Spring 2022

The Effectiveness of an APRN-led Pain Service on Patient Satisfaction Scores: A Retrospective Analysis

Maripatricia Welz-Bosna
West Chester University of Pennsylvania

The Effectiveness of an APRN-Led Pain Service on Patient Satisfaction Scores: A Retrospective Analysis

A Capstone/DNP Project

Presented to the Faculty of the

College of Health Science & Department of Nursing

West Chester University

West Chester, Pennsylvania

In Partial Fulfillment of the Requirements for the

Degree of

Doctor of Nursing Practice

By

Maripatricia Welz-Bosna

May 2022

Dedication

For Tristan who has shown me the true meaning of challenging work and what can be accomplished, and Alex who has never in all these years said, “Enough.”

Acknowledgments

I am grateful for the support, guidance, and expertise of all the faculty members of the College of Health Sciences Department of Nursing, especially Dr. Jacquelyn Owens DNP, CRNP, Cheryl Monturo PhD, ACNP, Cheryl Schlamb DNP, CRNP, and Veronica Wilbur Ph.D., ARNP

I would also like to mention great thanks to Barbara Romig DNP, RN, and Deborah Swavely DNP, RN, from Tower Health for continued support and for allowing this DNP QI project to take place.

It has been an honor.

Abstract

This quality improvement (QI) project examined if the implementation of an Advanced Practice Registered Nurse (APRN) led consult pain service, was able to improve patient satisfaction measured on the HCAHPS and Press Ganey pain satisfaction scores. A one-way ANOVA analysis was used to examine if mean outcome scores varied at a statistically significant level ($p<.05$) by year (2018, 2019, 2020). Bonferroni Post Hoc tests reflecting *How Often Staff Talk About Pain* by year using the dependent variable Top Box Score, indicated that the mean score for year 2020 (M=74.10, SD=17.45) was significantly higher than year 2018 (M=63.22). The mean score for year 2019 (M=64.62, SD=22.80) did not differ significantly from the other two years. Bivariate analysis indicated that Press Ganey Scores reflecting *Staff Talk About Pain Treatment* did not vary significantly by year, $F(2, 445) = .41$, $p=.66$. Results from this QI project and the effectiveness of an APRN-led pain service on patient satisfaction scores are inconclusive, and further research is needed. Pain is complex, and a patient's satisfaction with pain is never straightforward. The effectiveness of an APRN-led pain service on patient satisfaction remains under-researched and in need of more methodological evaluation. APRNs need to focus on multidimensional validated outcome measures, which can measure our effectiveness in the management of patients with pain.

Keywords: Patient Satisfaction, Pain, HCAHPS, Advanced Practice Registered Nurse (APRN), Effectiveness

Table of Contents

List of Tables

List of Figures

The Effectiveness of an APRN-Led Pain Service on Patient Satisfaction Scores: A Retrospective Analysis

Chapter 1

Introduction and Background

The Institute of Medicine (IOM) now considers chronic or persistent pain a disease, which can pose significant adverse effects on a person's physical and emotional health, employability, and quality of life (Institute of Medicine, 2011). In turn, patients often experience increased depression, anxiety, social isolation, financial hardship, and suffering. Parallel to this crisis, American views of pain control shifted over the past twenty years. Pain became the fifth vital sign, with total elimination of pain becoming an expectation. When not achieved, inadequate pain control may be viewed as a failure of providers to treat appropriately, leading to poor patient satisfaction and possible diminished reimbursement. The high occurrence of pain in hospitalized patients and the variations in pain management throughout the United States healthcare system result in less than adequate pain control for many patients (Herzig et al., 2018).

Along with poor post-operative pain, many surgical patients report high rates of adverse events, including nausea, constipation, ileus, urinary retention, respiratory depression, and delirium (Hyland et al., 2021). These adverse events reflect pain's subjective and often under-managed nature within acute hospital settings. Patients may then experience prolonged recovery times, delayed discharge, reduced quality of life, frequent readmission, increased risk of post-surgical pain syndrome, and for those taking opioids, opioid dependency (Gordon et al., 2010). Hospital providers, including APRNs, are often confronted with patients who have a history of chronic pain requiring hospitalization for an acute medical or surgical procedure. For many providers, these patients present complex management challenges and compound

frustration. Many specialty service providers such as Trauma, Orthopedics, and Hospitalists verbalize a lack of knowledge related to assessing complicated pain patients and medication management, specifically opioids, due to inadequate pain education in medical and nursing schools. This translates to inconsistent pain assessment and management, nursing and provider bias, and patient marginalization. This feeling of not being understood or heard can then be depicted in lower-than-average outcomes and patient satisfaction scores.

Across the United States, patient satisfaction has had an increasingly significant role in the quality-of-care reforms, with the delivery of healthcare closely tied with a patient's experience of their care. Inadequate treatment of pain not only diminishes a patient's experience of care but also decreases potential revenues appreciated in the Hospital Value-Based Purchasing program (Gupta, 2014). In 2002 the Agency for Healthcare Research and Quality (AHRQ) partnered with the Centers for Medicare and Medicaid Services (CMS) to create a standardized survey instrument and data collection methodology for measuring the patient's perspective on care received while hospitalized known as Hospital Consumer Assessment of Healthcare Providers & Systems (HCAHPS). With implementation, in March 2008, for the first time, hospitals could compare themselves against all other U.S. hospitals, which the public could see. This program links a portion of a hospital's payments from CMS to performance on a set of quality measures, including patient satisfaction related to pain management (Gupta, 2014). Although patient satisfaction with pain management has increased since the first set of HCAHPS data was released in 2008, pain-related patient satisfaction scores have continually trailed behind other HCAHPS dimensions, with wide variations in scores across hospital systems (Gupta, 2014).

Hospital Consumer Assessment of Healthcare Providers & Systems scores reflect how an organization performs. To understand the ranking and specific program achievements, hospitals must look at past historical performance scores against trending performance scores. Comparing these scores then provides insight into whether performance has improved, remained the same, or worsened. In 2013 the project site leadership conducted a multifaceted needs' assessment due to lower-than-average Press Ganey and HCAHPS pain satisfaction scores. The Pain Committee's recommendations included (a) to improve pain care through a dedicated APRN with pain specialization, (b) to create education programs for providers and nurses to help identify patient groups at risk for poor pain control, and (c) to increase patient pain management satisfaction on primary outcome Press Ganey and HCAHPS pain scores. In addition, a gap was identified addressing The Joint Commission requirement that complex pain patients require multidisciplinary pain care. A critical access hospital must provide information to staff and licensed independent practitioners on available services for consultation and referral of patients with complex pain management (LD.04.03.13, EP4 and PC.01.02.07, EP3) (The Joint Commission, 2018).

Advanced Practice Registered Nurses (APRNs) are nurses with advanced education, practice, and certification focused on direct care of individuals (NCSBN, 2008.) APRNs who specialize in pain management have additional education with certification in patient management and believe adequately controlled pain is a fundamental human right and an ethical principle, which requires multimodal patient-focused care and informed evidence. Though evidence from studies that the provision of a dedicated APRN to improve pain care can improve clinical practice behaviors of staff, reduce patient pain rating, increase functionality, and for some reduce re-hospitalization, the effectiveness of an APRN-led pain service on patient

satisfaction remains under-researched and in need of methodological evaluation (Courtenay & Carey, 2008). APRN performance remains dependent upon a medical model of care with a foundation based on revenue generated care, and productivity. From a public health perspective, pain is one of the most common reasons U.S. adults seek medical care, either within a hospital system or community care. Today, pain is more prevalent and accounts for more direct costs to the U.S. healthcare system than heart disease, cancer, or diabetes and is a public healthcare crisis. A patient experiencing acute or chronic pain requires assessment and reassessment, education, medication management, the transition of care, and advocacy; all of which can be difficult to capture under this standard medical billing model. The development of an inpatient pain service dates back to 1988 after realizing that post-operative pain required a new organizational structure, not new techniques, or medications for pain control (Stamer et al., 2020). The Acute Pain Service (APS) can be found throughout many U.S. hospitals, though the exact amount is unknown. Services vary depending on organizational structure, processes, quality, and personnel, with many hospital systems finding the formation of a multidisciplinary team unrealistic (Stamer et al., 2020). Challenges for APRNs in pain management lie in developing an organizational system that applies current knowledge to ensure safe and effective acute, chronic, and acute-on-chronic pain care in medically complex patients, with a focus on outcome measurement (DeVore et al., 2017). APRNs practicing pain management are in a unique position to improve pain-related safety, along with evidence-based practice and patient satisfaction. Often acting as conduits between patients and physicians, with exceptional communication and problem-solving skills. We must find ways outside this medical model to measure effectiveness within our practice areas. Therefore, the purpose of this evidence-based quality improvement project is to evaluate the effectiveness of an APRN-led pain service within a large acute care hospital on

HCAHPS pain satisfaction scores and ascertain if implementation of a similar APRN-led pain service may be effective within a similar healthcare system.

Chapter 2

Literature Review

Chapter Two includes a description of the conceptual framework and review of the literature for this evidence-based quality improvement (QI) project, the implementation of an Advanced Practice Registered Nurse (APRN) led consult hospital pain service, and the effects on Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) pain satisfaction scores. This review is divided into the following sections: a) Conceptual Framework, b) Search Strategy, c) Methodological Quality, d) APRN Role in Pain Management, e) Education, f) Summery of Research Gaps.

Conceptual Framework

The Participatory, Evidence-based, Patient-centered process for Advanced practice nurse (APN) role development, implementation, and evaluation (PEPPA) is based on the principals of participatory action research (PAR) (Bryant-Lukosius & DiCenso, 2004). PAR utilizes systematic inquiry with principals to include enhanced contributions of nurses, patients, population-to-practitioner ratio, unmeant patient needs along with patient satisfaction with care (Bryant-Lukosius & DiCenso, 2004). PEPPA utilizes a goal-directed and outcome-based process with a focus on addressing patient health needs through the delivery of coordinated care and collaborative relationships among healthcare providers and systems (Bryant-Kosius & DiCenso, 2004). Incorporating a structure-process-outcome evaluation like Donabedian's theory allows for outcome evaluation and quality of care of the APRN role. One goal of this framework is to help APRNs overcome role implementation barriers within organizations or systems. APRN roles have often been implemented as a solution to a specific healthcare issue, or population issue

rather than from formal systematic needs assessment and may lack clearly defined APRN roles (Boyko et al., 2016; Bryant-Lukosius & DiCenso, 2004).

The PEPPA framework comprises nine defined steps in effectively assessing the need for a new model of care (see Appendix A). It provides structure including development, implementation, evaluation of an APRN, and the new model of care in which the APRN may be placed or in this DNP student case, helped initiate. Various outcomes may be evaluated based on the patient's perspective, the APRN, other collaborating providers, or the organization or health system in which a new model of care is initiated (Boyko et al., 2016). The PEEPA framework aligned well with this DNP student's research question with the primary aim to evaluate the effectiveness of an APRN-led hospital consultation pain service on pain satisfaction scores within a southeastern acute care hospital system. This framework uses a health-oriented, patient-focused, and stakeholder-driven process to help overcome obstacles while implementing a new APRN role or model of care (Bryant-Lukosius & DiCenso, 2004). PEPPA places emphasis on the APRN and helps provide data to stakeholders on the quality of care provided by advanced nursing providers, along with promoting understanding of the broad range of skills APRNs have within our specialty areas.

Search Strategy

Evidence was collected using PubMed, CINAHL, MEDLINE, EBSCO, Cochran, and Trip databases. The initial search included articles published 2015-2021, later expanded to include 2010-2021. Search terms included: *advanced practice registered nurse-led pain service, nurse practitioner-led pain service, hospital pain service, consult pain service, nurse-led pain service, implementation of advanced practice-led pain, patient satisfaction, nurse practitioner*

"AND" patient satisfaction scores, advanced registered nurse "AND" HCAHPS, patient satisfaction measurement, APRN "AND" acute pain care "AND" pain program.

In addition, this DNP student reviewed guidelines and information from the American Pain Society (APS), The Centers for Disease Control (CDC), and the American Society of Pain Management Nursing (ASPMN). With guidance from West Chester University (WCU) research librarian, Web of Science was utilized to explore reference lists of twenty review articles identified.

The above search terms resulted in a range of 6 to 26,000 articles, few related to an APRN-led consult pain service. As more searches were conducted, additional search terms included the use of MeSH terms, "role*" AND "APRN" OR "NP," "in hospital," "pain."*

One thousand four hundred ten publications were examined, with 1200 eliminated as irrelevant. These were narrowed down further by applying exclusion criteria such as APRN-led programs unrelated to pain or pediatric pain, resulting in 210 articles. Inclusion criteria focused on themes related to implementing an APRN-led pain service, HCAHPS pain scores, and adults, leading to excluding an additional 194 articles. The last search yielded 22 articles, with 16 publications determined to be used for this literature review. Selections were chosen based on a careful review of outcomes related to satisfaction scores related to pain and relevance to APRN-led pain services or programs.

Methodological Quality

The Melnyk Pyramid Levels of Evidence was used to determine the hierarchy of evidence for selected publications, with the grading system adapted from Melnyk & Fineout-Overhault's Model (Mazurek-Melnyk & Fineout-Overholt, 2019). This model assigns an article to one of seven grade levels, with publications ranked highest levels of evidence Level I

to the lowest level of evidence Level VII. Results identified three randomized controlled trials (RCT) (Level II), two controlled studies without randomization (Level III), two case-controlled/cohort studies (Level IV), five studies that involved QI or descriptive project (Level VI), and four articles consisting of reports/consensus statements based on expert opinion (Level VII). Study settings included hospitals, one hospital pain-clinic, and two articles related to care within skilled nursing facilities

Review of the Literature

APRN Role in Pain Management

The role of an APRN is to improve the quality of care of a specific population of patients, whether through individualized clinical follow-up, evidence-based practice, patient teaching, or promoting the continuous teaching of nurses (McNamara et al., 2009). Pain is a complex subjective experience that requires a multidisciplinary approach to care and is challenging to manage. Presently, primary evidence has been focused on outcomes measurement related to pharmacotherapies or interventional management of pain. Evidence-based outcomes remain poor related to organizational leadership, clinical management, and individual patient pain management. A primary recommendation has been to improve the service delivery and access to care of patients with pain by allowing APRNs to practice to the fullest extent of the law within their scope of practice. Full practice authority would then increase opportunities for APRNs to design, implement, and lead collaborative pain care models within the community or hospital systems in which they practice (Schoneboom et al., 2016). In an Australian Hospital that serves a population of 162000, with over 2000 elective surgeries, leadership identified a substantial proportion of surgical patients that had a history of a documented chronic pain syndrome. Thus, experiencing acute-on-chronic pain requiring a pain management consult (Schoenwald, 2011).

Due to workload demands and decreased availability of Pain Anesthesiologists, significant delays in pain management for some patients accrued, leading to the development of a Nurse Practitioner (NP) pain service.

Data collected from September 2009 to July 2010 resulted in the absence of clinical incidents related to NP prescribing, increased patient pain assessment, increased use of multimodal pain management including non-pharmacological interventions such as cold therapy, relaxation, and referral for trans-electrical Nerve stimulation (TENS) (Schoenwald, 2011). Further, supporting an APRN-led pain service can manage, assess and "create safe, effective pain management plans of care as part of a combined nursing and medical team approach that is more reliable than a model serviced by medical staff alone" (Schoneboom et al., 2016, p. 445).

Education

The importance and facilitation of education for patients, nursing, and providers related to pain appeared as an underlying theme in all but one study review. Findings showed that APRN education and management improved patient satisfaction related to pain, increased functional status, utilized multimodal analgesia more consistently, decreased adverse symptoms related to opioids, and educated on best practices related to pain (Fang et al., 2021; Kaasalainen et al., 2016). Two separate QI improvement projects within Level I Hospital systems, reported improvement of patient HCAHPS satisfaction scores related to pain after the implementation of both nursing, patient, and provider education by a dedicated APRN with pain specialization (DeVore et al., 2017; Elkbuli et al., 2020). Within an urban academic Family and Community Medicine practice, variations in care were identified related to multiple resident prescribers, no consistent staff supervision, inconsistent opioid prescribing practices, patient dissatisfaction with pain control, and resident frustration (Naimer et al., 2019). To improve practice, an NP-led

collaborative care model was formed to improve opioid prescribing practices by family medicine residents, which included two-hour mandatory education sessions related to pain developed by the NP. Education was case based, related to patient assessment, pharmacologic and non-pharmacologic modalities, risk assessment, and use of the Prescription Drug Monitoring Program (PDMP). After 12 months of implementation, a retrospective record review was conducted and found improved resident opioid prescribing as measured by adherence to clinical practice guidelines and safer opioid prescribing. Residents verbalized less frustration, and the clinic received increased "compliments" from patients (Naimer et al., 2019). Despite the availability of clinical practice guidelines (CPGs) for cancer pain in an urban, comprehensive cancer center, a gap was identified related to NP usage. After implementing a blinded audit and feedback (A/F) intervention and education, NP adherence to CPGs increased, along with improved initial pain assessment and follow-up assessment documentation. Patients within the intervention group reported increased function, and satisfaction with pain relief increased from 68.4% to 95.1% during A/F ($p < .0001$) (Dulko et al., 2010).

Of the three randomized controlled trials (RCTs) which implemented an NP-led pain intervention, two occurred in hospital settings–an adult tertiary Emergency Room (ED) and a metropolitan hospital labor and delivery unit. The third took place at a large urban hospital chronic-pain clinic. Research showed that intervention of APRN-led care, along with patient education, can improve patients' acute postoperative pain, reduce anxiety, depression, and chronic pain, including improved timeliness of pain assessment (Jennings et al., 2015; Morales−Fernández et al., 2020; Schoenwald et al., 2018).

Summary and Research Gaps

Despite evidence that unrelieved pain affects approximately 100 million Americans (IOM, 2011), with 20-30% of surgical patients experiencing unrelieved pain (Gordon et al., 2016) and 60% of oncology patients receiving treatment will experience pain (Dulko et al., 2010), little was found in the literature including methodological weakness related to APRN-led implementation of a hospital pain service or the effect of an APRN consult pain service on HCAHPS pain scores. The more significant part of the literature on implementation of APRN-led pain care appears to be exploratory. Of the articles identified and reviewed, only three single-institutions, with small sample size, directly examined the relationship between APRN care and HCAHPS pain scores with none related to APRN-led pain service (DeVore et al., 2016; Elkbuli et. al., 2020; Philips et al., 2009). Multiple articles looked at the relationship of APRN-led care models and outcome variables, including implementation of practice guidelines for staff, patients receiving prompt APRN pain assessment and intervention, pharmacologic intervention (both with opioid and non-opioid), education of pain coping skills, anxiety, depression, functionality, pain scores, communication, and education (Dulko et al., 2010; Fang et al., 2021; Kaasalainen et al., 2016; Kaasalainen et al., 2015; Mackintosh et al., 1997; Naimer et al., 2019). Three RCTs looked at APRN effectiveness with pain care versus standard care and the impact on pain intensity scores, with only two looking at APRN-led intervention and none looking at HCAHPS pain scores (Jennings et al., 2015; Morales−Fernández et al., 2020; Schoenwald et al., 2018).

Evidence from this literature review revealed the emergence of several themes such as APRN-led pain care effectively improves pain scores, depression, anxiety, and patient satisfaction (Dulko et al., 2010; Fang et al., 2021; Morales−Fernández et al., 2020; Naimer et al.,

2019; Schoenwald et al., 2018). Outcomes were achieved utilizing multimodal medication management, including provider, nursing, and patient education (Dulko et al., 2010; Kaasalainen et al., 2015; Kaasalainen et al., 2016; Philips et al., 2009; Schoneboom et al., 2016). The body of evidence identified the importance of patient satisfaction scores but highlighted what many pain experts have communicated; pain management is complicated, and patient satisfaction with pain does not rely on one specific modality and is never straightforward. The challenges for us in pain management lie in developing an organizational system that applies current knowledge to ensure safe and effective acute (postoperative) pain, chronic pain, and acute-on-chronic pain care in medically complex patients, focusing on multidimensional validated outcomes measurements.

Research Question

In adults with pain, how does the implementation of an APRN-led consult pain service affect Press Ganey and HCAHPS pain satisfaction scores within a 724-bed acute care hospital?

a) Do HCAHPS scores reflecting how often staff talk about pain vary by year at a statistically significant level?

b) Do Press Ganey scores reflecting staff talk about pain treatment vary by year at a statistically significant level?

c) Do domain performance scores reflecting communication about pain domain performance vary by year at a statistically significant level?

Chapter 3

Methods

This Doctor of Nursing Practice (DNP) evidence-based quality improvement (QI) project utilized a retrospective review of Press Ganey and HCAHPS scores related to pain satisfaction, during implementation of an APRN-led consult pain service 2018 through 2021.

During a protracted process from 2013 through 2014, the Pain Management Committee and Hospital leadership within a southeastern acute care teaching hospital conducted a needs assessment due to lower than average Press Ganey and HCAHPS pain satisfaction scores. As a result, administrators created a dedicated consult pain service implemented by an Advanced Practice Registered Nurse (APRN) with a fifteen-year history in both inpatient and outpatient management of pain. The primary aim of this project was to evaluate the effectiveness of an evidence-based, patient-centered APRN-led hospital consultation pain service on pain satisfaction scores.

A patient's hospital experience and satisfaction have become measurement metrics tied to a hospital system's quality measures and payment. HCAHPS is a validated public performance quantitative standardized survey instrument, which evaluates the complex qualitative relationship between the patient and staff. This survey tool assigns a numerical rating to a non-numerical subjective experience such as pain control (HCAHPS, November 2017). Multiple quality improvement (QI) projects and case studies with descriptive intervention have utilized HCAHPS pain scores to measure and reassess program performance related to patient satisfaction. After implementation of an evidence-based pain management nursing algorithm, HCAHPS pain scores increased from an average of 55% (median of 59.9%) to an average of 62% (median of 61.5%) (DeVore et al., 2017).

In 2007, the acute pain service within a large urban New York City hospital discontinued patient-controlled analgesia (PCA) resulting in patient perceptions of inadequate pain control (Philips et al., 2009). A hospital committee identified transitional gaps and implemented an APRN Recuperative Pain Medicine (RPM) service with a primary goal to improve clinical care. Using retrospective analysis of Press Ganey and HCAHPS pain satisfaction outcomes from inception August 2007 to December 2008, it was found patient satisfaction with pain management on Press Ganey survey increased from the 87th percentile up to the 99th percentile (Philips et al.,2009).

Population Sample

The setting was a 724-bed non-profit acute care, Level I Trauma, Magnet Recognition, teaching hospital in southeastern Pennsylvania. The HCAHPS survey was administered to a random sampling of inpatients between 48 hours and six weeks post hospital discharge. Inclusion criteria included adult patients at least 18 years of age, without a psychiatric admitting diagnosis, and at least one overnight hospital stay within medical, surgical, or maternity care (Gupta, 2014).

Instruments

More than 8,400 patients complete the HCAHPS survey each day. In 2001 the Institute of Medicine (IOM) published "Crossing the Quality Chasm", stating provision of patient-centered care is a key element of a high-quality healthcare system (IOM; 2001). In reaction, the Hospital Quality Association (HQA) developed the HCAHPS survey with the intent to provide a standardized survey instrument and methodology for measuring a patient's perspective on healthcare. HCAHPS survey measures eight key "domains" of healthcare quality, with domain six related to Pain Control (Gupta et al., 2009). As support for the HCAHPS survey grew, it became tied to the annual payment update for Medicare. Beginning 2008, general acute care

hospitals were required to collect and publicly report HCAHPS results on the Centers for Medicare & Medicaid Services (CMS) Hospital Compare website or face a decrease of 2% reimbursement rates from Medicare (Dutta et. al., 2015). Later in 2010 with the passing of the Affordable Care Act, hospitals entered the "pay for performance" phase. With the initiation of pay for performance a low-scoring hospital can have up to 2% of reimbursements withheld, while a top-scoring hospital can receive the equivalent of a 2% bonus.

In 2016, concerns were raised from providers and national organizations that HCAHPS pain survey questions, specifically question (#14) of the HCAHPS survey, may be contributing to an overprescribing of opioids to increase satisfaction scores (Appendix B). For some, it was felt that focusing on a patient response goal of "always" related to pain, may lead to overaggressive treatment with unintended patient harm (Ashburn et al., 2015). Centers for Medicare and Medicaid Services (CMS) responded by conducting a large-scale, randomized experiment within 51 U.S. hospitals, coupled with cognitive testing of new pain items and interviews with patients, caregivers, and stakeholders (HCAHPS, 2017). The new two item versions of communication about pain had strong psychometric properties as demonstrated by a good reliability score of 0.88 (>0.80) (HCAHPS 2017, p.3). Beginning in January 2018, three new survey questions related to communication about pain replaced previous pain management questions. Implementation began with surveys completed during calendar year 2018. First time public review of pain communication scores occurred in October 2020, containing data related to patients discharged during the calendar year 2019 (HCAHPS, November 2017). Original pain management measure was reported for the last time in October 2018, for quarters 1-4 of the year 2017.

Data Collection

Data reflected surveys completed by hospitalized adult patients with at least one overnight stay. No identifiable patient related data was utilized in this project. HCAHPS and Press Ganey reports were collected and de-identified by a DNP external mentor at the project site prior to sharing. Reports included quarterly data beginning Q1 (Jan- March) 2018 and ending Q2 (April-June) 2020, vertical responses, single column – Press Ganey to align with HCAHPS.

Beginning Q1 2018, HCAHPS questions related to pain with focus on communication included: (Screener question) #12. During this hospital stay did you have any pain?

Data obtained from 2018-2020 will therefore include these three questions (see Appendix C). Composite scores from these questions are then calculated as the mean of the percentage of respondents responding to "always" to both composite questions.

Data Analysis

This DNP student received formatted reports of both Press Ganey and HCAHPS pain survey in basic Excel file for review and cleaning. Data analysis included both descriptive and inferential statistics. Descriptive statistics included the number of individuals responding to each question at each time point and quarter, and the range, mean, and median scores for each question at each point. Since data collected are time series, this DNP student examined changes with appropriate longitudinal statistical tests over time. Responses to questions from Press Ganey and HCAHPS will be plotted over time, 2018 through 2020. CMS changes to HCAHPS pain questions ending with Q4 2017, and new questions focused on pain communication introduced Q1 2018 will be considered during analysis.

The latest version of SPSS (26.0) was used for all statistical analyses. Bivariate tests, specifically a one-way ANOVA analysis, was used to examine if mean outcome scores

(HCAHPS Scores Reflecting *How Often Staff Talk About Pain*, Press Ganey Scores Reflecting *Staff Talk About Pain Treatment*, Domain Performance Scores Reflecting *Communication About Pain Domain Performance*) varied at statistically significant level ($p<.05$) by year (2018, 2019, 2020).

Within the final inferential analysis presented, all test assumptions related to parametric testing were examined, including normality, linearity, and no undue influence or outliers scores and revealed no significant problems. There were no missing data values present, which facilitated a complete case analysis.

In terms of statistical power, the G*power software indicated that an approximately medium effect size effect (Cohen's $f=.25$) would be detected in a one-way ANOVA analysis with 3 groups (2018, 2019, 2020) with power set at .80 and alpha set at .05, using a sample size of 159 study participants. Thus, the current projected sample of 448 study participants provided sufficient statistical power for the current analysis.

Protection of Human Subjects Data

This evidence-based QI project is a retrospective review therefore no patients will be recruited, and only de-identified data will be examined. Aggregated HCAHPS data has no identifying patient information and is voluntarily completed post discharge. Approval was given by the project location (Appendix C) and West Chester University Institutional Review Board (IRB) granted this project exempt status with permission to proceed without further review (Appendix D). This DNP QI project poses no physical, psychological, social, or financial risk to patients who completed both Press Ganey and HCAHPS patient satisfaction standard survey tools. The de-identified data will remain confidential, and access will be limited to the hospital DNP external mentor, the WCUPA faculty member, the DNP student, and the statistician, thus

minimizing any breach of confidentiality. Data will be stored on a password-protected computer for analysis and completion of the final DNP manuscript. In accordance with West Chester University IRB regulations, data will be kept for a period of not less than 3 years and then destroyed.

Chapter 4

Research Question 1:Do HCAHPS Scores Reflecting How Often Staff Talk About Pain Vary By Year at a Statistically Significant Level?

Dependent Variable: All PG Database Scores

Table 1 presents a one-way ANOVA analysis of HCAPHS scores reflecting *How Often Staff Talk About Pain* by year using the dependent variable *All PG Database Score*. Bivariate analysis indicated that HCAPHS scores did vary significantly by year, $F(2, 445) = 402.26$, $p < .001$. Bonferroni Post Hoc tests indicated that the mean score for year 2018 ($M = 67.66$, $SD = .79$) was significantly higher than years 2019 ($M = 67.20$, $SD = .26$) and 2020 ($M = 64.25$, $SD = .13$). Furthermore, the mean score for the year 2019 ($M = 67.20$, $SD = .26$) was significantly lower than year 2018 7.66, $SD = .79$), but significantly higher than 2020 ($M = 64.25$, $SD = .13$). Lastly, the mean score for year 2020 ($M = 64.25$, $SD = .13$) was significantly lower than in 2018 ($M = 67.66$, $SD = .79$) and 2019 ($M = 67.20$, $SD = .26$). See Figure 1 for a bar chart presenting these scores.

Dependent Variable: Top Box Scores

Table 2 presents a one-way ANOVA analysis of HCAPHS scores reflecting *How Often Staff Talk About Pain* by year using the dependent variable *Top Box Score*. Bivariate analysis indicated that HCAPHS scores did vary significantly by year, $F(2, 445) = 3.04$, $p < .05$. Bonferroni Post Hoc tests indicated that the mean score for year 2020 ($M = 74.10$, $SD = 17.45$) was significantly higher than the year 2018 ($M = 63.22$, $SD = 20.19$). The mean score for year 2019 ($M = 64.62$, $SD = 22.80$) did not differ significantly from the other two years. See Figure 2 for a bar chart presenting these scores.

Research Question 2: Do Press Ganey Scores Reflecting Staff Talk About Pain Treatment Vary By Year at a Statistically Significant Level?

Dependent Variable: All PG Database Scores

Table 3 presents a one-way ANOVA analysis of Press Ganey Scores reflecting *Staff Talk About Pain Treatment* using the dependent variable *All PG Database Scores* by year. Bivariate analysis indicated that Press Ganey Scores did vary significantly by year, $F(2, 445) = 56.98$, $p < .001$. Bonferroni Post Hoc tests indicated that the mean score for year 2018 ($M = 64.63$, $SD = .82$) was significantly higher than the year9 ($M = 64.08$, $SD = .26$), but lower than 2020 ($M = 65.25$, $SD = 1.23$). Furthermore, the mean score for year 2019 ($M = 64.08$, $SD = .26$) was significantly lower than year 2018 ($M = 64.63$, $SD = .82$) and year 2020 ($M = 65.25$, $SD = 1.23$). Lastly, the mean score for year 2020 ($M = 65.25$, $SD = 1.23$) was significantly higher years 2018 ($M = 64.63$, $SD = .82$) and 2019 ($M = 64.08$, $SD = .26$). See Figure 3 for a bar chart presenting these scores.

Dependent Variable: Top Box Scores

Figure 4 presents a one-way ANOVA analysis of Press Ganey Scores reflecting *Staff Talk About Pain Treatment* using the dependent variable *Top Box Scores* by year. Bivariate analysis indicated that Press Ganey Scores did not vary significantly by year, $F(2, 445) = .41$, $p = .66$.

Research Question 3: Do Domain Performance Scores Reflecting Communication About Pain Domain Performance Vary By Year at a Statistically Significant Level?

Dependent Variable: All PG Database Scores

Figure 5 presents a one-way ANOVA analysis of domain performance scores reflecting *Communication About Pain Domain Performance* using the dependent variable *All PG Database Scores* by year. Bivariate analysis indicated that domain performance scores did vary significantly by year, $F(2, 445) = 83.81$, $p < .001$. Bonferroni Post Hoc tests indicated that the mean score for year 2018 ($M = 66.14$, $SD = .79$) was significantly higher than years 2019 ($M = 65.63$, $SD = .26$) and 2020 ($M = 64.73$, $SD = .59$). Furthermore, the mean score for year 2019 ($M = 65.63$, $SD = .26$) was significantly lower than year 2018 ($M = 66.14$, $SD = .79$), but significantly higher than year 2020 ($M = 64.73$, $SD = .59$). Lastly, the mean score for year 2020 ($M = 64.73$, $SD = .59$) was significantly lower that year 2018 ($M = 66.14$, $SD = .79$) and 2019 ($M = 65.63$, $SD = .26$).

Dependent Variable: Top Box Scores

Figure 6 presents a one-way ANOVA analysis of domain performance scores reflecting *Communication About Pain Domain Performance* using the dependent variable *Top Box Scores* by year. Bivariate analysis indicated that domain performance scores did not vary significantly by year, $F(2, 445) = .37$, $p = .69$.

Chapter 5

Discussion

Framework

This DNP QI project sought to determine whether implementing an APRN-led hospital pain service improved HCAHPS and Press Ganey scores related to pain satisfaction. Supporting this process, this DNP student chose PEPPA Framework for its logical, systematic, step-by-step approach to developing a new APRN role within a hospital system. PEPPA helped provide a guide for introducing this new APRN role and helping this DNP student understand the factors involved with program implementation. Implementing an Acute Pain Service (APS) within a hospital system is costly and usually limited to high-acuity (acute) pain when patients require regional anesthesia for pain control. Most APS providers are unwilling to care for the day-to-day hospitalized patient requiring medication management and general post-operative pain care. An APRN pain management model that is evidence-based and patient-centered can be more cost-effective. Due to the COVID-19 pandemic and a system-wide restructuring process resulting in a reduction of specialty services, including the APRN-led pain service, this DNP student could only implement four of the nine PEPPA steps.

The first step in the PEPPA framework was defining the patient population and describing the current care model, which included uncontrolled hospitalized adults with acute or chronic pain. There was no APS within the hospital, with pain managed by the admitting service, whether medical or surgical. The second step was to identify stakeholders representing vested interests, values, perceived power, and expectations (Boman et al., 2021). For this APRN-led pain service model, the stakeholders included the hospital responsible for hiring and establishing this new position, the Hospitalist service, Pain Committee, which included multiple specialty

services, Chief Medical Officer, Chief Nursing Officer, and the nursing staff. This DNP student found the Chair of the Hospitalist Service and Nursing crucial. In the third step, strengths and limitations related to the current model of care prior to APRN-led pain service implementation were assessed by the hospital pain committee 2013-2014, which determined the need for a new model of care. Once within the hospital system, this APRN identified education related to pain for both nursing and physicians as paramount. Step four then focused on a better understanding of patient needs and the strengths and limitations of the APRN-led pain service model development. Limitations were exposed as the service expanded, along with the identification of the need for a transitional pain service.

Key Findings

Contrary to the proposed aim of this DNP project, retrospective statistical analysis between a categorical variable (APRN-led pain service) with three response variables related to HCAHPS and Press Ganey pain satisfaction scores was not able to show a significant association. Another finding was the lack of statistical variance and the relatively low yearly mean scores. Of significance, Top-Box scores by year reflecting How Often Staff Talk About Pain showed a mean score 2020 significantly higher (74.1) than the year 2018 (63.22), while the mean score for 2019 (64.62) did not differ significantly relative to the other two years. Press Ganey Top-Box scores by year reflecting How Often Staff Talk About Pain indicated that each year did not differ at a statistically significant level from one another and was below the national average, 2018 (59.6), 2019, (59.8), and 2020 (55.6). In comparing the results with other QI projects (DeVore et al., 2017; Elkbuli et al., 2020; Philips et al., 2009) were able to report statistical improvement in patient satisfaction scores related to pain based on the original HCAHPS Pain Item questions, reviewed on quarterly benchmark periods. Analyzed quarterly

benchmarks periods could not be obtained for analysis due to overlap in benchmark data, resulting in a reduced distribution of yearly mean scores.

HCAHPS and Press Ganey scores are validated and appropriate instruments for examining pain satisfaction, with considerable limitations; primarily, the measure is a single item. Without having several items measuring, the same construct, Cronbach's alpha cannot be utilized to assess internal consistency and reliability. One must also keep in mind that the HCAHPS survey captures ordinal data, so there is no reason to believe that there are equal measurement points between responses. This leads to the mean score falling between the responses as not entirely believable, with possible bias.

Implications

Pain satisfaction had an increasingly significant role in quality-of-car-reforms, with direct and indirect costs to the individual patient, hospital organizations, and society. Inadequate treatment of pain diminishes a patient's experience of care and decreases potential revenues appreciated in the Hospital Value-Based Purchasing program. Evidence from studies shows that the provision of a dedicated APRN to improve pain care can improve clinical practice behaviors of staff, reduce pain rating, increase functionality, and reduce re-hospitalization. Much of the problem lies in the fact that pain management is a complex area for QI, but there continue to be opportunities for those of us in pain management. Further studies are needed to directly assess the impact and role of the APRN-led pain service to determine its effectiveness. The strengths of this QI project show the importance of continuous assessment of APRN evidence-based outcomes related to the specialty of pain management.

Future Research

For patients, unrelieved pain remains one of the most significant factors of a hospital stay. Objective performance measures deliver a continuous score computed by several composite items related to pain. These could be measured along with HCAHPS and Press Ganey survey pain scores to measure patient-provider communication related to pain. Findings related to this QI project showed poor statistical significance, but there is evidence of practical-clinical significance, which could lead to further research. Other research could include interdisciplinary education focusing on pain management and evidence-based alternative pain control interventions implemented by an APRN.

Sustainability of practice change

This QI project was implemented to remain sustainable after implementation providing effective patient care and stakeholder investment. A primary goal was to make lasting results within a program that had grown to include three APRNs providing inpatient pain consults and a newly developed physician-led outpatient Interventional pain service. What could not be foreseen was the fiscal impact of COVID-19, resulting in the decision to terminate the inpatient APRN-led pain service within this hospital system.

Limitation

Due to this DNP student no longer being employed within this hospital system, this DNP student could only obtain benchmark data from 2018 through 2020. With the inability to obtain quarterly benchmark data 2014- 2021, to include pre-post program implantation data, results related to The effectiveness of an APRN-led pain service on patient satisfaction scores are inconclusive. Research has shown that many factors may impact the dependent variable

(HCAHPS scores), which include voluntary response bias, patient education level, socioeconomic status, pain perception and tolerance, previous use of opioids, acute versus chronic medication use, type of injury, surgical procedures, and communication (Gupta, 2014). Beginning March 2020, Pennsylvania Governor Wolf issued a state of emergency and stay-at-home order related to COVID-19. During this time, the banning of all elective surgeries within hospital systems was initiated, including the furlough of all non-essential providers within the hospital system this DNP student worked with. Consultations related to post-operative pain, acute back pain, and chronic pain declined substantially, which this DNP student felt may have directly impacted HCAHPS and Press Ganey surveys, seen with a 2020 sample size of n=26.

Conclusion

In summary, the goal of this quality improvement project was to determine the effectiveness of an APRN-led model of care on patient satisfaction scores related to pain. The literature indicates that patients are increasingly more satisfied with pain management when they feel a provider has listened to their specific needs, communicated effectively, and provided education related to their pain and medications, including continuity of care (Shindul-Rothschild et al., 2017). While statistical analysis of HCAHPS and Press Ganey pain satisfaction scores were not able to prove this DNP student's research question, a review of the literature confirms APRN models of care within the specialty of pain management are diverse with positive patient outcomes (Fang et al., 2020; Morales−Fernández et al., 2020; Kaasalainen et al., 2016; Kaasalainen et al., 2015; Schoenwald et al., 2018; Jennings et al., 2015).

References

APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee. (2008). *Consensus Model for APRN Regulation: Licensure, Accreditation, Certification & Education* [Report]. National Council of State Boards of Nursing. https://www.ncsbn.org/Consensus_Model_for_APRN_Regulation_July_2008.pdf

Ashburn, M. A., & Fleisher, L. A. (2016). Does assessment of patient satisfaction with pain care lead to patient harm? *Healthcare*, *4*(1), 6–8. https://doi.org/10.1016/j.hjdsi.2015.08.001

Boman, E., Gaarde, K., Levy-Malmberg, R., Wong, F., & Fagerström, L. (2021). Using the peppa framework to develop the nurse practitioner role in emergency care: Critical reflections. *Nordic Journal of Nursing Research*, 205715852098847. https://doi.org/10.1177/2057158520988478

Boyko, J. A., Carter, N., & Bryant-Lukosius, D. (2016). Assessing the spread and uptake of a framework for introducing and evaluating advanced practice nursing roles. *Worldviews on Evidence-Based Nursing*, *13*(4), 277–284. https://doi.org/10.1111/wvn.12160

Bryant-Lukosius, D., & DiCenso, A. (2004). A framework for the introduction and evaluation of advanced practice nursing roles. *Journal of Advanced Nursing*, *48*(5), 530–540. https://doi.org/10.1111/j.1365-2648.2004.03235.x

Bryant-Lukosius, D., DiCenso, A., Browne, G., & Pinelli, J. (2004). Advanced practice nursing roles: Development, implementation and evaluation. *Journal of Advanced Nursing*, *48*(5), 519–529. https://doi.org/10.1111/j.1365-2648.2004.03234.x

Courtenay, M., & Carey, N. (2008). The impact and effectiveness of nurse-led care in the management of acute and chronic pain: A review of the literature. *Journal of Clinical Nursing*, *17*(15), 2001–2013. https://doi.org/10.1111/j.1365-2702.2008.02361.x

CMS Hospital Compare. www.medicare.gov/hospitalcompare/search.html

DeVore, J., Clontz, A., Ren, D., Cairns, L., & Beach, M. (2017). Improving patient satisfaction with better pain management in hospitalized patients. *The Journal for Nurse Practitioners*, *13*(1), e23–e27. https://doi.org/10.1016/j.nurpra.2016.07.020

Dulko, D., Hertz, E., Julien, J., Beck, S., & Mooney, K. (2010). Implementation of cancer pain guidelines by acute care nurse practitioners using an audit and feedback strategy. *Journal of the American Academy of Nurse Practitioners*, *22*(1), 45–55. https://doi.org/10.1111/j.1745-7599.2009.00469.x

Dutta, S., Uzma-Abbas, S., Babalola, O., & Villanueva, T. (June 2015). *HCAHPS and the metrics of patient experience: A guide for hospitals and hospitalists*. Hospitalist Medicine Practice.

Elkbuli, A., Stotsenburg, M., Epstein, C., Calvert, K., Boneva, D., McKenney, M., & Deaton, K. (2020). A multidisciplinary approach to improve pain management and satisfaction in a trauma population. *Journal of Trauma Nursing*, *27*(2), 96–103. https://doi.org/10.1097/jtn.0000000000000493

Fang, L., Chen, L., Sun, H., Xu, Y., & Jin, J. (2021). The effectiveness of using a nurse-led pain relief model for pain management among abdominal surgical patients: A single-center, controlled before-after study in China. *Pain Management Nursing*, *22*(2), 198–204. https://doi.org/10.1016/j.pmn.2020.08.004

Gordon, D. B., Polomano, R. C., Pellino, T. A., Turk, D. C., McCracken, L. M., Sherwood, G., Paice, J. A., Wallace, M. S., Strassels, S. A., & Farrar, J. T. (2010). Revised American pain society patient outcome questionnaire (aps-poq-r) for quality improvement of pain management in hospitalized adults: Preliminary psychometric evaluation. *The Journal of Pain*, *11*(11), 1172–1186. https://doi.org/10.1016/j.jpain.2010.02.012

Gupta, A. (2009). Patient perception of pain care in hospitals in the United States. *Journal of Pain Research*, 157. https://doi.org/10.2147/jpr.s7903

Gupta, A. (2014). Patient perception of pain care in the United States: A 5-year comparative analysis of hospital consumer assessment of health care providers and systems. *Pain Physician*, *5; 17*(5; 9), 369–377. https://doi.org/10.36076/ppj.2014/17/369

Hanna, M. N., González-Fernández, M., Barrett, A. D., Williams, K. A., & Pronovost, P. (2012). Does patient perception of pain control affect patient satisfaction across surgical units in a tertiary teaching hospital? *American Journal of Medical Quality*, *27*(5), 411–416. https://doi.org/10.1177/1062860611427769

Herzig, S., Calcaterra, S., Mosher, H., Ronan, M., Van Groningen, N., Shek, L., Loffredo, A., Keller, M., Jena, A., & Nuckols, T. (2018). Safe opioid prescribing for acute non-cancer pain in hospitalized adults: A systematic review of existing guidelines. *Journal of Hospital Medicine*, *13*(4), 256–262. https://doi.org/10.12788/jhm.2979

Hospital Consumer Assessment of Healthcare Providers and Systems. (November 2017). *Hospital CAHPS Successfully Transitioning to the New Communication About Pain Items on the HCAHPS Survey*.

Hyland, S. J., Brockhaus, K. K., Vincent, W. R., Spence, N. Z., Lucki, M. M., Howkins, M. J., & Cleary, R. K. (2021). Perioperative pain management and opioid stewardship: A practical guide. *Healthcare*, *9*(3), 333. https://doi.org/10.3390/healthcare9030333

Institute of Medicine Committee on Advancing Pain Research. (2011). Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research.

Jennings, N., Gardner, G., O'Reilly, G., & Mitra, B. (2015). Evaluating emergency nurse practitioner service effectiveness on achieving timely analgesia: A pragmatic randomized controlled trial. *Academic Emergency Medicine*, *22*(6), 676–684. https://doi.org/10.1111/acem.12687

Kaasalainen, S., Ploeg, J., Donald, F., Coker, E., Brazil, K., Martin-Misener, R., Dicenso, A., & Hadjistavropoulos, T. (2015). Positioning clinical nurse specialists and nurse practitioners as change champions to implement a pain protocol in long-term care. *Pain Management Nursing*, *16*(2), 78–88. https://doi.org/10.1016/j.pmn.2014.04.002

Kaasalainen S, RN, PhD, Wickson-Griffiths A, RN, PhD, Akhtar-Danesh N, et al. (2016). The effectiveness of a nurse practitioner-led pain management team in long term care: A mixed methods study. *International Journal of Nursing Studies*, *62*, 156–167. https://doi.org/10.1016/j.ijnurstu.2016.07.022

Mackintosh, C., & Bowles, S. (1997). Evaluation of a nurse‐led acute pain service. Can clinical nurse specialists make a difference? *Journal of Advanced Nursing*, *25*(1), 30–37. https://doi.org/10.1046/j.1365-2648.1997.1997025030.x

Mazurek-Melnyk, B., & Fineout-Overholt, E. (2019). *Evidenced-Based Practice in Nursing and Healthcare* (4th ed.). Wolters Kluwer.

McNamara, S., Giguère, V., St-Louis, L., & Boileau, J. (2009). Development and implementation of the specialized nurse practitioner role: Use of the peppa framework to achieve success. *Nursing & Health Sciences*, *11*(3), 318–325. https://doi.org/10.1111/j.1442-2018.2009.00467.x

Morales-Fernandes, A., Jimenez- Martin, J., Morales-Ascencio, J., Vergara-Romero, M., Mora-Bandera, A., Aranda-Gallardo, M., & Canca-Sanchez, J. (2020). Impact of nurse-led intervention on quality of life in patients with chronic non-malignant pain: an open randomized controlled trial. *Journal of Advanced Nursing, 77(1), 255-265*. https://doi.org/10.1111/jan.14608

Naimer, M. S., Munro, J., Singh, S., & Permaul, J. A. (2019). Improving family medicine residents' opioid prescribing: A nurse practitioner-led model. *The Journal for Nurse Practitioners*, *15*(9), 661–665. https://doi.org/10.1016/j.nurpra.2019.07.002

Patient-mix Coefficients for October 2021 (3Q20 through 4Q20 Discharges) Publicly reported HCAHPS Results. (2021, July 17). hcahpsonline.org. Retrieved October 13, 2021, from

Philips, B. D., Liu, S. S., Wukovits, B., Boettner, F., Waldman, S., Liguori, G., Goldberg, S., Goldstein, L., Melia, J., Hare, M., Jasphey, L., & Tondel, S. (2009). Creation of a novel recuperative pain medicine service to optimize postoperative analgesia and enhance patient satisfaction. *HSS Journal*, *6*(1), 61–65. https://doi.org/10.1007/s11420-009-9135-6

Schoenwald, A. V. (2011). Two hundred days of nurse practitioner prescribing and role development: A case study report from a hospital-based acute pain management team. *Australian Health Review*, *35*(4), 444. https://doi.org/10.1071/ah10946

Schoenwald, A., Windsor, C., Gosden, E., & Douglas, C. (2018). Nurse practitioner-led pain management the day after cesarean section: A randomized controlled trial and follow-up study. *International Journal of Nursing Studies*, *78*, 1–9. https://doi.org/10.1016/j.ijnurstu.2017.08.009

Schoneboom, B. A., Perry, S. M., Barnhill, W., Giordano, N. A., Wiltse Nicely, K. L., & Polomano, R. C. (2016). Answering the call to address chronic pain in military service members and veterans: Progress in improving pain care and restoring health. *Nursing Outlook*, *64*(5), 459–484. https://doi.org/10.1016/j.outlook.2016.05.010

Stamer, U. M., Liguori, G. A., & Rawal, N. (2020). Thirty-five years of acute pain services: Where do we go from here? *Anesthesia & Analgesia*, *131*(2), 650–656. https://doi.org/10.1213/ane.0000000000004655

Shindul-Rothschild, J., Flanagan, J., Stamp, K. D., & Read, C. Y. (2017). Beyond the pain scale: Provider communication and staffing predictive of patients' satisfaction with pain control. *Pain Management Nursing*, *18*(6), 401–409. https://doi.org/10.1016/j.pmn.2017.05.003

The Joint Commission. (2018). *R3 Report Pain assessment and management standards for critical access hospitals* (Requirement, Rational, Reference, Issue 15, June 15, 2018) [Report].

Table 1

One-Way ANOVA Analysis of HCAHPS Scores Reflecting *How Often Staff Talk About Pain - All PG Database Scores* by Year (*n*=448)

Variable	n	M (SD)	MIN/MAX	F(df)	p
Year				**402.26 (2, 445)**	**.001[1]**
2018	220	67.66 (.79)	67.0-70.0		
2019	202	67.20 (.26)	66.0-68.0		
2020	26	64.25 (.13)	64.0-65.0		

[1]Bonferroni Post Hoc tests indicated that the mean score for year 2018 (*M*=67.66, *SD*=.79) was significantly higher than years 2019 (*M*=67.20, *SD*=.26) and 2020 (*M*=64.25, *SD*=.13). Bonferroni Post Hoc tests indicated that the mean score for year 2019 (*M*=67.20, *SD*=.26) was significantly lower than year 2018 (*M*=67.66, *SD*=.79), but significantly higher than year 2020 (*M*=64.25, *SD*=.13).Bonferroni Post Hoc tests indicated that the mean score for year 2020 (*M*=64.25, *SD*=.13) was significantly lower that year 2018 (*M*=67.66, *SD*=.79) and 2019 (*M*=67.20, *SD*=.26).

Table 2

One-Way ANOVA Analysis of Press Ganey Scores Reflecting *Staff Talk About Pain Treatment - All PG Database Scores* by Year (*n*=448)

Variable	n	M (SD)	MIN/MAX	F(df)	p
Year				**56.98 (2, 445)**	**.001[1]**
2018	220	64.63 (.82)	64.0-67.0		
2019	202	64.08 (.26)	63.0-64.0		
2020	26	65.25 (1.23)	62.0-66.0		

[1]Bonferroni Post Hoc tests indicated that the mean score for year 2018 (*M*=64.63, *SD*=.82) was significantly higher than years 2019 (*M*=64.08, *SD*=.26), but lower than 2020 (*M*=65.25, *SD*=1.23). Bonferroni Post Hoc tests indicated that the mean score for year 2019 (*M*=64.08, *SD*=.26) was significantly lower than year 2018 (*M*=64.63, *SD*=.82) and year 2020 (*M*=65.25, *SD*=1.23). Bonferroni Post Hoc tests indicated that the mean score for year 2020 (*M*=65.25, *SD*=1.23) was significantly higher that year 2018 (*M*=64.63, *SD*=.82) and 2019 (*M*=64.08, *SD*=.26).

Table 3

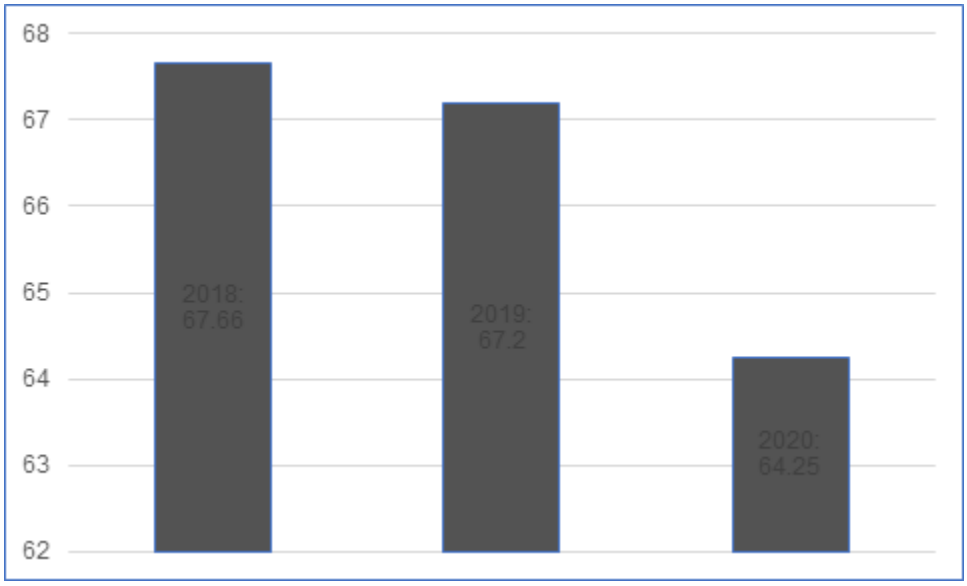
One-Way ANOVA Analysis of Press Ganey Scores Reflecting *Staff Talk About Pain Treatment - All PG Database Scores* by Year (*n*=448)

Variable	n	M (SD)	MIN/MAX	F(df)	p
Year				**56.98 (2, 445)**	**.001[1]**
2018	220	64.63 (.82)	64.0-67.0		
2019	202	64.08 (.26)	63.0-64.0		
2020	26	65.25 (1.23)	62.0-66.0		

[1]Bonferroni Post Hoc tests indicated that the mean score for year 2018 (*M*=64.63, *SD*=.82) was significantly higher than years 2019 (*M*=64.08, *SD*=.26), but lower than 2020 (*M*=65.25, *SD*=1.23). Bonferroni Post Hoc tests indicated that the mean score for year 2019 (*M*=64.08, *SD*=.26) was significantly lower than year 2018 (*M*=64.63, *SD*=.82) and year 2020 (*M*=65.25, *SD*=1.23). Bonferroni Post Hoc tests indicated that the mean score for year 2020 (*M*=65.25, *SD*=1.23) was significantly higher that year 2018 (*M*=64.63, *SD*=.82) and 2019 (*M*=64.08, *SD*=.26).

Figure 1

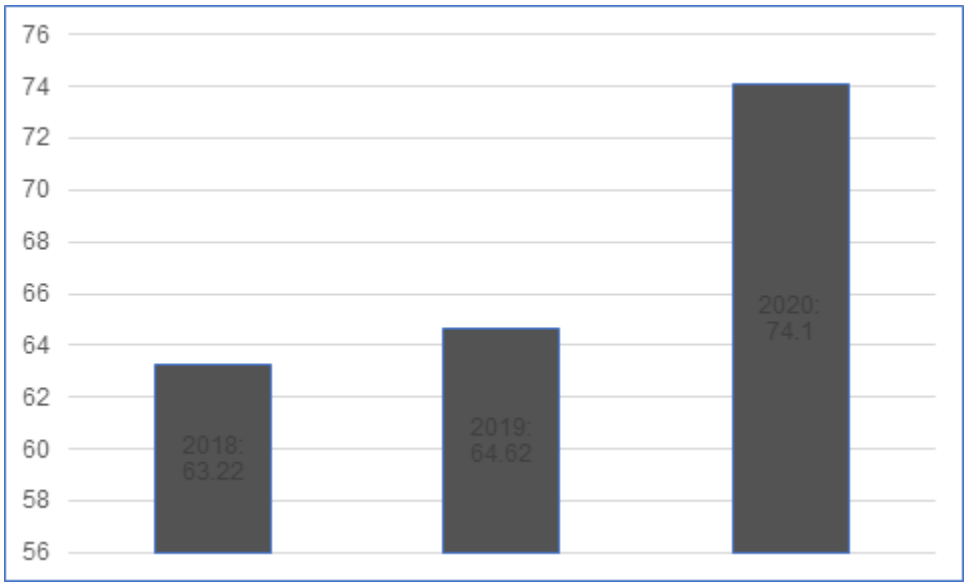
HCAHPS Scores Reflecting *How Often Staff Talk About Pain - All PG Database Scores* by Year (*n*=448)*



Note. Bivariate analysis indicated that each year differed at a statistically significant level from one another.

Figure 2

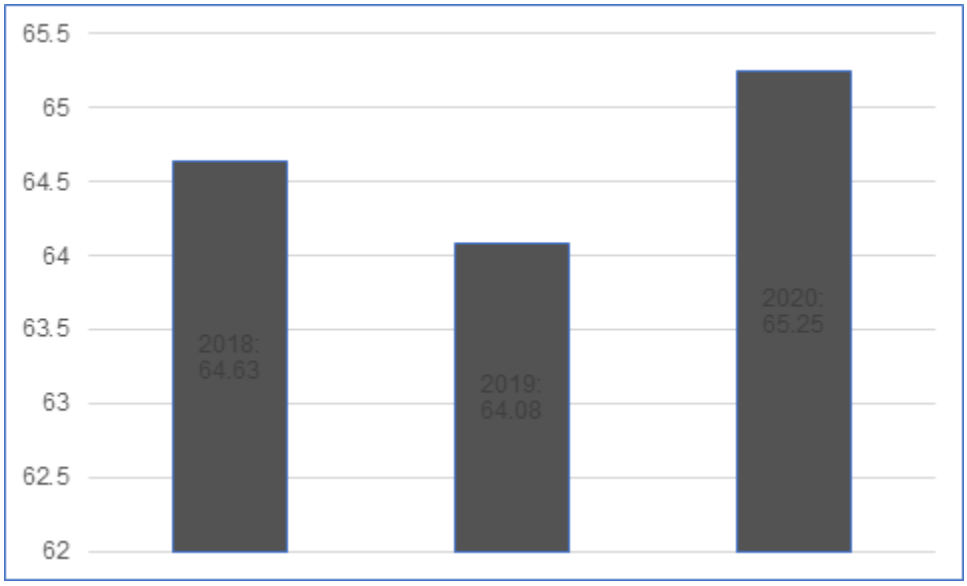
HCAHPS Scores Reflecting *How Often Staff Talk About Pain – Top Box Scores* by Year (*n*=448)*



Note. Bivariate analysis indicated that mean score for year 2020 was significantly higher than year 2018, while the mean score for year 2019 did not differ significantly relative to the other two years.

Figure 3

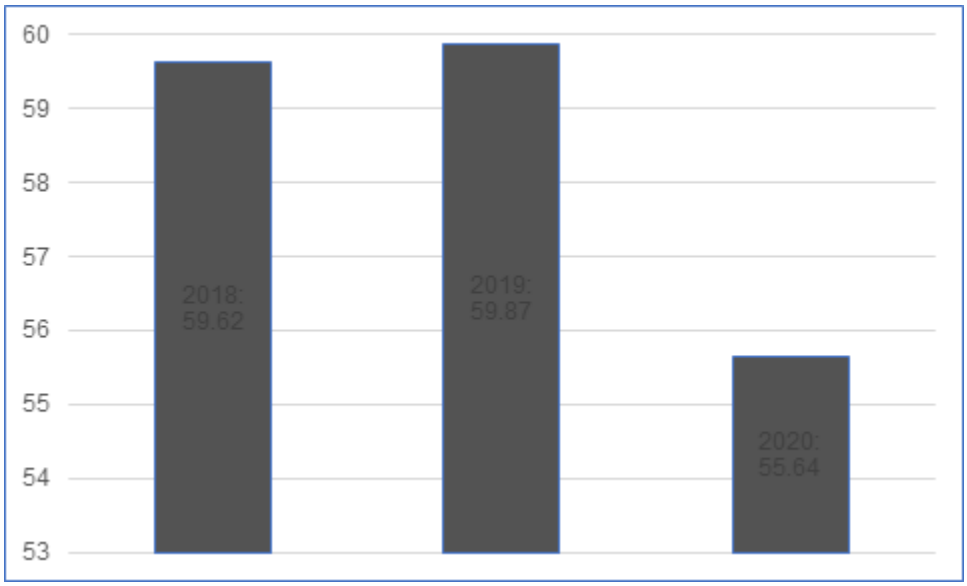
Press Ganey Scores Reflecting *Staff Talk About Pain Treatment - All PG Database Scores* by Year (*n*=448)*



Note. Bivariate analysis indicated that each year differed at a statistically significant level from one another.

Figure 4

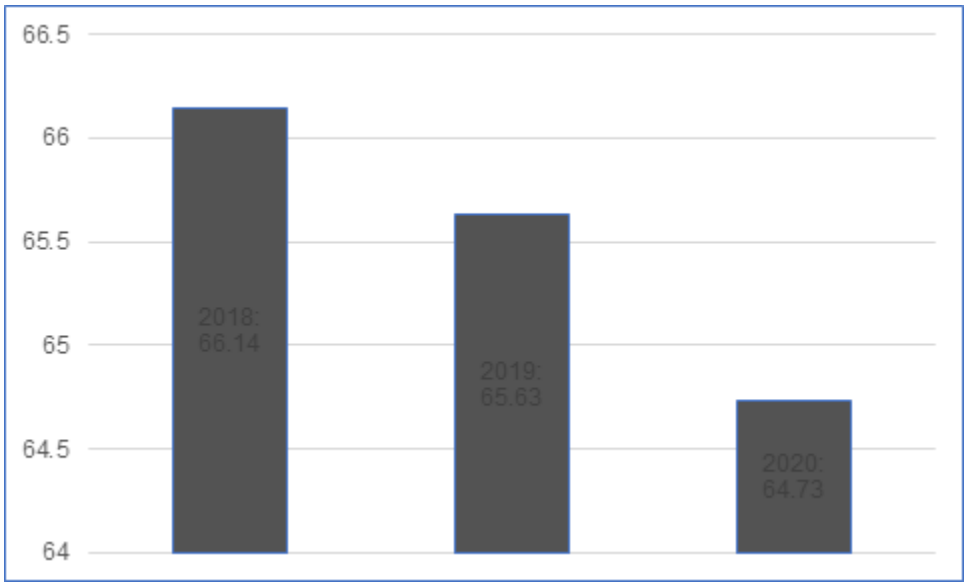
Press Ganey Scores Reflecting *Staff Talk About Pain Treatment – Top Box Scores* by Year (*n*=448)*



Note. Bivariate analysis indicated that each year did not differ at a statistically significant level from one another.

Figure 5

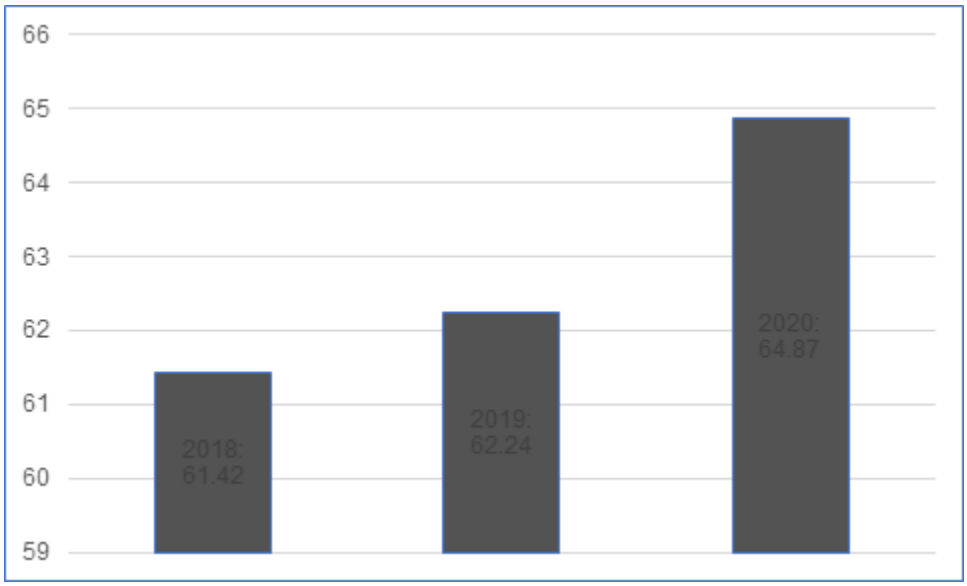
Domain Performance Scores Reflecting *Communication About Pain Domain Performance-All PG Database Scores* by Year (*n*=448)*



Note. Bivariate analysis indicated that each year differed at a statistically significant level from one another.

Figure 6

Domain Performance Scores Reflecting *Communication About Pain Domain Performance-Top Box Scores* by Year (*n*=448)*

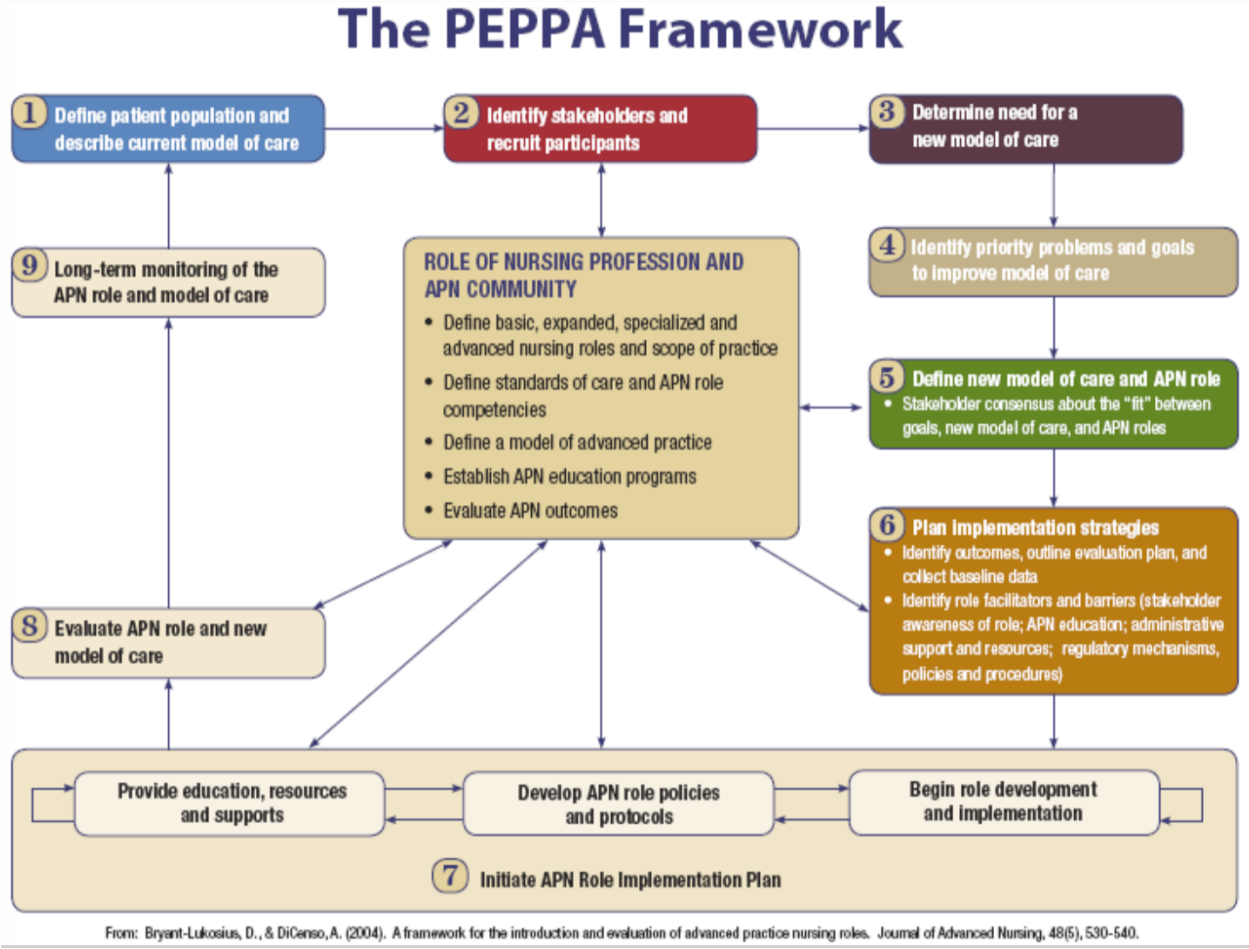


Note. Bivariate analysis indicated that each year did not differ at a statistically significant level from one another.

Appendix A

PEPPA Framework

Permission to use granted February



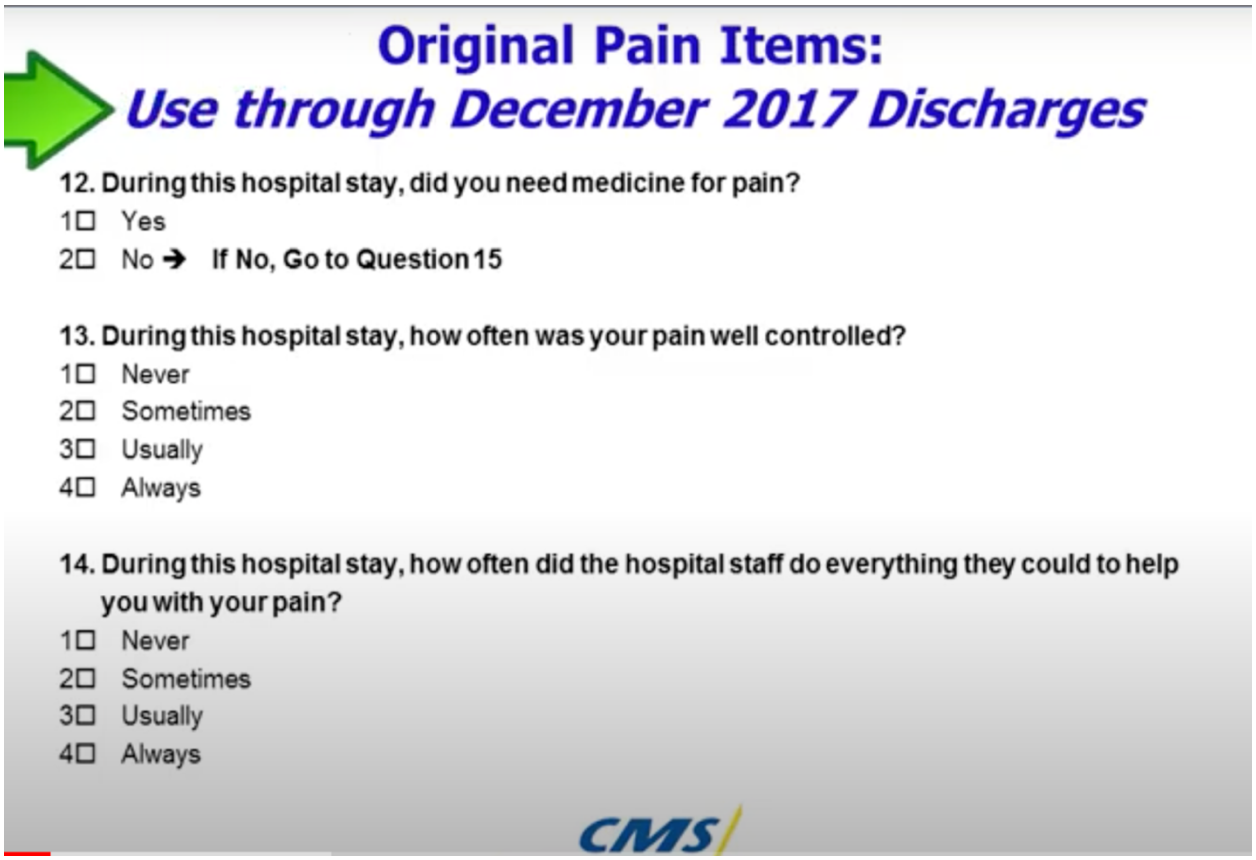
From: Bryant-Lukosius, D., & DiCenso, A. (2004). A framework for the introduction and evaluation of advanced practice nursing roles. Journal of Advanced Nursing, 48(5), 530-540.

Appendix B

Original Pain Items

Used through December 2017 Discharges

#12 (Screener Question)

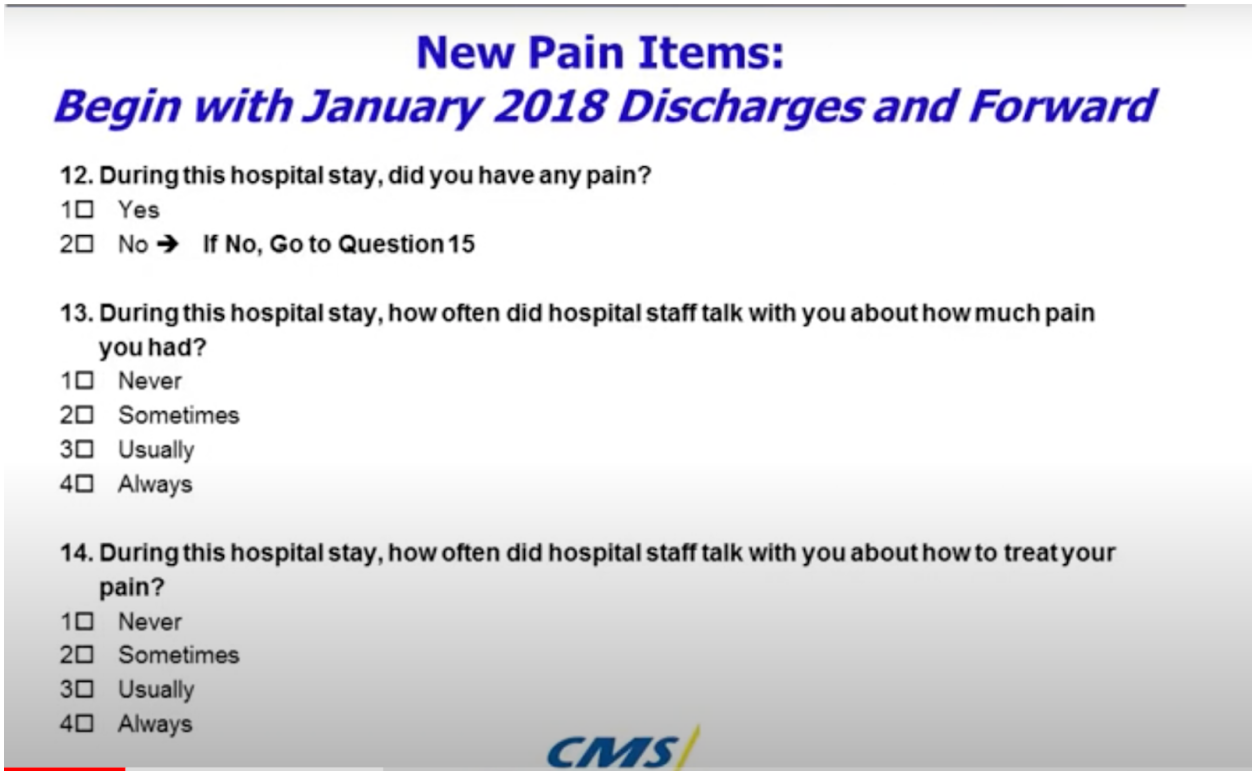


Appendix C

New Pain Items

Begin with January 2018 Discharges and Forward

 # 12 (Screener Question)



Appendix D

January 19, 2022

Dear Maripat,

On behalf of the Reading Hospital's DNP Review Committee, it is a pleasure to inform you that your project, "The effectiveness of an APRN-Led pain service within a large acute care hospital" has been approved. The project was deemed a quality improvement effort by the Director, Human Subjects Protection, and representative from the Reading Hospital IRB. Barbara Romig, Vice President for Nursing Services has approved you to use the aggregated de-identified data, which will be extracted for you from the Press Ganey database.

Sincerely,

Deborah Swavely

Deborah Swavely DNP, RN
Senior Director Nursing Clinical Inquiry and Research | 484-628-9105
deborah.swavely@towerhealth.org | TowerHealth.org

Appendix E

Office of Research and Sponsored Programs | West Chester University | Ehinger Annex
West Chester, PA 19383 | 610-436-3557 | www.wcupa.edu

Jan 20, 2022 9:25:38 AM EST

To: Maripatricia Welz-Bosna
Department: School of Nursing, Nursing

Re: Exempt - Initial - IRB-FY2022-152 EVIDENCE-BASED QUALITY IMPROVEMENT PROJECT: Patient satisfaction after implementation of an APRN-Led consult pain service

Dear Maripatricia Welz-Bosna:

Thank you for your submitted application to the WCUPA Institutional Review Board. We have had the opportunity to review your application and have rendered the decision below for EVIDENCE-BASED QUALITY IMPROVEMENT PROJECT: Patient satisfaction after implementation of an APRN-Led consult pain service.

Decision: Exempt

Selected Category: Category 4. Secondary research for which consent is not required: Secondary research uses of identifiable private information or identifiable biospecimens, if at least one of the following criteria is met:
(i) The identifiable private information or identifiable biospecimens are publicly available;
(ii) Information, which may include information about biospecimens, is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained directly or through identifiers linked to the subjects, the investigator does not contact the subjects, and the investigator will not re-identify subjects;
(iii) The research involves only information collection and analysis involving the investigator's use of identifiable health information when that use is regulated under 45 CFR parts 160 and 164, subparts A and E, for the purposes of "health care operations" or "research" as those terms are defined at 45 CFR 164.501 or for "public health activities and purposes" as described under 45 CFR 164.512(b); or
(iv) The research is conducted by, or on behalf of, a Federal department or agency using government-generated or government-collected information obtained for nonresearch activities, if the research generates identifiable private information that is or will be maintained on information technology that is subject to and in compliance with section 208(b) of the E-Government Act of 2002, 44 U.S.C. 3501 note, if all of the identifiable private information collected, used, or generated as part of the activity will be maintained in systems of records subject to the Privacy Act of 1974, 5 U.S.C. 552a, and, if applicable, the information used in the research was collected subject to the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 et seq.

If there are any questions, please don't hesitate to reach out to irb@wcupa.edu

Sincerely,
WCUPA Institutional Review Board

IORG#: IORG0004242
IRB#: IRB00005030
FWA#: FWA00014155