NURSING ASSESSMENT AND TREATMENT OF PANIC DISORDER IN THE EMERGENCY DEPARTMENT: AN EVALUATION OF PROTOCOLS AND PROCESSES

by

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Jodi Lynn Blanchard entitled "Nursing Assessment and Treatment of Panic Disorder in the Emergency Department: An Evaluation of Protocols and Processes" and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

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DEDICATION

To Adam, my husband, best friend, and biggest supporter. You are the reason I have been able to accomplish this goal. Thank you for always being there, supporting me, encouraging me, and keeping me grounded. I love you!

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ABSTRACT

The purpose of this project was to conduct a program evaluation of a cardiac workup for patients who present to an emergency department (ED) with chest pain, in order to determine if and how nursing protocols and processes are implemented to identify and treat patients with panic disorder. Aims for the project were to (1) identify and describe commonalities related to activities, attitudes, and knowledge among registered nurses (RNs) who implement such protocols and processes; (2) describe how current processes fit within evidence based recommendations for evaluation and treatment of chest pain in the ED, and (3) generate evidence based practice recommendations for the evaluation and treatment of patients who present to the ED with complaints of chest pain, are diagnosed with non-cardiac chest pain (NCCP), and who may meet criteria for a diagnosis of panic disorder. Participants included ED RNs with experience evaluating patients with chest pain, and psychiatric mental health nurse practitioners (PMHNPs) with experience treating patients for anxiety. Data were collected through focus group interviews, and summarized into categories using the W.K. Kellogg Foundation (2004) logic model template. Five commonalities were identified from ED RNs, including: protocol based interventions, assessments and interventions based on nursing judgment, risk associated discharge planning, standardized discharge education, and inpatient psychiatric evaluation for suicidal ideation/homicidal ideation. Three common concerns were identified from PMHNPs, including: panic disorder as a differential diagnosis, patient expectations of benzodiazepine treatment, and education about panic disorder and evidence based treatments. Results revealed gaps in care for patients who present to the ED with chest pain who may have an undiagnosed panic disorder, including lack of assessment, diagnosis, treatment, education, or referral to a

mental health provider. Recommendations include providing standardized education for patients discharged from the ED with a diagnosis of NCCP, with information about panic disorder, evidence-based treatments, and a list of available mental health providers in the area. Considerations for future research include development and implementation of a feasible, effective, and validated screening tool for panic disorder in the ED setting, and the development and implementation of an inter-professional education program for ED providers and PMHNPs.

INTRODUCTION

Chest pain is one of the most common reasons for seeking treatment in the emergency department (ED); however, more than 50% of such patients are discharged with a diagnosis of non-cardiac chest pain (NCCP) (Kisely, Campbell, Yelland, & Paydar, 2015). Up to 88% of patients with a diagnosis of NCCP have a psychiatric disorder; panic disorder is the most common psychiatric etiology of such pain (Marchand et al., 2012). In addition, among patients who are discharged with NCCP it is estimated more than 90% of cases of panic disorder are not detected or diagnosed, nor is mental health treatment offered or recommended (Marchand et al., 2012). The personal and economic costs associated with NCCP include decreased quality of life for patients, and increased health care costs as a result of increased frequency of health care use (Coley, Saul, & Seybert, 2009; Kisely et al., 2015). Costs associated with NCCP treatment, and associated repeat hospital visits, have been estimated to exceed $2.5 million over a one-year period (Coley, Saul, & Seybert, 2009).

Advanced practice nurses in the psychiatric mental health role have a responsibility to advocate for quality, equitable health care for individuals with mental health conditions (American Nurses Credentialing Center, 2012). A PMHNP and Doctor of Nursing Practice (DNP) is perfectly positioned to assume a leadership role in such advocacy. The purpose of this project was to describe gaps in care for the population of patients who seek services in the ED as a result of an undiagnosed, untreated panic disorder.

Significance of the Problem

Patients who receive a diagnosis of NCCP after a thorough workup in the ED to rule out acute coronary syndrome (ACS) tend to experience persistent symptoms including chest pain,

anxiety, and reduced quality of life (Marchand et al., 2012; Webster, Thompson., & Norman, 2015). However, there are no current evidence-based protocols to guide management of NCCP of a possible psychiatric etiology. There are a dearth of resources regarding providing reassurance to patients about the non-cardiac nature of their chest pain without treatment or education about a possible diagnosis of panic disorder, or referral to a mental health professional (Marchand et al., 2012; Webster et al., 2015). Prominent features of panic disorder include worry about having another attack, or consequences resulting from the attack (American Psychiatric Association, 2013). Therefore, when patients with undiagnosed panic disorder endure prolonged periods without understanding the nature of the disorder, exacerbation of symptoms is likely to occur. Two devastating consequences of patients not receiving treatment, education, or a mental health referral for possible panic disorder include a lack of patient centered care, and lack of quality health care.

Available literature has revealed a gap in assessment and treatment for patients with panic disorder who present to the ED with complaints of chest pain. This gap in care leads to decreased quality of life for affected patients, and increased costs to the health care system. In an effort to describe gaps between evidence-based, and current practices in the care for this patient population, I conducted a program evaluation project. Motivation for the project stems from my clinical nursing experience, and my observations of this concern. Insight was also obtained from other mental health professionals.

Definition of Terms

Chest pain is defined as discomfort or pain that can be felt anywhere along the front of the body between the neck and upper abdomen, and can be associated with many different

possible etiologies (U.S. National Library of Medicine, 2017). Non-cardiac chest pain is a recurring, angina-like sub-sternal chest pain of a non-cardiac origin, and is associated with reports of poor quality of life, and frequent utilization of healthcare resources (Schey, Villarreal, & Fass, 2007). Panic disorder is a mental health condition diagnosed when a person experiences recurrent, unexpected panic attacks, which result in persistent worry about having another attack, or the development of maladaptive behaviors as a result of the panic attacks (American Psychiatric Association, 2013). A panic attack is an abrupt surge of intense fear or discomfort, accompanied by physical and/or cognitive symptoms, including but not limited to palpitations, pounding heart, sweating, chest pain, nausea, dizziness, and fear of dying (American Psychiatric Association, 2013). Nursing protocols are specific written procedures, which describe nursing actions to be implemented in a given situation (*Medical Dictionary*, 2009).

Purpose

The purpose of this project was to conduct a program evaluation of a cardiac workup for patients who present to an emergency department (ED) with complaints of chest pain, in order to determine if and how nursing protocols and processes are implemented to identify and treat patients with panic disorder. Aims for the project were to (1) identify and describe commonalities related to activities, attitudes, and knowledge among registered nurses (RNs) who implement such protocols and processes; (2) describe how current processes fit within evidence based recommendations for evaluation and treatment of chest pain in the ED, and (3) generate evidence-based practice recommendations for the evaluation and treatment of patients who present to the ED with complaints of chest pain, are diagnosed with NCCP, and who may meet criteria for a diagnosis of panic disorder.

Framework

A practice based framework was used to guide this project, in the form of algorithms. Current, evidence-based guideline recommendations for diagnosis and treatment of chest pain and ACS are provided in the form of seven different algorithms. Guideline recommendations were developed by a work group including physicians, nurses, pharmacists, and other healthcare professionals relevant to the topics of chest pain and ACS, in addition to a staff facilitator for systematic reviews from the Institute for Clinical Systems Improvement. The work group of experts collected evidence from literature searches, including systematic reviews, randomized-controlled trials, meta-analyses, and other literature sources. Evidence was analyzed by review of published meta-analyses, and systematic review of the literature collected. Grades of the quality of available evidence are provided for each recommendation included within the algorithms. (National Guideline Clearinghouse [NGC], 2012).

Algorithms relevant to the ED context, and the purpose of this project, included the emergency intervention algorithm, non-cardiac causes algorithm, and special workup algorithm (NGC, 2012).

LITERATURE SYNTHESIS

Synthesis of evidence was conducted to gather relevant literature associated with the purpose of this project. Sources were identified using online literature searches for scholarly articles in PubMed, Cochrane Library, Embase, and the National Guideline Clearinghouse (NGC) registry, using key words *panic disorder, chest pain, noncardiac chest pain, emergency department, evaluation, and algorithm*. Filters included English language, full text articles, and publication within the past five years. With the exception of the NCG, there were a total of 54

articles obtained using combinations of the selected keywords. Articles were then further filtered to eliminate duplications, and selected based on relevance to the project purpose. According to the Grades of Recommendation Assessment, Development, and Evaluation (GRADE) Working Group, the quality of evidence among selected articles range from very low to high, with the majority of ratings low (DiCenso, Guyatt, & Ciliska, 2005). The majority of sources consisted of non-experimental prospective (cohort), and cross-sectional designs, in addition to one qualitative study, one randomized controlled trial, and one clinical practice guideline (see the complete evidence appraisal table in Appendix A).

Emergency Department Use Associated with Chest Pain

There is consensus among the literature of high rates of ED use for complaints of chest pain. Estimates of ED use for chest pain are as high as 20% of all ED visits annually, or 6-10 million patients, making it the second most common reason for seeking treatment in the ED. (Al-Ani & Winchester, 2015; Ingram, McKee, Quirke, Kelly, & Moloney, 2017; Leite et al., 2015; Mahler et al., 2015; Marchand et al., 2012).

Prevalence of Non-Cardiac Chest Pain (NCCP)

Multiple sources have identified NCCP as the most common discharge diagnosis among patients who seek services in the ED with chest pain, with the prevalence range for NCCP between 45% to > 90% (Al-Ani & Winchester, 2015; Bokma et al., 2015; Ingram et al., 2017; Leite et al., 2015; Marchand et al., 2012; Webster et al., 2015). Although several sources have identified psychiatric disorders as a common cause of NCCP (Ali-Ani & Winchester, 2015; Bokma et al., 2015; Foldes-Busque et al., 2013; Foldes-Busque et al., 2015; Foldes-Busque et al., 2016; Greenslade, Hawkins, Parsonage, & Cullen, 2017; Leite et al., 2015; Marchand et al.,

2012; Webster et al., 2015;), others fail to suggest a potential psychiatric etiology, or strategy for ruling out an underlying psychiatric diagnosis (Ingram et al., 2017; Mahler et al., 2015; Napoli, Baird, Tran, & Wang, 2017). In recent estimates, upwards of 88% of patients with NCCP have a comorbid psychiatric disorder, with panic disorder as the most common psychiatric comorbidity (24%-70% concurrence rate) (Marchand et al., 2012). Specifically speaking, the prevalence of panic disorder among NCCP patients is estimated to be between 12%-41% (Bokma et al., 2015). Thus, some scientists and researchers recommend improved screening and treatment protocols to address NCCP, specifically related to the identification and treatment of psychiatric disorders (Al-Ani & Winchester, 2015; Bokma et al., 2015; & Webster et al., 2015).

Standard of Care

Currently, standard practice for assessment and treatment of patients with chest pain involves testing to rule out a physical etiology, with ACS as the primary concern, followed by risk stratification for further recommendations (NCG, 2012). Current guidelines recommend the use of algorithms to guide assessment, and various diagnostic testing, specific to the context (e.g. emergency department intervention algorithm, or clinic evaluation algorithm) (NGC, 2012). According to the emergency intervention algorithm, interventions include assessment of vital signs and symptoms, imaging and diagnostic testing, early interventions, and risk stratification (NGC, 2012). For patients in the low risk category for ACS, the final recommendation is discharge to outpatient management with no further screening or treatment recommendations in the ED (NGC, 2012). If it is determined the chest pain is not related to ACS prior to risk stratification, but may indicate another serious diagnosis, use of a special workup algorithm is recommended to further rule out pulmonary embolism, pneumothorax, or pericardial disease, and

if negative refer to the non-cardiac causes algorithm (NGC, 2012). If it is determined the chest pain is not related to ACS, and is not indicative of another serious diagnosis, use of a non-cardiac causes algorithm is indicated to rule out pleural or pulmonary disease, costochondritis, or gastrointestinal disease (NGC, 2012). After ruling out potential physical etiologies, the final recommendation under the non-cardiac causes algorithm is to reconsider the differential diagnosis (NGC, 2012). At this point in the guideline descriptions it is stated, "The clinician may then have to redirect his/her search for a diagnosis to conditions of the thoracic spine or thoracic nerves. Other considerations are somatization and anxiety disorders" (NGC, 2012, p. 24).

Validated decision aids available for use in the ED setting for ACS risk stratification include the Manchester Triage System, and the HEART score (Leite et al., 2015; Mahler et al., 2015). Leite et al. (2015) conducted a study among patients who present to the ED with chest pain (N=174), and determined the prognostic values of the Manchester Triage System and HEART score; the results validated the use of these decision aids, and anxiety-depressive disorder was the third most common final diagnosis among the participants (9.0%). However, the authors do not specify how the diagnosis of depression or anxiety was made, and the most common final diagnosis was non-specific chest pain (36.9%) (Leite et al., 2015). Mahler et al. (2015) conducted a randomized controlled trial (N= 282) to compare the HEART pathway to usual care (American Heart Association guidelines), in identifying patients with chest pain in the ED for early discharge; results indicated increased early discharge rates, and low rates of major adverse cardiac events 30-days post-discharge, in the HEART pathway; however, there were no recommendations for, or evaluations of, non-cardiac conditions (Mahler et al., 2015).

Assessment, Diagnosis, and Treatment of Panic Disorder in the ED

Among the studies in which assessment of anxiety disorders for patients who present to the ED with chest pain has been conducted, a variety of screening tools have been used. Reported tools include: Generalized Anxiety Disorder Questionnaire (GAD-7), Hospital Anxiety and Depression Scale (HADS), Composite International Diagnostic Interview (CIDI), Anxiety Disorder Interview Schedule for DSM-IV (ADIS), Panic and Agoraphobia Scale (PAS), Agoraphobic Cognitions Questionnaire (ACQ), Anxiety Severity Index (ASI), Body Sensations Questionnaire (BSQ), Spielberger State-Trait Anxiety Inventory (STAI), Panic Screening Score (PSS), Cardiac Anxiety Questionnaire, and the Mini-International Neuropsychiatric Interview (Ali-Ani & Winchester, 2015; Bokma et al., 2015; Foldes-Busque et al., 2013; Foldes-Busque et al., 2015; Foldes-Busque et al., 2016; Greenslade, Hawkins, Parsonage, & Cullen, 2017; Marchand et al., 2012). Treatment recommendations for panic disorder were identified in only one study, and included brief cognitive behavioral therapy interventions, and pharmacological management with paroxetine (Marchand et al., 2012).

Despite consensus related to high rates of ED services sought for chest pain, and low rates of cardiac etiology, there is much heterogeneity in the literature associated with the identification of panic disorder among patients with NCCP. Furthermore, of the sources in which panic disorder has been identified as a potential underlying cause of NCCP, there is significant heterogeneity between studies in use and implementation of screening tools. Treatment recommendations for identified panic disorder in the ED among patients with NCCP are also lacking. Finally, most of the literature available on the topic of panic disorder among patients with NCCP is greater than 10 years old, there is significant overlap of authors among the

literature, and many of the studies have not been conducted in the U.S. This synthesis supported a need for increased understanding of context-specific protocols and processes implemented in the identification and treatment of panic disorder among patients who present to the ED with complaints of chest pain.

METHODS

This was a program evaluation project, conducted using the W.K. Kellogg Foundation logic model. Data were obtained from focus group sessions and interviews with ED nurses and PMHNPs. The use of logic models for program evaluation and reporting provide a guide for gathering, and presenting information and progress, in order to inform, advocate for a specific approach, and teach stakeholders (W.K. Kellogg Foundation, 2004). The logic model was selected to provide a visual method for obtaining, and reporting information related to nursing protocols and processes currently implemented in evaluation of chest pain in the ED. Relevant information obtained from ED RNs in accordance with the logic model template, and project purpose, included: resources/inputs in place to facilitate assessment, evaluation, and treatment of patients who present to the ED with chest pain; activities involved in conducting a cardiac workup; outputs, meaning the intended results of the cardiac workup; perceived outcomes, in terms of common diagnoses, treatments, and referrals; and impact, which was predicted based on current available evidence. Data related to attitudes and knowledge were not included on the template; however, were included in data analysis.

The logic model can also be used for program planning (W.K. Kellogg Foundation, 2004). Data from PMHNPs were collected relative to the third project aim, to generate evidence based practice recommendations for the evaluation and treatment of patients who present to the

ED with complaints of chest pain, are diagnosed with NCCP, and who may meet criteria for a diagnosis of panic disorder. Thus, relevant information obtained from PMHNPs in accordance with the logic model template included both their current perceptions, and recommendations.

Ethical Considerations

Approval for the project was obtained from the University of Arizona Institutional Review Board (IRB), in accordance with the University IRB approval process. At the time of the interviews, all participants signed a consent form, and were provided with a copy. The consent form was administered in consideration of fulfilling the ethical principles of autonomy, beneficence, and justice. The form included a statement of research; voluntary participation or refusal; purpose of the project, and intended use of results; expectations of participation; possible risks/discomforts; explanations of confidentiality, privacy, and secure storage of collected data; and contact information for questions, concerns, or complaints. (Kaiser, 2009; Orb, Eisenhauer, & Wynaden, 2001).

Participants

RNs working in two specialty areas (ED, PMHNP) were recruited for participation in a focus group session. ED RNs who were sought included those with current or recent work experience in an ED within Pima county, AZ, and who have experience with, and/or knowledge about the nursing protocols and processes used to evaluate patients with chest pain. PMHNPs included providers in the same geographical area, who have experience evaluating patients for anxiety. Exclusion criteria were nurses who were not fluent English speakers or writers, or those who had been away from the practice environment (patients with anxiety or patients seen in the ED with chest pain) for more than three years. Recruitment occurred over a 7-week period, after

approval was received from the University of Arizona IRB. To aide in the recruitment process, key informants distributed two different fliers asking for volunteer ED RNs and PMHNPs to participate. Potential participants were then encouraged to pass on the fliers to other potential participants. This method of sampling is termed *snowball sampling*, and is used by both qualitative and quantitative researchers due to its distinct advantages of being cost effective and practical (Polit & Beck, 2011). Key informants included known staff nurses, academic faculty, and local providers who were aware of the project and purpose, and who voluntarily agreed to assist with recruitment. One set of fliers were distributed to ED nurses within Pima county, AZ, asking for participation in a project exploring nursing protocols and processes implemented during a cardiac work up for chest pain. The other set of fliers were distributed to PMHNPs in the same county, asking for participation in a project exploring evaluation and treatment of panic disorder within nursing protocols and processes implemented during a cardiac work up for chest pain in the ED. Interested participants contacted me through text message, and/or e-mail. I responded within 24 hours to answer questions of both key informants and interested participants, and to coordinate meeting times and locations convenient for multiple participants.

ED RN participants (N=3) included two females, and one male. The average age of participants in this group was 39 years (range: 33-43). The average length of time with nursing experience in their current roles was 4.6 years (range: 3-6 years). PMHNP participants (N=6) included four females, and two males. The average age of participants in this group was 45.3 years (range: 35-60). The average length of time with nursing experience in their current roles was 13.5 years (range: 3.5-34 years). To protect participant privacy, names or locations of employment were not collected or recorded; however, all participants voluntarily shared this

information. ED RNs worked in two different hospitals, and PMHNPs all worked in different settings.

Data Collection and Setting

Due to scheduling conflicts, participant illness during the scheduled meeting time, and loss of participant interest during coordination of scheduling, one focus group session was conducted with two ED RN participants, and one individual interview was conducted with another ED RN. For the PMHNP interviews, one focus group session was conducted with six participants. Focus groups are used to gather rich sources of information from a homogenous group of participants, and are typically comprised of five or more individuals (Polit & Beck, 2011). However, adequate sample size in qualitative inquiry is broadly determined by the number of participants necessary to achieve data saturation, which depends on a variety of factors including the scope of the information needed, quality of the data provided by participants, and the sensitivity of the topic being discussed (Polit & Beck, 2011). In regard to input from ED RNs, the scope of information needed for this project was narrow. Responses were specific to current activities and interventions conducted in their professional roles, with limited inclusion of opinions. For the majority of questions, all ED RNs provided similar responses, with little new information obtained during the second interview session. This could be interpreted as an indicator of data saturation.

Participants from each group were asked a set of pre-determined questions. Questions for RNs were developed to facilitate an understanding of the current nursing protocols and processes implemented during a cardiac workup for patients who present with a complaint of chest pain. Questions for PMHNPs were developed to guide the discussion about the usefulness of the

emergency intervention, non-cardiac causes, and special workup algorithms in the assessment and treatment of patients with panic disorder. Additionally, PMHNPs were asked to share their perspective regarding screening, education, and/or referrals for patients with low risk of ACS, NCCP, and panic disorder. The lists of interview questions are included in Appendices B and C. Additional questions were asked for clarification purposes only, in order to confirm accuracy of my understanding of participant responses, and/or accuracy of the responses as intended by the participants. Demographic data was also collected at the time of the interviews.

The focus group sessions and individual interview were all conducted in public settings in the community selected by the participants, which included a partitioned meeting room in a restaurant, and isolated tables at a restaurant and coffee shop. Interviews were recorded using a digital audio recorder, and I conducted all focus group sessions and interviews. I also took field notes to highlight specific topics, and nonverbal behaviors or utterances. The PMHNP group interview lasted approximately 20 minutes, the ED RN group interview lasted approximately 15 minutes, and the ED RN individual interview lasted approximately 16 minutes. I expected and planned for the group interviews to last approximately one hour each. There are several possible explanations for the short duration of the interviews. The first is the nature of the questions. Although both sets of questions were intended to be open ended, there was generally a limited number of responses provided by participants for each question in both groups, and two of the questions for PMHNPs prompted yes/no answers. A second possible explanation is the low level of sensitivity of the topic being discussed, which limited the amount of emotionally charged responses. Although the main topic was related to patients with actual or possible panic disorder, participant questions and responses were related to their professional roles and perspectives,

rather than their personal experiences with panic disorder. However, in the event a participant expressed or showed emotional distress during the interviews, a list of mental health resources was made available.

Data Analysis

As recommended by Polit and Beck (2011) in analyzing qualitative data, audio taped interviews were transcribed verbatim, including identification of who was speaking, nonverbal utterances or behaviors, and emphasis on certain words. I transcribed the audio recordings after repeated review, including stopping, rewinding, and replaying the recordings. Participants were identified on the written transcriptions by gender (M, F), and numerical order of initial response (1, 2, 3, etc.).

Transcribed responses were summarized according to categories on the W.K. Kellogg Foundation logic model template (W.K. Kellogg Foundation, 2004), as discussed in the methods section, and included in Appendices D and E. A general inductive approach was then used to identify commonalities as they related to project objectives, then describe the commonalities and repeated phrases, words, experiences and responses among the participants (Thomas, 2006).

FINDINGS

After reviewing the statements provided by the ED RNs, five over-arching commonalities were identified in relation to activities, attitudes, and knowledge associated with protocols and processes implemented in evaluation and treatment of chest pain in the ED: protocol based interventions, assessments and interventions based on nursing judgment, risk associated discharge planning, standardized discharge education, and inpatient psychiatric evaluation for suicidal ideation/homicidal ideation.

Interviews with PMHNP participants revealed their perceptions about the usefulness of the emergency intervention, non-cardiac causes, and special workup algorithms in the assessment and treatment of patients with panic disorder. Additionally, participants provided input regarding screening, education, and referrals for patients with low risk of ACS, NCCP, and panic disorder. Their responses revealed three common concerns: panic disorder as a differential diagnosis, patient expectations of benzodiazepine treatment, and education about panic disorder and evidence based treatments.

Protocol Based Interventions

When asked about the triage protocol, all three ED RNs mentioned the need to complete the electrocardiography (ECG) within a specified time frame, establish intravenous access, draw labs (specifically, troponins), and administer aspirin and nitroglycerin. These interventions are consistent with current guideline recommendations for the diagnosis and treatment of chest pain, and are incorporated within the emergency intervention algorithm (NGC, 2012). Participants spoke confidently about their knowledge and implementation of these protocol based interventions, specifically emphasizing the need to obtain the ECG as first priority, followed by the administration of aspirin. One participant replied, "we just follow our protocol…it's aspirin, nitro, morphine is a little…not as big anymore, but we just follow that protocol".

Additional standard processes included obtaining a patient history, and conducting suicide and home safety screens. When asked if patients were ever screened for panic or anxiety disorder, participants referred to these other actions. All participants talked about screening during the intake, which might include previous medical conditions and suicide risk. One participant explained:

> "*Well there's no standardized tool, I mean there's, it could be from looking at the patient, and doing a little bit of a psychosocial type deal where you ask our usual screening of like have you thought of harming yourself or others, do you have any weapons?*"

Assessments and Interventions Based on Nursing Judgment

In addition to assessments and interventions implemented within standard ED protocols and processes, RN participants also described personal practices, including assessing patient appearance, asking additional questions based on inclinations or patient responses, and occasionally requesting case management assistance with mental health resources. One participant mentioned the significance of observing appearance including skin temperature and color, and shortness of breath, while assessing chest pain character, quality, and onset. In discussing the triage process, a participant explained that if a patient has stable vital signs and does not look in acute distress, that patient may be triaged, whereas a patient who appears in acute distress is taken directly into a treatment or exam room.

Participants also spoke about individualized assessment and treatment of anxiety. One participant said:

> "*Sometimes you kind of get that vibe from somebody that they're like anxious about it, you just ask them if they have, and the physician will assess them and sometimes they'll order them, like Ativan. We see that.*"

Another participant described a situation where a patient may mention experiencing increased stress at home, and said in those instances he would be more inclined to ask about and document environmental or other stressors. He also explained a potential treatment plan for a patient showing signs of a panic attack, which included basic protocol-based interventions (e.g., aspirin, vital signs), administration of Ativan, and a chest x-ray. He spoke about the use of Ativan as a "differential" to distinguish a cardiac versus anxiety etiology.

Participants discussed the availability and use of case management and social work services in situations indicating concern for patient safety. These were primarily instances of suicidal ideation (SI), homicidal ideation (HI), or an unsafe home environment, and these professionals were rarely if ever sought for assistance with a possible case of panic or anxiety. One participant mentioned he will request case management assistance for mental health resources at his discretion, if he personally thinks a patient may benefit. He explained it would be the patient's responsibility at that point to follow-up, and that he would tell the patient, "I'm not gonna tell you to do this, I'm not gonna hold your hand, but, you might, here's some resources for you".

Risk Associated Discharge Planning

Participants were asked about how risk level is determined for ACS, and the discharge plan for patients identified as low risk. They were generally unaware of the protocol and/or scoring system for determining ACS risk level, but discussed their understanding of decisions and interventions based on the physician determined risk level. The usual plan described by participants is admission with involvement of cardiology for high risk patients; an extended observation period followed by expedited referral, and a scheduled appointment with outpatient cardiology for intermediate risk; and discharge to a primary care provider (PCP) for low risk. One participant mentioned scheduling appointments for outpatient cardiology or a PCP within two days post-discharge.

Standardized Discharge Education

Participants were specifically asked about discharge education provided for patients identified as low risk for ACS. All participants described standardized education about chest

pain, specifically signs and symptoms of a myocardial infarction (MI) to be aware of, and to return if they experience. One participant clarified the cardiac nature of the discharge education, which has "nothing with anxiety or anything". Another participant explained there is a standardized education set available for anxiety, including non-pharmacological interventions such as mindfulness, breathing techniques, and coping mechanisms; however, he said that education is very rarely included at discharge for patients who come in with a complaint of chest pain, saying, "I can't think of one within the past year that had the general anxiety on it".

Inpatient Psychiatric Evaluation for Suicidal Ideation/Homicidal Ideation

I asked participants if referrals were ever made for patients, specifically to a mental health provider. All participants explained patients who need to be seen by a mental health professional would be evaluated by a psychiatric provider while in the ED, prior to discharge. They were all consistent with this indication being a result of a patient saying they want to hurt themselves, hurt others, or aren't safe at home. A psychiatric evaluation in the ED for a patient with chest pain who made no mention of SI or safety concerns would be a rare exception. One participant shared her belief for this exception as being because, "anxiety's usually just handled at the moment. If you're going specific anxiety…or panic attacks". Another participant discussed the use of a community-based psychiatric crisis agency for evaluating patients in the ED who are deemed an immediate risk for SI/HI, as well as for patients with a substance abuse addiction. None of the participants could think of a time when a patient with a complaint of chest pain was referred to an outpatient mental health provider or agency at discharge.

Panic Disorder as a Differential Diagnosis

There was consensus among PMHNP participants about the need to rule out a cardiac or other medical diagnosis prior to considering panic disorder as a differential diagnosis. Participants discussed this need in terms of health risks, as well as reassurance for the patients about a non-cardiac condition. All participants shared the perception of this practice as the current standard in the ED. One participant explained she will generally assess the patient's perspective about an ED visit. She says she likes to know how often they are going to the ED, as a way to measure the patient's perception of symptom severity. For this provider, it was important to her to hear from the patient he/she wasn't diagnosed with a cardiac condition, and to document there was a negative cardiac workup in the ED. Another participant talked about considerations when working with geriatric patients, saying many of the patients he sees have a cardiac history. He stated, "they've all had heart attacks, and they have panic, so they go to the hospital like every other day".

In regard to screening for panic disorder in the ED, all PMHNP participants agreed this should occur after ruling out a myocardial infarction (MI), as well as any other medical etiology. One participant explained, "it's a rule out diagnosis like all psychiatric diagnosis," but also added, "I think they are responsible for arriving at that differential diagnosis, at least as a rule out, one of the most probable. They're all trained for that". She also shared an example of how reassurance from a negative cardiac workup can benefit a patient therapeutically, such as a time when she "had a patient who went to their cardiologist and it was very reassuring to them, so when I was doing cognitive behavioral therapy they could use in their rational response 'my cardiologist said, I'm absolutely fine'".

The participants also discussed the absence of panic disorder listed as a differential diagnosis on the algorithms. One participant shared her opinion about the algorithms in relation to considering panic disorder, saying:

> "*I think it's very telling that it's, it's not mentioned at all on any of the…algorithms, and it's, there's a really high association with having panic attacks and having these symptoms, and I think it's just really, interesting, in a negative way, that they're, not present*".

Another participant shared past work experience in an ED that included a specific psychiatric ED, and said psychiatric providers would "automatically move in, and assess" patients after medical conditions were ruled out. He suggested this practice would be ideal, but all participants generally believed this would be an unfeasible solution in the local county. A more general recommendation was to add "psych consult" as the last step in the algorithms.

Patient Expectations of Benzodiazepine Treatment

Many PMHNP participants shared the perception of benzodiazepine administration as the standard treatment for patients in the ED who show signs of anxiety, and discussed their experiences in treating those patients in the outpatient setting. Many spoke about their frustrations with patients asking them for benzodiazepines after having received them in the ED, and expressed a desire for ED providers to better educate patients about the use of this class of medications in crisis situations, or short term only. One participant shared her opinion, saying:

> "*I think that the patients just use the ER for treatment, so they just keep going back, and they treat 'em with benzos, and then they feel better, and then they go home they feel better, and everything's, they're cured until they have the next anxiety attack and go back to the ER. It's kind of a revolving door, so then when you get to see them, in my experience, they're asking for benzos. Cause that's the only thing that helps their anxiety*."

Education about Panic Disorder and Evidence Based Treatments

PMHNP participants were asked to share their recommendations for discharge education to be provided for patients discharged from the ED with a diagnosis of NCCP. They believe there is a need for patients to be better educated about panic disorder as a diagnosis, and long term, outpatient treatment options. All participants agreed patients who are discharged with a diagnosis of NCCP should be given a referral to a mental health provider; however, the majority believed this is currently common practice. Most participants believe the patients they see who have been to the ED for chest pain have been told they have panic disorder and need to see a mental health provider. One participant said he has heard patients say they have been told, "you're fine go home, and that's it," but said that isn't very common. There was consensus among participants the education should include information about non-pharmacological treatments. One participant explained:

> "*I think they should absolutely get information about CBT, or mindfulness, or something that it's not, Xanax treatment, that it's not just a benzo treatment, that this will be the expectation and there are a lot of skills, and I, I think it instills a lot of hope, that you can get this under control, and these skills can offer that… and it's evidence-based.*"

Participants also discussed some of the perceived challenges associated with finding a mental health provider in the area who is accepting patients, as well as a person's insurance. One participant described how difficult and frustrating it can be for patients to be referred to their insurance company, then having to navigate through automated phone prompts to eventually get to someone who is still unable to help them, because they don't know which providers are accepting patients. She suggested, "the ER actually being able to hand out names of people who are, um, taking patients who would be able to treat them for their anxiety might be helpful".

DISCUSSION

Results from this evaluation revealed consistencies between current nursing protocols and processes implemented during a cardiac work up for patients who present to the ED with a complaint of chest pain, and standards of practice described in the most recent literature. Interventions are consistent with the most current guideline recommendations for the diagnosis and treatment of ACS and chest pain, outlined in the emergency intervention algorithm, non-cardiac causes algorithm, and special work-up algorithm (NGC, 2012).

According to the guidelines, high risk patients should receive early therapy for high risk patients, and be admitted; intermediate risk patients should receive early therapy for intermediate risk patients, and be admitted to a chest pain unit or monitored bed; and low risk patients should be discharged to outpatient management. Specific recommendations for outpatient management include preferred follow-up with a cardiologist, but a follow-up with a primary care physician (PCP) may also be appropriate, within 1-3 days after discharge. (NGC, 2012). Participants described discharge practices from the ED consistent with these recommendations.

As discussed previously, one participant described implementation of basic protocol interventions, followed by use of Ativan as a strategy for determining a cardiac versus panic etiology. As long as an ECG and troponin labs were completed and negative, and consideration was given for a gastrointestinal diagnosis prior to considering anxiety or panic, the actions described were generally consistent with the initial steps from the emergency intervention algorithm, with redirection to the use of the non-cardiac causes algorithm (NGC, 2012). Since all participants mentioned the ECG as the initial action, it could be assumed this step would be completed. However, the other two action steps were unclear from the participant response.

Analysis of ED RN responses revealed any assessment of anxiety or panic disorder is based on individual nursing judgment, and if treatment is given, typically consists of administration of Ativan. The most common practice for discharge among patients identified as low risk for ACS is referral to a PCP, and patients are given standardized education about signs and symptoms of chest pain as it relates to a MI. Referrals to an outpatient mental health provider or agency are not made, and if mental health resources are given it is based on nursing discretion.

Evidence Based Practice Recommendations

Evidence based practice incorporates the use of the most current evidence available in the literature, knowledge from clinical expertise, patient preferences, and available resources (Lusk, 2014). To fulfill the component of clinical expertise, PMHNP providers were asked to share their perspectives about screening, education, and referrals for patients with low risk of ACS, NCCP, and panic disorder.

Consistent with the most recent literature, ED RN participants identified NCCP as the most common discharge diagnosis among patients who present with a complaint of chest pain (Al-Ani & Winchester, 2015; Bokma et al., 2015; Ingram et al., 2017; Leite et al., 2015; Marchand et al., 2012; Webster et al., 2015). Furthermore, they described discharge planning, including referrals, generally consistent with the guideline recommendations listed in the emergency intervention algorithm (NGC, 2012). Although PMHNP participants generally believed it is common practice for these patients to be diagnosed with a panic or anxiety disorder, and/or referred to a mental health provider, findings from ED RN participants indicate this is a rare practice. Among patients with NCCP, findings reported in recent literature indicate

greater than 90% of cases of panic disorder are undetected or undiagnosed, and mental health treatment is rarely offered or recommended (Marchand et al., 2012). Both ED RNs and PMHNPs discussed a lack of education about panic disorder for patients who are discharged with a NCCP diagnosis.

Although nursing protocols and processes implemented by ED RN participants were consistent with current guideline recommendations for assessing and treating chest pain, assessment and treatment of panic or anxiety was based on nursing judgment. Treatment for anxiety offered by physicians was limited to administration of Ativan. Detailed actions to determine the most common medical etiologies for chest pain are described in the guideline algorithms (NGC, 2012). However, there are no current guidelines available to evaluate for, diagnose, and/or treat panic or anxiety disorder among patients with NCCP. The need for improved screening and treatment protocols to address NCCP has been discussed in the literature (Al-Ani and Winchester 2015; Bokma et al., 2015).

The main recommendation from PMHNP experts is to provide more comprehensive education to patients in the ED, prior to discharge. Education should include information about a diagnosis of panic disorder, non-pharmacological treatments, and non-benzodiazepine treatments. Recommended non-pharmacological treatments include CBT, mindfulness, and skill work. These recommendations are consistent with current guideline recommendations for the treatment of panic disorder, which include: accurate diagnosis, and written information about panic attacks; CBT; self-help; avoidance of the use of benzodiazepines for long term therapy; and use of antidepressant medications as first line pharmacological management (National Institute for Healthcare and Excellence, 2011).

Additionally, it is recommended by PMHNP experts to have a current list of available mental health providers in the community who are accepting patients. This list should also be given to patients at discharge.

Trustworthiness

A key aspect of demonstrating rigorous qualitative inquiry is to fulfill the standards of trustworthiness. Four criteria to be addressed in developing trustworthiness include: credibility, dependability, confirmability, and transferability. (Lincoln & Guba, 1985).

Credibility is defined by confidence in the truth of the data, and interpretations of data. Member checking is one strategy to enhance credibility. This was done during data collection, in the form of requesting participant confirmation of my understanding of their responses, in order to assure accuracy. (Lincoln & Guba, 1985).

Dependability in a qualitative design is parallel to reliability in a quantitative design, referring to the replicability of findings over time and context (Lincoln & Guba, 1985). Dependability can be addressed through the use of person and space triangulation, which was achieved in this project design by collecting data from different types of participants (ED nurses, PMHNPs), as well as from different sites (Denzin, 1989).

Confirmability refers to the accuracy of interpretation of data in representing the information provided by participants from their voice, without the inquirers influence in regard to biases, motivations, or perspectives. Similar to the strategy identified to address credibility, member checking can also be used to enhance confirmability. (Lincoln & Guba, 1985).

Transferability refers to the extent to which the findings can be extrapolated to other contexts (Lincoln & Guba, 1985). Transferability was also addressed through person and space

triangulation, which allowed for determination of cross-site consistency, and validation of data through multiple perspectives on the phenomenon (assessment and treatment of chest pain and panic disorder in the ED) (Denzin, 1989).

Limitations

There are several limitations of this evaluation project. It is uncertain as to whether complete data saturation was achieved with the small sample size of ED RN participants. Also, conducting an individual interview in addition to a small focus group interview among these participants may have influenced the quality of data collected. Another potential limitation is the choice of public settings for the interviews. Although the interviews were conducted in designated, partitioned spaces, the surrounding environments were loud, which made transcription challenging. A final potential limitation was the inclusion of yes/no questions for PMHNP participants. It is possible this restricted the depth of participant responses.

Implications for Advanced Practice and the DNP Role

Results from this evaluation indicate a need for improved screening, education, and referrals for patients who present to the ED with chest pain, and who are discharged with a diagnosis of NCCP. These improvements can address gaps in care for patients who seek services in the ED as a result of an undiagnosed, untreated panic disorder. PMHNP and DNP providers can facilitate these changes by applying theories and actions of transformational leadership. This would require involvement of stakeholders from a variety of disciplines (e.g. PMHNP, ED RNs, ED physicians, medical directors, business associates), in order to create a shared vision for changing current practices in a way that would promote positive outcomes for patients, providers, and health care organizations (Marshall, 2011).

The ED RN participants all discussed standardized education packets provided to patients at discharge, which include information about chest pain related to a MI. In consideration of the current literature available indicating high prevalence rates of panic disorder among patients with NCCP, and data obtained from this project, I recommend inclusion of standardized education about panic disorder at discharge, in addition to a list of local mental health providers who are accepting patients. PMHNP providers could review educational content to verify consistency with current evidence-based practice recommendations, including CBT, mindfulness, relaxation strategies, and antidepressant pharmacological management. PMHNP providers could also collaborate with their local EDs, and provide contact information, accepted insurance coverage, and options for scheduling an appointment, to be given to ED patients at discharge. This would require commitment from PMHNPs and ED providers to maintain their roles of such a collaboration agreement.

Directions for Future Research

In regard to screening for panic disorder in the ED, there is a notable lack of evidence available for a validated, effective screening tool. Bokma et al. (2015) conducted a study to determine feasibility and outcomes of the implementation of a screening program for panic disorder in patients who were diagnosed with NCCP in a cardiac ED. Results revealed limited feasibility due to low staff adherence rates, and high patient refusal rates for participation (Bokma et al., 2105). Further research is needed for a feasible, effective, and validated screening tool for panic disorder among patients who have NCCP in the ED. Responses from ED RN participants in this project indicated a lack of understanding about the difference between screening for panic or anxiety disorder, and asking about a relevant health history. This would be

an important consideration for future research into a potential screening tool for use by RNs in the ED setting.

PMHNP participants expressed frustration related to their experiences in treating patients with panic disorder in the outpatient setting, after having been seen and treated in the ED with benzodiazepines. Participants discussed a need for ED providers to better educate patients about the appropriate indications for benzodiazepine treatment, including use in crisis, and short term situations, as opposed to long term treatment recommended in the outpatient setting. ED RNs described occasional administration of Ativan for management of anxiety in patients receiving a work up for chest pain. Future research may include development and implementation of an inter-professional education program including ED providers (RNs, physicians), and PMHNPs, in an effort to promote consistency in care.

Plans for Dissemination

There are a variety of ways in which dissemination of research findings can be accomplished, including but not limited to presenting at conferences, sharing results in professional online forums, and publishing in relevant journals (Lusk, 2014). My first step in disseminating findings from this evaluation will be to present a summary at the University of Arizona College of Nursing, which will be open to the public. I also intend to become actively involved with a local professional group of PMHNPs, where I will have opportunities for discussing my project and findings. Given the opportunity, I would love to present my findings at a professional nursing and/or medical conference.

Results from this evaluation have revealed gaps in care for patients who present to local EDs with chest pain, and who may have an undiagnosed panic disorder. These gaps were

described within nursing protocols and processes implemented during evaluation of chest pain in EDs in Pima County, in the forms of lack of assessment, diagnosis, treatment, education, or referral to a mental health provider. Insight was obtained from PMHNP providers about the usefulness of current guidelines for diagnosis and treatment of chest pain and ACS, in identifying patients with a possible panic disorder. PMHNP providers also provided input related to recommendations for screening, education, and referrals for patients who are discharged from the ED with a diagnosis of NCCP. Recommendations for first steps in addressing these gaps in care are to provide standardized, evidence-based education about panic disorder and evidence-based treatments for the disorder, and a list of local mental health providers who are accepting patients, to be given to patients who are discharged with a diagnosis of NCCP. This should be implemented as standard protocol.

APPENDIX A:

EVIDENCE APPRAISAL TABLE

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Al-Ani, M., & Winchester, D. E. (2015). Prevalence and overlap of noncardiac conditions in the evaluation of low-risk acute chest pain patients	Quantitative - Investigation of symptoms & noncardiac conditions in patients w/ chest pain at low risk of cardiac disease	None specified	Cross-sectional. Analysis of data from prospective registry of patients w/ low cardiovascular risk, evaluated in dedicated chest pain evaluation center	195	Patient Health Questionnaire (PHQ-9) for depression; Generalized Anxiety Disorder Questionnaire (GAD-7) for anxiety; GERD symptom severity questionnaire for gastroesophageal reflux disorder; chest pain characteristics recorded on 10-point scale	Depression prevalence = 34%; anxiety prevalence = 30%.; GERD = 44%, all of at least moderate severity. 32.5% with two or more conditions. Weak correlation between noncardiac conditions & severity and frequency of angina. Noncardiac conditions were common among patients w/out evidence of CAD. Depression & anxiety present in in ~1/3 of patients w/ <20% undergoing treatment

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Foldes-Busque, G., Fleet, R. P., Denis, I., Poitras, J., Chauny, J. M., Diodati, J. G., & Marchand, A. (2015). Nonfearful panic attacks in patients with noncardiac chest pain	Quantitative - Prevalence & characteristics of NFPA & their consequences on panic identification & access to MH services in Pt w/ NCCP	None specified	Cross-sectional	339 pt w/ NCCP & panic attacks	General brief interview followed by Anxiety Disorders Interview Schedule for DSM-IV	39% of pts w/ panic attacks among those w/ NCCP reported NFPA. Psych morbidity lower in Pts w/ NFPA than typical panic attacks. 39% of sample met criteria for NFPA, 61% presented w/ TPA. Rate of panic attack identification by emergency physicians (NFPA = 5.3%; TPA = 8.7%)
Ingram, S. J., McKee, G., Quirke, M. B., Kelly, N., & Moloney, A. (2017). Discharge of non-acute coronary syndrome chest pain patients from emergency care to an advanced nurse practitioner-led chest pain clinic: A cross-sectional study of referral source and	Quantitative - What are the outcomes of non-ACS patients discharged from ED to advanced cardiology nurse-led CP clinic, & comparisons by referral type?	None specified	1 site cross-sectional. Data extracted from case notes from patients attending CP clinic over 2 years	1041	Accelerated Diagnostic Protocol (ADP) to Rule in/out Stable Coronary Artery Disease (SCAD)	NCCP final diagnosis in 76% of the sample. Most common: NCCP w/ no obvious cause, GI chest pain, musculoskeletal CP, and other (arrhythmia & hypertension)

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
final diagnosis						
Webster, R., Thompson, A. R., & Norman, P. (2015). 'Everything's fine, so why does it happen?' A qualitative investigation of patients' perceptions of noncardiac chest pain	Qualitative - Patients perceptions & experiences of NCCP	Common sense model	Purposive sampling. Thematic analysis w/ semi-structured interviews	7	Semi-structured interview schedule	Seven themes identified. Most participants perceived psychological factors to play a causal role, but lack understanding in regard to cause
Leite, L., Baptista, R., Leitao, J., Cochicho, J., Breda, F., Elvas, L., . . . Costa, J. N. (2015). Chest pain in emergency department: Risk stratification with Manchester triage system and HEART score	Quantitative – Description of patient population who present to the ED w/ CP, characterization of subgroup of patients w/ ACS, & prognostic value of Manchester Triage system & HEART score	None specified	Retrospective cohort study. Random sampling.	233; 174 in analysis of HEART score data ; 168 needed to detect differences w/ 80% power	Manchester Triage System (structured questionnaire); HEART score (retrospectively applied); data recorded in ALERT®; 6 week follow-up via EHR & phone calls	Most common final diagnosis = NSCP (36.9%), followed by ACS (9.4%), anxiety-depressive disorder (9.0%), & respiratory infection. HEART score had good discriminatory power to predict probability of MACE; Manchester Triage system

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
						correctly prioritized Pts w/ most severe causes
Mahler, S. A., Riley, R. F., Hiestand, B. C., Russell, G. B., Hoekstra, J. W., Lefebvre, C. W., . . . Miller, C. D. (2015). The HEART pathway randomized trial: Identifying emergency department patients with acute chest pain for early discharge	Quantitative - Comparison of HEART Pathway w/ usual care in identifying patients with acute chest pain for early discharge	None specified	Randomized controlled trial; single-center trial	282	HEART score and Troponin measures at 0 and 3 hours (experimental group); American College of Cardiology/American Heart Association guidelines (usual care); outcomes assessed at 30 days via phone interview (validated, scripted dialogue) & EHR review; Research Electronic Data Capture templates	HEART pathway: 30-day objective cardiac testing rate = 56.7% compared to 68.8%; early discharge occurrence = 39.7% compared to 18.4%; median LOS = 9.9 hours compared to 21.9 hours; 2.7% cardiac-related repeat ED visits compared to 4.3%. No patients identified for early discharge had MACE w/in 30 days
Foldes-Busque, G., Denis, I., Poitras, J., Fleet, R. P., Archambault, P., & Dionne, C. E. (2013). A prospective cohort study to refine and validate the panic screening score for	Quantitative – Will a refined, validated panic screening score (PSS) tool increase the identification of panic-like anxiety in patients who present to the ED w/ unexplained CP?	Clinical decision rules; Stiell and Wells criteria	Prospective cohort study protocol	Recruitment of 3,000 participants	Eligibility evaluation form; PSS; follow-up phone interview; ADIS-IV; Additional predictors for the refinement phase; Autonomic Nervous System Questionnaire; patient health questionnaire-15; modified version of the Life Events	Study will result in a screening tool to be used to assess for panic like anxiety in patients who present to the ED w/unspecified CP, in order to facilitate referrals to mental health & primary

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
identifying panic attacks associated with unexplained chest pain in the emergency department.					Stress Scale; modified version of the Ottawa Acceptability of Decision Rules Instrument	care providers for further assessment, diagnosis & treatment
Foldes-Busque, G., Hamel, S., Belleville, G., Fleet, R., Poitras, J., Chauny, J. M., . . . Marchand, A. (2016). Factors associated with pain level in non-cardiac chest pain patients with comorbid panic disorder.	Quantitative – What is the role of psychological factors common to NCCP & PD in predicting CP levels in patients with both conditions?	Biopsychosocial model	Mixed methods: Cross-sectional; prospective; randomized cohort	66	Demographic & medical interview; ADIS-IV; PAS; short-form McGill pain questionnaire, chest pain version; cardiac anxiety questionnaire	Only heart-focused fear, & attention for cardiac sensations were assoc. w/ NCCP intensity; only attention for cardiac sensations was statistically significant.
Greenslade, J. H., Hawkins, T., Parsonage, W., & Cullen, L. (2017). Panic disorder in patients presenting to the emergency department with chest pain: Prevalence and presenting symptoms.	Quantitative – What is the prevalence of PD in patients who present to the ED w/ complaints of CP? What are the characteristics of patients w/ PD in terms of presenting symptoms, risk factors, medical	Not specified	Observational	338	Patient symptoms, risk factors, past history & current medications; verbatim report of whether they had experienced a stressful or anxiety-provoking event prior to presenting to ED; Mini-International Neuropsychiatric Interview	Prevalence of PD was low (5.6%, CI: 3.4-8.6%)

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
	history and MACE?					
Marchand, A., Belleville, G., Fleet, R., Dupuis, G., Bacon, S. L., Poitras, J., . . . Lavoie, K. L. (2012). Treatment of panic in chest pain patients from emergency departments: Efficacy of different interventions focusing on panic management	Quantitative – Hypothesis: Two brief cognitive behavioral therapy (CBT) interventions, and paroxetine are more effective than supportive usual care for individuals with PD who present to the ED w/ NCCP	Not specified	Quasi-experimental	71	Anxiety Disorders Interview Schedule for DSM-IV (ADIS); Panic and Agoraphobia Scale (PAS), Agoraphobic Cognitions Questionnaire (ACQ), Anxiety Severity Index (ASI), Body Sensations Questionnaire (BSQ), Spielberger State-Trait Anxiety Inventory (STAI), Beck Depression Inventory-Revised (BDI-II), McGill Pain Questionnaire (MPQ), Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36)	For PD severity based on ADIS: Time effect significant across all 4 conditions; no significance for condition; significance for condition x time – treatments more effective than supportive usual care

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Bokma, W. A., Batelaan, N. M., Beek, A. M., Boenink, A. D., Smit, J. H., & van Balkom, A. J. (2015). Feasibility and outcome of the implementation of a screening program for panic disorder in noncardiac chest pain patients in cardiac emergency department routine care	Quantitative - What is the feasibility & outcome of implementation of a screening program for classifying PD in patients w/ NCCP, as part of routine cardiac ED care?	None specified. Description indicates plan, do, study, act cycles	Cohort study. Participants scoring > 8 on HADS contacted by psych dept. for CIDI, administered via phone w/in 2 weeks post-discharge. Barrier analyses during pilot phase & implementation period 51 initially screened using Hospital Anxiety & Depression Scale (HADS); those scoring above cutoff contacted by psych dept to conduct CIDI	12	Hospital Anxiety and Depression Scale (HADS); Composite International Diagnostic Interview (CIDI)	Eight patients diagnosed w/ psychiatric disorder, two of which were PD. Limited feasibility – low staff adherence rates (23.8% offer rate for screening of eligible patients) & high patient refusal rates

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Napoli, A. M., Baird, J., Tran, S., & Wang, J. (2017). Low adverse event rates but high ED utilization in CP patients treated in an ED observation unit	Quantitative - What is the prevalence of return visits to the ED among patients previously admitted to an ED CPU, & what are the patient characteristics and health risk factors associated with return visits?	None specified	Prospective cohort study. Patients admitted to CPU followed during stay & subsequently over 1 year. Return visits categorized as MACE, cardiac non-MACE, or noncardiac. Blinded advanced practice providers recorded relevant initial visit data. Repeat visits identified through EMR review by 2 blinded, trained chart abstractors	2139	Thrombolysis in Myocardial Infarction (TIMI) risk prediction score; Diamond & Forrester (D&F) score for likelihood of CAD	36.2% of CPU Pts returned to ED w/in 1 yr. vs. 5.4% of all ED Pts. Overall incidence of MACE at 1 year = 0.5%. Patients who had stress test on index visit less likely to return. Patients who smoked, had diabetes, Hispanic or African American more likely to return. 1/3 return for CP

Notes. PD = panic disorder. NCCP = noncardiac chest pain. ACS = acute coronary syndrome. CPU = chest pain observation unit. MACE = major adverse cardiac event. CP = chest pain. NSCP = non-specific chest pain

APPENDIX B:

FOCUS GROUP QUESTIONS FOR NURSES IN THE ED

FOCUS GROUP QUESTIONS FOR NURSES IN THE ED

- What is the triage protocol for patients who present with complaints of chest pain?
- What are the nursing processes/interventions implemented to rule out acute coronary syndrome (ACS)?
- Who are the primary providers involved in assessment, and treatment for patients with complaints of chest pain?
- How is risk level for ACS determined?
- What is the discharge plan for patients identified as low risk for ACS?
- Are patients screened for anxiety or panic disorder? If so, what screening tool is used?
- What is the most common discharge diagnosis in your experience?
- What education is provided at discharge?
- Are any referrals made, specifically to a mental health provider?

APPENDIX C:

FOCUS GROUP QUESTIONS FOR PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONERS

FOCUS GROUP QUESTIONS FOR PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONERS

- Do you think these algorithms provide sufficient guidance on giving consideration to a possible diagnosis of panic disorder?

- At what point would you recommend screening for panic disorder (or other anxiety disorder), if at all?

- What discharge education do you think should be provided to patients who are given a diagnosis of noncardiac chest pain?

- Do you think patients who are discharged with a diagnosis of NCCP should be given, or would benefit from, a referral to a mental health provider?

- What is your professional experience with patients who have panic disorder (or other anxiety disorder) in having previously sought treatment in an ED for complaints of chest pain?

APPENDIX D:

W.K. KELLOGG FOUNDATION LOGIC MODEL TEMPLATE – COMMON NURSING PROTOCOLS AND PROCESSES IMPLEMENTED IN THE ED DURING EVALUATION AND TREATMENT OF CHEST PAIN

Resources/Inputs	Activities	Outputs	Outcomes	Impact
Patient w/ cc: chest pain RNs ED Physicians Paramedics EHR Cardiology Pharmacists Techs	EKG within 5-7 minutes Triage Intake Establish IV access Obtain vital signs Blood work (troponins) Administer aspirin, nitro, & occasionally morphine Ask questions about CP character, quality, onset, what makes it better, what happened to make you come in today Observe appearance Document triage & additional notes	EKG results read & signed off by physician within 10 minutes Troponin levels *Rule in/out STEMI* *Determination of ACS risk level* Identification & documentation of previous medical conditions, safe at home screen, suicide screen, homicide screen Additional questions based on personal practice & inclinations Administration of Ativan	Hospitalist assignment Cardiology consult Hospital Admission, observation, or discharge Golden ticket for outpatient cardiology appointment Referral to PCP Discharge education – s/s of AMI to be aware of & return if experiencing, standardized CP education, follow-up w/ PCP Discharge diagnosis – Chest pain, unclear etiology; chest pain of unknown origin; panic disorder; stress-related Suicide/homicide risk identification – possible psychiatric evaluation; possible case management involvement (resource list) Safe at home risk identification – possible psychiatric evaluation; possible case management involvement (resource list)	Maintain chest pain accreditation Unresolved complaint

Notes. Adapted from W.K. Kellogg foundation logic model development guide. Italics denote non-nursing activities. Cc = chief complaint. EHR = electronic health record. CP = chest pain. EKG = electrocardiography. ACS = acute coronary syndrome. STEMI = ST elevated myocardial infarction. PCP = primary care provider.

APPENDIX E:

W.K. KELLOGG FOUNDATION LOGIC MODEL TEMPLATE – PMHNP PERCEPTIONS AND RECOMMENDATIONS: EVALUATION AND TREATMENT OF PANIC DISORDER IN THE ED

Resources/Inputs	Activities	Outputs	Outcomes	Impact
Patients seeking treatment in ED for CP ED physicians	Cardiac/medical workup (EKG) Administration of Ativan, xanax *Assess trauma history, stressors*	Rule in/out AMI Rule in/out other medical diagnosis *Consider panic disorder as differential diagnosis* Identification of concurrent substance abuse	Referral to mental health provider Discharge with reassurance of no medical cause Patients seeking benzodiazepines from mental health provider for treatment *List of mental health providers in the community who are accepting patients* *Education about a panic attack & non-benzodiazepine treatment (CBT, mindfulness, skills [evidence based treatments])* Dual diagnosis & treatment *ED psychiatric case manager, &/or social worker consult*	Lack of understanding about a panic attack, and/or outpatient treatment Reassurance about lack of cardiac etiology *Increased access to mental health treatment* *Awareness about diagnosis, non-benzodiazepine treatment options* *Instilled hope* *Affirmation from multiple health care professionals* *Reduction of repeat ED visits* Repeatedly seeking treatment in the ED (specifically, for benzodiazepines)

Notes. Adapted from W.K. Kellogg foundation logic model development guide. EKG = electrocardiography. AMI = acute myocardial infarction. CBT = cognitive behavioral therapy. Italics denote recommendations.

APPENDIX F:

THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Research
Office for Research & Discovery

Human Subjects
Protection Program

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Date:	August 23, 2017
Principal Investigator:	Jodi Lynn Bleth
Protocol Number:	1708742756
Protocol Title:	Nursing Assessment and Treatment of Panic Disorder in the Emergency Department: An Evaluation of Protocols and Processes
Level of Review:	Exempt
Determination:	Approved

Documents Reviewed Concurrently:

Data Collection Tools: *Bleth_DNP Project - Interview Questions.docx*
HSPP Forms/Correspondence: *Bleth-IRB F-200- Revised-Final.doc*
HSPP Forms/Correspondence: *Bleth - UA-Verification of Human Subjects Training-1.doc*
HSPP Forms/Correspondence: *Signature page.pdf*
Informed Consent/PHI Forms: *Bleth-DNP Project Consent form-PMHNP.doc*
Informed Consent/PHI Forms: *Bleth-DNP Project Consent form-PMHNP.pdf*
Informed Consent/PHI Forms: *Bleth-DNP Project Consent form-RN.doc*
Informed Consent/PHI Forms: *Bleth-DNP Project Consent form-RN.pdf*
Participant Material: *Bleth-DNP Project - List of MH Resources.docx*
Participant Material: *Bleth-DNP Project - List of MH Resources.docx*
Recruitment Material: *Bleth - DNP Project - Key Informant e-mail script.docx*
Recruitment Material: *Bleth - DNP Project - Potential Participant e-mail script.docx*
Recruitment Material: *Bleth-DNP Project Recruitment Flyer - PMHNP-Revised 8-8-17.docx*
Recruitment Material: *Bleth-DNP Project Recruitment Flyer - RN- Revised 8-8-17.docx*

This submission meets the criteria for exemption under 45 CFR 46.101(b). This project has been reviewed and approved by an IRB Chair or designee.

- The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).
- All research procedures should be conducted according to the approved protocol and the policies and guidance of the IRB.
- Exempt projects do not have a continuing review requirement.
- Amendments to exempt projects that change the nature of the project should be submitted to the Human Subjects Protection Program (HSPP) for a new determination. See the Guidance on Exempt Research information on changes that affect the determination of exemption. Please contact the HSPP to consult on whether the proposed changes need further review.
- You should report any unanticipated problems involving risks to the participants or others to the IRB.

- All documents referenced in this submission have been reviewed and approved. Documents are filed with the HSPP Office. If subjects will be consented, the approved consent(s) are attached to the approval notification from the HSPP Office.

REFERENCES

Al-Ani, M., & Winchester, D. E. (2015). Prevalence and overlap of noncardiac conditions in the evaluation of low-risk acute chest pain patients. *Critical Pathways in Cardiology, 14*(3), 97-102. doi:10.1097/HPC.0000000000000050

American Nurses Credentialing Center. (2012). *2011 Psychiatric-mental health nurse practitioner role delineation study*. Retrieved from http://www.nursecredentialing.org/Certification/NurseSpecialties/FamilyNP/RELATED-LINKS/FamilyNP-2011RDS.pdf

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: American Psychiatric Publishing.

Bokma, W. A., Batelaan, N. M., Beek, A. M., Boenink, A. D., Smit, J. H., & van Balkom, A. J. (2015). Feasibility and outcome of the implementation of a screening program for panic disorder in noncardiac chest pain patients in cardiac emergency department routine care. *General Hospital Psychiatry, 37*(5), 485-487. doi:10.1016/j.genhosppsych.2015.06.005

Coley, K. C., Saul, M. I., & Seybert, A. L. (2009). Economic burden of not recognizing panic disorder in the emergency department. *The Journal of Emergency Medicine, 36*(1), 3-7. doi:http://dx.doi.org.ezproxy3.library.arizona.edu/10.1016/j.jemermed.2007.06.002

Denzin, N.K. (1989). *The research act* (3rd ed.). New York, NY: McGraw-Hill.

DiCenso, Guyatt, & Ciliska. (2005). *Evidence-Based nursing: A guide to clinical practice*. St. Louis, MO: Elsevier Mosby.

Foldes-Busque, G., Denis, I., Poitras, J., Fleet, R. P., Archambault, P., & Dionne, C. E. (2013). A prospective cohort study to refine and validate the panic screening score for identifying panic attacks associated with unexplained chest pain in the emergency department. *BMJ Open, 3*(10), e003877-2013-003877. doi:10.1136/bmjopen-2013-003877

Foldes-Busque, G., Fleet, R. P., Denis, I., Poitras, J., Chauny, J. M., Diodati, J. G., & Marchand, A. (2015). Nonfearful panic attacks in patients with noncardiac chest pain. *Psychosomatics, 56*(5), 513-520. doi:10.1016/j.psym.2014.07.005

Foldes-Busque, G., Hamel, S., Belleville, G., Fleet, R., Poitras, J., Chauny, J. M., . . . Marchand, A. (2016). Factors associated with pain level in non-cardiac chest pain patients with comorbid panic disorder. *BioPsychoSocial Medicine, 10*, 30. doi:10.1186/s13030-016-0081-5

Greenslade, J. H., Hawkins, T., Parsonage, W., & Cullen, L. (2017). Panic disorder in patients presenting to the emergency department with chest pain: Prevalence and presenting symptoms. *Heart, Lung & Circulation,* doi:S1443-9506(17)30063-X

Ingram, S. J., McKee, G., Quirke, M. B., Kelly, N., & Moloney, A. (2017). Discharge of non-acute coronary syndrome chest pain patients from emergency care to an advanced nurse practitioner-led chest pain clinic: A cross-sectional study of referral source and final diagnosis. *The Journal of Cardiovascular Nursing, 32*(2), E1-E8. doi:10.1097/JCN.0000000000000374

Kaiser, K. (2009). Protecting respondent confidentiality in qualitative research. *Qualitative Health Research, 19(*11), 1632-1641. doi:10.1177/1049732309350879

Kisely, S. R., Campbell, L. A., Yelland, M. J., & Paydar, A. (2015). Psychological interventions for symptomatic management of non-specific chest pain in patients with normal coronary anatomy. *Cochrane Database of Systematic Reviews.* doi:10.1002/14651858.CD004101.pub5

Leite, L., Baptista, R., Leitao, J., Cochicho, J., Breda, F., Elvas, L., . . . Costa, J. N. (2015). Chest pain in the emergency department: Risk stratification with Manchester triage system and HEART score. *BMC Cardiovascular Disorders, 15*, 48-015-0049-6. doi:10.1186/s12872-015-0049-6

Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage.

Lusk, P. (2014). Clinical scholarship: Let's share what we are doing in practice to improve outcomes. *Journal of Child and Adolescent Psychiatric Nursing: Official Publication of the Association of Child and Adolescent Psychiatric Nurses, Inc, 27*(1), 1-2. doi:10.1111/jcap.12068

Mahler, S. A., Riley, R. F., Hiestand, B. C., Russell, G. B., Hoekstra, J. W., Lefebvre, C. W., . . . Miller, C. D. (2015). The HEART pathway randomized trial: Identifying emergency department patients with acute chest pain for early discharge. *Circulation Cardiovascular Quality and Outcomes, 8*(2), 195-203. doi:10.1161/CIRCOUTCOMES.114.001384

Marchand, A., Belleville, G., Fleet, R., Dupuis, G., Bacon, S. L., Poitras, J., . . . Lavoie, K. L. (2012). Treatment of panic in chest pain patients from emergency departments: Efficacy of different interventions focusing on panic management. *General Hospital Psychiatry, 34*(6), 671-680. doi:10.1016/j.genhosppsych.2012.06.011

Marshall, E.S. (2011). *Transformational leadership in nursing: From expert clinician to influential leader.* New York: Springer Publishing Company.

Medical Dictionary. (2009). *The free dictionary by Farlex*. Farlex, Inc. Retrieved from https://medical-dictionary.thefreedictionary.com/

Napoli, A. M., Baird, J., Tran, S., & Wang, J. (2017). Low adverse event rates but high emergency department utilization in chest pain patients treated in an emergency department observation unit. *Critical Pathways in Cardiology, 16*(1), 15-21. doi:10.1097/HPC.0000000000000099

National Institute for Healthcare and Excellence. (2011). *Generalised anxiety disorder and panic disorder in adults: Management*. Retrieved from https://www.nice.org.uk/guidance/cg113/chapter/1-Guidance#stepped-care-for-people-with-panic-disorder

National Guideline Clearinghouse. (2012). *Diagnosis and treatment of chest pain and acute coronary syndrome (ACS)*. Retrieved from https://www.guideline.gov/summaries/summary/39320/Diagnosis-and-treatment-of-chest-pain-and-acute-coronary-syndrome-ACS

Orb, A., Eisenhauer, L., & Wynaden, D. (2001). Ethics in qualitative research. *Journal of Nursing Scholarship, 33(1)*, 93-96. Retrieved from http://www.columbia.edu/~mvp19/RMC/M5/QualEthics.pdf

Polit, D.F., & Beck, C.T. (2011). *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.). Philadelphia: Lippincott Williams & Wilkins.

Schey, R., Villarreal, A., & Fass. (2007). Noncardiac chest pain: Current treatment. *Gastroenterology & Hepatology, 3*(4), 255-282. PMCID: PMC3099272

Thomas, D.R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation, 27*(2), 237-246. doi: 10.1177/1098214005283748

U.S. National Library of Medicine. (2017). *Medline plus: Chest pain*. Retrieved from https://medlineplus.gov/ency/article/003079.htm

Webster, R., Thompson, A. R., & Norman, P. (2015). 'Everything's fine, so why does it happen?' A qualitative investigation of patients' perceptions of noncardiac chest pain. *Journal of Clinical Nursing, 24*(13-14), 1936-1945. doi:10.1111/jocn.12841

W.K. Kellogg Foundation. (2004). *W.K. Kellogg foundation logic model development guide*. Retrieved from http://www.smartgivers.org/uploads/logicmodelguidepdf.pdf