	61	72%
<b>Ethnicity</b>				
American Indian or Alaska Native	1	1%	2	·
Asian	4	3%	1	·
Black	7	6%	9	11%
Native Hawaiian or other Pacific Islander		0%	1	·
Patient Declined	1	1%	0	·
White	103	89%	72	85%
<b>Marital Status</b>				
Divorced	13	11%	7	·
Married	66	57%	53	62%
Separated	0	0%	2	·
Significant other	3	3%	1	·
Single	23	20%	14	16%
Unknown	1	1%	1	·
Widowed	10	9%	7	·
<b>Age Category</b>				
20-39	5	4%	3	·
40-59	42	36%	25	29%
60-79	54	47%	42	49%
80+	15	13%	15	18%

### The Number Who Were Screened According to Protocol

Group one, pre-implementation had a total of 116 post-MI patient visits, of whom 65% ( $n=75$ ) would have been candidates for the depression screening protocol. Group two, post-implementation had 85 post-MI patient visits, of whom 76% ( $n=65$ ) were candidates for the screening protocol. Of the 75 candidates for depression screening pre-implementation of the depression screening protocol, 0 (0%) PHQ screening was done during the cardiology office visit. For the second group, post-implementation of the protocol, 35% ( $n=23$ ) of the 65 candidates were

screened using the PHQ during their cardiology visit. See Table 2 for a summary of patients screened for depression during their cardiology office visit.

**Table 2** Number Screened for Depression in the Cardiology Clinics

	<b>Pre-Screening Protocol (Feb-March 2017)</b>	<b>Post-Screening Protocol (Oct-Nov 2017)</b>
<b>Post-MI Patient Visits</b>	<b>116</b>	<b>85</b>
<b>Candidates for Screening</b>	<b>75 (65%)</b>	<b>65 (76%)</b>
<b>Patients Screened</b>	<b>0 (0%)</b>	<b>23 (35%)</b>

A chart review of the candidates who were not screened in group two, post-implementation was done to assess further why so many potential screenings were missed. Seventeen of the missed screenings were patients who were seen in the specialty clinics of Advanced Heart Failure, Electrophysiology, Preventive Research, and Valve. Staff from these clinic areas were provided information on the roll out of the depression screening protocol but had not received the intensive training that the general and interventional clinic staff received. Additionally, these specialty areas did not have designated champions to encourage the use of the protocol. A combination of less training or education for staff and no champion CA, RN, or APRN in those clinic areas led to a disconnect from the project and was a major factor in the protocol not being followed in the specialty clinics.

For the 25 other screening candidates who were missed, there were three major factors identified at the hospital clinic site that contributed to missed screens. These three factors included CAs floating in and out of clinic rooms to cover other areas, being short staffed or too busy, and staff turn-over. When the champion CA was floated out of the general cardiology work rooms or had the day off it resulted in CAs who were less trained or dedicated to the project floating into the general clinics and not following through with the protocol or simply forgetting

about it. Both the RNs and the providers reported that if the CAs didn't start the process, they just assumed the patient didn't meet the criteria, and they didn't look further.

Staff turn-over at the hospital campus clinic was another factor affecting a less than enthusiastic response to the change project. For example, one of the first champion CAs changed jobs before the implementation of the protocol, which resulted in having to find and train two other champion CAs before the project began. It was decided to have two champion CAs in case another one left the clinic again. This was the case for one of the RNs as well. The first champion RN decided to decrease her hours and change her clinic responsibilities the week before implementation of the protocol. She was still available, but only one or two days a week. When this was realized, another champion RN was asked to help in the process, but she received less training than the original one. They both were supportive of the project, but it did affect consistency when they were not there. These staffing issues were not a problem at the smaller, suburban clinic. There was no turn-over during the whole process, and few missed screenings.

Another factor that influenced the high number of missed screenings in patients who would have been candidates for the protocol involved individual responses to the innovation as explained in the Rogers' diffusion of innovation theory (Melnik & Fineout-Overholt, 2015). There were some early innovators who were on board right away and involved in helping make the project succeed, then a few of the early adopters stepped up to be champions for the project. Champions for the project received additional training and responsibilities, and their feedback was used to design work flow changes. Next, were the early majority, who were willing to participate in the project with ongoing prompting and support from the APRN project lead, and the CA and RN champions. Next, came the late majority, who for the most part didn't think the protocol project pertained to them as they worked in different areas of the clinic, such as the specialty clinics, and they didn't see it as a priority for them to know or implement. Last, were the

laggards, who didn't think cardiology should be stepping into the realm of mental health and were not sure the project would continue beyond the two-month trial, therefore simply didn't do it.

Identifying the multiple factors influencing whether depression screening was done during the cardiology visit was insightful and highlighted the importance of education, communication, and having nursing involved in the practice change going forward.

Despite the high number of missed screening, it was still encouraging that the number of patients screened for depression post-MI in the cardiology clinics went from 0% ( $n=0$ ) in the pre-implementation group to 35% ( $n=23$ ) in the post-implementation group in just a two-month period. With more education and training for staff, time, and ongoing administrative support, implementing a depression screening protocol for post-MI patients in the cardiology clinic has the potential to bring the screening rate 100%.

### **Analyzing Potential Associations in the Post-Implementation Group**

Potential associations between different factors in the post-implementation group were explored using a Chi-square analysis. There was no association found between gender and whether depression screening had occurred at any time after the patient's MI ( $p=0.2518$ ). There was also no association found of those who had a history of depression and whether depression screening was done any time after the patient's MI ( $p=0.5815$ ). There was a significant difference between cardiology clinics regarding whether a PHQ depression screening was done at any time within a year of the MI ( $p=0.048$ ). The clinic location, size, and staff stability likely affected the difference in whether PHQ screening post-MI was completed. The suburban clinic serves patients who tend to be local and follow with their primary provider in the same area which lends to more consistent, collaborative care among health services. The suburban clinic also had fewer CAs and RNs to educate on the importance of depression screening and implementing the protocol, less

turn over, and more enthusiasm and ownership for trying new procedures that could improve patient care.

Whereas, the metro, hospital affiliated clinic is large and serves patients anywhere from blocks to 300 miles away who often have a primary care provider outside of the health system making follow-up care less consistent and collaborative. The hospital campus clinic also serves multiple cardiac specialty groups who at times rely on cross coverage of CA and RN support, contributing to less consistent care. There was also a higher turn-over rate among support staff at the hospital campus clinic leading to different levels of expertise throughout the project. Comparing overall rates of depression screening done at any time after an MI, by both primary care providers and cardiology, helped highlight factors that influence collaborative, consistent care that can influence the successful implementation of QI projects.

### **PHQ Scores of Those Who Were Screened in the Cardiology Clinic**

Of the 23 persons who were screened for depression in the two cardiology clinics, 12 had no symptoms of depression and required only a PHQ-2 screening. Eleven patients went on to complete the PHQ-9, with three who scored positive for mild symptoms of depression, five who scored moderate, and three with major symptoms. For a summary of the PHQ results see Table 3. Even though the screening numbers were low, it did reveal that 35% ( $n=8$ ) of those screened had symptoms of moderate to major symptoms of depression, consistent with what is reported in the literature related to depression rates post-MI ranging from 10.4% to 37.7% at 3, 6, and 12 months out from an MI (Lane et al., 2002; Kala et al., 2016). Ongoing implementation of the protocol and resultantly increased screening rates would likely reveal equally high depression rates that need further referral and treatment.

**Table 3** PHQ Screening Scores of Those Screened in the Cardiology Clinics

<b>PHQ = 0 No Symptoms of Depression</b>	<b>PHQ &lt; 5 Mild Symptoms of Depression</b>	<b>PHQ =5-9 Moderate Symptoms of Depression</b>	<b>PHQ &gt;= 10 Major Symptoms of Depression</b>
<b>12</b>	<b>3</b>	<b>5</b>	<b>3</b>

**Limitations**

This QI project demonstrated a few limitations when implementing the depression screening protocol in post-MI patients in the cardiology clinics. First is the low number of patients who underwent screening 35% (*n* = 23) compared to the number of those who were candidates for the protocol (*n*=65). This prompted further review of why so many screenings were missed. There are opportunities to improve on the screening rates by providing additional education and training, including specialty areas in the project, and allowing more time to get the late majority and laggards on board with the change. Another area for improvement, which was outside of this project but needs to be addressed, was the high staff turn-over and frequent floating in and out of different work areas in the clinic, which led to a sense of lack of responsibility in following protocols and providing consistency in care.

An additional limitation of the project was that it was conducted at two cardiology clinics with greater staffing resources, cardiology access, and integrative medicine and mental health services than may be available at more rural clinics. Also, the protocol and review of the literature were focused on patients who had an MI in the last year, which may not be generalizable to patients who are more than a year out from their MI or other cardiovascular illnesses such as heart failure, valvular disease, post-coronary artery bypass, or rhythm issues. Despite the limitations of the project, it did provide insight into the importance of using a change model to guide the

process and the potential successes and pitfalls to consider when implementing a change in practice.

### **Discussion**

Implementing a depression screening protocol in the cardiology clinic increased the number of PHQ depression screenings done in post-MI patients. However, there is more work to be done to increase screening rates and to institute the protocol into standard practice. To start with, a culture change in the cardiology clinic is needed to move from an acute care, curative mindset to providing longitudinal, patient-centered care as expressed in Wagner's CCM (Glasgow et al., 2001; Wagner, Austin, & Van Korf, 1996). This culture change and successful implementation of the protocol would require organizational support, use of technology to promote best practice standards, collaborative care that includes both traditional and non-traditional therapies, and access to community resources for patients. Cardiac disease is a chronic disease and depression post-MI is associated with worse cardiac outcomes and all-cause mortality (Gan et al., 2014; Lane et al., 2002; Lichtman et al., 2008; Lichtman et al., 2014; May et al., 2017; Wu & Kling, 2016); therefore, it is imperative to begin addressing depression in the cardiology clinics. Depression screening cannot be left up to just primary care and mental health providers to manage alone; it takes a team of providers and cardiology must begin to be part of the team by taking on a holistic, preventive approach to improve quality of life and patient satisfaction with an aim to improve health outcomes.

Another factor in the success of a QI change project is the importance of having a change model to guide the process. Roger's diffusion of innovation change theory was the framework used in the implementation of a depression screening protocol in the cardiology clinic. This framework included garnishing administrative support, educating major stakeholders, and using a collaborative approach to develop and implement the protocol. Knowing the potential individual

responses to the practice changes was important when tailoring education to individuals, as was taking time to stay connected throughout the process.

Nursing played several important roles in this QI project, starting with the APRN leading the project; the RN Clinical Manager supporting the expectation of the CA role to include PHQ-2 screening and the RN providing patient depression education, scoring the PHQ-9, and providing an after-visit summary to the patient. Ideally, the patient's EHR would trigger the need for PHQ-9 screening, which could then be done on an electronic tablet by the patient and responses would go directly into the patient's EHR, which would eliminate the CA responsibility of initiating the screening protocol. The RN Nurse Manager and clinic RN support would then be 100% responsible for the screening. Enlisting support and collaborating with nursing, who are at the point of care, was essential to the success of implementing the protocol. Additional research and literature review are needed on whether depression screening should be implemented across other cardiology specialties, as is follow-up on outcomes of those who were screened for depression and treated to see if there was a benefit regarding patients' quality of life, satisfaction, and subsequent rehospitalizations.

### **Conclusion**

Addressing depression post-MI is recommended as best practice by the AHA, AAFP, and APA. Addressing depression post-MI in the cardiology clinic utilizing a patient-centered, preventive care approach can help improve quality of life, patient satisfaction, and may prevent worse cardiac outcomes and mortality.

Going forward, more nurses, APRNs and DNPs are needed to lead changes in the healthcare system promoting evidence-based practice and addressing healthcare inequities and injustices to promote patient and population health. Nurses are ideally positioned to lead health care and the nation in strategies to address these inequities and health determinants by "drawing on their historical legacy of patient advocates, patient care expertise, and community focused

education...Nurses can embrace this new leadership role using interdisciplinary collaboration, advocacy, political involvement, and community partnership” (Lathrop, 2013, p. 41). The Institute of Medicine [IOM] (2011) recognized the need for nurses “...to become as full partners with physicians and other health professionals, in redesigning health care in the United States” (p. 221) and called for doubling the number of Doctors of Nursing Practice (DNPs) by 2020. The IOM (2011) has called on nurses to answer the leadership call in all healthcare settings, stating “Nurses must understand that their leadership is as important to providing quality care as is their technical ability to deliver care at the bedside in a safe and effective manner” (p. 225). DNPs are recognized as being uniquely positioned to lead health care changes by applying their fundamental nursing knowledge and expertise along with advanced knowledge in patient and population health, informatics, science, evidence-based practice, health systems, politics, and policies in improving the Nation’s health. This QI project implementing a depression screening protocol in the cardiology clinic is a testimony to the effectiveness of nursing leadership in promoting best-practices that have the potential for positive effects beyond the clinical setting.

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Appendix A

**PATIENT HEALTH QUESTIONNAIRE - 9  
(PHQ-9)**

Over the last <u>2 weeks</u> , how often have you been bothered by any of the following problems? <i>(Use "✓" to indicate your answer)</i>	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 or 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 are 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

FOR OFFICE CODING \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_  
= Total Score: \_\_\_\_\_

**If you checked off any problems, how difficult have these 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
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

PHQ-9 form is available at: [http://www.phqscreeners.com/sites/g/files/g10016261/f/201412/PHQ-9\\_English.pdf](http://www.phqscreeners.com/sites/g/files/g10016261/f/201412/PHQ-9_English.pdf)